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I thank everyone for the time and expertise they provided

Kaye Bowman

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### Contents

Executive summary .................................................................................................................. 5
Introduction .............................................................................................................................. 9
  What are skill sets? .................................................................................................................. 9
  Rationale for considering skill sets for resources operations workforces ................. 9
  Aspects of skill sets considered .......................................................................................... 11
  Dominant view to date on skill set types, purposes and access ...................................... 14
  The agrifood case example ................................................................................................. 14
  Method .................................................................................................................................. 16
Skill sets use in the resource operations workforce context .............................................. 17
  Background Context ............................................................................................................ 17
  Identified roles for skill sets ............................................................................................... 20
  Skill sets use in surface mining operations ....................................................................... 20
  Skill sets use in oil and gas operations .............................................................................. 29
  Summary: the case for skill sets for resources operations workforces ....................... 34
Enabling increased use of skills sets training ..................................................................... 35
  Australia’s current VET policy settings ............................................................................ 35
  Increased workforce productivity ....................................................................................... 35
  Emerging policy on skill sets ............................................................................................. 36
  Barriers to skill sets use ...................................................................................................... 38
  Recommendations to support increased skill use ............................................................ 41
Appendix A Key features of the four types of skill sets in Australian VET ....................... 44
Appendix B The interview guide ............................................................................................ 45
Appendix C Exploring skill sets use through formal VET data analysis .......................... 46
Appendix D Skill sets in Resources and Infrastructure Industry Training Package RII09 ... 60
Appendix E Skill sets in PMA08 Chemical, Hydrocarbons and Refining Training ........... 65
Tables
Table 1 Skill sets types and definitions.................................................................11
Table 2 General purposes skill sets may serve and benefits.....................................13
Table 3 WA Public VET Resources Sector Students most likely to be skill set or partial qualification only completers 2009-2011: Number of students by number of units undertaken..........................16
Table 4 Workforce development strategies being pursued by the WA resources sector ..........17
Table 5 Per cent of mining employees provided nationally recognised training off various types, financial year 2011-12........................................................................................................28
Table 6 Australia’s high level VET policy settings..................................................34
Table 7 Skills sets: Policy recommendations of Skills Australia (2011)........................35
Table 8 Commonwealth skill set policy 2012.........................................................36
Table 9 South Australia policy on skill sets in Skills for All, 2012..............................36

Figures
Figure 1 Products of the formal VET system, showing where skill sets sit.........................9
Figure 2 Phases of resources projects, with the focus of this skill set project highlighted..........10
Figure 3 Training priorities of the resources sector....................................................18
Figure 4 Occupation skills profile of a typical mining operations workforce (1 digit ANZSCO) .... 19
Figure 5 Occupation skills profile of a typical oil and gas operations workforce (1 digit ANZSCO)...... 29
Executive summary

This Skill Sets for the Resources Sector report was commissioned by the Western Australia Resources Industry Training Council (RITC). The Council’s primary purpose is to provide strategic advice to the Western Australian State Training Board and the Department of Training and Workforce Development regarding the development and implementation of innovative solutions to address skills shortages and the changing workforce needs of the resources sector in Western Australia. Skill sets are of interest to Western Australia’s resources sector for their potential to meet some demand for skills for resources operations and make the best use of the available training dollars.

Since the global financial crisis, Western Australia’s resources sector has continued to grow and create substantial numbers of jobs, particularly as projects transition from the construction to operations phase. In this context, skill set training is of interest for its potential to realise efficiencies in skills development and to maximise productivity. The resources sector is a capital intensive sector dependent on the knowledge and skills of its workers to use the available equipment and technology effectively and efficiently. Building skills of direct relevance to increase workforce participation and performance is a key requirement.

So what are skill sets?

Skill sets are an emerging intermediate product of the formal vocational education and training (VET) system, and co-exist with qualifications and units of competency. Skill sets prepare individuals to perform a specific job function, whereas qualifications prepare individuals for a broader range of functions within an occupation. Skill sets are aimed at providing specific skills to enable a job function to be performed and in a way that could best be defined as ‘just enough” and “just-in-time”. Skill sets can also lead to or form the basis of full qualifications and be used as “skill top ups” for the already qualified, allowing individuals to transfer between job roles and even occupations.

This report is predicated on an industry view that for some segments of the resources sector, training in full qualifications is a case of over skilling and results in the unnecessary allocation of productive time and resources to the development of skills that may not be needed or applied in the context of the specific job role.

The presented information on the applicability and usage of skill sets in Western Australia’s resources sector was obtained from stakeholders through interviews supplemented by a literature review. This study has also highlighted significant weaknesses in existing data collections that are being addressed at the national level. Western Australia’s current VET statistical collection does not report skill set training separately to qualifications training. This is also the case Australia wide. Learners can only enrol in whole VET qualifications even when they simply want a single, or only some, unit(s) of competency. An attempt has been made to determine actual skill sets usage by individuals in publicly funded VET resources sector courses in Western Australia to supplement the findings from the interviews. The approach for this data analysis was validated through the Department of Training and Workforce Development.

Finally, the report reflects on whether emerging formal VET policies are sympathetic to greater uptake of the identified roles for skill sets and, if not, what reforms are required. Early policy settings on skill sets are based on anecdotal evidence. A notable exception is the agrifood sector where two evidence gathering research projects on skill sets have been undertaken that call into
question aspects of current skill set policy settings. The agrifood example, together with this study have demonstrated that skills set application and “appropriateness” is dependent upon the particular industry /occupation under consideration and a “one size fits all approach” is not relevant or practical.

**Key findings**

As resources sector stakeholders (including the Minerals Council of Australia; Queensland Resources Council; Chamber of Minerals and Energy, Western Australia; and South Australian Chamber of Mines and Energy) noted in their joint submission to Skills Australia in 2010:

“The current funding framework, the National Skills and Workforce Agreement, which funds for full qualifications rather than skills sets, does not meet the needs of the minerals and energy sector and disadvantages regional industry requiring non-traditional trade occupations. It must also be recognised skills sets comprising units of nationally recognised training can form the basis for forming a full qualification and any skills gained contribute to the human capital of the nation..............Skill sets are a core feature of certain work and occupational roles in the resources sector, where full qualifications are a case of over-skilling [and therefore an inefficient use of government and industry training resources]. The recognition of skill sets as a subset of a nationally recognised qualification is critical. In the absence of acceptance of this principle, skill shortages will continue and a key intervention opportunity ignored.”

Skill sets are in use in mining and oil and gas operations for many purposes. Skill sets are in use:

- to fill operator job roles where a licence is all that is required (together with appropriate safety training) and particularly in mining operations;
- for multi-technical skilling purposes to keep pace with new skill needs due to technology advancements/deployments, and particularly in oil and gas operations;
- to meet regulatory requirements and enable some workers to take on additional safety roles and/or responsibilities; and
- to enable workers to perform multiple job-roles for example, training or supervisory roles.

Overall, skill sets training seems to be serving large and small enterprises alike in Western Australia’s resources sector. Whilst larger enterprises are thought to have had greater flexibility with respect to the deployment of labour and therefore job “specialisations”, in reality, multi-skilling often required or demanded in small to medium sized enterprises lends itself to a qualifications plus skill sets approach. Importantly, the case for skill sets for the resources sector is not necessarily to the exclusion of full qualifications – it is very much job role/function dependent.

All of the found applications for skill sets in resources operations are not supported by current Australian VET policy on skill sets. The former Skills Australia and now Australian Workforce and Productivity Agency has led the way on providing advice on skill sets policy but to date only the Commonwealth government and one state, South Australia, have developed a clear policy on skill sets. Western Australia like all other states and territories except South Australia does not yet have a transparent policy on skill sets.
For all the identified uses of skill sets within Western Australia’s resources sector to be supported, required policy adjustment would include:

- The current focus on skill sets in training packages - there is evidence to suggest that more consistent public funding of enterprise/RTO developed skill sets should also be considered.
- The current Certificate III requirement for a person to be eligible for skill sets training – this excludes substantial cohorts of resource operations workers for whom skill sets training is attractive and the most efficient and effective application of available training resources; and
- The current practice of not reporting skill sets as an outcome from VET – as a result, some policy decisions on skill sets remain uninformed by a quantitative evidence base.

**Recommendations**

To bring about an increased usage of skills sets in the resources sector of Western Australia it is recommended that:

**Recommendation 1: Defining and Promoting Skill Sets**

a) The RITC acknowledges the following inclusive definition of skill sets “A grouping of one or more units of competency, fewer than those needed to achieve a qualification, that meet the skills development needs of an individual in an enterprise, or industry sector.”

b) The RITC promotes skill sets in addition to qualifications as part of the overall workforce development strategy required for resources operations and skill sets as being a workforce participation and productivity improvement strategy to:
   - fill operator job roles;
   - keep pace with new skill needs due to technology developments;
   - meet regulatory requirements (including those relating to safety); and
   - multi-skill workers to allow them to take on broader job roles (e.g. as on-the-job trainers/assessors and supervisory roles).

**Recommendation 2: Identifying relevant skill sets for the resources sector operations workforce**

a) The RITC commences to include information on industry requirements for skill sets in its resources sector workforce development plans using the findings of this report.

b) The RITC systematically develops further intelligence from industry on skill sets needs including the views of workers on the impacts of skill sets training.

c) The RITC uses the identification of skill sets that have industry support at a state level as a mechanism for working with the relevant national Industry Skills Councils to gain endorsement for their recognition in national training packages where they currently do not exist.

d) The RITC encourages the relevant national Industry Skills Councils to proactively review the “fitness for purpose” of skill sets in training packages through Industry Skills Council continuous improvement processes.

**Recommendation 3 Funding of skill sets**

a) The RITC encourages the Department of Training and Workforce Development to fund skill sets training in Western Australia on the basis of skill sets constructed from units of competency
within the formal VET system, as these skill sets add to individuals’ employability and are transferable skills to further training or other employment situations.

**Recommendation 4  Developing an evidence base on skill sets**

a) The RITC encourages the Western Australia Department of Training and Workforce Development to record and report skill sets training separately to qualifications training to provide an evidence base for future policy determinations consistent with the national vocational education and training statistics collection (AVETMISS).
Introduction
This report explores the attractiveness of training in skill sets as a component of an overall workforce development strategy for the resources sector in Western Australia. The report also reflects on whether emerging formal VET policies are sympathetic to greater uptake of the identified roles for skill sets and, if not, what reforms are required. This chapter explains the rationale for the project, the issues regarding skill sets that were investigated and the approach taken.

What are skill sets?
‘Skill set’ is the term now commonly used in the Australian Vocational Education and Training (VET) system for a grouping of one or more competencies below the level of a full qualification that meets the skills needs of a client (individual/enterprise /industry). Skill sets are an emerging intermediate product of the formal VET system and co-exist with qualifications and units of competency as shown in Figure 1 below. Skill sets prepare individuals to perform a specific job function, whereas qualifications prepare individuals for a broad range of job functions of an occupation.

Figure 1 Products of the formal VET system, showing where skill sets sit

<table>
<thead>
<tr>
<th>Main product</th>
<th>Qualifications</th>
<th>Intermediate product</th>
<th>Skill sets</th>
<th>Building block</th>
<th>Unit of Competency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Units of competency in combinations that prepare individuals for all job functions of an occupation and meet Australian Qualification Framework learning outcome requirements for a qualification testamur.</td>
<td>A grouping of one or more units of competency, fewer than those needed to achieve a qualification, that meet skill needs of a specific job function and for which statements of attainment are issued.</td>
<td>The unit specifies the knowledge and skill, and the application of that knowledge and skill for job tasks and to the standard of performance expected in the workplace. The unit is the smallest that can be assessed and recognised in formal VET.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Constructed by the author

Rationale for considering skill sets for resources operations workforces
The resource sector of Western Australia is interested in skill set training from the viewpoint of making the best use of the available training dollars. Skill set training is of interest for its potential to realise efficiencies in skills development and maximise productivity. The resources sector is a capital intensive sector, dependent on the knowledge and skills of its workers to use the available equipment and technology effectively and efficiently. Building skills of direct relevance to increase workforce participation and performance is a key requirement. This report focuses particularly on identifying roles that skill sets can play in the operational phase of resource projects. This focus is due to the large number of projects that will be transitioning from construction to operations between 2013 and 2018.
Western Australia’s resources sector has been in a significant growth phase since the global financial crisis. Despite some softening in commodity prices since late 2012, the sector is expected to continue to create new jobs as projects transition from construction to operations. According to the Chamber of Minerals and Energy of Western Australia¹:

- Western Australia now has over $190 billion of planned resources projects across the State and a workforce of approximately 116,000.
- As a number of resources projects commence operation, this workforce will continue to increase to 2018, with an additional 19,000 operational staff required.
- As the current wave of construction activity gives way to operations, the construction workforce will peak in 2014 and then slowly reduce to below 2012 levels by 2018.
- The overall resources workforce is expected to peak in 2014 largely due to a number of projects moving into the production phase².

Short-term growth plans in the Western Australian resources sector are linked to operations. Many additional competent operations workers are required to realise satisfactory returns on investments, as a significant proportion of past project investment transitions from construction to operations. A lack of workers capable of undertaking the operations jobs at hand presents a risk to the sector. Skills shortages have the capacity to delay projects, add greatly to project costs and affect productivity and international competitiveness, and the realisation of significant further benefits for all Australians. Given the high demand for competent workers for the operational phase of Western Australian resource projects, this report focuses on the role that skill sets can play in meeting this particular skills demand. The report identifies instances where skill sets provide for efficiency in resources operations workforce development and productivity and where full qualifications training is a case of over skilling and would result in unnecessary allocation of productive time and resources to the development of skills that may not be needed or applied in the context of the specific job role.

Figure 2 Phases of resources projects, with the focus of this skill set project highlighted

![Figure 2 Phases of resources projects, with the focus of this skill set project highlighted](source)

Source: Constructed by the author


² With Woodside Energy recently indicating that its Browse project (in its current form) will not proceed, at least in the immediate future, it is highly likely that Western Australia’s resources sector has reached a peak in the current cycle and that overall employment numbers will start to fall.
Aspects of skill sets considered
When identifying roles for skill sets attention was paid to:

- what type of skill sets are used;
- what purposes the skill sets are serving; and
- which resource operations workers are involved.

These basic aspects of skill sets remain under debate among VET system stakeholders. There are different views regarding which skills sets for what purposes and for what individuals VET policy should cover. There is interest in the found uses of skills sets among the operations workforces of the resources sector in Western Australia being supported by the formal VET system.

Skill set types
There is not just one type of skill set. Altogether, four different types of skills sets can currently be distinguished in Australian VET, in its broadest sense. They include three types that sit inside the formal VET system and a fourth type that sits outside of the formal VET system. Definitions for each type are provided in Table 2 and other technical details below. Other features of the four different types of skills sets are outlined in Appendix A and will be discussed later.

Table 1 Skill sets types and definitions

<table>
<thead>
<tr>
<th>Formal VET skill sets</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill sets in training packages</td>
<td>“Those single units or combinations of units which link to a license or regulatory requirement, or defined industry need” (NQC 2006).</td>
</tr>
<tr>
<td>Skill sets developed by RTOs ENTERPRISES</td>
<td>“A grouping of one or more (accredited) units of competency, fewer than those needed to achieve a qualification, that meet the skills development needs of an individual in an enterprise, or industry sector” (Mills et al 2012, p.22).</td>
</tr>
<tr>
<td>VET student determined skill sets</td>
<td>“Skill sets that are part of a particular qualification(s) that students have chosen to undertake” (author).</td>
</tr>
<tr>
<td>Informal skill sets</td>
<td>Definition</td>
</tr>
<tr>
<td>Enterprise ‘informal’ skill sets</td>
<td>“Skill sets required for a specific job function within an enterprise that are not made up of units of competency from within the formal VET system” (author).</td>
</tr>
</tbody>
</table>

Skill sets in training packages
It was 2004 when skill sets were first suggested as requiring attention in Australian VET due to the apparent increasing value being placed on them by industry and individuals alike. In the final report of the High Level Review of Training Packages in VET it was noted:

“If Training Packages are to continue to serve the needs of both industry and learners, the status of full qualifications must not be eroded. At the same time, employers and individuals


are increasingly valuing ‘skill sets’: discrete but cohesive components of learning, and we recommend steps to give them greater recognition, and at the same time give more weight to skill sets” (p5)\(^5\).

Subsequently, in 2006 the decision was taken by the National Quality Council and endorsed by the Council of Australian Governments (COAG) to include skill sets in training packages, and in 2007 principles and protocols for skill sets in training packages were developed and for their inclusion from 2009\(^6\). The Council decided skill sets in training packages would be defined as:

"Those single units or combinations of units which link to a license or regulatory requirement, or defined industry need".

The Council also decided these skill sets must be fully prescribed, that is, made up of a definite set of units, with no electives. By the end of 2012 there were more than 1000 skill sets in the 70 plus national VET training packages\(^7\). Take-up rates of these far from trivial numbers of skill sets are unknown. **Australia’s VET statistical collection currently lacks the capacity to accurately report skill set utilisation. It is understood this is being addressed at the national level**\(^8\).

