

SUSTAINABILITY SKILLS COLLABORATION FRAMEWORK

ASBEC JOBS AND SKILLS TASK GROUP

19 JUNE 2013



Acknowledgement:

This report was prepared by Sweeney Consult on behalf of ASBEC's Jobs and Skills Task Group, building on an earlier draft written by Jane Clancy for ASBEC.

Disclaimer:

While ASBEC's Jobs and Skills Task Group and Sweeney Consult endeavour to provide reliable analysis and believes the material it presents is accurate, it will not be liable for any claim by any party acting on such information.

Contact:

Executive Officer
Australian Sustainable Built Environment Council
208/54 Foveaux Street
Surry Hills NSW 2000
02 8006 0828
eo@asbec.asn.au
www.asbec.asn.au

Sustainability is recognised in the construction industry as good business practice, achieved by managing impacts on the environment and society, and seeing the business benefits that sustainability can bring.

United Kingdom's Constructing Excellence in the Built Environment

Energy efficiency initiatives across Australia are affecting existing occupations, requiring additional skills for new ways of doing things. Some new occupations are also being created, but on a much smaller scale.

Skills Australia 2011

Within this fragmented industry, multiple efforts to train and reskill workers are underway. However, there is no overarching framework within which training resources can be focused. The vocational education and training (VET) sector, the university sector and industry itself all contribute to the overall effort.

Built Environment Industry Innovation Council 2012

... the talent is available and with appropriate leadership it could be mobilised to transform the industry. ... this process is a joint responsibility of government and industry, but is dependent on industry itself firstly accepting and then addressing these future challenges. 'Ostrich like' behavior will only hasten the decline of competitiveness and government action alone will not save the industry.

Built Environment Industry Innovation Council 2012

Table of Contents

1. EXECUTIVE SUMMARY	2
2. INTRODUCTION	4
DEFINING SUSTAINABILITY SKILLS.....	5
BACKGROUND	6
APPROACH	6
3. THE JUSTIFICATION FOR A SUSTAINABILITY SKILLS FRAMEWORK	7
SUSTAINABILITY LEADS TO PRODUCTIVITY GAINS.....	7
SUSTAINABILITY SKILLS ARE NEEDED ACROSS THE BUILT ENVIRONMENT SECTOR.....	9
ONGOING LEARNING IS KEY TO ADDRESSING SUSTAINABILITY SKILLS.....	11
COORDINATION OF RESOURCES IS REQUIRED TO EFFICIENTLY ADDRESS LEARNING NEEDS.....	13
COLLABORATION PROVIDES THE MEANS TO ACHIEVE COORDINATION OF RESOURCES.....	14
4. THE SUSTAINABILITY SKILLS COLLABORATION FRAMEWORK	16
PRINCIPLES	16
FRAMEWORK.....	18
5. FRAMEWORK ACTIONS.....	21
THE INITIAL STEPS	21
ENGAGING WITH THE BUILT ENVIRONMENT SECTOR ON SUSTAINABILITY SKILLS	24
ENGAGING WITH THE GOVERNMENT ON SUSTAINABILITY SKILLS.....	26
ENGAGING WITH EDUCATION AND TRAINING PROVIDES ON SUSTAINABILITY SKILLS	26
ENGAGING WITH CUSTOMERS.....	28
PROVIDING THE RIGHT INFORMATION.....	29
6. COMMUNICATING THE FRAMEWORK.....	30
7. TAKING THE FIRST STEP	30
8. ABOUT THIS PROJECT	31
9. REFERENCES.....	32
10. APPENDIX A. STAKEHOLDERS AND ROLES	35
INDUSTRY	35
GOVERNMENTS.....	37
EDUCATION AND TRAINING	40
PROCUREMENT	41
OTHER ORGANISATIONS AND NETWORKS.....	42
11. APPENDIX B. COMMUNICATIONS PLAN	43

1. EXECUTIVE SUMMARY

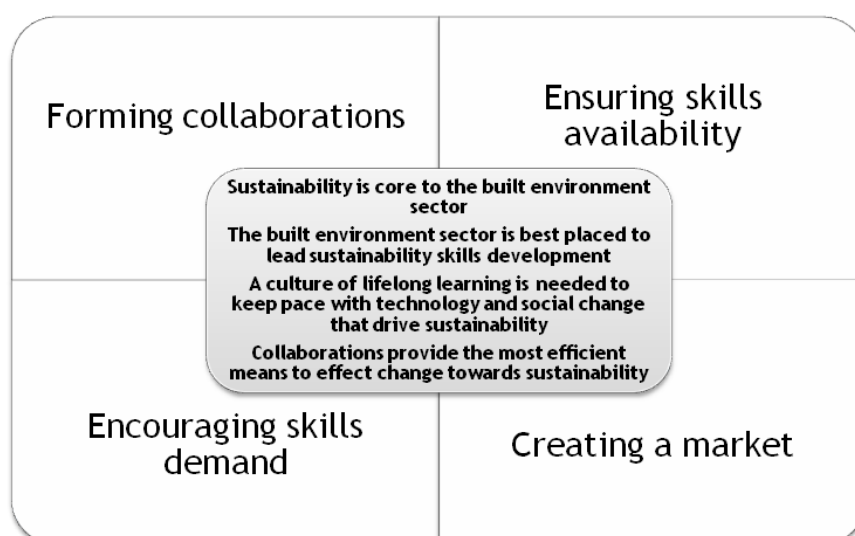
The social, environmental and economic case for aggressively improving the sustainability of Australia's built environment is compelling. However skills gaps are seriously limiting the capacity of Australia's built environment sector to meet this challenge. Effective collaboration between the built environment sector, government, and education and training providers, is essential to achieve improvement in sustainability skills at the rate needed to ensure the viability of the sector in a globally competitive environment.

There is increasing evidence that investing in the sustainable built environment brings economic benefits from resource efficiencies, as well as increased productivity and social wellbeing. This has created increased demand for sustainable buildings and precincts at the premium end of the commercial sector, but the rest of the built environment sector is lagging.

Whilst there has been significant advancement in progressing sustainability skills across segments of the built environment sector workforce, there remains a critical need for an integrated and sector wide approach to ensure that new and existing workers have the skills to meet the sustainability challenges and opportunities that lie ahead.

The framework outlined in this report is based on desktop research complemented by consultations and feedback from ASBEC's Jobs and Skills Task Group.

Four key principles were identified upon which the Sustainability Skills Collaboration Frameworks is founded.



Based on these principles, a set of four interlinked strategies were identified as providing the structure and process to enable effective communication and collaboration between the diverse stakeholders (industry, governments, education providers and other relevant parties).

There are twelve actions identified to implement the framework, categorised as:

- Engaging with the built environment sector on sustainability skills
- Engaging with education and training providers on sustainability skills
- Engaging with the government on sustainability skills
- Engaging with customers
- Providing the right information

A key action is the establishment of a Built Environment Skills Advisory Group, led by the built environment sector, together with representatives from government and education and training providers, to ensure a coordinated approach to overcoming the skills gap.

The first step to implement the framework is to hold a one day facilitated workshop with the aim to get commitment from parties to form working groups and commit funding to undertake the framework actions. This would be a low-investment, high return opportunity to get collective commitment to take on the remaining actions in the framework.

2. INTRODUCTION

Australia's built environment sector¹ has the opportunity to initiate a step change in the productivity, liveability and sustainability of the urban landscape.

The Australian Sustainable Built Environment Council (ASBEC) has set out a vision for Australia's built environment that seeks to enhance social capital, generate economic capital and preserve and restore natural capital². Pursuing this agenda is critical to Australia's ability to respond to the challenges associated with climate change, maintaining competitiveness in a global market, and ensuring our cities are great places to live and work.

The importance of putting in place frameworks to enable the transformation of the urban landscape is underscored by the German Advisory Council on Global Change's (WBGU; 2011) 'Flagship Report: World in Transition: A Social Contract for Sustainability'.

The tangible benefits of investing in sustainability are already being experienced in some parts of Australia's built environment. In the commercial building sector, green buildings attract tenants more easily; command higher rents and sale prices; save money through reduced energy and water use; lower long-term operation and maintenance costs; and improve worker productivity and occupants' health and well-being. These benefits are typical of the dividends that accrue from smart investments in sustainability across the built environment.

The social, environmental and economic case for aggressively improving the sustainability of Australia's built environment is compelling. However skills gaps are seriously limiting the capacity of the sector to meet this challenge. This is not a new insight; governments at both a state and federal level have made a number of attempts to address these gaps, and there are examples of best-practice that can be used to guide further initiatives³. Although significant progress has been made in some areas, critical capacity constraints remain. Given the scale of the challenge, current initiatives on their own are unlikely to deliver the sector-wide improvement necessary to take advantage of this opportunity.

Effective collaboration is essential to achieve improvement at the necessary rate. To date, government agencies, industry bodies, professional associations and education institutions have often found themselves starting from scratch each time a new intervention is attempted. Programs and materials developed in one state are not consistently disseminated to others. Professional associations are required to have the same conversations again and again with universities that do not effectively share information on course development. And basic information about how to navigate the increasingly complex education and training landscape is not readily available.

The need for collaboration between all stakeholders is highlighted in the Plumbing Industry Advisory Council's (PIAC) response to the Victorian Climate Change Green Paper (PIAC, 2012:2):

"If Victoria's plumbing workforce as a whole had strong green skills and attitudes, if participant firms and suppliers to the industry were effectively pursuing innovation and entrepreneurial growth, and if government policy settings concerning plumbing were well informed by applied research, the plumbing industry would become a powerhouse for tackling climate change and developing new jobs in the State."

¹ In this report, the built environment sector refers to all roles and industries that have a part in the built environment, from planners, designers, architects, builders, electrical and plumbing contractors, painters, to fit-out, and facilities management and maintenance.

² ASBEC 2015 Draft Strategy http://www.asbec.asn.au/files/ASBEC_2012-2015_Draft_Strategy.pdf

³ For example, the NSW Energy Efficiency Training Program (EETP) has demonstrated the benefits of working with industry to identify training needs, and the role government can play in facilitating the supply of training (see case study on EETP for more information).

ASBEC recognises the good work that has been done, the significant challenges that remain, and proposes the foundation for a new collaboration between the built environment sector, government and education and training providers to initiate a step change in skills development to enable and facilitate the transformation of the urban landscape.

DEFINING SUSTAINABILITY SKILLS

Sustainability skills (also referred to as ‘green skills’) are defined by the Council of Australian Governments (COAG, 2009) as *“the technical skills, knowledge, values and attitudes needed in the workforce to develop and support sustainable social, economic and environmental outcomes in business, industry and the community”*. Sustainability skills are therefore not solely new skills, but may augment existing skills.

Education for sustainability helps build people’s capacity to innovate and implement solutions. Sustainability is a way of approaching work; a way of thinking about and analysing work, and about how workers apply existing skills. As *Living Sustainably: The Australian Government’s ‘National Action Plan for Education for Sustainability’* (Department of the Environment, Water, Heritage and the Arts, 2009) notes education for sustainability is *“not simply about providing information, but about equipping people with the skills, capacity and motivation to plan and manage change towards sustainability within an organisation, industry or community ... it equips people to understand connections between environmental, economic, social and political systems”*.

Sustainability skills have many facets, and priorities for skills development are different in each sub-sector of the built environment sector. In many areas, the most important skills gaps are technical skills that are not currently being delivered through accredited training. Technical skills gaps may be longstanding, but they can also arise quickly as technology and processes evolve and course providers struggle to keep up with best practice. Regardless of the reason for a skills gap developing, companies in these sub-sectors are often forced to hire individuals with generic qualifications and train them in-house in order to meet industry needs.

In other areas, there is a need to improve generic skills such as systems thinking, problem solving and the ability to work in multi-disciplinary teams (Allens & NCS, 2012; WBGU, 2011). These generic skills provide workers with the knowledge and capability to work in multi-disciplinary teams for environmental, social and economic benefit. They also allow workers to understand their actions within the wider context of the built environment, including people that use the space, the local natural environment, and global concerns such as climate change, resource extraction and resource efficiency.

The Construction and Property Services Industry Skills Council (CPSISC)⁴ and its stakeholders acknowledge that sustainability or green issues are intrinsic, rather than ‘bolted on’ (CPSISC 2011). This means that sustainability skills need to be embedded into all training for the workforce as they enter the built environment sector. In addition, sustainability skills should not be considered as a voluntary topic in professional development, but rather core to the process of learning and adapting to the changes that are shaping the built environment sector.

These new skills can be obtained by:

- Reviewing existing training at the vocational education and training (VET) level and embedding it into training packages
- Reviewing higher education degrees and ensuring that sustainability skills are embedded in relevant courses

⁴ CPSISC represents the workforce training and development needs of the construction and property services industries, which is a key plank of the built environment sector.

- Additional training (accredited⁵ and non-accredited⁶) to familiarise existing workers with new concepts and practices that will enable them to operate in the continuously changing technology and processes that shape the built environment sector.