**Skill sets developed by RTOs/enterprises**

When defining and endorsing the development of skills sets in training packages, the National Quality Council stated that: ‘*Registered Training Organisations (RTOs) can also identify skill sets in response to the needs of enterprises or individuals*’\(^9\).

RTOs had been identifying combinations of units of competency to meet specific enterprise or individual needs for many years, and as part of a holistic solution to the individual client’s skill and/or workforce needs. RTO/enterprise developed skill sets are made up of combinations of units of competency from *any* accredited qualification and in *any* combination as developed through negotiation any time to meet client needs. RTO/enterprise developed skill sets are also known as **locally endorsed skill sets**. The take up rate of these skill sets also is not known as RTOs have not been required to report on skill sets delivery in a consistent manner.

**Student determined formal skill sets**

Students also have been making up their own skill sets for a long time, through completion of some units of competence from a VET qualification. Student determined skill sets may actually be training package or RTO/enterprise determined skill sets or idiosyncratic and based on an individual

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\(^7\) The Australian Government training website @http://training.gov.au/- the official National Register of information on Training Packages, Qualifications, Courses, Units of Competency and Registered Training Organisations (RTOs)

\(^8\) In 2011 the Standing Council on Tertiary Education Skills and Employment (SCOTSE) assigned the Data and Performance Measurement Principal Committee to develop a national reporting mechanism for skill set in the Australian VET Management Information System (AVETMIS) Standard. The Standard is being modified to enable recording and reporting of all types of formal skill sets.

perspective of what may assist in gaining employment. Existing policy settings make it impossible to get a “fix” on student determined skill sets as they remain hidden in partial qualifications completed data. In Western Australia a “force to course rule” is applied at enrolment which sees public training providers enrolling students in a qualification even if their intent may be to achieve a skill set outcome or partial qualification outcome only.

‘Informal’ skill sets
There also is skill set training that is not linked to the formal VET system and that is referred to here as enterprise ‘non-formal’ or informal skill sets. There is a significant amount of training that is undertaken within enterprises that is not accredited but is meeting enterprise specific competency requirements and that is not currently reported in any statistical collection. These skill sets may be as a result of “vendor training” for workers to enable them to use new equipment or products or they may be other internal training such as induction training.

Purposes skills sets serve
Skill sets of all types are aimed at providing flexibility and responsiveness to clients skill needs. They are aimed at providing specific skills to enable a job function to be performed and in a way that could best be defined as ‘just enough” and “just-in-time”. There are three general purposes that stakeholders’ across the VET system have identified that skill sets might serve. They are outlined in Table 2.

Table 2 General purposes skill sets may serve and benefits

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Explanation</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>To meet changing skill needs</td>
<td>Skill needs are constantly changing due to • advances in information technology, design technologies and telecommunications; • advances in regulatory frameworks, such as in workplace and occupational health and safety, specific industry regulations, taxation and goods and services tax legislation; and • changes in work practices and work organization due to an increased focus on quality assurance and control to drive productivity/accountability.</td>
<td>Keep skills up to date Productivity maintenance/improvement Compliance with regulations/licensing requirements</td>
</tr>
<tr>
<td>To provide skills in demand which do not add to a qualification</td>
<td>There are cases where full qualifications are not required from an enterprise perspective and skill sets training is enough training for individuals to perform the required work.</td>
<td>Gain just those skills required to enter a job or take on a new job function Productivity improvement/avoidance of over-skilling</td>
</tr>
<tr>
<td>To enable a stepping stone approach to skills development</td>
<td>There are time-poor learners for whom skill sets training may suit as a “staging point” approach to full qualification training. There also are learners who are daunted by the prospect of undertaking a full load of formal training associated with a qualification for whom skill sets training can be a mechanism to build confidence.</td>
<td>Gain skills in short sharp bursts to fit with learners circumstances Credit towards a qualification Confidence/motivation to do more training</td>
</tr>
</tbody>
</table>

Source: Compiled by the author from stakeholder views on skill sets summarised by Skills Australia, 2011
Which workers are involved
Skill sets can be taken as a standalone option or as a staging point to a full qualification, or as skill “top ups” for the already qualified. Skill sets use among the already qualified has considerable support. The primary concern around skill sets as an initial entry point to formal VET is that they may confine some individuals to narrow job roles and reduce their labour mobility. Quantitative studies consistently show individuals with qualifications are more likely to be employed, working full time, and have higher earnings that those without qualifications. The related concern is that unlimited access to skill sets training, in time, might reduce the quantum of individuals that complete a full qualification. According to projections, the overall unmet demand for qualified VET workers remains large, particularly from Certificate III level upwards. Having said that, for some in the workforce, access to skill sets re-introduces them to learning which has positive outcomes in terms of overall workforce skill levels and productivity.

Dominant view to date on skill set types, purposes and access
Armed with an account of stakeholders’ views on skill sets as gathered in 2010, the former Skills Australia provided starting point policy recommendations in 2011. The recommendations favour skill sets in training packages, and particularly for individuals who already hold an entry qualification to an occupation and specifically a VET Certificate III qualification. The policy positions are elaborated later, in the final chapter. Suffice to say, it is hard to develop a general policy on skill sets, with different industries and occupations having substantially different approaches to skills formation – it is clear that one size does not fit all and there needs to be inherent flexibility in when and how skill sets can be used. The agrifood sector is a case in point.

The agrifood case example
AgriFood Skills Australia (the national Industry Skills Council representing the agriculture sector) has persistently called for a ‘building blocks’ approach to skills development. The ‘building blocks’ approach in mind is a broad one, where all formal skill sets are readily available to all within the sector. The following quotes illustrate:


“Skill Sets as currently nationally defined and applied in the Training Packages have their place and are seen by the agrifood industry as relevant to compliance or regulatory requirements but not sufficiently flexible to meet all of the skills needs expressed by clients.

The agrifood industry also wants the option of building enterprise-identified skill sets in addition to those from Training Packages to meet specific enterprise skills needs. Registered Training Organisations are often involved in determining these enterprise skill sets through a systematic training needs analysis process and in turn they provide skill sets as part of a holistic solution to the individual client’s skill and/or workforce needs as opposed to whole of industry.”

“Noble ambition as it is, our system’s absolute focus on boosting the attainment of full qualifications is at odds with the agrifood sub-culture, where learning is developmental, socially embedded and occurs over a lifetime. The adoption of new skills and deep knowledge by our entire workforce will not be achieved through full qualifications across 880,000 workers, a notion neither logistically nor financially viable for government or industry.....With government now calling for annual productivity growth of two per cent, we must now recognise what industry has known for a long time: that productivity is more complex than the simple maxim of more qualifications equating to increased productivity “(p. 14).”

“There are significant sections of the agrifood sector that support full qualifications as a means of skilling their workforce but there also are many enterprises who just need their workers trained in the skills required to do the job at hand and many individuals in these workplaces who want no more than the training that will help them get a job, keep it, or will be a means of progression.”

“Skills sets are seen as a critical tool in holistic approaches to [agrifood] workforce and regional skills development. ... There is a strong perception that the strategies and concepts being developed (re skill sets) have significant potential for application in other industries including the resources industry.”

There are two case studies that provide supporting evidence for the above claims. An evidence-gathering report on the training requirements of agrifood industries of 2010 provides many anecdotal examples of the uses being made of skill sets by individuals from various agrifood industries and among both those with and without qualifications. The other study, carried out in 2011-12, involved analysis of past practice with RTO/enterprise skill sets among NSW TAFE agrifood


16 Lista Consulting (2010) op cit p16

17 Lista Consulting 2010).op cit
students. The study found significant numbers of students who had undertaken skill sets had gone on to complete a qualification. *The study supports the view that skill sets in many cases are not in competition with qualifications; rather they are an enabler for engagement in formal VET and are being used as a stepping stone to a qualification as well as a post qualifications attained option to further skills development*. These are the only case studies on skill sets published to date.

**Method**

For this exploratory study of skill sets in the resources sector, interviewing stakeholders was the main data collection method. The stakeholders interviewed included training superintendents of resources companies to provide the employer perspective, and representatives of registered training organisations (RTOs) for an all clients and educational perspective. The interview guide is provided in Appendix C.

To supplement the findings from the interviews, an attempt was made to uncover actual skill sets usage by individuals in publicly funded VET resources sector courses in Western Australia. Details on the method employed and the results are presented in Appendix C. Of note is that patterns in the units of competency completed were only looked for among those students most likely to be skill set or partial qualification only completers and who had done less than the number of units required for the full qualification (i.e. for the student numbers in the shaded boxes below).

**Table 3 WA Public VET Resources Sector Students most likely to be skill set or partial qualification only completers 2009-2011: Number of students by number of units undertaken**

<table>
<thead>
<tr>
<th>RII09 surface operations qualifications</th>
<th>Required No. of units to complete</th>
<th>No. of students doing less than the number of units required for the qualification</th>
<th>No. of students doing equal to or more than the number of units required for the qualification*</th>
<th>Total students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate 11</td>
<td>9</td>
<td>263</td>
<td>154</td>
<td>417</td>
</tr>
<tr>
<td>Certificate 111</td>
<td>13</td>
<td>377</td>
<td>11</td>
<td>388</td>
</tr>
<tr>
<td>Certificate IV</td>
<td>16</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Diploma</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Adv. Diploma</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>642</td>
<td>165</td>
<td></td>
<td>807</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PMA08 oil and gas operations qualifications</th>
<th>Required No. of units to complete</th>
<th>No. of students doing less than the number of units required for the qualification</th>
<th>No. of students doing equal to or more than the number of units required for the qualification*</th>
<th>Total students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate 11</td>
<td>16</td>
<td>80</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>Certificate 111</td>
<td>21</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Certificate IV</td>
<td>26</td>
<td>70</td>
<td>27</td>
<td>97</td>
</tr>
<tr>
<td>Diploma</td>
<td>10</td>
<td>7</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Adv. Diploma</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>41</td>
<td></td>
<td>202</td>
</tr>
</tbody>
</table>

* It is possible these students were eligible to receive a qualification but had not have obtained a qualification because they had not requested one- in WA qualifications are only issued upon an individual’s request or application for conferral of an award. Alternatively, it could be that these students had not done the ‘right’ combination of unit of competencies that is, in accord with the packaging rules for a qualification, and so were not eligible to receive a qualification. Time was not available to analyse the data for these students to work out which of the 2 alternatives or another explanation was the case.

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Skill sets use in the resource operations workforce context

This chapter describes roles for skill sets in developing capable workforces for the operational phase of Western Australian resources sector projects. The roles are as identified by the study interviewees, with illustrative examples. As relevant, the found patterns in the units of competencies undertaken by resources sector VET students who are skill set or partial qualification only completers is included as support information.

Background Context

The Western Australian resources sector has been active in searching out ways to meet its foreseeable growth in demand for skills for operations. Table 4 provides details. In brief, the sector has a three pillar approach that involves:

- Up skilling existing workers and transferring their expertise to less-experienced staff;
- Developing new more diversified local workforces; and
- Attracting skilled people from overseas where demand cannot be met within Australia.

Table 4 Workforce development strategies being pursued by the WA resources sector

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining experienced workers through up-skilling</td>
<td>Experienced workers are being retained through appropriate incentives and being up-skilled to supervisory or mentoring roles to transfer their knowledge and expertise to less-experienced staff.</td>
</tr>
<tr>
<td>Developing “new” local workforces</td>
<td>Various initiatives have been taken to increase participation and particularly among women and Indigenous Australians. Younger workers are also being targeted but maturity is linked to safety behaviour that is of utmost importance to the sector.</td>
</tr>
<tr>
<td>Establishing improved and more realistic training infrastructure for off-site formal training</td>
<td>In Western Australia there is a wide range of training infrastructure: the Australian Centre for Energy and Process Training (ACEPT) that has a process plant and distillation tower which provides students with unrivalled learning opportunities; “The Cut” (underground mine simulation) at Central Institute of Technology’s East Perth campus; BHP Billiton has established a “training mine” north of Perth and Ausdrill and Site International have entered into an agreement with the Western Australian Government to establish a training academy for the mining and drilling industries at Muresk Institute near Northam. In addition, both BHP Billiton and Rio Tinto have established significant training centres, located in the Perth metropolitan area.</td>
</tr>
<tr>
<td>Greater use of employment based contracts of training</td>
<td>The numbers of trainees and apprentices in the resources sector (including mining and oil and gas) has increased by 18% since 201021. 68% of all trainees and apprentices stay with their employer once trained20. Also, delivery approaches that accelerate the time taken to skill people are being investigated, for example, progression based on competency and the use of mentoring.</td>
</tr>
<tr>
<td>Continuing with non-formal training</td>
<td>Resources companies use substantial amounts of structured training outside of the formal VET system, for example, from vendors of equipment and services, and via new workers working alongside expert workers to master leading edge skills.</td>
</tr>
<tr>
<td>Adopting new technologies</td>
<td>Automated and remotely controlled operating systems are being looked into or are already in use offering productivity improvements and improved decision making. Increasing automation will bring demand for new and higher level skills and also result in lesser demand for lower skilled positions21.</td>
</tr>
</tbody>
</table>

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20 NCVER VOCSTATS data base, and as reported in WA Resources Industry Training Council (RITC) Industry Workforce Development Plan DRAFT 2012/13 (unpublished).
Roles for skill sets are being investigated within the above general context and towards ensuring the three priorities of competency, safety and productivity, and for the reasons summarised in Figure 3 and explained further below.

**Figure 3 Training priorities of the resources sector**

1. Safety
   - Resources sector work can be hazardous. Ensuring all workers are kept safe and injury free in the workplace is the priority. Resource companies have safety training and risks and incidents response management built into their operations.

2. Competence
   - Only persons assessed on site as competent technically to perform the job at hand, as well to work safely, are employed. This is a legal requirement. There are significant penalties for non-compliance.

3. Productivity
   - Getting the job done in the most cost-effective way possible without affecting quality /safety is a key goal. Resources companies use whichever form of training that best suits, be it formal or non formal training.
   - Drivers for use of formal VET include: when mandated; to provide legal proof that industry standards are being met; to enable labour mobility across Australia; and as a staff retention strategy to indicate employees are valued. Through skills and knowledge recognition and extension but relevancy and quality issues can act as detractors.

People employed in resources operations must be competent technically to perform the job at hand, as well as competent to work safely. For example, in mining operations:

“Employees must be given adequate instruction and training in safety procedures and systems of work and in the tasks required of the employee; assessed before commencing work at the mine to ensure that the employee is competent to perform the tasks he or she will be assigned and to operate any plant and equipment the employee will be required to operate; and retrained and reassessed whenever systems of work or plant and equipment are changed, or new systems of work or plant and equipment are introduced, and a record will be made of any instruction, training, retraining, assessment or reassessment given as required under this regulation; and the record kept for a minimum of 2 years after it is made”. 22

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In the oil and gas sector, there is a "safety case" regime in operation that commits companies to ongoing detailed evaluations of risks, safety and emergency management competence.23

Expenditure on training is high in the resources sector to achieve both technical competency and safety. A recent study conducted for the Minerals Council of Australia found the minerals sector nationally spent just over $1.1 billion on training during the financial year ending June 2012, equivalent to almost 5.5% of total payroll. For Western Australia alone the figure was 6 per cent of total payroll. This training expenditure is mostly industry funded (almost 98%) rather than publicly funded24. The oil and gas sub sector similarly expends high amounts on training that is augmented by some publicly funded training25.

The interviewees to this study explained that resources sector companies think in terms of job roles and the competencies required for performance of the roles safely and efficiently and effectively. Skills development is “fit for purpose” and directly aligned to a safety requirement, identified skills gap or career progression, to ensure maximum productivity. The training undertaken depends on the individual worker and their starting point knowledge and skills. If skill sets training is sufficient, then employers may capitalise on this and not train to a full qualification, thereby using scarce training resources in the most efficient and effective way. Further, employers adopt those skill sets that best align with their needs, be they formal or non-formal skill sets. However, there is a shift occurring towards formal training according to those interviewed but only if the formal training is relevant and of acceptable quality.

Interviewees identified four drivers that are encouraging resources companies to seek out formal VET options, so long as they meet industry needs. The four drivers are:

- When it is a mandatory requirement; the resources sector recognises well-established qualifications as entry level qualifications for many occupations, such as relevant university degrees for professional occupations and Certificate III level qualifications for traditional trades.
- As a staff retention strategy - to indicate to employees that they are valued through facilitating access to recognised skills development for career progression.
- To facilitate labour mobility between sites across Australia- formal VET options are recognised nationally.
- To meet regulatory requirements and “duty of care” - verifying an individual’s knowledge and skills against units of competency in the formal VET system provides evidence that an individual is competent to industry standards.