BACKGROUND

The 2009 *Green Skills Agreement* was a key driver for Australian industry and education and training providers to address the sustainability skills required in the workplace. The agreement, which formally runs from 2010 to 2013⁷, has four primary objectives, which are to:

- develop national standards in skills for sustainability within the requirements of the national skills framework
- upskill VET practitioners so they can provide effective training and facilitation in skills for sustainability
- review and revise training packages to incorporate skills for sustainability
- implement strategies to reskill vulnerable workers in the transition to a low-carbon economy.

Funding for the Green Skills Agreement has been allocated in the 2013 Federal budget, as part of the Government's support for the National Training System. However, there is no plan or decision to continue the current agreement beyond 2013.

It is critical that the gains of the Green Skills Agreement are both consolidated and built upon. This next stage must see industry taking the lead in collaborating with stakeholders to advance sustainability skills across the building industry.

The *Green Skills Agreement* suggested that there would be significant engagement with the higher education sector, but the implementation plan primarily addressed the VET sector. It is important that the next stage of sustainability skills initiatives address not just the VET sector, but also the higher education sector and non-accredited training.

APPROACH

The development of Sustainability Skills Collaboration Framework ('the framework') is based on a comprehensive review of literature on sustainability skills, and consultation with key stakeholders in the built environment sector. ASBEC's Jobs and Skills Task Group provided valuable feedback that has strengthened the framework to ensure that it meets the needs of the sector.

⁵ Accredited training refers to that which provides a person with a nationally recognised qualification on completion, through a Registered Training Provider or a University.

⁶ Non-accredited training refers to that which does not lead to a recognised qualification.

⁷ The agreement's implementation plan includes an evaluation study, which is currently being conducted and the results of which are expected before the end of June 2013. The evaluation also incorporates *the National VET Sector Sustainability Policy and Action Plan (2009-2012)*. The evaluation may propose further action, including in VET.

3. THE JUSTIFICATION FOR A SUSTAINABILITY SKILLS FRAMEWORK

Whilst there has been significant progress in advancing sustainability skills across segments of the built environment sector workforce, there remains a critical need for an integrated and sector-wide approach to ensure that new and existing workers have the skills to meet the sustainability challenges and opportunities that lie ahead. There are five key drivers that underpin the need for a sector-wide collaboration framework to move the sustainability skills agenda forward:

- Sustainability leads to productivity gains
- Significant sustainability skills gaps remain in the built environment sector
- Ongoing learning is key to addressing sustainability skills gaps
- Coordination of resources is required to efficiently address learning needs
- Collaboration is the most effective way of coordinating resources

SUSTAINABILITY LEADS TO PRODUCTIVITY GAINS

Much has been said in recent years about the imperative of 'greening' Australia to address the challenges of climate change, resource depletion, the rising cost of energy, waste management, pollution and biodiversity loss.

There is bipartisan agreement to cut greenhouse gas emissions by five percent by 2020⁸. The efforts of the built environment sector are integral to achieving the national target. In 2007, an estimated 23 per cent of Australia's greenhouse gas emissions were attributable to the building sector (ASBEC, 2009). ClimateWorks' 2010 *Low Carbon Growth Plan for Australia* found that the building sector had the potential to contribute 11% (28 MtCO₂e) of the total 2020 lowest-cost emissions reduction opportunities for Australia, with the lowest-hanging fruit in the commercial built environment.

While much of the discussion has been around greening as a means to address risk, there are also significant economic benefits of greening the economy. For example, a 2008 report by Cambiar Consulting (2008) concluded that, with the right market settings, six Australian market sectors (renewable energy, energy efficiency, sustainable water systems, biomaterials, green buildings and waste and recycling) then valued at \$US15.5 billion and employing 112,000 people could grow by 2030 to a value of \$243 billion and 847,000 jobs. Globally, the market volume of environmental products and services was expected to increase from some \$US1,370 billion in 2008 to \$US2,740 billion by 2020. It should also be noted that societies with the right skills to benefit from transformational changes, such as the Industrial Revolution, are able to reap the greatest rewards in terms of productivity and economic gains (WBGU, 2011)⁹.

A greater focus on sustainability, including sustainability education, will also benefit Australia in our region. For example, the 'Australia in the Asian Century White Paper' noted that "*The Asian century offers a wealth of opportunities and career choices in a variety of businesses (including small and medium-sized enterprises), especially for Australia's young people ... in environmentally sustainable growth, natural resource management, infrastructure development, urban design and health and aged care—as Australians leverage their expertise to do business with their neighbours*" (Australian Government, 2012).

Sustainability is not just central to economic growth, but also to productivity. *Our Cities, Our Future - A national urban policy for a productive, sustainable and liveable future* makes the links between productivity, sustainability and liveability when it notes that they are part of an interrelated and

⁸ Based on 2000 baseline level of greenhouse gas emissions.

⁹ The WBGU (2011) made the observation that Britain had a workforce that had the requisite technological skills and a good supporting education system, along with other enabling factors such as a strong centralised government, to make the most from the Industrial Revolution.

dynamic system. For example, “*efficient public transport can address congestion and improve access to jobs and opportunity (productivity); it can also reduce greenhouse gas emissions (sustainability); and enable affordable access to education, health and recreational facilities (liveability)*” (Department of Infrastructure and Transport 2011: 7). The policy also illustrates similar links for national communications infrastructure. Australia’s sustainable population strategy (*Sustainable Australia - Sustainable Communities*) makes similar links.

There is now detailed evidence on the links between the sustainability and the productivity of the built environment. After reviewing an extensive body of literature, the World Green Building Council (2013) concluded that green buildings:

- do not necessarily cost more than conventional buildings
- attract tenants more easily, and command higher rents and sale prices
- save money through reduced energy and water use and lower long-term operation and maintenance costs
- improve worker productivity, and occupants health and well-being
- mitigate risks (such as regulatory, climate change and changing tenant preferences and investor risks).

Similarly, preliminary research by the Green Building Council of Australia (2013), set to be released later in 2013, has found that Green Star-certified buildings:

- produce 62% fewer greenhouse gas emissions than average Australian buildings, the equivalent to removing 168,000 cars from our roads for a year
- use 65% less electricity than average Australian buildings, saving the equivalent of 75,000 average households’ electricity use annually
- use 51% less potable water than if they had been built to meet minimum industry requirements, saving more than 3,300,000 kL per annum or enough potable water to fill 1,300 Olympic swimming pools every year
- recycle 96% of their construction and demolition waste, diverting the equivalent of 37,600 truckloads of construction and demolition waste from landfill.

The link between sustainability, energy efficiency and improved business productivity is increasingly accepted in the built environment sector. For example, the Your Future Home Top 50 Sustainable Building Leaders 2012 rankings¹⁰ identified architects, building designers, builders, materials producers, interior designers, consulting engineers, and urban designers that strongly support sustainability principles and practices which improve business productivity.

Though the drivers for sustainability are clear, the Built Industry Innovation Council (2012) expressed concern that the fragmented nature of the industry and resistance to change were hindering the ability for the industry to grow, and meet future challenges.

CASE STUDY – CONSTRUCTING EXCELLENCE

Constructing Excellence was formed in the United Kingdom in 2003 from uniting numerous industry bodies to form a powerful, influential voice for improvement in the built environment sector. Constructing Excellence is the single organisation charged with driving the change agenda in construction. The organisation exists to improve industry performance in order to produce a better built environment. It is a cross-sector, cross-supply chain, member led organisation operating for the good of industry and its stakeholders.

Constructing Excellence counts guidance and training amongst its key activities. Training is an area of growing importance within the UK construction industry. Some of the benefits gained by adopting a training programme for employees include:

¹⁰ <http://www.yourfuturehome.com.au/index.php?module=pages&id=230>

- Greater productivity
- Staff development and retention
- Confident and competent employees
- Increased profitability

Organisations that invest in training for their employees can apply for Investor In People (IIP) standard [www.investorsinpeople.com]. IIP demonstrates that the organisation is committed to improving its performance through its people. The standard, which has now become international, has produced guides specific to sectors in the construction industry. As a result, this can increase an organisations' potential to become internationally competitive.

Reference:

<http://www.constructingexcellence.org.uk/aboutus/default.jsp>

<http://www.constructingexcellence.org.uk/resources/themes/internal/training.jsp>

SUSTAINABILITY SKILLS ARE NEEDED ACROSS THE BUILT ENVIRONMENT SECTOR

Deficits in skills for sustainability reduce the built environment sector's ability to improve productivity, deliver government policy and meet community expectations. These skills include technical skills that apply to specific roles, including (but not limited to):

- Building design and construction
- Waste reduction and management
- Water management
- Energy efficiency in lighting, heating, ventilation and cooling
- Procurement
- Indoor air quality
- Facilities management

The need for a comprehensive and coordinated approach to research and modelling of sustainability skills needs, deficits and gaps for trades and professions to meet emission targets was recognised in the *Green Skills Agreement*. In response, the Industry Skills Councils (2010) responded by embedding sustainability in national training packages.

Much work has been done in recent years to identify the sustainability skills required by the built environment sector, and to incorporate them in VET training packages. For example, national competency standards for the building and construction industry include:

- work effectively and sustainably in the construction industry
- apply sustainable building design principles to water management systems
- build thermally efficient and sustainable structures
- minimise waste on the building and construction site
- develop workplace policies and procedures for sustainability.

However, these changes in the VET sector tend to benefit new entrants to the workforce, but not existing workers. The existing workforce can be trained in specific skills through targeted, workplace-based training that meets the needs of both employees and their employers. The NSW Energy Efficiency Training program provides an exemplar model of government working with industry to identify and bridge the sustainability skills gap.

CASE STUDY: NSW ENERGY EFFICIENCY TRAINING PROGRAM

The NSW Energy Efficiency Training Program (EETP), run by the Office of Environment and Heritage, is an example of a government led upskilling initiative, focusing on energy efficiency, that establishes partnerships between industry and education and training providers. The program is a holistic response to needs outlined in research to support industry, government and the community move towards greater energy efficiency.

The EETP builds the knowledge and skills of tradespeople and professionals to support improved energy efficiency practices, products and services. This is achieved by:

- supporting industry partnership projects that develop and deliver energy efficiency training
- supporting higher education projects that develop and deliver energy efficiency courses and resources for the university sector
- undertaking research and evaluation to inform the planning, delivery and evaluation of innovative, targeted energy efficiency training
- providing subsidies for Registered Training Organisations to deliver accredited training in energy efficiency skills
- developing professional development courses to update the energy efficiency knowledge of educators and trainers in the Vocational Education Training (VET) sector.

To date, 8000 people have been trained and 95 new training courses developed and delivered, (including 13 vocational professional development courses).

This program has led to real resource efficiency outcomes, which have led to ongoing interest by companies, industry groups, and specific sectors (e.g. aged car, clubs) for further training.

The key lessons from the program are that:

- industry has a key role in identifying skill needs
- government has a role in supporting and facilitating the development training resources
- industry prefers targeted and customised training that is short and to the point
- government can support the demand for training by subsidising the delivery
- training should be delivered by industry experts
- training delivery should be flexible, and at a time that suits the needs of employers and employees.

Reference:

Frouke de Reuver, Senior Project Officer Office of Environment and Heritage

<http://www.environment.nsw.gov.au/sustainbus/greenskills/enefttraining.htm>

Some research and modelling of skill needs, deficits and gaps has been undertaken, especially focussing on energy efficiency skills (Allen & NCS, 2012; NCS, 2012; Skills Australia 2011; GHD 2010; Per Capita, 2010; Rafferty & Yu, 2010; Ithaca Group, 2009). The focus on energy efficiency has been driven by changes in regulations due to the carbon price. More recently, CPSISC has conducted research about skill gaps in energy efficiency: its *Energy Efficiency Skills Gaps and Training Needs* project is due for completion in mid-2013.

There has also been considerable research undertaken internationally in the area of sustainability skills (OECD, 2010; ILO, 2009; PEW Charitable Trusts, 2009).

It is important to also recognise that sustainability skills relate to other issues such as construction waste management, water management, indoor air quality, sustainable procurement, and ongoing facilities maintenance and management.

The systemic issues that impact on the uptake of training related to sustainability skills should be considered within the prism of the barriers to the uptake of skills training in general. The uptake of sustainability skills is further hindered in that the awareness of sustainability skills and their importance to business is limited in many enterprises, and particularly within SMEs (which make up the largest share of the construction sector, at 97.7%¹¹).

In considering the systemic issues to the uptake of training, it is also important to distinguish between the size of businesses. The literature reviewed by the National Centre for Sustainability (2012) clearly points to larger companies being more likely to invest in training, based on an ability to identify and assess skill needs and training options, and develop a workplace development plan based on strategically positioning the business to face future needs.

¹¹ Australian Small Business 2011.

<http://www.innovation.gov.au/SmallBusiness/KeyFacts/Documents/SmallBusinessPublication.pdf>

By comparison, SMEs have limited resources to invest in training, and place day-to-day commercial pressures ahead of strategic planning and upskilling. SMEs also have difficulty (perceived or real) in accessing or identifying appropriate training option. One proposed intervention is for the development of more focussed advisory services that link businesses with reputable and trusted training organisations and training options.

The formal training sector, particularly the VET sector, has been the primary supplier of green skills in Australia. This is driven by the COAG Green Skills Agreement (2009). Funding models can impact upskilling of the existing workforce. For example, the Victorian Training Guarantee will only fund increasingly higher level qualifications. This poses difficulties for individuals and businesses as 'lower' qualifications provide an opportunity to refresh or gain new skills in addition to the ones they already hold. The TAFE sector is also geared towards training 'unskilled' workers rather than upskilling or retraining existing workforce.

The lack of specialised training options both within the industry and through the vocational or higher education systems, leading to a strong incidence of skills acquired on-the-job. Issues such as the cost and time required for training, including the opportunity cost, are barriers to accessing both accredited and non-accredited training. In addition, there is a fear that providing training to staff leads to a risk of such staff leaving the business for more pay.

When training is accessed, many businesses, particularly SMEs, tend to favour short courses or other workplace based training ahead of qualifications. SMEs also gain new skills through informal training, including learning from peers and through the supply chain. Such 'place-based' networks may present an opportunity for government to support and facilitate the uptake of sustainability skills that directly relate to the needs of SMEs.

Skills needs are constantly changing as technology evolves and the importance of sustainability is increasingly recognised. Embedding sustainability skills across the economy means having an ongoing (rather than one-off) capacity to identify and address skills deficits.

A summary of supply side and demand side barriers to sustainability skills is outlined below.

Supply side	Demand side
<ul style="list-style-type: none"> • VET sector training does not meet the needs of business • TAFE/VET funding model does not facilitate development and delivery of qualifications and courses that are seen as not returning an immediate financial benefit • Lack of access to appropriate training providers • There is a lack of trainers with the requisite sustainability skills • Environmental scans do not reflect skills shortage accurately across all States and Territories • Funding model does not cater to upskilling existing workers 	<ul style="list-style-type: none"> • Lack of awareness by employers as to what are 'sustainability skills' • Lack of awareness and understanding as to the importance of sustainability skills • Sustainability skills overshadowed by the wider skill shortage • Little investment in up-skilling generally (especially in SMEs) • Limited (perceived or real) economic demand or economic return from investment in green skills • Management gap • Cost of training • Lack of policy/regulations to drive demand in training

ONGOING LEARNING IS KEY TO ADDRESSING SUSTAINABILITY SKILLS

An appropriately skilled workforce is key to achieving productivity and sustainability goals. However these skills are not only gained at the beginning of an individual's working life.

Lifelong learning is a necessary response to technological and social change, but it is especially essential in the built environment sector. The economic, environmental and social drivers of sustainability demand that the sector's workers at all levels continually update their skills and knowledge. There are examples of industry-led training to upskill the workforce, as well as nationally accredited training. However, there is no push factor to drive the workforce through such training, and only a small percentage of the workforce participate in it at present.

Examples of industry-led training to upskill the workforce:

- Green Plumbers (national/international) – commenced by Master Plumbers and Mechanical Services Association of Australia (MPMSAA) and now run by Green Invest Pty Ltd
- Enviroplumber (NSW) - Master Plumbers Association of NSW
- EcoSmart Electricians – National Electrical and Communications Association (NECA)
- Global Green Electricians - Electrical Telecommunications and Renewable Energy Contractors (ETREC) Inc Association
- Green Cleaning – Fresh Green Clean & Lennox Institute

Examples of accredited training to upskill the workforce:

- 21928VIC Vocational Graduate Certificate in Energy Efficiency for Facility Managers
- 22002VIC Course in Sustainable Painting Practices
- 21877VIC Vocational Graduate Certificate in Energy Efficient HVAC Design
- UEENEEK145A - Implement and monitor energy sector environmental and sustainable policies and procedures

Despite the imperative for increased learning and the achievements of recent years, a survey of ASBEC's members found there is limited ongoing education and training in the area of sustainability. Also, sustainability considerations are still regularly seen as additional, rather than core.

The built environment sector needs a more informed and skilled workforce that treats sustainability as a core focus and not an optional extra. This will result in the retrofitting of existing buildings (particularly in the non-premium market) and the design and construction of buildings with smaller environmental footprints. It will also result in a workforce of facility managers, professional facilitators, energy efficiency providers, auditors, retro-commissioning designers and other professionals (such as lawyers and accountants) needed to operate them effectively. Critically, this shift will reduce levels of risk for investors in our buildings and cities.

CASE STUDY: CUT THE CARBON

Cut the Carbon is a partnership between CITB, the Federation of Master Builders (FMB) and the National Specialist Contractors' Council (NSCC) and is supported by Scottish Building Federation and the Scottish Passive House Centre. Together these organisations represent almost 80% of the United Kingdom's construction industry.

Building on the Green Deal, Cut the Carbon offers, through a web portal [www.cutcarbon.info], a wide range of advice and services, including the business case for sustainable skills, case studies of successful businesses, access to training, and financing for sustainability skills to SMEs.

Steve Geary, the skills strategy director of CITB, states that "Cut the Carbon looks beyond the Green Deal to the low carbon future we all face. The energy efficiency sector is an integral part of the future of construction and it is vital the businesses make preparations now so that they can stay at the forefront of developments".

Reference:

<http://cutcarbon.info/?lang=en>

<http://cutcarbon.info/about-carbon-reduction/why-construction-is-going-green.aspx?lang=en#.UayESErwlf0>

COORDINATION OF RESOURCES IS REQUIRED TO EFFICIENTLY ADDRESS LEARNING NEEDS

There are many individuals that already play a role in skilling the workforce (see Appendix A- Stakeholders and Roles). These people work for industry, governments, education providers and other key stakeholders, and operate through many different formal and informal networks. Their roles and responsibilities vary greatly, from high-level policy and program design to ‘at the chalkface’ teaching: so does their focus, from sustainability issues being at the core of their job role, to sustainability being a minor part of their role.

As noted elsewhere in this report, the definition of ‘sustainability’ also varies significantly, which can reduce coordination across the sector.

With such a diversity of individuals, organisations, roles, responsibilities, foci and definitions, significant issues arise. There are diverse but uncoordinated approaches and actions which make it more difficult to achieve strategic directions (for example, to identify and address skills deficits, deliver government policy and meet community expectations). In addition, many people do not have access to information about what others are doing that would be useful to them. As a result, there can be cases where effort may be unduly concentrated in specific areas, leaving them over-provided for, while policy and program deficits are unrecognised and unaddressed in other areas. There may also be unnecessary conflicts in policy directions and in program activities because relevant people and organisations were not coordinating effectively to overcome skills gaps.

Given Australia's increasingly mobile workforce, a national approach is required to move to a low-carbon, sustainable future, and the lack of coordination hinders the required transformation. Better coordination of continuing professional development, education and training is needed. This will result in easier and quicker discovery of sources of information and advice, potential partners, relevant case studies, and learning and other opportunities; more accurate identification of skills deficits and emerging skill needs; better focus on strategic directions. It will also result in more efficient use of resources, and improved educational outcomes for new and existing workers.

Greater coordination will result in:

- easier and quicker discovery of sources of information and advice, potential partners, relevant case studies, and learning and other opportunities
- more efficient and effective activity to increase sustainability
- improved educational outcomes for new and existing workers.

Greater coordination is also needed to address barriers to skill acquisition, including:

- workforce fragmentation
- the lack of uptake of formal qualifications
- time pressures
- cost of training.

CASE STUDY- UNITED KINGDOM'S EMPLOYER OWNERSHIP OF SKILLS

The Employer Ownership of Skills Pilot (EOP) is a competitive fund open to employers to invest in their current and future workforce in England. Employers are invited to develop proposals that raise skills, create jobs, and drive enterprise and economic growth. Government will invest in projects in which employers are also prepared to commit their own funds in order to make better use of the combined resources.

A key principle of the EOP is that employer ownership and responsibility for skills development drives jobs and growth. This is done through collaboration within industry, and with other stakeholders.

“Creating the conditions that encourage the best employers to step up and work with their employees, trade unions, colleges and training providers to take end to end responsibility for workforce development in their industry will drive ambition, quality and better utilisation of skills”. UKCES 2013: 4

UKCES note that it is imperative that skills training moves from a model where the government sets and manages the agenda, to one where a set of new relationships between employers, employees, industry groups and unions, and education and training providers are embedded within the skills landscape. It is suggested that this will provide all stakeholders with the clarity and confidence they need to interact in an outcome focused and demand led way to meet the future requirements of industry.

The EOP has been piloted in the construction industry with a consortium of 18 construction businesses, including large companies and SMEs, backed by industry bodies taking part in the initiative. A number of skills challenges were identified by the consortium, including a need to address the lack of work readiness amongst new entrants to the sector including 'softer' skills, and a lack of leadership and management skills to meet the challenges of a rapidly changing environment.

Rather than employers tackling skills issues on their own, the EOP has supported industry collaboration to help share best practice, increase relevant skills development and utilise businesses' collective purchasing power to drive the relevance, availability and quality of training provision in the key skills needed for growth. The project also reduces duplicate training interventions, costs and is a catalyst for the sharing, management and implementation of best practice skills solutions.

In excess of 150 employers are involved in the project, with the collaboration framework allowing the industry to address issues on a larger scale which benefits the sector and the wider economy as a whole.

The benefits to the participating businesses and the construction sector are multiple, and include:

- delivery of almost 15,000 additional workforce up-skilling interventions
- delivery of over 3,600 training interventions for managers and future leaders
- enhancing best practice through sector-led course design and collective purchasing power.

Reference:

<http://www.ukces.org.uk/ourwork/employer-ownership>

<http://www.ukces.org.uk/ourwork/investment/portfolio/eop1-construction-employers>

COLLABORATION PROVIDES THE MEANS TO ACHIEVE COORDINATION OF RESOURCES

Collaboration within the built environment sector and with external stakeholders provides the most efficient means for improved coordination of resources to meet sustainability skills learning needs.

Overcoming the multiple barriers to the uptake of sustainability skills requires an integrated and collaborative response that tackles both supply and demand side barriers.¹²

This includes collaborations within the built environment sector (large enterprises and SMEs, industry associations, professional associations, peak bodies, industry skills councils), and with external stakeholders - education and training providers (higher education, VET, non-accredited training), and government (Federal, State) to identify skill gaps and the most appropriate delivery mechanisms to upskill workers, as well as the funding mechanisms to support the training. Stakeholders and their roles are outlined in Appendix A.

The demand side encompasses the decisions made by enterprises to transform their operations to embed sustainability across all roles and responsibilities. This in turn requires educating the customers that drive procurement in the built environment sector that it is in their interest to demand sustainability considerations are embedded across the board. It is crucial that companies within the built environment sector (e.g. construction) be engaged effectively, as this is a key mechanism to reach existing workers. It is also important for there to be collaborations with professional associations who can influence the continuing professional development of their

¹² Collaboration refers to multiple actors working towards a shared purpose. The Built Environment Industry Innovation Council (BEIIC; 2012), noted that the built environment sector can be fragmented and lack a common purpose, especially when it comes to the sustainability agenda.

members. It is through changing existing business practice, and a valuing of sustainability skills by workers, that there can be a rapid shift towards a more sustainable built environment.

Collaborations can come from increasing the effectiveness of existing networks and partnerships, and developing new ones where required.

There are examples which demonstrate good practice in industry. These include work undertaken by Engineers Australia to incorporate energy efficiency and sustainability in professional standards. There is also extensive work taking place in the accounting field involving collaboration between accounting professional bodies, industry and universities.

BEICC (2010) proposed ten recommendations to drive more innovation and improve productivity, to champion innovation across the industry and to build connections and collaborate with other innovation organisations. BEIC noted that innovation in the built environment required a partnership between the levers that government influences and controls, and the levers that industry has influence over. Industry needed to drive innovation through better practice, and government need to create an enabling regulatory requirement to support innovation. Skills development was identified as a key action, requiring a collaboration between industry and government.

CASE STUDY- PLUMBING INDUSTRY CLIMATE ACTION CENTRE

The Plumbing Industry Climate Action Centre (PICAC) is an industry initiative which now involves all stakeholders in the plumbing and sustainability industry. PICAC started as a collaboration between the union – the PTEU, and the employers – the Master Plumbers. Both saw that there were gaps in training provision which meant that industry wasn't able to meet changing consumer demand for sustainable practices. By working together, we've been able to close that gap and provide a workforce with world's best training able to meet new demand, to the benefit of employees, employers and the end consumer.

PICAC is very much an industry-led facility, which means we have grown to include major stakeholders like the National Fire Industry Association (NFIA) and the Air Conditioning and Mechanical Contractors' Association (AMCA). All of these stakeholders offer training which meets industry need at the Centre, meaning we had more than 5,000 courses completed last year. Government has looked to PICAC as a model for collaboration in other areas, such as with their announcement of innovation precincts. To date, there has been a \$14million investment in PICAC, \$10million of that from industry. We are proud to have received support from the Plumbing Industry Commission, Energy Safe Victoria, Victorian and Australian Governments.