Interviewees to this study reported that the current trend appears to be towards qualifications training for all new workers to the industry to give the employer a more roundly educated person and greater flexibility regarding what job role the person is placed in after they have acquired an

23 The Common Safety Training Program (CSTP) is an industry initiative and has recently become an industry mandate. See www.ergt.com.au/.../common-safety-training-program-cstp.aspx


entry level VET qualification. However this trend is not universal and is not being adopted by all resources companies. Some employers provide skill sets training but also support employees to attain a full qualification. There are employers who provide skill sets training only wherever possible.

Identified roles for skill sets
So far the resources sector has been discussed as a whole and the workforce development issues and training priorities that are common to the sector. However, the resources sector is diverse and roles for skill sets were found to differ in part between the two subsectors of mining and energy (oil and gas) operations. This is because the two subsectors have different workforce profiles and this affects the roles that skill sets play. For example, the largest cohort of workers in mining operations perform operator roles (machine operators), whereas in oil and gas operations the largest cohort of workers perform skilled to highly skilled jobs (see Figures 4 and 5 respectively below). Thus, detailed below is the roles identified by interviewees for skill sets in relation firstly to mining operations workers and secondly, oil and gas operations workers, and with illustrative examples. A fuller study is required to identify all skill sets that could be of use to the resources sector from an operations perspective. The provided examples are illustrative however, of the variety of roles that skill sets can play.

Skill sets use in surface mining operations
Mining operations involve the extraction of minerals from an ore body, load, vein, seam or reef and loading and transporting to processing facilities to sort the components and then loading and transporting the economic components to markets. To gain access to the minerals it is often necessary to mine through and remove much waste materials to appropriate other sites. The total movement of ore and waste constitutes the mining operations process and that may involve surface or sub-surface (underground) excavation techniques. The skills profile of a typical mining operations workforce is shown in Figure 4 below.
Roles for skill sets
Roles for skill sets that interviewees identified for the mining operations workforce (and the approximations provided of the number of workers involved where provided) included:

- To meet entry level requirements for the many machinery operator positions (26 per cent of the workforce);
- To enable already qualified trades persons and technicians to enter mining from another sector (that make up a further 26 per cent of the entire workforce);
- To up-skill existing workers and particularly into on-the-job training trainer roles (that can involve large numbers as great emphasis is placed in on-the-job training) and supervisory roles;
- To meet regulatory requirements (that can involve the entire workforce); and
- To acquire particular safety related licenses for certain kinds of work (that sizeable numbers of all workers also require and up to 30-40 per cent in one large company).

Practical examples of skill sets in use
Practical examples of each of the above roles for skill sets follow.

Skill sets that enable entry to surface mining operations work

- There is a range of mining mobile machinery operator jobs for which skill sets training to meet licensing requirements is sufficient for enter (together with appropriate safety skills).

Source: Census of Population and Housing 2011, and as assembled and supplied by WA RITC
The largest cohort of workers in a surface mining operation is mobile machinery operators (26 per cent of the workforce). They include haul truck, water cart, dozer, grader, loader and shovel operators, for which a full qualification may not be required. In large mining companies demand for each type of mobile plant operator can be large, giving rise to the focus on skill sets training. During consultations, company representatives were of the view that training machine/equipment operators in full qualifications would be a case of over-skilling for these tightly defined job roles and at significant and unnecessary additional time and cost.

There are units of competency for mobile machinery operators among the electives of the Certificate II Surface Mining Operations in the Resources and Infrastructure Industry Training Package (RII09). The data analysis of students who were partial completers of the Certificate II qualification in surface mining over the period 2009-2011 revealed that many had just done one or several of these elective units to do with operating machinery (see Appendix D).

Mobile machinery operators may also obtain their licences through vendor training and to their standards of accreditation, for example Caterpillar accredited training linked to sales of their equipment.
Mobile machinery operators may create career paths through a skill set to skill set stepping stone approach. Two examples that interviewees provided are as follows.

**Example 1.** A mobile machinery operator may undertake skills set training to broaden work options

![Diagram](image1)

**Example 2.** A mobile truck driver may develop an upward career pathway through skill sets

![Diagram](image2)

- A skill set linked to a license is also all that is required for shot-firing work in mining (together with appropriate safety skills).

Once they have been security cleared, a person can become a shot firer or blaster, who assembles, positions and detonates explosives to break or dislodge rock and soil, via skill sets training only (a full qualification is not an absolute pre-requisite).

![Diagram](image3)

There are four shot firing skill sets (RIIBLAs) in the mining (RII09) training package that relate to different application conditions that have been determined by the Australian Forum of Explosive Regulators (since May 2010) and meet the licensing requirements for shot firers of the WA Dangerous Goods and Safety regulations (No: 125). The data analysis of students who were partial completers of the Certificate II qualification in surface mining over the period 2009-2011 revealed that, of the 40 students that have just done 4 units, half had done units related to shot-firing work.

The administration of shot firer licenses is the responsibility of the WA Department of Mines and Petroleum (DMP) with DMP having a memorandum of understanding (MOU) with Western Australia’s Training and Accreditation Council (TAC). Under this MOU, TAC monitors training provider compliance with necessary VET regulation and DMP monitors delivery from a technical or subject matter perspective. This arrangement seems to be working well with DMP reporting an improvement in quality and industry confidence in outcomes. DMP recognises qualifications/statements of attainment only from “approved” providers which is a further control over quality.
Applicants must demonstrate to the DMP chief officer that they are competent in the relevant shot firer skill set by providing a statement of attainment for the relevant units from a RTO approved to deliver the required units. RTOs seek registration for their qualifications and or skill set training delivery from the WA Training Accreditation Council (TAC). DMP officers sometimes sit in on TAC conducted audits of RTOs seeking registration in this area to determine their technical competency regarding the shot firing skill set. The officers have found that some RTOs who have the full qualification in which the shot firer skill sets sit within their scope of registration in fact cannot deliver the shot firer skill set as they lack the required technical expertise. For this reason, the VET regulator suggested that the existence of shot-firing competencies as a separate skill set facilitates the TAC audit process.

**Skill sets to enable already qualified trades persons and technicians to enter mining**

- Skill sets are also used by already qualified trades persons and technicians to enter mining from another sector.

Many occupations within mining operations are common with other industries. For example, tradespersons are required in mining operations to maintain, repair and manufacture machinery and equipment – e.g. electricians, mechanical fitter, heavy duty mechanics, boiler makers etc. Trade training falls under the domain of other industry sectors and skills bodies. Trades trained workers may require a particular skills set(s) only to transition to work in the mining context.

One example provided by interviewees was in relation to automotive tradespersons. In the Automotive Industry Retail, Service and Repair Training Package (AUR12 of 20/2/2013), there is a skill set targeted at light vehicle trained technicians to provide them the fundamental knowledge and skills to diagnose and repair mobile heavy plant equipment in the resources sector. A second example is the skill set for qualified surveyors in the Resources and Infrastructure Industry Training Package (RII09) that provides the specific generic competencies that the surveyor would need in a mining context. There also is a skill set in the RII09 Training Package for experienced safety coordinators requiring specific generic competencies in operating in a mining environment.

**Example 1**

![Example 1 Diagram](image)

**Example 2**

![Example 2 Diagram](image)
**Example 3**

**Skills sets that up-skill existing workers and expand their job roles**

Interviewees pointed to a range of skill sets that provide additional generic skills for existing workers that enable them to change job roles and/or move into a higher level job.

- **There are skill sets for experienced (but not necessarily qualified) workers that enable them to take on additional training and assessment support roles in the workplace.**

The requirement that all mining workers are proved competent in the workplace setting means that great emphasis is placed in on-the-job training (OJT) and verification of competency (VoC). Company representatives remarked that experienced workers are encouraged to become part time on the job trainers (OJT) and assume responsibility for the on-the-job component of the learning pathway for less experienced workers, instructing them in the safe and efficient operation of equipment. OJTs perform a critical role as they have a most direct influence over fellow workers competence and performance levels. One large mining operations company has some 700-800 experienced workers who act as on the job trainers (OJTs), and who might spend up to 30% of their time working as an OJT. OJTs may instruct the person and they may record their observations as evidence for the use of a qualified assessor. To become an OJT, skill sets only training can be sufficient. There are skills sets in the Training and Assessment Training Package that some resources companies and their RTO use. However other companies use their own mix of units of competency. There appears to not be a standard approach to OJT training across mining companies.
There are skill sets for experienced (but not necessarily qualified) workers to move up to supervisory positions

Interviewees spoke of several different skill sets in use for supervisory training. There appears to not be a standard supervisor skill set in use across mining companies. Examples of the various supervisor skill sets in use are as follows:

Example 1: There is a leading hand supervisor skill set in the RII09 training package, criticised by one enterprise RTO provider as not being based on a logical cluster of units which meet critical industry needs in the area of supervision.

Example 2: The aforementioned enterprise RTO has built its own three tier supervisory training program based on formal units of competency. In building this program account was taken of the unit of competency requirements for managers and supervisors of the resources company BHP Billiton and also of the Queensland Mining and Quarrying Safety and Health Act. The result is a supervisory training program that can meet BHP Billiton and Queensland based respect company needs and those of the enterprise RTO itself.

Example 3: There is a skill set for Supervision of Indigenous Employees in the RII09 training package designed for experienced supervisors or managers seeking to or already working with Indigenous employees and requiring recognition of their current skills.

Example 4. There is a Workplace supervisor skill set in the TAE training package suitable for supervisors and managers involved in developing the skills of their team. In particular these competencies are identified as essential skills for those engaged in supervising apprentices.

The data analysis of students who were partial completers of the Certificate III qualification in surface mining over the period 2009-2011 revealed that most of those who had completed 4 or 5 units had done units to do with leadership and supervision. Also, the two students who were partial completers of the Certificate IV had undertaken done units associated respectively with leadership of plant operations and leadership in occupational health and safety and risk management (see Appendix C).

Skill sets to meet safety regulations that involves the entire workforce

Health Safety and Environment (HSE) skill set training is undertaken by every new worker and in update form at regular intervals by all workers.
In Western Australian, HSE induction skill sets are determined on a company by company basis, and they may or may not be made up of nationally recognised units of competency. Many companies had previously used a standard general approach to this training and in the form of MARCSSTA (Mining and Resource Contractors Safety Training Association) but they have since abandoned this approach as being too generic and in some cases, lacking quality. Resources companies now have greater control over the content of HSE training themselves which allows for induction to be site specific and in the “company way”, that is according to its cultural values and ways of working.

However, DMP reported that mines inspectors have observed that there is some confusion about HSE training and levels of competency required and that greater attention to this issue is required to maintain continuous improvement in safety on mine sites. DMP is currently developing a guidance note to help clarify and standardise the requirements for HSE training and competency in the mining sector. This may provide the base for consideration of a new generic skill set in HSE training, as there is in Queensland. In Queensland the ‘Standard 11 Generic OH&S Induction skill set specified by the Queensland Mining Inspectorate and that is made up of units of competency from within the RIIO9 training package (and in the Certificate II in surface mining operations).

**Skill set to acquire particular licenses for certain kinds of work**

As well as being technically competent to perform the job and safety trained in general, some mine workers need further safety training for licences to undertake certain kinds of work.

- **Mine workers need a specified skill set for a license if they are to undertake high risk work.**

A person requires a high risk work (HRW) licence to perform the following work:

- Scaffolding - basic, intermediate and advanced;
- Rigging work - dogging; basic, intermediate and advanced rigging;
- Crane and hoist operation - tower; self-erecting tower; derrick; portal boom; bridge and gantry; vehicle loading; non slewing mobile; slewing; materials hoist; personnel and materials hoist; boom-type elevating work platform; vehicle mounted concrete placing boom;
- Forklift operation - forklift trucks; order-picking forklift trucks;
- Pressure equipment operation - basic, intermediate and advanced boiler operation; turbine operation; reciprocating steam engine operation.

Worksafe Australia is the regulatory authority for high risk work licenses (HRWL) and has determined the units of competency required from within training packages for issuance of a license. The high

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Communication from David Harvey, Special Inspector of Mines Resources Safety Division, Department of Mines and Petroleum Western Australia
risk work license skill sets are in the Training and Logistics and Construction and Property Services training packages.

There are many workers on mine sites that are involved in high risk work - one large company suggested as many as 30 to 40 percent of its workers were involved in high risk work and required to hold a high risk work skill set/license of some kind.

For some workers on mining sites interviewees suggested that some HRWL were too broad for some groups of workers, including those involved in basic scaffolding and rigging work, and that the introduction of restricted license categories would be useful and to avoid over-skilling and skills wastage in these instances.

- **Mine workers also need a specified skill set if they are to work in confined spaces**

Persons entering a confined space must do so in accordance with company procedures referenced to the relevant Australian Standard. There are skill sets for working in confined spaces identified in other training packages (e.g. the oil and gas PMAO8 Training package) but not the RII09.

- **There are other skill sets to do with safety that some workers require.**

The safety overlay in mining operations means that some workers need to become safety representatives as well as do their given technical role (and as opposed to a safety supervisor for which a qualification is required and a Certificate IV level).

Further evidence of substantial use of skill sets in mining operations

A recent survey commissioned by the Minerals Council of Australia on the types of training being undertaken by resources industries across Australia provides evidence of the significant extent to which skill sets are used in mining operations. The survey found that skill sets are the main form of nationally recognised training provided to minerals employees, and by the approximately 75% of total mining operators in the survey that offered at least one form of national recognised training.

The skill sets covered included both nationally endorsed skill sets (in training package) and locally endorsed skill sets (i.e. RTO/enterprise developed) although it could not be stated for sure that respondents have not included skills sets that aren’t linked to the formal recognised VET system.

Around 50% of total mining companies undertook skill sets training with nearly three quarters of all
employees in iron ore undertaking skill sets. For other nationally recognised training the levels are fairly uniform, hovering at around 10% for VET qualifications and 5% for university degrees (see table below).

Table 5 Per cent of mining employees provided nationally recognised training of various types, financial year 2011-12

<table>
<thead>
<tr>
<th>Type</th>
<th>Total Australia</th>
<th>WA</th>
<th>WA iron ore</th>
<th>WA gold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower VET qualifications</td>
<td>11</td>
<td>16</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Higher level VET</td>
<td>12</td>
<td>16</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>qualifications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skill sets</td>
<td>50</td>
<td>56</td>
<td>74</td>
<td>15</td>
</tr>
<tr>
<td>University degrees</td>
<td>6</td>
<td>12</td>
<td>17</td>
<td>2</td>
</tr>
</tbody>
</table>

Also found by the survey was a high incidence of other structured training that is unaccredited and does not lead to a nationally recognised qualification but has a specified content or predetermined plan designed to develop employment related skills and competencies (i.e. enterprise non-formal skill sets. Some 82 per cent of all employees in mining nationally received unaccredited structured training (skill sets) in the 2011-12 financial year while for Western Australia it was 85 per cent. This training included in on the job operator training, induction training, health and safety training management and supervisory training and other structured training.

Skill sets use in oil and gas operations
Importantly, and contrary to public opinion, the oil and gas industry does not directly employ large numbers of people. Many of those in the industry are highly skilled, with 72 per cent of the industry workforce comprising managers, professionals or technicians/trades workers as shown in Figure 5. Oil and gas operations require engineers of many types and other professionals with chemical and business skills (37 per cent of the total workforce). Also many types of VET qualified technicians and trades persons are required (20 per cent of the total workforce) to work as operators and maintainers of the plant and equipment in the field (skilled tradespersons and IT support people). The more experienced and highly skilled field operators often move into control panel room operator positions responsible for monitoring the overall oil and gas operation. There also is some requirement for mobile machinery operators and drivers (6 per cent of the total workforce) and many kinds of general support services workers clerical, cooks, kitchen hands etc. that make up the rest of the workforce.

For VET trained oil and gas operations workers, the relevant training package is the Chemical, Hydrocarbons and Refining Training Package (PMA08). There has been substantial growth in enrolments in PMA qualifications in recent years at all AQF levels except Australian Qualifications Framework (AQF) level II the lowest level qualification available. This is due to significant industry expansion (7 of the world’s 12 LNG plants currently under construction are in Australia) and because

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29 NCVER. (2013) op cit p 34
the Certificate III is increasingly being seen as the base qualifications of the sector\textsuperscript{30}. Skill sets in the PMA08 as of March 2013 are listed in Appendix F).

**Figure 5 Occupation skills profile of a typical oil and gas operations workforce (1 digit ANZSCO)\textsuperscript{31}**

Roles for skill sets

Roles for skills sets that interviewees identified for oil and gas operations workforce (and the approximations provided of the number of workers involved, where provided) included:

- To meet the "safety case" regime in operation and covering safety inductions (that involves the entire workforce), additional competencies (for some team members) to be able to respond appropriately to any safety incidents, and the acquisition of safety related licenses for certain kinds of work;
- To multi-skill already qualified persons, so that they can perform the available jobs and keep pace with changes in job roles, and to up-skill them to move to higher level roles; and
- For entry-level purposes for those relatively few workers involved in machine operator job roles that a person can do with an appropriate licence (and occupational health and safety tickets).