The collaboration works because our memberships all share in its benefits and we act collectively in their interests. Being partners in the facility means we all have ownership of decisions. We all share in the success of our industry and we all bring our own strengths, perspectives and priorities to the table. Working together to build a world class facility to support a world class industry is something we can all share the benefits of.

Reference:

Shayne La Combre, CEO PICAC

4. THE SUSTAINABILITY SKILLS COLLABORATION FRAMEWORK

The Sustainability Skills Collaboration Framework is proposed to enhance and improve the ability of the workforce to design, build and maintain a sustainable built environment that enhances social capital, generates economic capital and preserve and restores natural capital.

The Sustainability Skills Collaboration Framework responds to work undertaken previously by BEICC (2012: 13) that noted:

“Within this fragmented industry, multiple efforts to train and reskill workers are underway. However, there is no overarching framework within which training resources can be focused. The vocational education and training (VET) sector, the university sector and industry itself all contribute to the overall effort.

BEICC members, and particularly the union members, supported the development of a national action plan to provide that framework and to enable the VET and industry sectors to allocate scarce resources.”

This framework is focussed on collaboration within the built environment sector, with education and training providers, and with government.

There has been significant progress and gains made in addressing sustainability skills, following the Green Skills Agreement (2009) and various initiatives involving industry, government and education and training providers over the past several years.

This framework seeks to consolidate the gains that have been made and build on the good work to date, and address areas that have not received as much attention such as upskilling the existing workforce.

PRINCIPLES

Four key principles underpin the framework. They are as follows:

- Sustainability is core to the built environment sector
- The built environment sector is best placed to lead sustainability skills development
- A culture of lifelong learning is needed to keep pace with technology and social change that drive sustainability
- Collaborations provide the most efficient means to drive this change

These principles are based on the desktop research and consultations. The four principles reflect the basis upon which the framework was developed. The principles are detailed further below.

Sustainability is core to the built environment sector

Sustainability is about doing business smarter, increasing productivity, and reducing the cost of doing business. This is clearly evident with the issue of construction waste (see box below).

Waste in the Construction Industry

“Building materials account for about half of all materials used and about half the solid waste generated worldwide.

They have an environmental impact at every step of the building process—extraction of raw materials, processing, manufacturing, transportation, construction and disposal at the end of a building’s useful life”.¹³

By reducing waste through more sustainable practices, using sustainable thinking, and applying technical skills to waste recovery and improved design, the built environment sector can improve environmental outcomes, increase productivity, and reduce cost.

Sustainability should not be seen as a bolt-on to the built environment sector but as an intrinsic part of it. Sustainability refers to doing more with less; in other words being more efficient. As the Industry Skills Councils (2010:1) state:

“Efficiency = productivity and quality”.

Sustainability means delivering buildings and urban landscapes for the present and future generations that have positive impacts on social, natural and economic capital. By embracing sustainability and the skills required, the built environment sector will be better positioned to compete on the global stage.

The built environment sector is best placed to lead sustainability skills development

The built environment sector understands the needs of its customers and clients, and is best placed to address the needs of employees and employers regarding skills development. Industry leadership is critical for the built environment sector to transform itself and meet the challenges and opportunities arising from the issues such as climate change, resource constraints, new regulations, and changing consumer demands amongst other drivers for sustainability. The built environment sector must be proactive and embrace changes in practices and technology in the same manner as other sectors (e.g. manufacturing).

A culture of lifelong learning is needed to keep pace with technology and social change that drive sustainability

Lifelong learning is key to maintaining a productive workforce that can compete globally. Learning is no longer confined to pre-employment. Though it is critical that new workers are educated and trained in sustainability skills, the existing workforce must also upskill to meet the challenges and opportunities posed by changing practices and demands. All workers, from CEOs to bricklayers, architects to refrigeration mechanics, must embrace a culture of professional development and lifelong learning. This can be achieved through various means, from accredited training in the classroom, online training, and on-the-job. Whilst there has been considerable work undertaken in updating vocational education training packages to include sustainability skills, the industry must ensure that existing workers are upskilled across the country.

Collaborations provide the most efficient means to drive this change

Collaboration and partnerships are key to sustainability, and skills development. Working in silos is no longer acceptable. With an increasingly mobile workforce, it is important to facilitate and support skills development. The built environment sector must take the lead, and work together with government, and education and training providers, to drive sustainability skills across the workforce. Industry must develop effective partnerships with education and training providers to clearly articulate the skills needs for future workers, and to share knowledge and resources with

¹³ Source: Department of Sustainability, Environment, Water, Population and Communities (2011) Construction And Demolition Waste Guide - Recycling And Re-Use Across The Supply Chain

education and training providers to ensure that industry relevant practices are taught. Industry, education and training providers, and government must work together to ensure that companies and workers have the capacity to access lifelong learning.

FRAMEWORK

The framework sets out the structures and processes to enable effective communication and collaboration between diverse stakeholders (industry, governments, education providers and other relevant parties) to address skills issues in the built environment. Four overarching strategies that give effect to the principles are presented, with a number of actions sitting under each strategy.

The industry must drive the change, but Government involvement in a collaborative structure is necessary. This will help ensure that change is made from both the bottom-up and the top-down, in a manner that drives change across the country, not just in pockets of the built environment sector. The manner in which the Green Skills Agreement led to changes across training packages demonstrates the importance of government involvement.

The built environment sector should engage with the Commonwealth to ensure that there is a continuing structure that includes Federal and State Governments working in collaboration with industry to consolidate the gains already made in sustainability skills, and to build on these through upskilling the existing workforce and working to ensure higher education establishments deliver graduates with the employability skills needed to compete in a rapidly changing environment.

This framework focuses on sustainability skills, but also addresses the overall skill shortage across the built environment sector. As the CPSISC Chair noted in the 2012-13 Environment Scan:

“An ongoing commitment to training will be critical to avoid future skills shortages that will restrict growth and impact adversely on consumer impressions of the quality of construction and property services goods and services.”

The purpose of this framework is to facilitate effective collaboration between key stakeholder groups that are in a position to catalyse change across the built environment sector. These groups include:

- peak bodies
- professional and industry associations
- industry skills councils
- companies (large and SMEs)
- state, territory and federal governments
- VET and higher education providers and practitioners

The framework aims to:

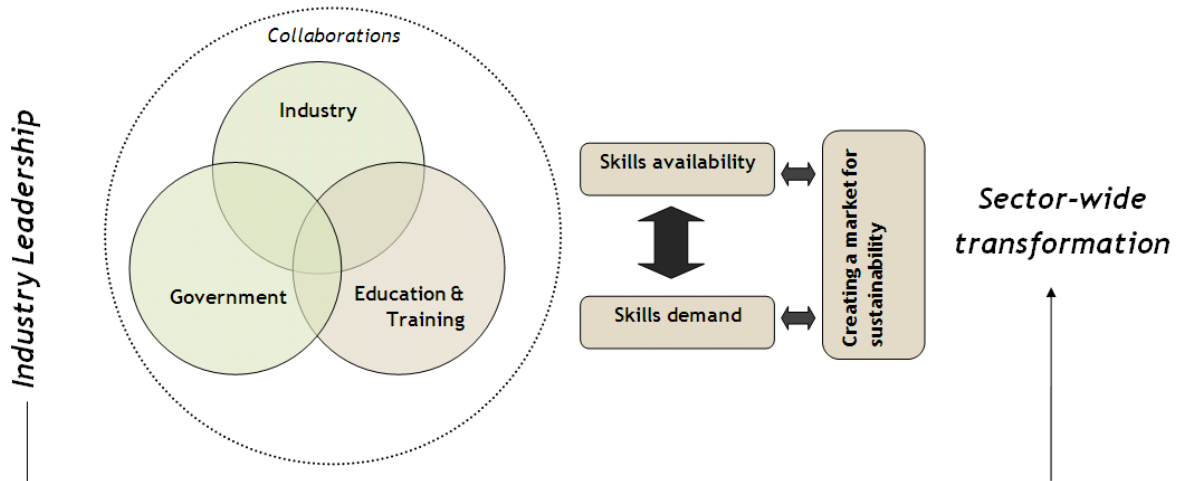
- set out the structures and processes required to enable effective communication and collaboration between diverse stakeholders (industry, governments, education providers and other relevant parties) to address skills issues in the built environment.
- define the roles and actions required of each stakeholder, and the format for interaction between stakeholders.
- function as a roadmap for transforming the way that skills issues in the built environment are addressed.

The framework will do this through:

1. Forming collaborations
2. Ensuring skills availability
3. Encouraging skills demand
4. Creating a market and drive for sustainability in the built environment

The pathway in which the framework can transform the way that skills issues in the built environment are addressed, and thereby lead towards a sector-wide change towards more sustainable practice, is represented in the diagram below.

Industry leadership for sector-wide transformation



The framework, and associated actions and key collaborations are outlined below.

PRINCIPLES			
<ul style="list-style-type: none"> • Sustainability is core to the built environment sector • The built environment sector is best placed to lead sustainability skills development • A culture of lifelong learning is needed to keep pace with technology and social change that drive sustainability • Collaborations provide the most efficient means to drive this change 			
FRAMEWORK			
1. Forming collaborations Forming collaborations within the built environment sector, and with government and education and training providers is critical to the uptake of sustainability skills in the existing and new workforce across the country	2. Ensuring skills availability Effective coordination between stakeholders across the built environment sector to identify and prioritise key sustainability skills and the appropriate delivery mechanisms (accredited, non-accredited etc.) are provided for and resourced	3. Encouraging skills demand Coordination across industry associations and professional accreditations to facilitate and support continuing professional development across the workforce, with enabling structures for the workforce to access training	4. Creating a market for sustainability Driving demand for a more sustainable built landscape through sector-wide collaboration
1.1. Hold a one day facilitated workshop with aim to get commitment to undertake the framework actions 1.2. Conduct a mapping exercise of sustainability skills stakeholders and influencers in the built environment 1.3. Establish a Built Environment Skills Advisory Group 1.4. Engage with Federal Government to define a collaborative structure to build on the gains of the Green Skills Agreement	2.1 Commission a study into the sustainability skills training needs of SMEs in the built environment sector 2.2 Develop pilot projects where universities and RTOs partner with industry	3.1 Provide support for professional associations to define minimum sustainability standards where these have not been addressed 3.2 Professional associations, informed by industry associations, to review accreditation of university degrees to ensure sustainability skills are embedded in the curriculum 3.3 Develop a knowledge brokerage service on to promote sustainability skills in the built environment sector	4.1 Establish a built environment entity similar to Constructing Excellence - building on ASBEC's application for a Built Environment Industry Innovation Precinct 4.2 Link with relevant research programs (e.g. CRC Low Carbon Living) where significant investment is targeted at a similar outcomes 4.3 Educate customers, particularly non-premium commercial sector, on business case for sustainability
The role of stakeholders in each of the actions are listed in the following section			

5. FRAMEWORK ACTIONS

This section outlines the framework actions in greater detail, including an indication of the roles of different stakeholders (who is to lead, and implementation partners), and source of funding where relevant.

These are presented in terms of:

- The initial steps
- Engaging with the built environment sector on sustainability skills
- Engaging with education and training providers on sustainability skills
- Engaging with the government on sustainability skills
- Engaging with customers
- Providing the right information

THE INITIAL STEPS

Hold a one day facilitated workshop with aim to get commitment to undertake the framework actions

The first step in implementing this framework is to run a facilitated one-day workshop with stakeholders from the built environment sector (peak bodies, professional associations, unions, ISCs etc.) and government and education and training stakeholders, with the aim to get commitment from parties to form working groups and commit funding to undertake the remaining framework actions.

Collaborations between key stakeholders will lead to increased ownership of the issues and solutions, thereby leading to a more efficient and wise use of limited resources. Involving all the stakeholders in a collaborative forum provides an opportunity for active discussion, sharing of ideas, and collective decisions to be made on matters such as priorities, funding, and commitment to take actions further. This is particularly important in an economic environment where government and industry funding for sustainability education are likely to be increasingly constrained.

It is proposed that the workshop process be based on the collective learning model (Brown & Lambert, 2013¹⁴). This process is based on taking participants through four steps (collective learning spiral) of 'what should be' (the vision); 'what is' (the current situation); 'what could be' (big ideas); and 'what can be' (action plan). These steps can relate directly back to the framework and report, with participants thereby confirming, prioritising or adding to the framework.

This process has been demonstrated to be effective in getting a broad range of stakeholders to collectively identify, and most importantly 'own' the actions. The workshop is premised on broad participation across the built environment sector, and stakeholders. Such a facilitated workshop, with all the key stakeholders present, may also lead to new actions being formulated.

Led by:	ASBEC in partnership with other built environment sector peak bodies
Partners:	Federal and State Government, and Education and Training providers
Funding:	Government funding (estimated at around \$15,000) and industry in-kind

¹⁴ [Brown & Lambert, 2013](http://www.ewidgetsonline.net/dxreader/Reader.aspx?token=c373456c9a574a37a05ebd1315cae01c&rand=1199435577&buyNowLink=&page=&chapter=)
<http://www.ewidgetsonline.net/dxreader/Reader.aspx?token=c373456c9a574a37a05ebd1315cae01c&rand=1199435577&buyNowLink=&page=&chapter=>

Establish a Built Environment Skills Advisory Group

A Built Environment Skills Advisory Group (BESAG) should be established that includes industry (peak bodies, associations, unions, industry skills councils, companies), education and training providers, and government to oversee the outcomes of collaborations and share knowledge and best-practice across the sector.

BEIIC (2012) highlighted the fragmented nature of the built environment sector, and the need for an overarching framework within which training resources can be focused. It is proposed that key peak bodies in the built environment sector, including members of ASBEC and the Australian Construction Industry Forum (ACIF), initiate the formation of a BESAG. This would be done in parallel to engaging with the Federal Government at the Prime Ministerial level, and with Ministerial representation, as well as ensuring bi-partisan political support for such a group.

BESAG would bring high level representation from:

- Peak bodies
- Industry associations
- Companies
- Industry skills councils
- Unions

together with representatives from government and education and training providers to discuss skills from a supply and demand side, and how to address these in a coordinated and strategic manner to ensure national and sector-wide transformation towards sustainability.

While there are various mechanisms to coordinate policy and actions across governments (such as ministerial committees and their working groups, memoranda of understanding, model legislation and partnership agreements), the advisory group model acknowledges the significant non-government players in the built environment sector. It also allows for built environment sector leadership of a coordinated effort, such as the Tertiary Education Advisory Group proposed in the National Industry Education and Training (NIET) Action Plan, which aimed to remove silos between different education providers and sectors, to provide equitable and flexible pathways emphasising learning in the workplace (BEIIC, 2012).

Therefore, it is proposed that industry, working with the support and in partnership with the Commonwealth Government, establish a BESAG, which would:

- be comprised of high-level representatives of the built environment sector, higher education, vocational training and the three spheres of government
- report directly at Ministerial level
- be supported by a dedicated and properly resourced secretariat that can coordinate cross-sector, cross-jurisdictional and cross-departmental action as appropriate
- provide a platform for dialogue on the skill needs of the built environment sector, using this framework as the basis for action
- facilitate the exchange of information and closer collaboration on skill development strategies.

It is proposed that the BESAG, supported by a dedicated and properly resourced secretariat, has carriage of other key actions proposed as part of this framework. This secretariat should be funded through guaranteed recurring industry and government support to ensure the sustainability of such an entity.

Led by:	Built environment sector peak bodies
Partners:	Federal and State Government, and Education and Training providers
Funding:	Industry and Government funding

Conduct a mapping exercise of sustainability skills stakeholders and influencers in the built environment sector

A mapping exercise should be conducted to identify key networks, existing collaborations, and opportunities for new collaborations in the built environment sector.

There is a significant amount of activity in the built environment sector that incorporates sustainability considerations. It ranges from organisational to individual efforts, from the programmed to the ad hoc, from the informed to the inexperienced, and from the one-off to the long-term.

The Allens and NCS report (2012) indicated that there is a need for strong and effective national coordination of initiatives related to energy efficiency generally, particularly skill initiatives, and that this should be directed through existing forums where possible. There are many actors in the sustainability skills space within the built environment sector, but these are not clearly mapped out, and the roles and responsibilities, and opportunities could be enhanced through a thorough mapping exercise.

The consultations undertaken as part of this report indicated that there was a lack of knowledge about what was happening in other areas, and that knowing this information would be valuable.

Companies wanted a broader range of learning resources, greater knowledge of what other companies were doing, and a clearer understanding of public sector requirements. Education and training organisations, particularly researchers, wanted information about companies with whom they could collaborate. Governments wanted better ways of focusing industry support for reform agendas. There is a great deal of information, and many active people, out there: the challenge is to make it discoverable, and available.

The most effective mechanism for aggregating and dispersing knowledge about sustainability skills development would be a mapping exercise of key players, their networks and resources. Accurate, relevant and timely information is fundamental to effective collaboration.

Mapping would provide an essential evidence base about where current education and training effort is focused, and where more effort is required. The efficiencies resulting from such mapping would be significant:

- duplication would be identified, and thus minimised
- people could make a contribution once, and the broadest audience would know about it
- people could save time and effort finding relevant other people and activities, and find those that were most (rather than generally) relevant and useful.

The mapping would address:

- key organisations (including relevant policies, activities, partnerships and resources)
- key roles within these organisations
- relevant networks of individuals and organisations (including statements of purpose, terms of membership, activities and resources)
- relevant case studies about building sustainability skills and applying them to the other actions.

Led by:	Built Environment Skills Advisory Group
Funding:	Government grant & industry in-kind (time and intellectual capacity)

Commission a study into the sustainability skills training needs of SMEs in the built environment sector

Whilst there has already been research conducted on skills gaps and opportunities, these have not been sector-wide. It is important to develop a thorough understanding of the current initiatives across the whole built environment sector, and in particular, the skills needs of SMEs. This research should identify the skills training needs, barriers, and delivery mechanisms for SMEs in the built environment sector, and partnerships required to overcome skills deficit.

As noted earlier in this report, the uptake of green skills is particularly low with SMEs due to a number of reasons, such as:

- limited resources to invest in training
- placing day-to-day commercial pressures ahead of strategic planning and upskilling
- difficulty (perceived or real) in accessing or identifying appropriate training option.

Research outlined previously in this report also indicates that non-accredited training can also be more appropriate for many businesses, especially to upskill the existing workforce. Non-accredited training can offer companies greater flexibility, and more targeted training over shorter time. In contrast, accredited training at the VET level, which has been the focus of sustainability skills through the work of industry skills councils, tends to focus mostly on training new entrants into the workforce.

It is therefore important to understand the sustainability skills training needs for SMEs, and how these fit into their wider training needs, in order to develop a coordinated and effective process and partnerships to overcome the skills deficit.

Led by:	Built Environment Skills Advisory Group
Funding:	Government grant & industry in-kind

ENGAGING WITH THE BUILT ENVIRONMENT SECTOR ON SUSTAINABILITY SKILLS

Establish a built environment entity similar to Constructing Excellence to drive innovation and change in the sector

BEICC (2012) note that what is required is to move engagement beyond representative bodies and early adopter businesses to achieve greater take up of sustainability skills across the built environment sector. This could be done by developing a sector wide organisation similar to Construction Excellence in the United Kingdom.

The Department of Industry, Innovation, Science, Research and Tertiary Education (DIISRTE) on behalf of the Built Environment Industry Innovation Council (BEIIC) commissioned ASBEC to canvas industry interest in creating a Constructing Excellence entity in Australia. An industry/stakeholder workshop held in September 2012 supported creating such an entity, identifying that it would create a single united industry voice, be the home for relevant metrics and international benchmarking, support embedding best practice in procurement systems, be able to develop the business case to demonstrate to financiers that risk can be reduced, accelerate the utilisation of advanced technologies and promote investment in skills.

A business case to see if a similar organisation would be viable and valuable in Australia found that if a Constructing Excellence entity was established, by 2017, the built environment could be a dynamic and prosperous industry that was growing and profitable, internationally competitive, with five Australian contractors in the top 10 in the East Asian region, effective training and up skilling in place and the industry of choice for employment. To support this entity the workshop identified that it was crucial that there is industry leadership matched with bi-partisan support at the highest level of government, and connection with COAG (ASBEC, 2012).

The establishment of a sector-wide entity similar to Constructing Excellence would build on an application ASBEC has put forward under the 'Industry Innovation Precincts' fund. This application is to develop a Built Environment Industry Innovation Precinct (BEIIP). BEIIP would bring together leading researchers, pioneering companies, and the most creative thinkers to come up with the innovations and practices that will help the industry succeed in the Asian Century.

Led by:	Australian Construction Industry Forum and ASBEC
Members:	Australian Construction Industry Forum and ASBEC industry members, unions, industry associations, industry skills councils, companies
Partners:	Federal and State Government, and Education and Training providers
Funding:	Industry and Government seed funding, industry funding in long term

Link with relevant research programs (e.g. CRC Low Carbon Living) where significant investment is targeted at a similar outcomes

There are a number of research partnerships such as the Cooperative Research Centre (CRC) for Low Carbon Living and CRC for Water Sensitive Urban Cities that link universities and other research centres with industry. The research undertaken as part of these CRCs will lead to a demand for skills in order to apply the research findings across the built environment sector. The proposed BESAG would engage with the CRCs and other research partnerships to link the potential demand for skills with the supply side.

Led by:	Built Environment Skills Advisory Group
Partners:	CRCs and other research partnerships
Funding:	In-kind from Industry and education and training providers

Provide support for professional associations to define minimum sustainability standards where these have not been addressed

There are numerous professional associations with members who have a role in the built environment sector. These include but are not limited to:

- Australian Institute of Air-conditioning, Refrigeration and Heating
- Australian Institute of Building
- Australian Institute of Building Surveyors
- Australian Institute of Quantity Surveyors
- Building Designers Association of Australia
- Engineers Australia
- Facility Management Association
- Illuminating Engineering Society of Australia and New Zealand Inc
- Institute for Drafting & Design
- Royal Australian Institute of Architects
- Royal Australian Planning Institute

Such professional associations generally provide a form of continuing professional development (CPD) to their members. In the case of professional associations, undertaking a minimum amount of CPD is often a requirement of continued registration and membership.

In addition, some industry associations such as NECA and Master Plumbers have developed training programs on sustainability, for example:

- EcoSmart Electricians by NECA
- Green Plumbers initiated Master Plumbers, now through to Green Invest.

BESAG should engage with professional associations that have not developed CPD focussing on sustainability skills to identify minimum standards for ongoing learning. Professional associations that have developed sustainability CPD could play an important role on sharing their knowledge and experience with other associations.

Led by:	Built Environment Skills Advisory Group
Partners:	Professional associations
Funding:	In-kind from professional associations

ENGAGING WITH THE GOVERNMENT ON SUSTAINABILITY SKILLS

Engage with Federal Government to define a collaborative structure to build on the gains of the Green Skills Agreement

As noted previously in this report, the 2009 Green Skills Agreement has been the most significant Australian initiative to deliver the skills for sustainability required in the workplace. Funding for the Green Skills Agreement has been allocated in the 2013 Federal budget, as part of the Government’s support for the National Training System. However, there is no plan or agreement to continue the current agreement beyond 2013.

It is very important to maintain the momentum of this agreement, and this involves industry taking the lead in shaping the agenda, and working with Federal and State government, through COAG or in a similar structure, to ensure that actions are undertaken nationally.

The Australian Education for Sustainability Alliance (AESA) has an active consultation process in advancing the higher education sector’s focus on reorienting the sector to equip the workforce to work for a sustainable future. A key achievement in collaboration would be to join up the Green Skills Agreement process with the AESA initiative, which would make tangible the intent of the action plan to engage with higher education sector.

While such educational collaboration would benefit the entire economy and workforce, and not just the built environment sector, ensuring that the needs of the built environment sector are addressed by a new agreement would be a key task for the Built Environment Advisory Group.

Led by:	Built Environment Skills Advisory Group
Partners:	Federal and State Government, linking in with COAG process
Funding:	In-kind

ENGAGING WITH EDUCATION AND TRAINING PROVIDERS ON SUSTAINABILITY SKILLS

Develop pilot projects where universities and RTOs partner with industry

There is a need for increased collaboration between industry and education and training providers in the areas of teaching, student placement, and best-practice knowledge sharing between industry and teaching staff.

Research outlined previously in this report indicates that there is a shortage of lecturers and trainers with the requisite sustainability skills needed by industry. This creates a gap between what is being taught, and providing job-ready graduates. Work by the Natural Edge Project (Desha et al. 2007 & 2012) has provided evidence of gaps at the university level, as well as barriers to embedding energy efficiency in university courses. This includes:

- Energy efficiency is not embedded across all engineering disciplines.
- Inclusion of energy efficiency content is driven by individual lecturers based on their own interests
- Exposure to applying energy efficiency to worked examples was low to moderate

- Lecturers were keen to receive assistance, particularly through: accessing case studies on real life examples; accessing lists of good materials (e.g. audio-visual, texts etc.); and a customised set of energy efficiency readings for engineers.

Research by Allen Consulting Group and NCS (2012) has provided further evidence and recommendations for improving teaching at university and VET level.

The tasks required to fulfil this action would include:

- Developing generic legal frameworks and risk assessments for university-industry collaborations (UICs) to facilitate collaboration
- Companies to provide job placement opportunities for university students so that knowledge is translated to practical application of skills
- Developing networks between industry and education and training providers (lecturers and trainers) to share knowledge and best-practice
- Developing pilot projects where universities and RTOs work with industry to have industry experts as guest lecturers, as well as industry upskilling trainers and lecturers about best-practice sustainability skills

University – Industry Collaboration (UIC) already exists in different forms but this can be improved through a more coordinated model overseen by BESAG.