Practical examples provide by interviewees regarding each of the above roles for skills sets are as follows:

\textsuperscript{30} Manufacturing Skills Australia. (2012) Environmental scan 2012- PMAO8 enrolment figures Table p65 and explanatory remarks.

\textsuperscript{31} Source: Census of Population and Housing 2011, and as assembled and supplied by WA RITC
Skill sets in use to develop safety competencies

- There is a skill set in safety training required by all oil and gas operations workers

The potential risks in an oil and gas working environment are high and so the industry has developed a "safety case" regime that commits all oil and gas operating companies to ensuring all workers have the same core foundation of safety skills. The Australian Petroleum Production and Exploration Association (APPEA), with the oil and gas industry’s CEO Safety Leadership Forum, has developed a Common Safety Training Program (CSTP). The CSTP is based on 4 safety competency units from the PMA08 training package, and is a practical behaviour-based program. Participants must demonstrate ‘outcomes’ that is, actual safety behaviours, rather than just provide evidence of participation. The CSTP has been in operation since 1 January 2012. From this date all employers are expected to have processes in place such that all new employees attain a CSTP card and all experienced workers have CSTP cards or are working towards attaining a CSTP card. For training providers to participate in the CSTP, APPEA written agreement is required, which is based on a successful capability assessment by an APPEA appointed Independent Reviewer

- There is an additional safety induction skill set requirement, called the basic offshore and emergency induction training (BOSIET) for workers planning to work offshore.

The offshore operator safety induction skill set in the PMA08 training package covers both the CSTP and BOSIET.

- There are other safety skill sets that some workers must have to assist management of any incidences that arise.

As well as performing their technical job roles, oil and gas workers could be expected to be part of an incident response team. There are several skill sets related to emergency and significant incidents

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in the PMA08 training package, and in order to be an incident response commander, a team leader, a team member or a member of the emergency centre team. However one interviewee highlighted a structural issue regarding some of these skill sets. While each skill set is supposed to be for a specific job role and person, in the case of the incident response commander skill set and the emergency centre team skill sets this is not the case. In one company, the menu of units in these skill sets is held collectively by a team of people, and not all by one person. This company’s incident response team structure is such that no one worker requires the whole of the skill set, rather parts only thereof. It is thought that this company structure is not atypical in the oil and gas industry and raises some issues regarding how Industry Skills Councils develop skill sets.

The data analysis of students who were partial completers of PMA08 training package oil and gas operations qualifications at the Certificate IV and Diploma and Advanced Diploma levels over the period 2009-2011 revealed that most had undertaken safety and emergency response units of competency but not in combinations that accorded with skill sets as defined in the PMA08 training package. It is considered that these individuals undertook student or RTO/ enterprise determined skill sets in safety and emergency response (see Appendix C).

- **Oil and gas workers also need specified skill sets for a license if they work in confined spaces and/or in high risk work situations, as for in mining operations and detailed previously.**

- **Finally, there is also is a specific skill set in the PM08 for safety induction for contractors**

**Skill sets to multi-skill and up-skill already qualified persons**

- **There are skills set in use for technical multi-skilling purposes and to meet changing job roles.**

The multi-skilling of production personnel is a key strategic direction in the oil and gas industry. Job roles in the oil and gas industry are broadening and requiring multiple skill sets to achieve required levels of performance. Technology is increasingly being applied in oil and gas operations, including the use of automation and remotely controlled operations with smaller more multi-skilled crews on offshore assets. The overall trend is to towards multi-skilling of personnel in process operations and routine maintenance, and bringing in external experts when required for major repair and maintenance of equipment. Skill sets are being used to achieve the new multi-skilled workers required. Oil and gas process operators are being cross-skilled with electrical/instrumentation skills that enable field based operators to undertake routine maintenance work. **One minute a person can be operating the process and the next minute he can be the technician fixing it**. The process operator role is shifting to that of a process technician with highly sophisticated electrical instrument (and increasingly mechanical) skills combined with the process knowledge and skills of the traditional process operator.

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33 Quote from mining training superintendent
The data analysis of students who were partial completers of PMA08 oil and gas operations Certificate II and III qualifications over the period 2009-2011 revealed that most had completed units to do with undertaking minor maintenance work or skill sets to do with operating specific machinery or processing units and/or safety (see Appendix C).

Floating Liquefied Natural Gas (FLNG) technology is also an important development for the gas industry as it reduces both the project costs and environmental footprint of an LNG development. Shell’s Prelude FLNG Project in the Browse Basin, 475km north-northeast of Broome, Western Australia is the world’s first FLNG facility. Shell is currently working with a consortium that includes Curtin University and Challenger Institute (ACEPT) to develop an FLNG training program that will combine processing skills with maritime skills necessary for an FLNG environment.

- **Experienced operators can move into supervisor and management roles through skills training.**
  
  *There is a progressive approach to worker development in the oil and gas industry.*

Experienced workers are encouraged to take up training and or assessment or supervisory roles of other workers. The workplace assessor skill set from the TAE training package is included as one the skill sets in the PMA08.

**Skill sets for entry**

- **There are a small number of machine operator job roles a person can do with an appropriate license, and occupational health and safety tickets**

While most of the jobs in oil and gas operations are technically demanding and require highly skilled workers, there is a small requirement for mobile machinery operators and drivers (6 per cent of the total workforce). Operators of cranes for example are required and can start work by getting the appropriate licence and also a skill set for working in an offshore environment if required and other mandatory safety tickets.
Summary: the case for skill sets for resources operations workforces

“The business case for [resource sector] enterprises investment in training is to increase productivity. Therefore aside from where an occupation has a statutory requirement for a particular qualification, it is of little or no consequence to the enterprise whether the employee is training for a full qualification or merely a skill set that enables him/her to operate more effectively in the workplace”.

This study has focussed on establishing the business case specifically for skills sets and to increase workforce participation and productivity for the operational phase of resources projects in Western Australia. The study has found skill sets are in use in mining and oil and gas operations as follows:

- Skill sets are in use to fill job roles where a licence is all that is required (together with appropriate safety training) and particularly in mining operations;
- Skill sets are in use for multi-technical skilling purposes to keep pace with new skill needs due to technology developments, and particularly in oil and gas operations;
- Skill sets are in use to meet regulatory requirements; and
- Workers also undertake generic skill sets to move into higher-level trainer and supervisory roles.

Overall, skill sets training is serving the purposes of both smaller operations that require multi-skilled workers and larger operations that require specific job function workers, and to meet ongoing safety regulations and licencing requirements.

The case for skill sets for the resources sector is not to the exclusion of full qualifications: it is skill sets in addition to qualifications that are valued as an overall workforce development strategy for resources operations. Indeed, interviewees identified four drivers that are encouraging resources companies to seek out formal VET options, so long as they meet industry needs, and that provide the rationale for considering how the found skill sets in use relate to formal VET system policies in the next chapter.

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34 WA RITC submission to NRSET on discussion paper; ‘Resourcing the Future’, 13 April 2012.
Enabling increased use of skills sets training
This chapter identifies and discusses barriers to increased use of skills sets training by the resources sector in Western Australia and makes recommendations to overcome identified barriers.

Australia’s current VET policy settings
High-level Australian VET policy settings are contained in National Agreements for Skills and Workforce Development, and Partnership Agreements on Skills. The latest agreements were signed by the Council of Australian Governments (COAG) in 2012. Australian VET policy is centred on increasing workforce participation and productivity through qualifications attainment at the Certificate III level and higher, and via two new reform initiatives as outlined below.

Table 6 Australia’s high level VET policy settings

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Increase workforce participation rates</th>
<th>Increased workforce productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targets</td>
<td>By 2020 halve the proportion of Australians 20 to 64 years without a Certificate III level qualification.</td>
<td>By 2020, double the number of VET diploma and advanced diploma completions.</td>
</tr>
<tr>
<td>Latest Skills reform initiatives as of 2012</td>
<td>Introduce an entitlement for a training place to at least the first Certificate III in government-subsidised student funding streams.</td>
<td>Continue with a joint public/private funding stream for up-skilling the existing workforce in accordance with industry determined needs to ensure the new skills developed will be used.</td>
</tr>
</tbody>
</table>

Australian VET policy is focused on increasing the numbers of Australians of working age who are in work in order to meet the future demand for workers and as the size of the total pool of Australians of working age is decreasing due to population ageing. Further having more Australians of working age attain at least a Certificate III level qualification is the performance target, since research shows this level of qualification assists in achieving sustainable jobs outcomes in today’s labour market while the benefits for an individual completing a lower-level qualification are less certain but not to be dismissed completely. Towards achieving this target, COAG agreed in 2012 that an entitlement for training to the first Certificate III level would be introduced into VET student funding arrangements that each Australian state is responsible for within their jurisdictional borders.

The policy focus is also on increasing workforce productivity and increasing the number of workers with higher-level qualifications since diploma and above level qualifications have been projected to be the critical skills needed in the future Australian workforce to maintain economic competitiveness. To aid existing workforce up-skilling, the Commonwealth government and some state governments have introduced co-contribution funding programs that enterprises access according to their determined workforce skills needs and to ensure the developed new skills will be used.

36 Skills Australia has estimated that the workforce participation rate needs to be lifted to 69% by 2025, a 4% increase over the 2010 level.
Emerging policy on skill sets
Policies on skill sets are starting to emerge within the above general VET policy context. As mentioned in Chapter 1, policy makers’ attention was first drawn to the practice of skill set training in 2004 and by the High Level Review of Training Packages. The Review recommended steps be taken to give more weight to skill sets in Training Packages because both enterprises and individuals appeared to value them, whilst holding tight to the importance of qualifications. Subsequently, skill sets in training packages were introduced from 2009 and that sit alongside skills sets developed by RTOs to meet their enterprise and individual clients’ needs. No other steps were taken at this time. It fell to the former Skills Australia, in 2010, to canvas stakeholders’ views VET wide on skill sets, and make policy recommendations to take skill sets forward, and as part of its larger study into future directions for Australian VET that was published in 2011.

Skills Australia’s Recommendations
Skills Australia in its 2011 report indicated that public funding should be focussed on skill sets from training packages and only for learners who have achieved at least a VET Certificate III. Skills Australia’s policy recommendations to the VET sector were broader however, in recognition of arguments that VET stakeholders had put forward. Skills Australia considered “that there is merit to the argument that skill sets are capable of meeting a range of needs, including as a pathway to qualifications, as a tool for workforce development in enterprises, and as a mechanism to provide skill top-ups, particularly for existing workers.” Skills Australia explained the challenge to be: “to open up the pathways that benefit clients of the sector without creating the perverse impacts that some stakeholders fear” and to overcome “the lack of clear policy in the funding of skills sets that is causing confusion among stakeholders about availability” (p122). Skills Australia suggested that a proportion of public funding in both the enterprise-responsive and individual-based funding streams be made available for training package skill set delivery but within certain parameters as outlined in the table below.

Table 7 Skills sets: Policy recommendations of Skills Australia (2011)

<table>
<thead>
<tr>
<th>Recommendations 19 d) and e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• That a proportion of public funding in both the enterprise-responsive and individual-based funding streams for skill set delivery be made available within the parameters below</td>
</tr>
<tr>
<td>• That the impact of skill set delivery on enterprise workforce development and on achieving pathways to higher-level learning and work be assessed three years after the commencement of these funding arrangements (p17)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameters for public funding of skill sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Only to training package identified skill sets at this stage and subject to their identification by a national code to enable tracking of uptake and impacts</td>
</tr>
<tr>
<td>• Only for learners without a qualification if there is a guaranteed pathway to one</td>
</tr>
<tr>
<td>• Industry skills councils to provide a mapping of pathways from each identified skill set to qualifications</td>
</tr>
<tr>
<td>• Will not extinguish entitlement to public funding for a qualification</td>
</tr>
<tr>
<td>• Stronger quality arrangements for RTOs to minimize the potential for a proliferation of providers delivering what they might see as quick and cheap offerings</td>
</tr>
<tr>
<td>• RTOs to demonstrate a track record of achieving pathways from skill sets to higher-level learning for their learner cohorts for a period of at least two years (p123)</td>
</tr>
</tbody>
</table>

Actual policies on skill sets adopted
To date only the Commonwealth government and one state, South Australia, has developed a clear policy on skill sets. Clearly more work is required to be done at jurisdictional level before any skill set agenda can gain traction.

In 2012, the Commonwealth government adopted Skills Australia’s own expressed opinion on skills sets as its policy, and in relation to its new co funded National Workforce Development Fund. Under the Fund skill set training is allowed if the skill set is from a training package and the learner already holds at least a VET Certificate III. Participating enterprises are required to have a workforce development plan that validates the training to be undertaken through the Fund which is administered through the national Industry Skills Councils.

Table 8 Commonwealth skill set policy

| Joint public and private funding stream – the National Workforce Development Fund: |
| Only training package skill sets and only for those who hold a Certificate III or above as well full qualifications training |

Also in 2012, South Australia adopted a skill sets policy that is more complicated. In brief, South Australia has decided to fund some skill sets from training packages within its mainstream government student funded stream that the government has deemed eligible but not for one target group: the employed holding less than an AQF VET Certificate III. South Australia’s own state co-contribution joint public and private funding stream also provides for access to skill sets, and both enterprise/RTO and training package skill sets, for employees holding a Certificate III or higher qualification in priority industry sectors. In essence, the Certificate III bar remains.

Table 9 South Australia policy on skill sets in Skills for All

Mainstream government student entitlement scheme and in addition to full qualifications training

<table>
<thead>
<tr>
<th>For those unemployed at the time of enrolment:</th>
<th>For all Others</th>
<th>For employees who hold a qualification at the Certificate III level or higher in the industry sectors of</th>
</tr>
</thead>
<tbody>
<tr>
<td>For those holding less than a AQF Certificate III - An unlimited number of skill sets per annum</td>
<td>For those holding less than a AQF Certificate III - No skill sets</td>
<td>• Advanced Manufacturing,</td>
</tr>
<tr>
<td>For those holding Certificate III or higher - an unlimited number of skill sets per annum</td>
<td>For those holding a AQF Certificate III or higher - one funded skill set per annum</td>
<td>• Defence,</td>
</tr>
<tr>
<td>The skill sets must be</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- From within training packages that South Australia has deemed eligible i.e. on the Funded Training List for individuals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>There were 60 training package skill sets on the Funded Training List as of December 2012</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

State joint public/ private funding stream and in addition to full qualifications training

| The Skill sets must either be: |
| -Skill sets within training packages for meeting regulatory and licensing requirements OR |
| - Employers/enterprises defined & DFEEST verified skill sets to meet emerging needs, especially in areas of rapid technical or regulatory change. |

Source: Skills for all course eligibility criteria for individuals
Source: Skills in the workplace program guidelines version August 2012
http://www.skills.sa.gov.au/Portals/0/content/foremployersandbusiness/pdfs/sitw-programguidelinesaugust2012
Public funds are not available for entirely enterprise specific skill sets that are not transferable to another employment situation

All of the other states and territories have no discernible skill sets policy as yet. They are still considering their positions as part of their response to the national training entitlement reform initiative and also tightening fiscal conditions in all states and territories. Most states have indicated that they will be supporting skill sets training in some form or another and via both the student funding stream and their own enterprise-co-contribution funding streams if they have them. The exception is Western Australia. This state makes no mention of skill sets in any of the documents reviewed regarding the state’s future strategic directions for training.

**Barriers to skill sets use**

As just illustrated, there are many different policy positions regarding skills sets and no universal position amongst jurisdictions. As for those policies that do exist, there are three identified aspects that require revisiting and change if all of the found uses of skills sets among the operations workforces of the resources sector in Western Australia are to be supported. They include:

- The current focus on skill sets in training package *vis a vis* other types of skill sets;
- The current Certificate III requirement for a person to be eligible for skill sets training; and
- The current practice of not reporting skill sets as an outcome from VET.

**Barrier 1: The focus on training package skill sets**

The current skill set policy focus is on training package skill sets whereas there is evidence that more consistent public funding of enterprise/RTO developed skill sets should also be considered.

It is understood that training package skill sets are favoured because they have clear development processes and yield skill sets of determined of value to the industry/occupational area in focus. However this project has highlighted some issues in how skill sets in training packages have been developed. The impression left by those interviewed for this project is that generally national Industry Skills Councils are taking a reactive and ad hoc approach to skills sets within their established training package review processes – there is need for greater consistency in this area. Some Councils take up suggestions for skill sets only if stakeholders have contributed the idea on the relevant training package improvement issues register which is then validated through various industry based training package review groups. Some of the endorsed training package skill sets in relation to mining and oil and gas operations had not been seen before by some of the interviewees to this project who might have expected to have been consulted. In addition, some training package skill sets were considered by the interviewees to not be entirely appropriate to their needs. The interviewees reported using enterprise/RTO developed skill sets in addition to or rather than training package skill sets. With regard to the formal skills sets examples, some validating data was revealed of individuals’ usage via the analysis of data provided by the Western Australian Department of Training and Workforce Development for non-completers of surface mining extraction qualifications. There also were examples provided of non-formal skill sets.