This demonstrates the need for greater UIC, whereby industry input can assist lecturing staff in teaching up to date case studies that complement theory, and industry placement can provide students with the skills needed to be job-ready.

A 2012 review of university-business collaboration in the United Kingdom by Sir Tim Wilton demonstrates the importance of close collaboration between industry and the education and training sector. Wilton (2012) notes the strength and resilience in supplying a skilled workforce results from close collaboration and an understanding of each party’s priorities and capabilities. This includes measures such as increased opportunities for university students to access industry placements, and sandwich degrees (where students spend one year in industry). Government is noted to have an important role to play in creating an enabling environment through measures such as funding support, or stopping the accrual of interest on educational loans during industry placements.

Marshall and Woodley (2011) note that UICs can bring benefits to both parties, but in many cases, there is little work done on the governance arrangements and the expectations that each party has may not be clearly articulated. Investment in long-term relationships and establishing strong communication links are key aspects of best practice UICs (Pertuz et al 2010).

Edmondson et al (2013), presenting from a European context, notes that UICs require both sides to overcome the cultural and communications divide that tends to impair industry-university partnerships of all types and undercut their potential. Governments have an important enabling role, through maintaining a stable environment of funding and regulation for long-term strategic partnerships to thrive, and providing incentives for universities and companies that form strong relationships. University and company leadership is vital for collaborations to work, and it is important that people involved in collaborations understand each other’s expectations. As noted by Edmondson et al (2013: 10):

“Collaborations only work well when they are managed by people who cross boundaries easily and who have a deep understanding of the two cultures they need to bridge.”

Led by:	Built Environment Skills Advisory Group
Partners:	Individual or groups of universities and companies and SMEs

Funding:	Industry (providing support for student placements) and Government funding (establishing UICs, through a similar arrangement to Collaborative Research Networks)
-----------------	--

Professional associations, informed by industry associations, to review accreditation of university degrees to ensure sustainability skills are embedded in the curriculum

A number of professional associations such as Engineers Australia, and Australian Institute of Architects, are able to influence the content of relevant university courses by providing accreditation of degrees that lead to membership to the associations.

Linking with the previous action, professional associations informed by industry associations who would provide input on the knowledge and skills required by the workforce, would review the criteria with which they endorse certain university degrees to ensure that the requisite sustainability skills are embedded in higher education qualifications.

Led by:	Professional associations
Partners:	Built Environment Skills Advisory Group
Funding:	Professional associations

ENGAGING WITH CUSTOMERS

Educate customers, particularly non-premium commercial sector, on business case for sustainability

The premium end of the commercial building sector already understands the economic, social and environmental benefits of a sustainable built environment. Research by the Green Building Council of Australia (2013) has demonstrated the benefits of ‘green star’ buildings and large tenants are seeking such buildings for their workforce. There is an opportunity to spread the demand for more sustainable buildings to the non-premium commercial sector, as outlined in ‘The Next Wave’ Report (Davis Langdon, 2013) commissioned by Sustainability Victoria. This report found that:

- Buildings constructed between 1960 and 1999 would yield the most success from a targeted performance - based retrofitting scheme, due to the large numbers of these buildings spread across CBD, metropolitan and regional areas
- Key barriers to market transformation identified in the report include financial risks, disruption to tenants, lack of tenant demand, capital constraints and industry risks

The report noted that key drivers for retrofits include the establishment of interactive education tools for tenants and building managers, government procurement changes and easier access to finance for building retrofits.

The means of educating the non-premium commercial sector would need to be developed in consultation with the target group to ensure it is effective. However, one approach could be to develop a knowledge brokerage service as outlined in the following action.

Led by:	Built Environment Skills Advisory Group
Partners:	Non-premium commercial sector landlords, tenants, facilities managers
Funding:	Government grant (e.g. Energy efficiency information grant) or similar, and industry

PROVIDING THE RIGHT INFORMATION

Develop a knowledge brokerage service to promote sustainability skills in the built environment sector

There is a need to develop a knowledge brokerage service, consisting of a secretariat and an online portal, to (a) assist businesses to access independent information on relevant and appropriate training products (accredited and non-accredited), resources, and services, and (b) inform customers about benefits of investment in built environment sustainability.

It is important for relevant and timely knowledge to be made available to industry in the built environment sector. This is especially true for SMEs where lack of staff and competing objectives may prevent research into training needs around sustainability (or upskilling in general), as outlined in an earlier action. Customers, particularly the non-premium commercial sector, need the same information as noted in the previous action.

The development of a knowledge brokerage service would also build on the mapping exercise previously described.

Case studies and research suggest that providing organisations with independent information on training needs as well as training options can lead to upskilling of staff. Establishing such a knowledge brokerage service for the Australian built environment sector would allow businesses to access the right information at the right time. This could be through an online portal, as well as a secretariat service linked to the proposed BESAG, and a physical presence such as the Built Environment Industry Innovation Precinct that ABSEC has put forward for funding.

Led by:	Constructing Excellence Australia
Partners:	Companies, Education and training providers
Funding:	Government grant & industry

6. COMMUNICATING THE FRAMEWORK

This framework provides a key mechanism for industry-led collaboration to catalyse sector-wide ownership of the sustainability skills agenda.

This framework should be communicated across the built-environment sector through existing networks at forums, through newsletters, and online (through the ASBEC website and ASBEC member websites).

Groups that have been defined as having roles to play in implementing actions (e.g. professional associations, unions, education and training providers, government) should be briefed on the framework, and invited to provide feedback, or formal responses.

Wide-ranging feedback and discussion on the framework should be encouraged, as it is through communication and discussion that the sustainability skills agenda will be progressed.

7. TAKING THE FIRST STEP

As outlined in the previous section, the first step to implement the framework is to hold a one day facilitated workshop with the aim to get commitment from parties to form working groups and commit funding to undertake the framework actions. This would be a low-investment, high return opportunity to get collective commitment to take on the remaining actions in the framework.

Getting all the stakeholders in the room has been demonstrated to be effective in getting agreement on, and ownership of actions. A key output of such a workshop would be agreement by the built environment sector representatives, government and education and training providers to form a built environment skills advisory group. This would provide the impetus for the implementation of the framework.

8. ABOUT THIS PROJECT

This report was commissioned by the Australian Sustainable Built Environment Council's (ASBEC) Jobs and Skills Task Group, with support from the Australian Government.

ASBEC is the peak body of key organisations committed to a sustainable built environment in Australia. Its membership consists of industry and professional associations, non-government organisations and government observers who are involved in the planning, design, delivery and operation of our built environment, and are concerned with the social and environmental impacts of this sector. Jobs in the built environment sector include, but are not limited to, architects, builders, facility managers, tradespeople, town planners, engineers, surveyors, property valuers, and commercial building developers and owners.

ASBEC's vision is to transform market behaviour to foster resilient and sustainable communities that enhance social capital, generate economic capital and preserve and restore natural capital, to benefit current and future generations. The built environment workforce can be at the forefront of efforts to drive the transition to a low-carbon, resource-efficient and sustainable future, but they need the skills to do so. One of ASBEC's five policy priorities is to enhance existing educational frameworks to produce an appropriately skilled workforce capable of embracing emerging technologies in support of a rapid transformation towards sustainable and resilient communities.

The Green Skills Agreement and the National VET Sector Sustainability Policy and Action Plan (2009-2012) have in recent years been key drivers of national efforts to increase the sustainability skills of built environment professionals, and have been substantially driven by government. However:

- both these initiatives are coming to a close, with no agreement about how to maintain their momentum, threatening a policy vacuum in terms of government engagement with industry to build the essential sustainability skills of the workforce
- awareness by industry of the need, and action, to increase sustainability skills is rising steadily
- while action by the vocational education and training (VET) sector has been significant, much remains to be done, particularly in the higher education sector and with non-accredited training
- although actions are happening across many fronts there is no coordinated mechanism for dissemination of this knowledge, or single body to aggregate the information, making accessibility a real issue. This has resulted in duplication of effort in some areas whilst others, of no less merit, wait for resources.

Maintaining momentum on skills development for the built environment sector is essential to meeting Australia's sustainability challenge and to consolidate and build on the gains of recent years. Industry leadership of skills development is essential, particularly as 'greening' the built environment sector has such significant benefits for companies and their employees.

ASBEC's Jobs and Skills Task Group is focussed on ensuring that today's workforce has the skills necessary to deliver a sustainable built environment.

The Task Group is comprised of members from the following organisations:

- Air Conditioning and Mechanical Contractors' Association
- Australian Institute of Refrigeration Air Conditioning and Heating
- Chartered Institute of Building
- Consult Australia
- Energy Efficiency Council
- Facility Management Association of Australia
- NSW Office of Environment and Heritage
- Royal Institution of Chartered Surveyors Oceania

9. REFERENCES

- Australian Government 2012, Australia in the Asian Century White Paper, Commonwealth of Australia, Canberra.
- Australian Sustainable Built Environment Council 2009. The second plank-building a low-carbon economy with energy efficiency buildings, ASBEC, Melbourne.
- Australian Sustainable Built Environment Council 2012, Education for Life: Skills for a More Sustainable Future, ASBEC, Melbourne.
- Australian Sustainable Built Environment Council 2012. Australian Sustainable Built Environment Council (ASBEC) and Built Environment Industry Innovation Council (BEIIC) Constructing Excellence Workshop. Sydney Wednesday 5 September 2012.
- Built Environment Industry Innovation Council 2012. Built Environment Industry Innovation Council - Final report to the Government December 2012, Commonwealth of Australia.
- Cambiar 2008. Green Gold Rush: How ambitious environmental policy can make Australia a leader in the global race for green jobs. Australian Council of Trade Unions and Australian Conservation Foundation, Melbourne.
- Council of Australian Governments 2009, Green Skills Agreement.
- Davis Landgon (2013) The Next Wave- retrofitting Victoria's office buildings. Report for Sustainability Victoria. <http://www.sustainability.vic.gov.au/resources/documents/120227- SV - The Next Wave - Summary Report-FINAL.pdf>
- Department of Infrastructure and Transport 2011, Our Cities, Our Future: A national urban policy for a productive, sustainable and liveable future, Commonwealth of Australia, Canberra.
- Department of Sustainability, Environment, Water, Population and Communities 2011, Sustainable Australia - Sustainable Communities, Commonwealth of Australia, Canberra.
- Department of Sustainability, Environment, Water, Population and Communities 2011. Construction and demolition waste guide - recycling and re-use across the supply chain, Commonwealth of Australia, Canberra.
- Department of the Environment and Heritage 2004. Adaptive Reuse - Preserving our past, building our future, Commonwealth of Australia, Canberra.
- Department of the Environment, Water, Heritage and the Arts 2009, Living Sustainably The Australian Government's National Action Plan for Education for Sustainability, Commonwealth of Australia, Canberra.
- Department of the Environment, Water, Heritage and the Arts 2010, Sustainability Curriculum Framework: A guide for curriculum developers and policy makers, Commonwealth of Australia, Canberra.
- Desha, C., Hargroves, K., El Baghdadi, O. 2012, Review of Postgraduate Energy Efficiency Course Content and Recommendations for Use of Existing Course: Vocational Graduate Certificate in Building Energy Analysis (Non-Residential). Report to the National Framework for Energy Efficiency, The Natural Edge Project, Australia.
- Desha, C., Hargroves, K., Smit, M., Stasinopoulos, P., Stephens, R., and Hargroves, S. 2007, State of Education for Energy Efficiency in Australian Engineering Education – Summary of Questionnaire Results, The Natural Edge Project, Australia.

Edmondson et al 2013 Making Industry-University Partnerships Work. Lessons from successful collaborations <http://www.sciencebusiness.net/Assets/94fe6d15-5432-4cf9-a656-633248e63541.pdf>

German Advisory Council on Global Change (WBGU) (2011) Flagship Report: World in Transition: A Social Contract for Sustainability, Berlin: WBGU Secretariat, <http://www.wbgu.de/en/flagship-reports/fr-2011-a-social-contract/>

GHD 2010, Report for Long Term Strategy for the Development of Energy Efficiency Assessment Skills: Functional Skills Analysis Report, for the Department of Resources, Energy and Tourism, Canberra

GHD 2010, Report for Long Term Strategy for the Development of Energy Efficiency Assessment Skills: Training Needs Analysis Report, Report to the Department of Resources, Energy and Tourism, Canberra.

GHD 2010, Report for Long Term Strategy for the Development of Energy Efficiency Assessment Skills, Training Services Analysis Report, Report to the Department of Resources, Energy and Tourism, Canberra.

Green Building Council of Australia, preliminary findings on the environmental benefits of Green Star ratings, May 2013.

Harris R, Simons M & McCarthy C 2006. Private training providers in Australia Their characteristics and training activities, National Centre for Vocational Education Research, Adelaide.

Hes, D 2007. ESD Design Guide - office and public buildings, Department of the Environment and Water Resources, Canberra.

Ithaca Group 2009, Skills for Sustainability Standards Framework, Brisbane, Queensland.