It has become clear that training package skill sets simply are not capable of answering all needs, a view that has been recognised by the SA Training Commission. The Commission suggested (and the
South Australian government has adopted a policy position of not restricting public funding to training package skill sets as their industry consultations revealed a number of emerging areas where South Australian industries believe skill sets could be developed to support up-skilling and re-skilling of workers that were over and beyond the skill sets currently endorsed within national training packages. The Commission suggested using the identification and funding of emerging skill sets developed by RTOs/enterprises that have industry support at a state level, as a mechanism for state Industry Skills Boards (ISBs) to work with the relevant national ISCs to gain endorsement for their recognition in national training packages. This is seen as a proactive strategy to ensure the greatest possible alignment between SA’s skill needs and nationally recognised and endorsed training packages.

In addition, there is the evidence base on skill sets for the agrifood sector that suggests public funding of enterprise/RTO developed skill sets as well as skill sets in training packages should be considered on the basis that both type of skill sets are of value and indeed they complement each other. The research work by Misko provides further evidence for this position. In early September 2009, Misko located 178 skill sets across endorsed Training Packages on the National Training Information System (NTIS) website and undertook a content analysis of these skills sets. Misko also undertook a content analysis of 200 randomly selected, nationally accredited short courses in skill sets. She found that the accredited courses were being offered in areas where there are skills gaps and emerging skills issues not well covered in Training Packages or to the satisfaction of the requirements expressed by industry, government or community stakeholders.

Barrier 2: A Certificate III qualification as a prerequisite for skill set training

A Certificate III qualification as a prerequisite for the public funding of skill sets rules out a substantial cohort of resource operations workers for whom skill sets training is most attractive. It rules out, for example:

- A large cohort of workers in surface mining operations for which skill sets training is sufficient to take up the available mobile machinery operator positions and a smaller group of workers in such positions in oil and gas operations;
- All Certificate II level qualified workers who may be able to extend their job roles through skill sets training. Of particular note here is that it is possible for a person in both surface mining operations and oil and gas processing operations to enrol in and complete a Certificate II and then by undertaking additional units of competency in a stepping stone approach to attain a Certificate III if the additional units are elective units in the Certificate III. This is because the core units of competency required for a Certificate II and a Certificate III are the same in each case (nested); and
- Experienced skilled workers that do not hold a Certificate III qualification to prove it.

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44 At the time of drafting consideration was being given by government to removing the certificate III bar and revising funding policy through NWDF to allow those with a certificate II to be eligible for funding for skill set related training.
To rule out some workers from having access to skill sets from within the formal VET system seems inequitable and considering that all formal skill sets contribute to the human capital of the nation and can be the basis for forming a full qualification if need be. A policy that provides universal access to everyone to all formal skill sets, with appropriate caps, appears more defensible. Although research shows a Certificate III qualification assists in achieving sustainable job outcomes in today’s labour market and the benefits for an individual completing anything less are less certain, skill sets training can be most attractive for lesser qualified individuals.

The RTOs among the interviewees for this project suggested workers are focused on employer skill requirements. If it is skill sets they will do these if it is a qualification they will do that in order to gain employment. The RTOs agreed that a person is best prepared for his/her working life by undertaking a full qualification but a good RTO will be flexible and give employers what they want. Our role is to meet industry skill needs: to make sure workers can do their jobs, to fulfil this outcome. If skill sets is what they want we will deliver skill sets. However, a good RTO will point out the value of a qualification and encourage the person to go on eventually to get a full qualification.

The data for agrifood students supports the contention that skill sets can be a positive choice for workers. The reasons these students gave for undertaking skills sets included the small time commitment required, the ability to manage other work commitments and limit the loss of income, the ability to focus on specific, relevant and practical skills, the relatively low cost of the training and the ability to undertake training locally or even on-site, at a business/farm location. The students were fully aware they were not undertaking a full qualification. This was not what they wanted at that point of time. For those who did go on to complete a higher level qualification the additional benefit noted about skill sets was that it they had been awarded credit for the equivalent units already completed\textsuperscript{45}.

**Barrier 3- Current practice of not reporting skill sets as an outcome from VET**

As mentioned previously, although skill sets training has been occurring for a long time in Australian VET, it has not been recorded and reported and so skill sets training goes on unmonitored and unevaluated. Accordingly, policy decisions on skill sets training remain uninformed by a quantitative evidence base.

This situation continues, despite a recommendation that a national reporting mechanism for skill sets in training packages be established by the high level review of training packages in 2004, and again by Skills Australia in 2011, and an intent to do so having been made by the NCVER, in its *Review of the AVETMIS Standard for VET providers: outcomes from the discussion paper of 2010*.

It is understood however that this year provision is being made in the Australian VET statistical standard for the separate recording and reporting of skill sets training to qualifications training and that the provision being made includes for both skill sets in training packages and other skill sets that RTOs, enterprises and individuals have determined. This means that Skills Australia’s explanation for confining public funding of skills sets to those contained in Training Packages will no longer apply, and namely that :

“At this stage (in 2011) it is difficult to identify the RTO-developed skill sets. If skill sets are to be funded as a way of providing skills deepening, workforce development and pathways into further learning and work, they must be able to be clearly identified, tracked and measured. This is also essential to measure impacts, including the risks of any negative impacts on qualifications completions.” (p122-123).

However it is also understood that the separate recording and reporting of skill sets training to qualifications training that will become possible from 2014 will not be compulsory.

Arguments for the separate recording and reporting of skill sets training include not only to provide a mechanism for developing an evidence base on skill sets to inform policy but also to achieve an improved qualifications data base. Students who only intend to complete skills sets would no longer be forced into a full qualifications enrolment and affect, adversely, the overall VET qualification completion rate that is the major VET performance indicator. As it is, the current combined skill sets and qualifications data is not as robust as it could and should be for use as an indicator of either qualifications or skill sets likely to be achieved.

Recommendations to support increased skill use

To bring about an increased usage of skills sets in the resources sector of Western Australia it is recommended that:

Recommendation 1: Defining and Promoting Skill Sets

a) The RITC adopts the following definition of skill sets: “A grouping of one or more units of competency, fewer than those needed to achieve a qualification, that meet the skills development needs of an individual in an enterprise, or industry sector.”

b) The RITC promotes skill sets in addition to qualifications as part of the overall workforce development strategy required for resources operations and skill sets as being a workforce participation and productivity improvement strategy to:
   - fill operator job roles;
   - keep pace with new skill needs due to technology developments;
   - meet regulatory requirements (including those relating to safety); and
   - multi-skill workers to allow them to take on broader job roles (e.g. as on-the-job trainers/assessors and supervisory roles).

Recommendation 2: Identifying relevant skill sets for the resources sector operations workforce

a) The RITC commences to include information on industry requirements for skill sets in its resources sector workforce development plans using the findings of this report.

b) The RITC systematically develops further information from industry on skill sets needs including the views of workers on the employee impacts of skill sets training.

c) The RITC uses the identification of skill sets that have industry support at a state level as a mechanism for working with the relevant national Industry Skills Councils to gain endorsement for their recognition in national training packages where they currently do not exist.

d) The RITC encourages the relevant national Industry Skills Councils to proactively review the “fitness for purpose” of skill sets in training packages through Industry Skills Council continuous improvement processes.
Recommendation 3  Funding of skill sets

a) The RITC encourages the Western Australian Department of Training and Workforce Development funds skill sets training in Western Australia on the basis of skill sets constructed from units of competency within the formal VET system, as these skill sets add to individuals’ employability and are transferable skills to further training or other employment situations.

Recommendation 4  Developing an evidence base on skill sets

b) The RITC encourages the Western Australian Department of Training and Workforce Development to record and report skill sets training separately to qualifications training to provide an evidence base for future policy determinations consistent with the national vocational education and training statistics collection (AVETMISS).
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# Key features of the four types of skill sets in Australian VET

<table>
<thead>
<tr>
<th>Type/Feature</th>
<th>‘Training package’ skill sets</th>
<th>‘RTO/enterprise’ skill sets</th>
<th>‘Student determined’ skill sets</th>
<th>Enterprise skill sets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Availability</strong></td>
<td>From 2009</td>
<td>From 1990 when units of competency became the building block of the Australian VET system</td>
<td>Any time by an individual enrolling in a publicly subsidised qualification and completing only those competencies of interest</td>
<td>Whenever required</td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Meet an industry specified licensing requirement &gt;regulatory requirement &gt;other industry need</td>
<td>Meet individual/enterprise skills needs</td>
<td>Unclear, enrolment in a qualification hides the intent of the individual to only complete a skill set</td>
<td>Meet enterprise specific skill needs</td>
</tr>
<tr>
<td><strong>Composition</strong></td>
<td>Predefined units of competency from any TP qualification; no electives.</td>
<td>Flexible combinations of units of competency from any accredited qualification</td>
<td>Units of competency that are part of a specific accredited qualification</td>
<td>Not known; non formal skill sets not made up of units of competency from accredited qualifications</td>
</tr>
<tr>
<td><strong>Development process</strong></td>
<td>Through the Training Package review and improvement cycle</td>
<td>Negotiated between an RTO and enterprise/individual clients, any time</td>
<td>Qualifications development processes</td>
<td>Determined in house by an enterprise or bought in from vendors of products and services or other non RTO training providers</td>
</tr>
<tr>
<td><strong>Recognition</strong></td>
<td>Industry endorsed Statements of Attainment state &gt;the specific licence or regulatory requirement they meet or other defined industry need</td>
<td>RTO developed local product: Statements of Attainment state: &gt;the individual has completed specified units from nationally recognized qualification/course(s) &gt;can include additional brief information re identified purpose</td>
<td>A statement of attainment issued stating &gt;the individual has completed specified units from nationally recognized qualification/course(s)</td>
<td>Enterprise recognised</td>
</tr>
<tr>
<td><strong>Recording/Reporting</strong></td>
<td>Not currently reported. Proposed in national VET statistics forward plan from 2014</td>
<td>Not consistently reported. Some RTO’s code and report as completed statements of attainment</td>
<td>Recorded as non-completion of a qualification</td>
<td>Not reported publicly</td>
</tr>
<tr>
<td><strong>Cross over capability</strong></td>
<td>Other skill sets may be incorporated due to 2010 flexibility rule of one third of TP qualifications to be elective units</td>
<td>Training Package units of competency can be used in accredited courses /skill sets</td>
<td>Could be incorporated into a broad skill sets policy –by students intending to do skill sets being enrolled in such and not qualifications.</td>
<td>No cross over capability unless mapped to units of competency within the formal VET system.</td>
</tr>
</tbody>
</table>

Source: Constructed by the author
Appendix B

The interview guide
What role do you play in skilling the resources sector?

What skill sets do you know of that are currently used in resources operations in WA?

- From training packages?
- As negotiated with and delivered by an RTO?
- As an enterprise has developed or receives from vendors of new products/services being introduced into the workplace that is “non-formal skill sets”?

What purposes are the skills set in use serving?
Which workers are involved in the skill sets training you have identified?

- Unskilled? Operatives? Trades trained and other VET skilled workers? University qualified? Everyone?

Some people say workers who undertake skill sets training who do not have a post school qualification will be left with little prospect of building career/moving jobs easily. What do you think?

Some people say skill sets are good for workers who do not have a post school qualification as a building block approach to qualifications? What do you think? Do you know of examples where use has been made of series of skill sets to attain a qualification?

Some people want to restrict access to skill sets further to only those who hold a qualification at the Certificate III level. What do you think? What would be the implications for the resources sector? Who funds the skill sets training: the enterprise/the worker/individual/the government/combinations of these? Who do you think should pay?

How important and when are qualifications essential to taking up work in the resources sector? When are they not?

What features of the resources sector make skill sets an attractive option? What advantages does skill sets training provide?

Are there new areas in which skill sets could be used in the future?

What needs to happen to enable wider use of skill sets?
Appendix C

Exploring skill sets use through formal VET data analysis
This appendix reports the findings of the attempt made to uncover the extent and nature of skill sets use by individuals in publicly funded VET courses for the resources sector in Western Australia.

The issue
Western Australia’s VET statistical collection does not report on skill sets utilisation. In Western Australia a “force to course rule” at enrolment is applied which sees public providers enrolling students in a qualification even if their intent may be to achieve a skill set outcome or partial qualification outcome only. Thus, it is not known how many learners enrol in a whole qualification in order to complete a formal skill set only – be it industry or RTO defined or idiosyncratic. The extent of student determined formal skill sets remains hidden in partial qualifications completed data.

Method
In an attempt to uncover the extent and nature of student determined formal skill sets in the resources sector the following steps were taken, iteratively as our thinking progressed:

1. Data was obtained from the Western Australian Department of Training and Workforce Development (DTWD) that included “successful module enrolments of students not reported to have completed their enrolled qualification in the three years 2009-2011” from within the RII09 training package for mining operations and the PMA08 training packages for oil and gas operations.

2. The obtained data set was refined to eliminate students who might be continuing students, that is, who still might be intending to complete the qualification in which they were enrolled. This was done in two sub-steps:

a) The nominal length of time it takes for a student to complete a particular qualification was considered and any students for whom it was possible they were still be in the process of doing the full qualification were eliminated. The criteria used were as in the table below.

<table>
<thead>
<tr>
<th>RII09 Training Package</th>
<th>EXCLUDE</th>
<th>KEEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students doing Certificate IIIs for whom there is data that only includes for 2011 Students doing advanced diplomas for which there is only 2011 data</td>
<td></td>
<td>KEEP All students doing Cert I All students doing Cert II All students doing Cert IVs All students doing advanced diplomas with data starting 2009 or 2010.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PMA08 Training Package</th>
<th>EXCLUDE</th>
<th>KEEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students doing Certificate</td>
<td></td>
<td>KEEP All students doing Cert I</td>
</tr>
</tbody>
</table>
b) The kept data set from step 2a above was then sorted by funding source, and all students funded through a traineeship eliminated. The assumption was that students in traineeships (i.e. in employment based contracts of training) are highly likely to complete their qualifications compared to students who were institutionally delivery funded and therefore not employed or covered by a contract of training.

The refined data set after step 2a and b was made up of students not reported to have completed their enrolled in qualification in the three years 2009-2011 and who were most likely to be skill set or partial qualification only completers.

3. Further exclusions were made to the refined student data base for RII09. This data base included all students linked to all qualifications from within the training package. It was decided to only consider those students linked to surface extraction qualifications and so to mining operations that was the agreed focus of the study.

The final data base included 807 students in RII09 and 200 in PMA08 that were considered to be skill set or partial qualification only completers respectively in mining operations and oil and gas operations training.

4. The final data set of students considered to be skill set or partial qualification only completers was sorted by qualification level enrolled in. Then for each qualification level, students were sorted by the number of units they had undertaken and arranged in order from 1 upward and the data presented in pivot tables.

It was found that students considered skill set or partial qualifications only completers included some who had undertaken more units of competency than required to achieve the qualification in which they had enrolled. It is possible these students were eligible to receive a qualification but had not have obtained a qualification because they had not requested one- in WA qualifications are only issued upon an individual’s request or application for conferral of an award. Alternatively, it could be that these students had not done the ‘right’ combination of unit of competencies that is, in accord with the packaging rules for a qualification, and so were not eligible to receive a qualification. Time was not available to analyse the data for these students to work out which of the 2 alternatives or another explanation was the case.

In the final instance patterns in the units of competencies undertaken were looked for only among those students who had done less than the number of units required for the full qualification and considered to be skill set or partial qualification only completers.
Findings

Found patterns of units of competency undertaken by students who were skill set or partial qualifications only completers and who did less units of competency than those required for the qualification are as follows and for

A) RII09 Surface operations qualifications, and
B) PMA08 Oil and gas operations qualifications

a) RII09 Surface operations qualifications

Student numbers enrolled by qualification and by number of units taken

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Required No. of units to complete# (see last section)</th>
<th>No. of students doing less than the number of units required for the qualification</th>
<th>No. of students doing equal to or more than the number of units required for the qualification</th>
<th>Total students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate 11</td>
<td>9</td>
<td>263</td>
<td>154</td>
<td>417</td>
</tr>
<tr>
<td>Certificate 111</td>
<td>13</td>
<td>377</td>
<td>11</td>
<td>388</td>
</tr>
<tr>
<td>Certificate IV</td>
<td>16</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Diploma</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Adv. Diploma</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>642</td>
<td>165</td>
<td>807</td>
</tr>
</tbody>
</table>

Analysis results

Patterns in the units of competencies undertaken among those students who had done less than the number of units required for the full qualification and considered to be skill set or partial qualification only completers (i.e. in shaded box in the table above):

RII09 Surface operations Certificate II– 9 units are required for the full qualification (see attachment to Appendix C)

- 30 (40.5%) completed OPERATE A VEHICLE LOADING CRANE
- 13 (17.6%) completed OPERATE SUPPORT EQUIPMENT
- 8 (10.8%) completed PERFORM DOGGING

*These are elective units of the Certificate II and are either student or RTO/enterprise determined skill sets*

Cert III 2 units – total 43 students

- 18 (41.9%) completed CONDUCT WHEEL LOADER OPERATIONS and CONDUCT SKID STEER LOADER OPERATIONS
- 6 (14%) completed CONDUCT NON-SLEWING CRANE OPERATIONS and PERFORM DOGGING

*These are elective units of the Certificate II and are either student or RTO/enterprise determined skill sets*

Cert II 3 units – total 25 students

- 7 (30%) completed WORK SAFELY AT HEIGHTS and OPERATE A FORKLIFT and OPERATE A BOOM TYPE ELEVATING WORK PLATFORM
- 5 (20%) completed CONDUCT WHEEL LOADER OPERATIONS and CONDUCT BULK WATER TRUCK OPERATIONS and CONDUCT SKID STEER LOADER OPERATIONS
- 5 (20%) completed CONDUCT BULK WATER TRUCK OPERATIONS and CONDUCT HAUL TRUCK OPERATIONS and OPERATE ROLLER/COMPACTOR
These are elective units of the Certificate II and are either student or RTO/enterprise determined skill sets

Cert II 4 units – total 40 students
- 20 (50%) completed WORK SAFELY AND FOLLOW OHS POLICIES AND PROCEDURES and SUPPORT SHOTFIRING OPERATIONS and STORE, HANDLE AND TRANSPORT EXPLOSIVES and APPLY, MONITOR AND REPORT ON COMPLIANCE SYSTEM

These units include 2 of three units required for the RII09 Skill Set Surface Shot-firing skill set in the training package (SUPPORT SHOTFIRING OPERATIONS and STORE, HANDLE AND TRANSPORT EXPLOSIVES) plus a core unit from the Certificate II and III (WORK SAFELY AND FOLLOW OHS POLICIES AND PROCEDURES) and a core unit form the Certificate IV. (APPLY, MONITOR AND REPORT ON COMPLIANCE SYSTEM)

The four units are either a student or RTO/enterprise determined skill set.

Cert II 5 units – total 40 students
- 12 (30%) completed WORK SAFELY AND FOLLOW OHS POLICIES AND PROCEDURES and CONDUCT LOCAL RISK CONTROL and COMMUNICATE IN THE WORKPLACE and MAINTAIN AND MONITOR SITE QUALITY STANDARDS and PARTICIPATE IN ENVIRONMENTALLY SUSTAINABLE WORK PRACTICES

These units are the five core units of the Certificate II.

Cert II 6 units – total 11 students
No real pattern although 2 (18%) completed CONDUCT WHEEL LOADER OPERATIONS and CONDUCT BULK WATER TRUCK OPERATIONS and OPERATE ROLLER/COMPACTOR and CONDUCT HYDRAULIC EXCAVATOR OPERATIONS and CONDUCT GRADER OPERATIONS

These are elective units of the Certificate II and are either student or RTO/enterprise determined skill sets

Cert II 7 units – total 14 students
- 5 (36%) completed CONDUCT GRADER OPERATIONS and CONDUCT HYDRAULIC EXCAVATOR OPERATIONS and CONDUCT TRACKED DOZER OPERATIONS and OPERATE ROLLER/COMPACTOR and CONDUCT HAUL TRUCK OPERATIONS and CONDUCT BULK WATER TRUCK OPERATIONS and CONDUCT WHEEL LOADER OPERATIONS

These are elective units of the Certificate II and are either student or RTO/enterprise determined skill sets
- 4 (29%) completed WORK SAFELY AND FOLLOW OHS POLICIES AND PROCEDURES and CONDUCT LOCAL RISK CONTROL and COMMUNICATE IN THE WORKPLACE and PARTICIPATE IN ENVIRONMENTALLY SUSTAINABLE WORK PRACTICES and OPERATE SUPPORT EQUIPMENT and ISOLATE AND ACCESS PLANT and MAINTAIN AND MONITOR SITE QUALITY STANDARDS

These units include the core units of the Certificate II plus 2 elective units (OPERATE SUPPORT EQUIPMENT and ISOLATE AND ACCESS PLANT). They are either student or RTO/enterprise determined skill sets.

Cert II 8 units – total 16 students
- 7 (44%) completed COMPLY WITH SITE WORK PROCESSES/PROCEDURES and ENTER AND WORK IN CONFINED SPACES and SERVICE MINE PLANT AND EQUIPMENT and WORK SAFELY AT HEIGHTS and PARTICIPATE IN ENVIRONMENTALLY SUSTAINABLE WORK PRACTICES and COMMUNICATE IN THE WORKPLACE and CONDUCT LOCAL RISK CONTROL and WORK SAFELY AND FOLLOW OHS POLICIES AND PROCEDURES

These units include the five core units of the Certificate II plus elective units in SERVICING MINE PLANT AND EQUIPMENT and IN CONFINED SPACES. They are either student or RTO/enterprise determined skill sets.
- 5 (31%) completed CONDUCT TIP TRUCK OPERATIONS and ISOLATE AND ACCESS PLANT and OPERATE SUPPORT EQUIPMENT and PARTICIPATE IN ENVIRONMENTALLY SUSTAINABLE WORK PRACTICES and MAINTAIN AND MONITOR SITE QUALITY STANDARDS and COMMUNICATE IN THE WORKPLACE and CONDUCT LOCAL RISK CONTROL and WORK SAFELY AND FOLLOW OHS POLICIES AND PROCEDURES

These units include the five core units of the Certificate II plus elective units CONDUCT TIP TRUCK OPERATIONS and ISOLATE AND ACCESS PLANT and OPERATE SUPPORT EQUIPMENT. They are either student or RTO/enterprise determined skill sets.
RII09 Surface operations Certificate III-13 units are required to complete the qualification

<table>
<thead>
<tr>
<th>Qualification</th>
<th>No of students doing less than the number of units required for the qualification</th>
<th>No of students doing equal to or more than the number of units required for the qualification</th>
<th>Total students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate 11</td>
<td>80</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>Certificate 111</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Certificate IV</td>
<td>70</td>
<td>27</td>
<td>97</td>
</tr>
<tr>
<td>Diploma</td>
<td>7</td>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>

RII09 Surface Operations Certificate IV -16 units are required to complete the qualification

1 to 6 units and 9 plus units – total 0 students

1 student did 7 units and 1 student 9 units

2 students completed the same two units out of a total of 16 units. These were MONITOR A SAFE WORKPLACE and APPLY SITE RISK MANAGEMENT SYSTEM

These units are core units of the Certificate IV.

b) PMA08 oil and gas operations results

Students numbers enrolled by qualification and by number of units taken

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Required No. of units to complete# (from last section)</th>
<th>No of students doing less than the number of units required for the qualification</th>
<th>No of students doing equal to or more than the number of units required for the qualification</th>
<th>Total students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate 11</td>
<td>16</td>
<td>80</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td>Certificate 111</td>
<td>21</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Certificate IV</td>
<td>26</td>
<td>70</td>
<td>27</td>
<td>97</td>
</tr>
<tr>
<td>Diploma</td>
<td>10</td>
<td>7</td>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>
*There actually were only 200 students in total. The extra 2 counts are due to two students doing a unit twice under a different code each time. The unit was ‘PARTICIPATE IN ENVIRONMENTALLY SUSTAINABLE WORK PRACTICES’.

**Analysis of patterns in the units of competencies undertaken** among those students who had done less than the number of units required for the full qualification and considered to be skill set or partial qualification only completers

**Certificate II – 16 units are required for the full qualification**

<table>
<thead>
<tr>
<th>1 unit – 35 students</th>
<th>23 (65.7%) completed <strong>UNDERTAKE MINOR MAINTENANCE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 (17.1%) completed <strong>METALS AND ENGINEERING WORK PLACEMENT 1</strong></td>
</tr>
<tr>
<td></td>
<td>2 (5.7%) completed <strong>COMMUNICATE IN THE WORKPLACE</strong></td>
</tr>
</tbody>
</table>

**UNDERTAKE MINOR MAINTENANCE** is an elective unit of the Certificate II. **COMMUNICATE IN THE WORKPLACE** is a core unit. These are either student or RTO/enterprise determined skill sets =

<table>
<thead>
<tr>
<th>2 units – 5 students</th>
<th>2 (40%) completed <strong>CLEAN WORKPLACE OR EQUIPMENT</strong> and <strong>USE ORGANISATION COMPUTERS OR DATA SYSTEMS</strong></th>
</tr>
</thead>
</table>

These are elective units of the Certificate II and are either student or RTO/enterprise determined skill sets

<table>
<thead>
<tr>
<th>3 units – 4 students</th>
<th>2 (50%) completed <strong>COMMUNICATE IN THE WORKPLACE</strong> and <strong>FOLLOW EMERGENCY RESPONSE PROCEDURES</strong> and <strong>PNEUMATICS</strong></th>
</tr>
</thead>
</table>

The first two units are core units of the qualification and the third is an elective unit. These are either student or RTO/enterprise determined skill sets.

<table>
<thead>
<tr>
<th>4 units – 5 students</th>
<th>2 (40%) completed <strong>OPERATE HEAT EXCHANGERS</strong> and <strong>OPERATE EQUIPMENT</strong> and <strong>OPERATE FLUID FLOW EQUIPMENT</strong> and <strong>UNDERTAKE MINOR MAINTENANCE</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 (40%) completed <strong>SAMPLE AND TEST MATERIALS AND PRODUCT</strong> and <strong>OPERATE EQUIPMENT</strong> and <strong>OPERATE FLUID FLOW EQUIPMENT</strong> and <strong>UNDERTAKE MINOR MAINTENANCE</strong></td>
</tr>
</tbody>
</table>

These are elective units and are either student or RTO/enterprise determined skill sets.

<table>
<thead>
<tr>
<th>5 units – 12 students</th>
<th>10 (83.3%) completed <strong>INSTALL PIPEWORK AND PIPEWORK ASSEMBLIES</strong> and <strong>INTRODUCTION TO HYDRAULICS (1)</strong> and <strong>PNEUMATICS</strong> and <strong>PROCESS AND RECORD INFORMATION</strong> and <strong>UNDERTAKE MINOR MAINTENANCE</strong></th>
</tr>
</thead>
</table>

These are elective units and are either student or RTO/enterprise determined skill sets.

<table>
<thead>
<tr>
<th>7 units – 2 students</th>
<th>The two students had no combinations.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One student completed <strong>COMMAND THE OPERATION OF SURVIVAL CRAFT</strong> and <strong>COORDINATE INCIDENT RESPONSE</strong> and <strong>RESPOND TO A HELIDECK INCIDENT</strong> and <strong>APPLY OFFSHORE FACILITY ABANDONMENT AND SEA SURVIVAL PROCEDURES AND PRACTICES</strong> and <strong>OPERATE BREATHING APPARATUS</strong> and <strong>UNDERTAKE HELICOPTER SAFETY AND ESCAPE</strong> and <strong>ENTER CONFINED SPACE</strong></td>
</tr>
</tbody>
</table>

Some of these units are from the offshore incident response team member training package skill set but others are not. These units are either student or RTO/enterprise determined skill sets.

|                      | One student completed **OPERATE POWERED SEPARATION EQUIPMENT** and **SAMPLE AND TEST MATERIALS AND PRODUCT** and **OPERATE HEAT EXCHANGERS** and **OPERATE FLUID FLOW EQUIPMENT** and **OPERATE SEPARATION EQUIPMENT** and **OPERATE EQUIPMENT** and **UNDERTAKE MINOR MAINTENANCE** |
These units are either student or RTO/enterprise determined skill sets.

8 units – 2 students
- 2 (100%) completed WORK SAFELY AT HEIGHTS and UNDERTAKE FIRST RESPONSE TO FIRE INCIDENTS
These are safety units and are either student or RTO/enterprise determined skill sets.

9 units – 1 student
- This student completed SAMPLE AND TEST MATERIALS AND PRODUCT and WORK IN A TEAM and CLEAN WORKPLACE OR EQUIPMENT AND WORK IN ACCORDANCE WITH AN ISSUED PERMIT and IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and WORK SAFELY and FOLLOW EMERGENCY RESPONSE PROCEDURES and APPLY WORKPLACE PROCEDURES and COMMUNICATE IN THE WORKPLACE and UNDERTAKE MINOR MAINTENANCE
The 2 units WORK IN ACCORDANCE WITH AN ISSUED PERMIT and WORK SAFELY equal the contractor induction skill set in the training package. The units also include all core units of the Certificate II in process plant operations (IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and WORK SAFELY and FOLLOW EMERGENCY RESPONSE PROCEDURES and APPLY WORKPLACE PROCEDURES and COMMUNICATE IN THE WORKPLACE). This student has done either a student or RTO/enterprise determined skill sets with a focus on work equipment maintenance.

10 units – 3 students
- 3 (100%) completed COMMUNICATE IN THE WORKPLACE and APPLY WORKPLACE PROCEDURES and FOLLOW EMERGENCY RESPONSE PROCEDURES and IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and WORK SAFELY and WORK IN ACCORDANCE WITH AN ISSUED PERMIT
These students have done all core units of the Certificate II in process plant operations plus WORK IN ACCORDANCE WITH AN ISSUED PERMIT that gives them the contractor induction skill set in the training package
- 2 (66.6%) completed OPERATE EQUIPMENT and GAS TEST ATMOSPHERES and MONITOR AND CONTROL WORK PERMITS and PROCESS AND RECORD INFORMATION – in addition to the above
These students have done all core units of the Certificate II in process plant operations plus WORK IN ACCORDANCE WITH AN ISSUED PERMIT that gives them the contractor induction skill set in the training package plus additional units. The students have done either a student or RTO/enterprise determined skill set.

11 units – 3 students
- 2 (66.7%) completed DISMANTLE, REPLACE AND ASSEMBLE ENGINEERING COMPONENTS and PERFORM ENGINEERING MEASUREMENTS and SELECT AND PREPARE MATERIALS and INTERPRET TECHNICAL DRAWING and FOLLOW OHS PROCEDURES and CLEAN WORKPLACE OR EQUIPMENT and WORK SAFELY and IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and FOLLOW EMERGENCY RESPONSE PROCEDURES and APPLY WORKPLACE PROCEDURES and COMMUNICATE IN THE WORKPLACE
These students have done all core units of the Certificate II in process plant operations plus engineering components maintenance elective units. The students have done either a student or RTO/enterprise determined skill set.

13 units – 1 student
- This student completed USE UTILITIES AND SERVICES and PREPARE EQUIPMENT FOR EMERGENCY RESPONSE and OPERATE BREATHING APPARATUS and OPERATE POWERED SEPARATION EQUIPMENT and OPERATE FLUID FLOW EQUIPMENT and OPERATE SEPARATION EQUIPMENT and WORK IN ACCORDANCE WITH AN ISSUED PERMIT and IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and OPERATE EQUIPMENT and WORK SAFELY and FOLLOW EMERGENCY RESPONSE PROCEDURES and APPLY WORKPLACE PROCEDURES and COMMUNICATE IN THE WORKPLACE and UNDERTAKE MINOR MAINTENANCE
This student has done either a student or RTO/enterprise determined skill set that includes the core units of the qualification plus some emergency response units and some equipment operation and minor maintenance units.

14 units – 7 students
The students had done either a student or RTO/enterprise determined skill set.

PMA Certificate III – 21 units are required for the full qualification

I unit – 1 student
- This student completed OPERATE A PRODUCTION UNIT
  The student has done either a student or RTO/enterprise determined skill set.

4 units – 1 student
- This student completed ENTER CONFINED SPACE and APPLY OFFSHORE FACILITY ABANDONMENT AND SEA SURVIVAL PROCEDURES AND PRACTICES and OPERATE BREATHING APPARATUS and UNDERTAKE HELICOPTER SAFETY AND ESCAPE
  The student has done incidence response units but they do not add to a training package skill set in incidence response, rather this student has done either a student or RTO/enterprise determined skill set.

6 units – 1 student
- This student completed OPERATE A FORKLIFT and OPERATE AND MONITOR A STEAM TURBINE and OPERATE AND MONITOR BASIC BOILER and APPLY OFFSHORE FACILITY ABANDONMENT AND SEA SURVIVAL PROCEDURES AND PRACTICES and OPERATE BREATHING APPARATUS and UNDERTAKE HELICOPTER SAFETY AND ESCAPE
  The student has done some equipment operations units and some incidence response units that are either a student or RTO/enterprise determined skill set.

8 units – 1 student
- This student completed CONDUCT THICKENING AND CLARIFYING PROCESS and OPERATE FLUID FLOW EQUIPMENT and OPERATE PARTICULATES HANDLING EQUIPMENT and OPERATE SEPARATION EQUIPMENT and APPLY WORKPLACE PROCEDURES and COMMUNICATE IN THE WORKPLACE and IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and WORK SAFELY
  The student has done some equipment operations units and some core units of the qualification that are either a student or RTO/enterprise determined skill set.