Industry Skills Councils 2010. 5 Good Reasons- the case for core skills development <http://www.isc.org.au/pdf/5%20Good%20Reasons%20-%20the%20case%20for%20core%20skills%20development.pdf>

International Labour Organisation (ILO) 2009, Skills for green jobs: a global review, synthesis report based on 21 country studies, prepared by the Skills and Employability Department.

Ministerial Council for Tertiary Education and Employment 2010, Green Skills Agreement Implementation Plan 2010-2011.

National Centre for Sustainability 2012. Literature review on systemic issues that inhibit the uptake of skills development: Green skills and business sustainability skills, for Department of Business and Innovation, Melbourne.

National Quality Council 2009, Skills for sustainability: Sustainability skills stocktake and analysis final report, TVET, Melbourne.

National Sustainability Council 2013, Sustainable Australia Report 2013: Conversations with the future

National VET Sector Sustainability Action Group, Ministerial Council for Vocational and Technical Education (n.d.), National VET Sector Sustainability Policy and Action Plan (2009-2012).

Organisations for Economic Development (OECD) 2010, Green jobs and skills: the local labour market implications of addressing climate change, prepared by C Martinez-Fernandez, C Hinojosa and G Miranda, Working Document, CFE/LEED, Paris, February.

Per Capita 2010 International approaches to green skills and sustainability, Green Skills Research Project Presentation to ISC Conference.

Plumbing Industry Advisory Council 2012. Response to the Victorian Climate Change Green Paper

- Rafferty, M. and Yu, S. 2010, Skills for green jobs in Australia: unedited background country study. International Labour Office, Skills and Employability Department, Geneva.
- Skills Australia 2011, Energy Efficiency in Commercial and Residential Buildings: Jobs and Skills Implications.
- State of the Environment 2011 Committee 2011, Australia state of the environment 2011. Independent report to the Australian Government Minister for Sustainability, Environment, Water, Population and Communities. Department for Sustainability, Environment, Water, Population and Communities, Canberra.
- The Allen Consulting Group and the National Centre for Sustainability 2012. Review of Energy Efficiency Skills Demands and Training Provision Across the Trades and Professions, for the Department of Industry, Innovation, Science, Research and Tertiary Education, Canberra
- The Pew Charitable Trusts 2009, The Clean Energy Economy. Repowering Jobs, Business and Investments Across America. The Pew Charitable Trusts. Washington.
- 2013 <http://www.ukces.org.uk/assets/ukces/docs/publications/employer-ownership-of-skills-building-the-momentum.pdf>
- United Nations Environment Program 2011, Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication, www.unep.org/greeneconomy.
- Wilson T 2012. A Review of Business–University Collaboration. Department for Business, Innovation and Skills, London.
- World Green Building Council 2013. The business case for green building: a review of the costs and benefits for developers, investors and occupants. At <http://www.worldgbc.org/>, accessed 2/5/13.
- Worldwatch Institute 2008. Green Jobs: Towards decent work in a sustainable, low-carbon world. United Nations Environment Programme, Nairobi

10. APPENDIX A. STAKEHOLDERS AND ROLES

This section provides an overview of the roles various key stakeholders perform in relation to sustainability skills development and identifies potential future critical contributions.

INDUSTRY

Industry associations

Industry associations are established across a wide range of built environment sectors to support and represent the interests of their member companies.

Industry associations act as their industries' voice in working with governments at all levels, and particularly in emphasising industry need for relevant training. For example, the Air Conditioning and Mechanical Contractors' Association of Australia policy on education and training outlines that industry's view on the responsibilities of governments, employers and employees in building skills, and proposes actions. As another example, Consult Australia, the industry association for consulting companies in the built environment sector, has recently made submissions to state and local government reviews, and to the 2013-14 budget process.

Industry associations champion the business logic of sustainability. For example, Consult Australia's advocacy priorities are to eliminate waste, enhance productivity and embed sustainability across the industry and the wider economy. It also conducts a sustainability roundtable for members.

Industry associations are the most effective way to influence member companies to develop a culture of ongoing training and education around sustainability. They are key players in industry skills council processes to define industry skill needs. They generally encourage CPD in the industry. And they aggregate the views of their members to define skills messages for their various sectors.

The critical future contribution of industry associations is to:

- be the key point of contact between governments and their members
- champion the business logic of sustainability
- identify industry-specific skills issues and skill development needs
- develop accreditation schemes where appropriate
- facilitate members' ability to address sustainability skills development.

Professional associations

Most occupations in the built environment sector—including architects, builders, quantity surveyors, engineers, facility managers and planners—are represented by professional associations.

All these associations are active in identifying the need for increased sustainability skills. For example, the Australian Institute of Architects notes the importance of sustainable growth in its statement of purpose; the Australian Property Institute is conducting a research program to investigate the development of sustainability knowledge in the property profession. Engineers Australia's Environmental College has made major contributions to that profession's sustainability education.

Associations are also active in CPD. For example, the Association of Building Sustainability Assessors offers training and support for its members and accredited assessors, and holds seminars and information sessions on building sustainability. The Facility Management Association of Australia has conducted several workshops and presentations on sustainability.

The associations also offer information and advice to members about sustainability. For example, the Australian Institute of Architects produces resource sheets.

Professional associations outside the built environment sector also play an important role: for example, CPA Australia have published research on the collection, integration and reporting on sustainability information within an organisation. It also provides other resources about sustainability issues, including the influence and impact of sustainability issues on capital investment decisions. This is important for the built environment sector: it helps frame the business case for energy and other upgrades to commercial property.

The critical future contribution of professional associations is to:

- show leadership through policies to encourage sustainability skills
- identify skills gaps
- oversee CPD activities and develop accreditation programs
- support improved education and training in sustainability skills initiatives and programs.

Peak bodies

There are a number of peak bodies working to build sustainability skills in the built environment sector, including:

- ASBEC, a peak body of key organisations committed to a sustainable built environment in Australia
- the Australian Chamber of Commerce and Industry, which comprises state and territory chambers of commerce and national industry associations from all sectors of the Australian economy
- the Australian Construction Industry Forum, members of which include key players in residential and non-residential building, engineering construction, other industry groups and government agencies
- the Australian Education for Sustainability Alliance, comprising associations and individual organisations from the education, union, youth and environment sectors
- building and construction industry advisory groups and committees, which exist in some states.

The critical future contribution of peak bodies is to:

- advocate built environment sector skill needs to governments and broader stakeholders
- improve members' capability to promote sustainability skills development
- foster mechanisms for effective collaboration around sustainability skills development.

Industry skills councils

Australia has 11 industry skills councils. These councils are governed by independent, industry-led boards and are recognised and funded by the Australian Government. Their work predominantly involves gathering industry intelligence about skill needs and outputting it in the form of national training packages (on which VET system curriculum and qualifications are based), and coordinates industry advice to governments and enterprises. Interactions between industry skills councils and the higher education system are limited, except where higher education institutions offer training package qualifications either directly or through a subsidiary.

The Construction and Property Services Industry Skills Council (CPSISC) (and its two training packages, CPP07 Property Services Training Package and CPC08 Construction, Plumbing & Services Training Package) address the skill needs of many workers in the built environment sector. However, other training packages address the skill needs of workers such as refrigeration and air conditioning mechanics, electricians, some facility managers, administrators and others.

CPSISC is also currently undertaking several interlinked projects to support VET and higher education providers to build the skills, knowledge and capability to deliver clean energy services, products and advice to the Australian community and companies.

A key action, now completed, under the *Green Skills Agreement* was to ensure sustainability was adequately included in training packages. It is essential that RTOs update their curriculum and resources to satisfy these new inclusions.

The critical future contribution of industry skills councils is to:

- identify current and future trends in skills development for a low-carbon, circular economy
- ensure sustainability is adequately addressed through training packages
- provide delivery and assessment resources to enable effective integration of sustainability in vocational training.

Companies

Research for this project identified many companies that were committed to embedding sustainability in their culture. Elements of successful approaches include:

- a broad, triple bottom line definition of sustainability (environmental, economic and social sustainability)
- a hard-headed assessment of the business case for sustainability (including less environmental impact, more efficient and less wasteful use of resources, a more satisfied workforce, reputational benefits and greater appeal to prospective employees)
- a clearly expressed commitment to sustainability by the company's leadership
- thought-through consideration of the sustainability aspects of different job roles
- management processes, and performance and remuneration arrangements, systematically including sustainability considerations (rather than them being ad hoc or add-ons)
- active participation in industry associations around sustainability issues
- collaboration with education and training providers, and with other companies, to increase sustainability skills.

The critical future contribution of companies is to:

- collaborate with industry associations and education and training providers to build sustainability skills and share better practice
- integrate sustainability skills in relevant job roles and responsibilities.

GOVERNMENTS

Council of Australian Governments

The Council of Australian Governments (COAG) develops national, intergovernmental agreements, for example the *Green Skills Agreement* (2009).

COAG establishes ministerial councils to implement intergovernmental agreements. For example, the Standing Council on Tertiary Education, Skills and Employment (SCOTESE), established in September 2011, has high-level policy responsibility for the national tertiary education, skills and employment system, including strategic policy, priority setting, planning and performance, and key cross-sectoral issues. It also oversees the *Green Skills Agreement*.

COAG also establishes other bodies to implement intergovernmental agreements. For example, in 1994 it established the Australian Building Codes Board with government and industry representatives as a standards writing body responsible for the National Construction Code (NCC), which comprises the Building Code of Australia (BCA) and the Plumbing Code of Australia (PCA).

The critical future contribution of COAG is, through SCOTESE, to maintain the momentum of the *Green Skills Agreement* by establishing a successor agreement and activities.

Commonwealth Government

The Commonwealth Government develops national policy frameworks, such as:

Living Sustainably: the Australian Government's National Action Plan for Education for Sustainability (2009), which advances Australia's participation in the United Nations Decade of Education for Sustainable Development, 2005-2014

Sustainability Curriculum Framework: A guide for curriculum developers and policy makers, which informs how education for sustainability can be structured in the primary and secondary years

Sustainable Australia – Sustainable Communities, which looks at, amongst other things, how to improve the liveability of cities, suburbs and regions

Our Cities, Our Future: A national urban policy for a productive, sustainable and liveable future, which looks at how best to manage urban areas, including their sustainability

Living Sustainably: the Australian Government's National Action Plan for Education for Sustainability includes actions for the Australian Government to:

- provide national leadership and encouragement for action by others
- promote sustainability throughout the national training system
- support whole-of-institution change for sustainability in universities
- form partnerships with industry bodies and professional associations to develop and deliver workplace learning for sustainability
- work with local governments to improve their capacity to engage in best practice community education for sustainability.

The Commonwealth Government implements legislation to give effect to national arrangements for VET and higher education, such as:

- the [National Vocational Education and Training Regulator Act 2011](#), which established the Australian Skills Quality Authority (ASQA), which registers training organisations and accrediting courses
- the *Tertiary Education Quality and Standards Agency Act 2011*, which established the agency with broadly similar functions to ASQA, but for the higher education sector.

The Commonwealth Government establishes advisory groups to partner with industry to address sustainability skills development in the built environment sector. For example, the Built Environment Industry Innovation Council was established from October 2008 to 2010 to bring representatives of the built environment together to advise it on how to drive more innovation and improve productivity, to champion innovation across the industry and to build connections and collaborate with other innovation organisations.

The Commonwealth Government provides advice in its own right. A few of numerous examples are:

- ESD Design Guide - office and public buildings (and a similar water efficiency guide)
- Construction and demolition waste guide - recycling and re-use across the supply chain¹⁵
- Adaptive Reuse - Preserving our past, building our future¹⁶.

The Commonwealth Government also recognises and funds (including with other governments) bodies to conduct research, implement change, provide advice and intelligence, and engage with other governments, such as:

- CSIRO, the Bureau of Meteorology and the Australian Bureau of Statistics
- the State of the Environment 2011 Committee (which produced *Australia state of the environment 2011*)

¹⁵ Department of Sustainability, Environment, Water, Population and Communities 2011. *Construction and demolition waste guide - recycling and re-use across the supply chain*, Commonwealth of Australia, Canberra.

¹⁶ Department of the Environment and Heritage 2004. *Adaptive Reuse - Preserving our past, building our future*, Commonwealth of Australia, Canberra.

- the Australian Housing and Urban Research Institute, an independent national research organisation funded by contributions from federal and state governments and 10 participating universities
- cooperative research centres, 38 centres that support end-user-driven research collaboration to address major challenges facing Australia.

The critical future contributions of the Commonwealth Government are:

- continue to develop policy and legislative frameworks for education and training that encourage the uptake of sustainability skills
- establish an advisory group to partner with industry to address sustainability skills development in the built environment sector
- recognise and fund (including with other governments) bodies to conduct research, and projects, provide advice and intelligence, and engage with other governments with respect to the skill needs of the built environment sector
- improve the coordination of Commonwealth, state and territory policies and funding arrangements.