10 units – 1 student
- This student completed FOLLOW EMERGENCY RESPONSE PROCEDURES and MONITOR AND CONTROL WORK PERMITS and PROCESS AND RECORD INFORMATION and READ DIALS AND INDICATORS and USE EQUIPMENT WORK IN ACCORDANCE WITH AN ISSUED PERMIT and APPLY WORKPLACE PROCEDURES and COMMUNICATE IN THE WORKPLACE and IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and WORK SAFELY
  This student has done core units of the qualification plus some emergency response units that are either a student or RTO/enterprise determined skill set.

PMA Certificate IV – 10 units are required for the full qualification

1 unit – 9 students
- 2 (22.2%) completed MANAGE PLANT SHUTDOWN AND RESTART – no other combinations
  This student has done either a student or RTO/enterprise determined skill set.

2 units – 6 students
- 2 (33.3%) completed OPERATE AND MONITOR PUMPING SYSTEMS AND EQUIPMENT and OPERATE EQUIPMENT – no other combinations
These students have done either a student or RTO/ enterprise determined skill set.

3 units – 3 students – no combinations
- One student completed CO-ORDINATE MAINTENANCE and MANAGE PLANT SHUTDOWN AND RESTART and WORK IN ACCORDANCE WITH AN ISSUED PERMIT
- One student completed UNDERTAKE WELL MANAGEMENT and OPERATE A PRODUCTION UNIT and OPERATE PROCESS CONTROL SYSTEMS
- One student completed TRIAL NEW PROCESS OR PRODUCT and DEVELOP PLANT DOCUMENTATION and OPTIMISE PROCESS PLANT AREA

The students have done either a student or RTO/ enterprise determined skill set.

4 units – 5 students – no combinations
- One student completed COORDINATE PERMIT PROCESS and COORDINATE INCIDENT RESPONSE and PARTICIPATE IN ENVIRONMENTALLY SUSTAINABLE WORK PRACTICES (this unit was completed twice by this student, original data has been checked and confirms this – possible data error?)
- One student completed OPERATE FLUID FLOW EQUIPMENT and OPERATE AND MONITOR PRIME MOVERS and OPERATE AND MONITOR PUMPING SYSTEMS AND EQUIPMENT and OPERATE EQUIPMENT
- One student completed OPERATE A PRODUCTION UNIT and CONDUCT PIPELINE PIGGING and CONDUCT ARTIFICIAL LIFT and ASSESS RISK
- One student completed MANAGE PLANT SHUTDOWN AND RESTART and OPTIMISE PROCESS PLANT AREA and DEVELOP PLANT DOCUMENTATION and LEAD A COMPETITIVE MANUFACTURING TEAM

The students have done either a student or RTO/ enterprise determined skill set.

5 units – 6 students
- 2 (40%) completed IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and WORK SAFELY and COMMUNICATE IN THE WORKPLACE and APPLY WORKPLACE PROCEDURES and FOLLOW EMERGENCY RESPONSE PROCEDURES

The students have done all of the core units of the qualification as either a student or RTO/ enterprise determined skill set.

6 units – 4 students
- 2 (33.3%) completed APPLY WORKPLACE PROCEDURES and COMMUNICATE IN THE WORKPLACE and IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS – no other combinations.

The students have done some of the core units of the qualification as either a student or RTO/ enterprise determined skill set.

7 units – 1 student
- This student completed WORK IN ACCORDANCE WITH AN ISSUED PERMIT and ENTER CONFINED SPACE and OPERATE BREATHING APPARATUS and UNDERTAKE FIRST RESPONSE TO FIRE INCIDENTS and UNDERTAKE FIRE CONTROL AND EMERGENCY RESCUE and PROVIDE INITIAL FIRST AID RESPONSE and OPERATE AND MONITOR A BOILER UNIT

This student has done some units from the confined work team skill set in the training package and some units from the Incident response team member skill set in the training package and a monitor a boiler unit. Overall the student has undertaken either a student or RTO/ enterprise determined skill set.

8 units – 1 student
- This student completed OPERATE SEPARATION EQUIPMENT and USE EQUIPMENT and READ DIALS AND INDICATORS and IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and WORK SAFELY and COMMUNICATE IN THE WORKPLACE and FOLLOW EMERGENCY RESPONSE PROCEDURES and APPLY WORKPLACE PROCEDURES

The student has done core units of the qualification plus three operate and use equipment units as either a student or RTO/ enterprise determined skill set.

10 units – 13 student
- 12 (92.3%) completed MONITOR AND CONTROL WORK PERMITS and PROCESS AND RECORD INFORMATION and GAS TEST ATMOSPHERES and WORK IN ACCORDANCE WITH AN ISSUED PERMIT and
IDENTIFY AND MINIMISE ENVIRONMENTAL HAZARDS and OPERATE EQUIPMENT and WORK SAFELY and COMMUNICATE IN THE WORKPLACE and FOLLOW EMERGENCY RESPONSE PROCEDURES and APPLY WORKPLACE PROCEDURES

The student has done either a student or RTO/ enterprise determined skill set

PMA08  Diploma students – 10 units are required for the full qualification

3 units – 1 student
- This student completed OPERATE FLUID MIXING EQUIPMENT and OPERATE EQUIPMENT and OPERATE SEPARATION EQUIPMENT

The student has done either a student or RTO/ enterprise determined skill set

4 units – 1 student
- This student completed WORK IN ACCORDANCE WITH AN ISSUED PERMIT and MANAGE INCIDENT RESPONSE INFORMATION and MANAGE EMERGENCY INCIDENTS and ENTER CONFINED SPACE

The student has done some units from the Incident response commander skill set in the training package plus other general core units Overall, the student has done either a student or RTO/ enterprise determined skill set.

6 units – 1 student
- This student completed ESTABLISH INCIDENT RESPONSE PREPAREDNESS AND RESPONSE SYSTEMS and PROVIDE OPERATIONAL EXPERTISE TO A PROJECT TEAM and PARTICIPATE IN ENVIRONMENTALLY SUSTAINABLE WORK PRACTICES and ACHIEVE WORK OUTCOMES and CONTROL THE PROCESS DURING ABNORMAL SITUATIONS and PROCESS AND RECORD INFORMATION

The student has done 3 of the four core units of the qualification and units in incidence response, that is either a student or RTO/ enterprise determined skill set.

7 units – 1 student
- This student completed CONTRIBUTE TO SAFETY CASE and MANAGE EMERGENCY INCIDENTS and OPTIMISE PRODUCTION SYSTEMS and PLAN PLANT SHUTDOWN and COMMISSION/RECOMMISSION PLANT – no other combinations.

The students have done units in incidence response but not according to a training package skill sets in this area. The student has done either a student or RTO/ enterprise determined skill set.

8 units – 3 students
- 2 (66.7%) completed CONTROL THE PROCESS DURING ABNORMAL SITUATIONS and ACHIEVE WORK OUTCOMES and OPTIMISE PRODUCTION SYSTEMS and PLAN PLANT SHUTDOWN and COMMISSION/RECOMMISSION PLANT – no other combinations.

The students have done units in incidence response but not according to a training package skill sets in this area. The student has done either a student or RTO/ enterprise determined skill set.

PMA Advanced Diploma students – 15 units are required for the full qualification

1 student did 4 units and another 1 student did 12 units
No combinations found

- One student completed FIGHT AND EXTINGUISH FIRES ON BOARD A COASTAL VESSEL and OBSERVE SAFETY AND EMERGENCY PROCEDURES ON A COASTAL VESSEL and PROVIDE ELEMENTARY FIRST AID and SURVIVE AT SEA IN THE EVENT OF VESSEL ABANDONMENT
- One student completed ACHIEVE WORK OUTCOMES and BUILD PARTNERSHIPS TO IMPROVE INCIDENT RESPONSE CAPACITY and CONTRIBUTE TO SAFETY CASE and DEBOTTLENECK PLANT and MANAGE PEOPLE RELATIONSHIPS and MANAGE RISK and PARTICIPATE IN ENVIRONMENTALLY SUSTAINABLE WORK
Discussion of results
Patterns found in the units of competencies undertaken by students who were skill set or partial qualification only completers and had done less than the number of units required for the full qualification:

For partial completers of RII09 Surface mining qualifications
No training package skill sets were undertaken.

Certificate II– 9 units are required for the full qualification.
The following patterns were found among partial completers of the Certificate II qualification in surface mining:

- Many had completed one to three units only - units to do with operating mobile machinery, including haul truck, water carts, dozers, graders and loaders, cranes and shovel operators.
- Half of those who had done 4 units, had done units related to shot-firing work
- Those who had done between 5 to 8 units included many who had undertaken the core units of the qualification (and including Communicate in the workplace; Work safely and follow OHS policies and procedures; Participate in environmentally sustainable work practice; Conduct local risk control; and Maintain and monitor site quality standards) and sometimes in combination with units to do with operating mobile machinery and units to do with working safely.

Certificate III-13 units are required to complete the qualification
The following patterns were found among partial completers of the Certificate III qualification in surface mining

- Many had done one to three units only ,and units to do with operating mobile machinery, and particular with crane operations and dogging and rigging
- Most of those who had done 4 units or 5 units had done units to do with leadership and supervision

Certificate IV -16 units are required to complete the qualification
There were only two students who were partial completers of this qualification
- one student had done units associated with leadership of plant operations
- the other student had done units associated with leadership in occupational health and safety and risk management.

For partial completers of PMA08 oil and gas operations qualifications
No training package skill sets were undertaken.
Compared to in mining operations there are fewer clear patterns.

Certificate II– 16 units are required for the full qualification
- Of the 35 students who had done one unit 23 (65.7%) completed UNDERTAKE MINOR MAINTENANCE
• Other students had undertaken skill sets to do with operating various types of equipment and or safety

Certificate III – 21 units are required for the full qualification
There were five partial completers of this qualification. They had done combinations of units to do with safety, in some instances combined with operations of specific machinery or processing units.

Certificate IV – 10 units are required for the full qualification
• Many partial completers of this qualification had done safety and emergency response units of competency but not in combinations that added to any of the skill sets in incidence response in the training package.
• Some had done units to do with operating a production unit or particular processes within the overall oil and gas production process but not in combinations that added to any of the skill sets in incidence response in the training package.

Diploma – 10 units are required for the full qualification
• The few non completers of this qualification had focussed on incident and emergency response units but not in combinations that added to any of the skill sets in incidence response in the training package.

Advanced Diploma students – 15 units are required for the full qualification
• The few non completers of this qualification had focussed on incident and emergency response units but not in combinations that added to any of the skill sets in incidence response in the training package.

Attachment to Appendix C

Units of competency rules for qualifications

a) RII09 Surface extraction qualifications
Cert I in Surface Extraction Operations
Successful completion of Six (6) units of competency made up of: two (2) Core units, and four (4) elective units
Core units of competency
Unit code   Unit title
RIICOM201A Communicate in the workplace
RIIOHS201A Work safely and follow OHS policies and procedures

Cert II in Surface Extraction Operations Qualification: RII20209
Successful completion of nine (9) units of competency made up of: five (5) Core units, and four (4) elective units
Core units of competency
Unit code   Unit title
RIICOM201A Communicate in the workplace
RIIOHS201A Work safely and follow OHS policies and procedures
BSBSUS201A Participate in environmentally sustainable work practices
RIIRIS201B Conduct local risk control
And Either
RIIQUA201A Maintain and monitor site quality standards
Or
RIIGOVA01A  Comply with site work processes/procedures (Coal)

**Certificate III in Surface Extraction Operations RII30112**

Completion of *thirteen (13) units* of competency made up of: five (5) Core units, and eight (8) elective units

### Core units of competency

<table>
<thead>
<tr>
<th>Unit code</th>
<th>Unit title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIIOHS201A</td>
<td>Work safely and follow OHS policies and procedures</td>
</tr>
<tr>
<td>RIEENV201A</td>
<td>Identify and assess environmental and heritage concerns</td>
</tr>
<tr>
<td>RIRIIS301B</td>
<td>Apply risk management processes</td>
</tr>
<tr>
<td>RIIICOM302A</td>
<td>Communicate workplace information</td>
</tr>
<tr>
<td>RIQUA201A</td>
<td>Maintain and monitor site quality standards</td>
</tr>
</tbody>
</table>

**Certificate IV in Surface Extraction Operations**

Successful completion of *thirteen (13) units* of competency made up of: five (5) core, and eight (8) elective units.

### Core units of competency

<table>
<thead>
<tr>
<th>Unit code</th>
<th>Unit title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSBSUS301A</td>
<td>Implement and monitor environmentally sustainable work practices</td>
</tr>
<tr>
<td>RIICOM301B</td>
<td>Communicate information</td>
</tr>
<tr>
<td>RIIIOHS402A</td>
<td>Examine and maintain mine safety</td>
</tr>
<tr>
<td>RIIOHS402A</td>
<td>Examine and maintain mine safety</td>
</tr>
</tbody>
</table>

### And either

- BSBOHS407A | Monitor a safe workplace
- OR
- RIIIOHS402A | Examine and maintain mine safety

**Diploma of Surface Operations Management RII50109**

Successful completion of *thirteen (13) units* of competency made up of two (2) core and eleven (11) electives units

### Core units of competency

<table>
<thead>
<tr>
<th>Unit code</th>
<th>Unit title</th>
</tr>
</thead>
<tbody>
<tr>
<td>RIIOHS402A</td>
<td>Examine and maintain mine safety</td>
</tr>
<tr>
<td>RIIIS501A</td>
<td>Implement and maintain management systems to control risk</td>
</tr>
</tbody>
</table>

**b) PMA08 qualifications**

**Certificate II in Process Plant Operations**

Successful completion of *sixteen (16) units* of competency: five (5) core and eleven (11) elective units.

### Core units of competency

<table>
<thead>
<tr>
<th>Unit code</th>
<th>Unit title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSAENV272B</td>
<td>Participate in environmentally sustainable work practices</td>
</tr>
<tr>
<td>MSAPMOHS110A</td>
<td>Follow emergency response procedures</td>
</tr>
<tr>
<td>MSAPMOHS200A</td>
<td>Work safely</td>
</tr>
<tr>
<td>MSAPMSUP100A</td>
<td>Apply workplace procedures</td>
</tr>
<tr>
<td>MSAPMSUP102A</td>
<td>Communicate in the workplace</td>
</tr>
</tbody>
</table>

**Certificate III in Process Plant Operations**

Successful completion of *twenty one (21) units* of competency: five (5) core and sixteen (16) elective units.

### Core units of competency

<table>
<thead>
<tr>
<th>Unit code</th>
<th>Unit title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSAENV272B</td>
<td>Participate in environmentally sustainable work practices</td>
</tr>
<tr>
<td>MSAPMOHS110A</td>
<td>Follow emergency response procedures</td>
</tr>
<tr>
<td>MSAPMOHS200A</td>
<td>Work safely</td>
</tr>
<tr>
<td>MSAPMSUP100A</td>
<td>Apply workplace procedures</td>
</tr>
<tr>
<td>MSAPMSUP102A</td>
<td>Communicate in the workplace</td>
</tr>
</tbody>
</table>

**Certificate IV in Process Plant Technology**

Successful completion of *twenty six (26) units* of competency: five (5) core plus twenty one (21) elective units.

### Core units of competency

<table>
<thead>
<tr>
<th>Unit code</th>
<th>Unit title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSAENV272B</td>
<td>Participate in environmentally sustainable work practices</td>
</tr>
<tr>
<td>MSAPMOHS110A</td>
<td>Follow emergency response procedures</td>
</tr>
<tr>
<td>MSAPMOHS200A</td>
<td>Work safely</td>
</tr>
<tr>
<td>MSAPMSUP100A</td>
<td>Apply workplace procedures</td>
</tr>
<tr>
<td>MSAPMSUP102A</td>
<td>Communicate in the workplace</td>
</tr>
</tbody>
</table>

58
<table>
<thead>
<tr>
<th>Unit code</th>
<th>Unit title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSAENV272B</td>
<td>Participate in environmentally sustainable work practices</td>
</tr>
<tr>
<td>MSAPMOHS110A</td>
<td>Follow emergency response procedures</td>
</tr>
<tr>
<td>MSAPMOHS200A</td>
<td>Work safely</td>
</tr>
<tr>
<td>MSAPMSUP100A</td>
<td>Apply workplace procedures</td>
</tr>
<tr>
<td>MSAPMSUP102A</td>
<td>Communicate in the workplace</td>
</tr>
</tbody>
</table>

**Diploma of Process Plant Technology**

Successful completion of ten (10) units of competency: four (4) core plus six (6) elective units.