State and territory governments

State and territories act within national frameworks established by COAG and by the Australian Government. Within these frameworks, and also to act on jurisdictional imperatives, they develop policies and programs relating to sustainability (such as energy efficiency, water, waste and resource recovery).

State and territory governments are active in built environment sector sustainability through policy directions, acts, regulations, codes and licensing implemented by building, plumbing and architect authorities.

They also encourage sustainability education. For example, the Office of Environment and Heritage NSW produced a suite of research conducted in 2011 to explore current and emerging trends in sustainability education and engagement in NSW, and governance frameworks to build and support this field and its activities.

States and territories offer training, rebates, subsidies and grants to encourage households, businesses, communities, schools and government to save energy and water, reduce greenhouse gas emissions, adapt to the impacts of climate change, and reduce waste.

In addition to the critical future contribution of COAG noted above, the other contribution of state and territory governments to ongoing education and training for sustainability are to identify the roles and responsibilities of relevant departments in building sustainability skills in the built environment sector, and resource them to discharge those roles and responsibilities.

Local government

Local governments are active in built environment sector sustainability issues, for example through:

- sustainable building policies
- advice about improving the sustainability of buildings (such as the Victorian Municipal Association's *Planning for sustainable buildings guide*)
- local building and construction requirements
- advice to ratepayers about building, renovating and demolishing sustainability issues
- in NSW, Environmental Upgrade Agreements allow for loans to a building owner for water, energy and other environmental upgrades and this low-risk loan to be repaid through a local government charge on the land. Seven local governments offer, or plan to offer these agreements. Similar programs exist in other states.

Almost 50 local governments are members of the international network ICLEI – Local Governments for Sustainability.

The critical future contribution of local governments to ongoing education and training for sustainability is to ensure that their planning, building and other relevant functions are adequately informed by the latest thinking in built environment sustainability.

EDUCATION AND TRAINING

Registered training organisations

RTOs are training providers registered by ASQA (or, in some cases, by a state regulator) to deliver VET services. RTOs are recognised as providers of quality-assured and nationally recognised training and qualifications. There are currently around 5000 RTOs in Australia. RTOs are both public sector (such as TAFE institutes) and private sector (including adult/community providers, enterprise-based providers, industry organisations and commercial training organisations).

The VET system curriculum is almost entirely determined by the content of national training packages (although there are a few state-endorsed qualifications outside of training packages).

In recent years, there have been two major initiatives to address sustainability skills in the VET system:

- National VET Sector Sustainability Policy and Action Plan (2009-2012)
- Green Skills Agreement.

These have resulted in a range of actions including the incorporation of sustainability into training packages, skills for sustainability research projects and a national VET workforce professional development program.

The action plan and *Green Skills Agreement Implementation Plan* are currently being evaluated. It is anticipated the evaluation will identify potential next steps for the VET sector in supporting the uptake of skills for sustainability.

The critical future contributions of RTOs are to:

- continue the momentum created by the National VET Sector Sustainability Policy and Action Plan (2009-2012) and the Green Skills Agreement
- reorient training programs and campus operations to sustainability
- ensure sustainability units of competency in training packages are incorporated into courses, and that RTO staff have access to professional development and support to integrate and deliver sustainability skills training
- work with industry to identify and address sustainability skills needs.

Higher education institutions

There is significant action in the higher education sector to build sustainability skills.

In 2006, the Australian Vice-Chancellors' Committee (AVCC) released its *Education for Sustainable Development* policy, which encouraged members to 'educate the next generation of professionals and leaders to become fully aware of sustainability:

- for students, consider embedding elements of sustainability at appropriate levels in academic programs
- for staff, consider implementing professional development programs on sustainability themes.¹⁷

¹⁷ At <http://www.universitiesaustralia.edu.au/page/media-centre/2006-media-releases/sustainable-development-high-on-universities-agenda/>, accessed 19/4/13

In February 2012, Universities Australia (formerly the AVCC), jointly with other higher education bodies from around the world, committed to: 'teach sustainable development concepts, ensuring that they form a part of the core curriculum across all disciplines so that future higher education graduates develop skills necessary to enter sustainable development workforces and have an explicit understanding of how to achieve a society that values people, the planet and profits in a manner that respects the finite resource boundaries of the earth'.

The key network in higher education is Australasian Campuses Towards Sustainability, which in 2012 became a founding member of AESA. In February 2013, AESA issued a draft paper for consultation, titled *Reorienting our education systems to equip future managers, decision makers, teachers and other professionals to work for a sustainable future*. Its recommended actions are:

- a comprehensive review of progress against goals and reset targets and timetables
- benchmarking, sharing and monitoring best practice in education for sustainability
- establishing and prioritising research funding for sustainability in the 2013 federal budget
- tying Commonwealth Government funding to progress against benchmarks from 2014
- establishing systematic monitoring and reporting for sustainable campus operations by 2014
- establishing a revolving loan fund for sustainable campus operations in 2014
- incorporating sustainability into teacher training and the graduate attributes or exit standards for all university degrees from 2014.

A number of other organisations (such as Engineers Australia's Environment College, Australian Council of Engineering Deans and the Sustainable Built Environment National Research Centre) are also active around sustainability.

The critical future contribution of higher education is to advance the process being conducted by AESA and to implement the recommendations of that process.

Providers of non-accredited training

In 2006, research for the National Centre for Vocational Education Research indicated that in 2003 there were 573,000 students in non-accredited courses with private RTOs. The total number of students in non-accredited courses would have been much higher, because many would be doing courses with non-registered training organisations.¹⁸

There is a significant amount of non-accredited training occurring for the built environment sector, including around sustainability (a few of many examples are the Master Builders Green Living Program, NSW courses in home sustainability assessment and basic home sustainability advice [for volunteers] and unaccredited alternative energy courses). While such training may not be accredited under the national training system, it can be accredited under another framework (for example, a Green Star course leading to a Green Star qualification).

The critical future contribution of non-accredited training providers is to:

- offer training specifically tailored to individual companies which focuses on their needs and measures training outcomes in terms of application of skills on-the-job.

PROCUREMENT

In considering stakeholders for sustainability education and training, it is important to include those who ultimately demand new skills: potential new entrants, new entrants and existing workers. They need these skills to initially obtain a job and to then establish and progress their career. In its *Skills for Sustainability Standards Framework*, the National Quality Council noted that addressing sustainability in curriculum can develop students' skills in critical reflection and systemic thinking.

¹⁸ Harris R, Simons M & McCarthy c 2006

It is also important to note that demand for sustainability skills is ultimately driven by the market: for sustainable products and services, for a smaller carbon footprint, for less energy use and for continued economic growth.

The critical future contribution of potential new entrants, new entrants and existing workers is to undertake lifelong learning, and apply the lessons learnt, in sustainability skills.

OTHER ORGANISATIONS AND NETWORKS

While the organisations above both operate and are members of networks, there are a number of other players who do not fit neatly into the categories above and are important for sustainability education. Some examples are:

- Natural Strategies Group (at <http://www.naturalstrategies.com.au/>), which consults primarily to local governments, and also to companies
- The Natural Edge project (at <http://www.naturaledgeproject.net/default.aspx>), initially hosted by the Institution of Engineers Australia and now with an extensive group of mentors and an extensive research, publishing and training program, some of which is specifically relevant to the built environment sector.

11. APPENDIX B. COMMUNICATIONS PLAN

INTRODUCTION

In February 2013, the Australian Sustainable Built Environment Council (ASBEC) developed a framework to facilitate effective collaboration between industry, governments, education providers and other key stakeholders to ensure that the skills needs of the built environment sector are met.

One part of the framework is to develop this communications plan, to identify how the framework will be promoted throughout the sector.

This plan is laid out as a series of actions that, once implemented, will result in effective promotion of the framework to stakeholders.

1. Clarify stakeholders to be targeted

The stakeholders to be targeted for communications are:

- peak bodies
- industry associations
- professional associations
- industry skills councils
- Commonwealth Government
- state and territory governments

The framework addresses the roles of other stakeholders (local governments, companies, registered training organisations, higher education institutions, providers of non-accredited training, and new entrants and existing workers). Given the primary importance of engaging governments to commit to the actions in the plan, with industry support, the other stakeholders can effectively be targeted by the actions of the stakeholders listed above (for example, companies through industry associations, registered training organisations through industry skills councils and the higher education sector through peak bodies such as the Australian Education for Sustainability Alliance).

2. Clarify the communications objectives

The communications objectives are to:

- inform stakeholders that the framework exists
- communicate the benefits of collaborating through the framework
- gain their commitment to collaborating through the framework
- gain their commitment to implementing the actions in the framework.

3. Define the messages

In May 2013, the final report of the project was presented to the Commonwealth Government. The report details:

- why a collaboration framework is needed
- four principles of industry collaboration
- the critical future contributions of governments, industry, and education and training providers
- five key actions to implement the framework.

Together, these four points add up to a powerful case about why stakeholders should collaborate, the benefits to them, and what they can do. While the overarching case applies to all stakeholders, the message to each is slightly different.

It is proposed that a high-level, tailored one-page 'case for collaboration' be written for each stakeholder group, based on the material in the report. This serves as the 'base case', ensuring that

the message to them is comprehensive and consistent. Each of the one-pagers would be slightly different: for example, the one for industry associations would emphasise the interests of companies whereas the one for professional associations would emphasise the interests of professionals.

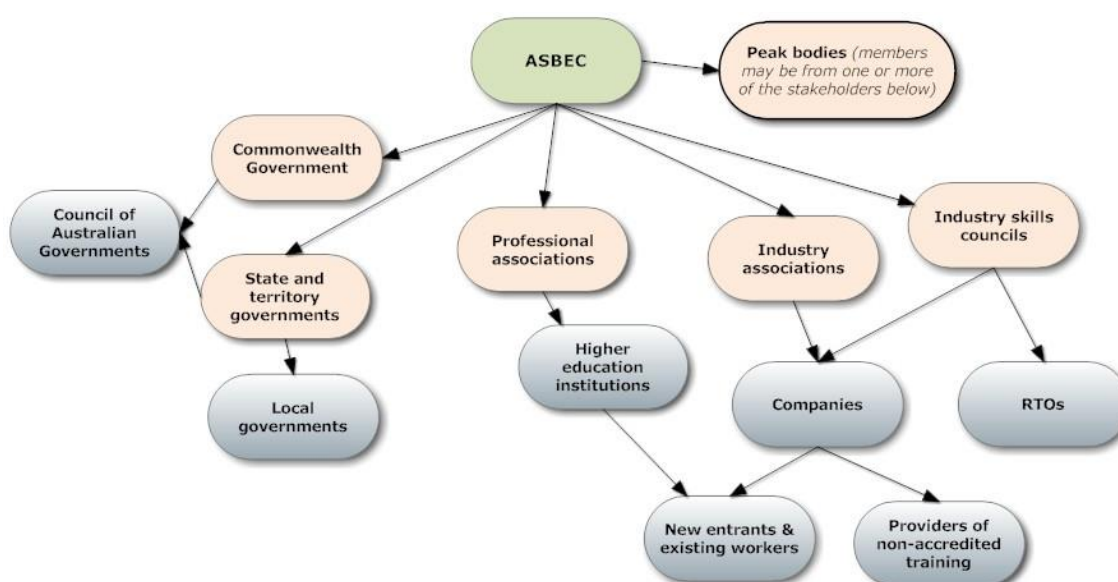
4. Identify communicators

To effectively disseminate messages, it is important to identify key lines of communication: that is, which stakeholders are well-placed to disseminate messages to other stakeholders.

Figure 1 shows the key lines of communication to disseminate messages. There are other lines of communication between stakeholders, but the figure shows the lines that should be targeted.

ASBEC has either strong links with, or has as full or observer members, each of the stakeholders in light red in Figure 1. It is proposed that ASBEC disseminate the tailored, one-page ‘case for collaboration’ to each stakeholder group, and encourage them to adapt the messages in it and disseminate them to the further stakeholders (in grey). The willingness of the targeted stakeholders to further disseminate the messages is a key indicator of the success of the framework. ASBEC would advise its preparedness to provide further, tailored information if required.

Figure 1: Key links between communicators



5. Identify and implement communication activities

It is proposed that ASBEC undertake the initial communications activities, being:

- distribute the report to its members
- organise and conduct the launch of the report
- publish the report to its website
- prepare the tailored one-page cases for collaboration
- make direct representations (in the form of correspondence or one-on-one meetings) to selected stakeholders as required, to explain and discuss the framework.

This creates the ‘first wave’ of communication to the targeted stakeholders (in light red) in Figure 1.

The request to these targeted stakeholders would be to:

- formally support the framework (while endorsement of the report by ASBEC Council constitutes endorsement of it by ASBEC members, it is preferable to have an explicit statement of support for the framework by members, acknowledging it has been formally considered by the governing body)

- brief members' senior staff about the framework
- publish the relevant 'case for collaboration' on the stakeholder's website (either in full, or abridged, form), with links to the main report
- use the 'case for collaboration' to promote the framework in newsletters, articles and other printed materials distributed by stakeholders.