**Core units of competency**

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSAENV272B</td>
<td>Participate in environmentally sustainable work practices</td>
</tr>
<tr>
<td>MSAPMOHS200A</td>
<td>Work safely</td>
</tr>
<tr>
<td>MSAPMSUP200A</td>
<td>Achieve work outcomes</td>
</tr>
<tr>
<td>MSAPMSUP210A</td>
<td>Process and record information</td>
</tr>
</tbody>
</table>

**Advanced Diploma of Process Plant Technology**

Successful completion of fifteen (15) units of competency: four (4) core units and eleven (11) elective units

**Core units of competency**

<table>
<thead>
<tr>
<th>Code</th>
<th>Unit Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSAENV272B</td>
<td>Participate in environmentally sustainable work practices</td>
</tr>
<tr>
<td>MSAPMOHS200A</td>
<td>Work safely</td>
</tr>
<tr>
<td>MSAPMSUP200A</td>
<td>Achieve work outcomes</td>
</tr>
<tr>
<td>MSAPMSUP210A</td>
<td>Process and record information</td>
</tr>
</tbody>
</table>
# Appendix D

## Skill sets in Resources and Infrastructure Industry Training Package RII09 as of 5/02/2013

<table>
<thead>
<tr>
<th>Skill set</th>
<th>Description</th>
<th>Units of competency included and pathway information</th>
</tr>
</thead>
<tbody>
<tr>
<td>RII09 Skill Set Explosion Protected Diesel Engine Systems Maintenance Release 1 21/3 2012</td>
<td>This Skill Set is for those conducting maintenance on explosion protected diesel engine systems for vehicles used in underground coal mines. This skill set is suitable for persons with a metal, mechanical, electrical or automotive trade or mechanical or electrical engineering qualification.</td>
<td>7 units from RII09 RIIDES301 Inspect, test and maintain diesel engine systems and their ancillary systems RIIDES302 Inspect, test and maintain joints on diesel engine systems RIIDES303 Inspect, test and maintain cooling systems on diesel engine systems RIIDES304 Inspect, test and maintain inlet systems on diesel engine systems RIIDES305 Inspect, test and maintain exhaust systems on diesel engine systems RIIDES306 Inspect, test and maintain safety shutdown systems on diesel engine systems RIIDES307 Test, determine the cause and rectify excessive emission levels on diesel engine systems These units provide a career development opportunity for experienced persons or tradespersons carrying out maintenance on explosion protected diesel engine systems used in underground coal mines.</td>
</tr>
<tr>
<td>RII09 Skill Set Leading Hand Release 2 21/3/2012</td>
<td>This Skill Set is for those individuals aiming to/wrorking as a leading hand in the resources and infrastructure industries.</td>
<td>5 core units: 3 BS807 and 2 RII09 units; plus either 1 from BS807 for not coal and 2 for from RII09 for coal. BSBBUS301A Implement and monitor environmentally sustainable work practices BSBWOR404B Develop work priorities BSBWOR502A Ensure team effectiveness RIIIGOV401B Apply, monitor and report on compliance systems RIIIRIS301B Apply risk management processes And EITHER the following BSB unit (all sectors except coal) BSBOHS407A Monitor a safe workplace OR for the Coal Sector both of the following units RIIOHSA Implement and monitor health and hygiene management systems RIIOHS403A Apply mine occupational health and safety management plan The units provide credit toward a number of Certificate IV qualifications in this Training Package and towards other qualifications in management</td>
</tr>
<tr>
<td>RII09 Skill Set Mine Surveying Release 1 22/6/2011</td>
<td>This skill set is for those working in mine surveying. It is essential that the individual already holds either a Diploma of Surveying qualification or a higher level surveying qualification. The skill set is designed to provide the mining specific competencies that a surveyor would need to work in a mining context</td>
<td>4 units from RII09 RIIICOM301A Communicate information RIIOHS201A Work safely and follow OHS policies and procedures RIIIRIS402A Carry out the risk management process RIISDN501A Conduct mine surveying operations These units provide credit towards the Diploma of Surface Operations Management or the Diploma of Underground Coal Mining Management.</td>
</tr>
<tr>
<td>RII09 Skill Set Rouseabout Off Shore Oil and Gas Release 1 22/6/2011</td>
<td>This skill set is for those beginning work as an off shore oil and gas roustabout. The Skill Set meets the industry requirements for induction to off shore oil and gas work.</td>
<td>5 units: 1 from BS807, 4 from RII09 BSBBUS301A Implement and monitor environmentally sustainable work practices BSBOHS201A Assist in maintaining rig safety and emergency procedures RIIOHS202A Carry out equipment and basic rig maintenance RIIOGF201A Carry out deck operations RIIOHS201A Work safely and follow OHS policies and procedures These units provide credit towards a number of qualifications from the RII09 Training Package, particularly the Certificate II in Drilling (Off Shore Oil and Gas).</td>
</tr>
<tr>
<td>RII09 Skill Set</td>
<td>Description</td>
<td>Units or Activities</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
<td>-------------------</td>
</tr>
</tbody>
</table>
| RII09 Skill Set Site Health and Safety Coordinator | This skill set is for those entering the mining industry as a safety coordinator with experience in coordinating safety requirements but requiring skills in operating in a mining environment. These units provide credit towards a number of qualifications from the RII09 Training Package, including the Certificate IV Surface Extraction Operations. | 6 units: 2 from BSB07 and 4 from RII09  
- BSBHS402B Contribute to the implementation of the OHS consultation process  
- BSBHS407A Monitor a safe workplace  
- RIIHS301A Conduct safety and health investigations  
- RIIHS403A Apply the mine occupational health and safety management plan  
- RIIHS404A Implement and monitor health and hygiene management systems  
- RIRIS402A Carry out the risk management processes  
These units provide credit towards a number of qualifications from the RII09 Training Package, including the Certificate IV Surface Extraction Operations. |
| RII09 Skill Set Supervision of Indigenous Employees | This Skill Set is designed for experienced supervisors or managers who are seeking to broaden their role in leading a work team which includes Indigenous Australians or supervisors who are already working with Indigenous employees and require recognition of their current skills. | 2 units: 1 from RII09, 1 from TAE10  
- RIILAT401A Provide leadership in the supervision of Indigenous employees  
- TAEDEL301A Provide work skill instruction  
These units of competency provide credit towards a range of supervisory qualifications in this or any other endorsed Training Package, including: BSB40807 Certificate IV in Frontline Management; TAE40110 Certificate IV in Training and Assessment |
| RII09 Skill Set Surface Coal Mine Safety | This skill set addresses the regulatory requirements for open-cut coal mining as specified in Recognised Standard 11, Training in coal mines - Coal Mining Safety and Health Act 1999, QLD. | 6 units from RII09  
- RIICOM201A Communicate in the workplace  
- RIIERR205A Apply initial response First Aid  
- RIIERR302A Respond to local emergencies and incidents  
- RIIGOV201A Comply with site work processes/procedures  
- RIIOHS201A Work safely and follow OHS policies and procedures  
- RIRIS201B Conduct local risk control  
These units provide credit towards a number of Certificate II and III qualifications in this Training Package |
| RII09 Skill Set Surface Shotfiring | This skill set is for those beginning work as a surface shotfiring regulator. Shotfiring regulations vary between states/territories. To be appointed under any statutory requirements as a shotfiring regulator, state/territory licensing requirements must be met. State/territory licensing requirements need to be confirmed by the employer, the participant and the Registered Training Organisation delivering and/or assessing the units of competency, before training commences. | 3 units from RII09  
- RIIBLA201A Support shotfiring operations  
- RIIBLA205A Store, handle and transport explosives  
- RIIBLA 301A Conduct surface shotfiring operations  
The units provide credit towards a number of qualifications from the RII09 Training Package, particularly the Certificate II in Surface Extraction Operations. |
| RII09 Skill Set Underground Coal Mine Safety | This Skill Set is for those individuals working in underground coal mines in the resources and infrastructure industries. This skill set addresses the regulatory requirements for underground coal mining as specified in Recognised Standard 11, Training in coal mines - Coal Mining Safety and Health Act 1999, QLD. | 6 units from RII09  
- RIICOM201A Communicate in the workplace  
- RIIERR203B Escape from hazardous situation unaided  
- RIIERR205A Apply initial response First Aid  
- RIIGOV201A Comply with site work processes/procedures  
- RIIOHS201A Work safely and follow OHS procedures  
- RIRIS201B Conduct local risk control  
These units provide credit toward a number of Certificate II and III qualifications in this Training Package. |
| RII09 Skill Set Underground Shotfiring – Coal | This skill set is for those beginning work as an underground shotfiring regulator in a coal-mining context. Shotfiring regulations vary between states/territories. To be appointed under any statutory requirements as a shotfiring regulator, state/territory licensing requirements must be met. | 2 units from RII09  
- RIIBLA202B Support underground shotfiring operations  
- RIIBLA302A Conduct shotfiring operations in underground coal mines  
These units provide credit towards a number of qualifications from the RII09 Training Package, particularly the Certificate III in Underground Coal Mining. |
<table>
<thead>
<tr>
<th>Skill Set</th>
<th>Description</th>
<th>Units Required</th>
<th>Units Details</th>
</tr>
</thead>
</table>
| RII09 Skill Set Underground Shotfiring – Metalliferous Mining Release 1 22/6/2011 | This skill set is for those beginning work as an underground shotfirer in a metalliferous mining context. Shotfiring regulations vary between states/territories. To be appointed under any statutory requirements as a shotfirer, state/territory licensing requirements must be met. State/territory licensing requirements need to be confirmed by the employer, the participant and the Registered Training Organisation delivering and/or assessing the units of competency, before training commences. | 4 units from RII09 | RIIBLA205A Store, handle and transport explosives  
RIIIL303A Conduct underground development shotfiring  
RIIIL304A Conduct underground production shotfiring  
RIBLA305A Conduct secondary shotfiring  
These units provide credit towards a number of qualifications from the RII09 Training Package, particularly the Certificate III in Underground Metalliferous Mining. |
| RII09 Skill Set Work Zone Traffic Control – Auditor Inspector Release 1 21/3/2012 | This Skill Set is for those individuals working as an auditor and / or inspector of a traffic control guidance plan. Note: The unit of competency must be assessed in the context of the work zone traffic control environment. | 4 units from RII09 | RIIICWD503A Prepare work zone traffic management plan  
RI高铁V401B Apply, monitor and report on compliance systems  
RIIHS201A Work safely and follow OHS policies and procedures  
RIII301B Apply risk management processes  
These units may provide credit toward a number of Certificate II, III, IV and Diploma qualifications in this Training Package and towards other qualifications in management. |
| RII09 Skill Set Work Zone Traffic Control – Implement Traffic Control Guidance Plan Release 1 21/3/2012 | This Skill Set is for those individuals working as a work zone traffic control guidance plan implementer in the resources and infrastructure industries. Note: The unit of competency must be assessed in the context of the work zone traffic control environment. | 3 units from RII09 | RIIICOM201A Communicate in the workplace  
RIIIRH201A Work safely and follow OHS policies and procedures  
RIIIRH302A Implement traffic management plan  
These units may provide credit toward a number of Certificate II or III qualifications in this Training Package. |
| RII09 Skill Set Work Zone Traffic Control – Road Labourer Release 1 21/3/2012 | This Skill Set is for those individuals working as a labourer in a work zone traffic control environment in the resources and infrastructure industries. Note: The unit of competency must be assessed in the context of the work zone traffic control environment. | 2 units from RII09 | RIIICOM201A Communicate in the workplace  
RIIIOHS201A Work safely and follow OHS policies and procedures  
The units provide credit toward a number of Certificate II qualifications in this Training Package. |
| RII09 Skill Set Work Zone Traffic Control – Supervisor Release 1 21/3/2012 | This Skill Set is for those individuals working as a work zone traffic control supervisor in the resources and infrastructure industries | 5 units from RII09 | RIIIBFD402A Supervise on-site operations  
RIIIGOV401B Apply, monitor and report on compliance systems  
RIIIOHS201A Work safely and follow OHS procedures  
RIIIRH302A Implement traffic management plan  
RIII301B Apply risk management processes  
The units provide credit toward a number of Certificate IV qualifications in this Training Package. |
| RII09 Skill Set Work Zone Traffic Control – Traffic Controller Release 1 21/3/2012 | This Skill Set is for those individuals working as a work zone traffic controller in the resources and infrastructure industries. | 3 units from RII09 | RIIICOM201A Communicate in the workplace  
RIIIRH201A Work safely and follow OHS policies and procedures  
RIIIRH302A Implement traffic management plan  
The units provide credit toward a number of Certificate II or III qualifications in this Training Package. |
| RII09 Skill Set Work Zone Traffic Control Guidance Plan – Developer | This Skill Set is for those individuals working as a work zone traffic control guidance plan developer in the resources and infrastructure industries. This may include | 4 units from RII09 | RIIICWD503A Prepare work zone traffic management plan  
RIIICOM201A Communicate in the workplace  
RIIIRH201A Work safely and follow OHS policies and procedures  
The units may provide credit toward a number of Certificate II, III, IV and Diploma qualifications in this Training Package and towards other qualifications in management. |
<table>
<thead>
<tr>
<th>Skill sets form other training packages of relevance to mining operations- EXAMPLES ONLY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AUR12 Mobile Plant Skill Set for Light Vehicle Technicians</strong></td>
</tr>
<tr>
<td>Description: N/A</td>
</tr>
<tr>
<td>Target group: The skill set targets automotive Light Vehicle Technicians who require the</td>
</tr>
<tr>
<td>skills and knowledge to diagnose and repair Mobile Plant Equipment in the Construction</td>
</tr>
<tr>
<td>and Mining industries.</td>
</tr>
<tr>
<td>This is a skill set covering the fundamental requirements for Light Vehicle technicians</td>
</tr>
<tr>
<td>to diagnose and repair mobile plant equipment in the Construction and Mining industries.</td>
</tr>
<tr>
<td>Licensing, legislative, regulatory or certification requirements may apply to this</td>
</tr>
<tr>
<td>skill set. Readers should ensure that they have also read the part of the Training</td>
</tr>
<tr>
<td>Package that outlines licensing and regulatory requirements.</td>
</tr>
<tr>
<td><strong>AUR12 Heavy Commercial Vehicle Skill Set for Light Vehicle Technicians</strong></td>
</tr>
<tr>
<td>Could apply to some mining situations</td>
</tr>
<tr>
<td>Description: N/A</td>
</tr>
<tr>
<td>Target group: The skill set targets and (sic) automotive Light Vehicle Technicians who</td>
</tr>
<tr>
<td>require the skills and knowledge to diagnose and repair heavy commercial vehicles in the</td>
</tr>
<tr>
<td>Road Transport industry. This is a skill set covering the fundamental requirements for</td>
</tr>
<tr>
<td>Light Vehicle technicians to diagnose and repair heavy commercial vehicles in the Road</td>
</tr>
<tr>
<td>Transport industry.</td>
</tr>
<tr>
<td>Licensing, legislative, regulatory or certification requirements may apply to this</td>
</tr>
<tr>
<td>skill set. Readers should ensure that they have also read the part of the Training</td>
</tr>
<tr>
<td>Package that outlines licensing and regulatory requirements.</td>
</tr>
</tbody>
</table>

**Skills Sets in Training and Assessment Training Package (TAE10) Release 2 as at March 2013**

<table>
<thead>
<tr>
<th>Skill set</th>
<th>Description</th>
<th>Units of competency included and pathway information</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAE10 Assessor Skill Set</td>
<td>Licensing etc N/A</td>
<td>3 units from TAE10 TAEASS401B Plan assessment activities and processes TAEASS402B Assess competence TAEASS403B Participate in assessment validation</td>
</tr>
<tr>
<td></td>
<td>Target Group: Individuals wishing to obtain the assessment competencies to assess according to AQTF requirements.</td>
<td>The TAEASS units provide credit towards TAE40110 Certificate IV in Training and Assessment.</td>
</tr>
<tr>
<td>TAE10 Enterprise and industry engagement Skill Set</td>
<td>Licensing etc N/A</td>
<td>3 units from TAE10 TAEASS504A Develop and implement recognition strategies TAEICR501A Work in partnership with industry, enterprises and community groups TAEATAS501B Undertake organisational training needs analysis</td>
</tr>
<tr>
<td></td>
<td>Target group: Individuals wishing to develop and implement RPL strategies, develop partnership arrangements with industry and enterprises and conduct training needs analyses.</td>
<td>These units provide credit towards TAE50111 Diploma of Vocational Education.</td>
</tr>
<tr>
<td>Skill Set</td>
<td>Target Group</td>
<td>Licensing</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Enterprise trainer and assessor Skill Set</td>
<td>Enterprise trainers and assessors working in an enterprise registered training organisation (RTO) or in an enterprise that works together with an RTO in an auspicing arrangement. These people deliver and assess nationally endorsed units or qualifications.</td>
<td>N/A</td>
</tr>
<tr>
<td>Sustainable practice Skill Set</td>
<td>All trainers and assessors. In the first instance those who have a specific role in delivering green skills or who train and assess in sectors where green skills development is identified as a priority.</td>
<td>N/A</td>
</tr>
<tr>
<td>Workplace supervisor</td>
<td>Supervisors and managers involved in developing the skills of their team. In particular these competencies are identified as essential skills for those engaged in supervising apprentices.</td>
<td>N/A</td>
</tr>
</tbody>
</table>
## Appendix E

### Skill sets in PMA08 Chemical, Hydrocarbons and Refining Training

<table>
<thead>
<tr>
<th>Skill set</th>
<th>Description</th>
<th>Units of competency included and pathway information</th>
</tr>
</thead>
</table>
| **PMA08 Confined space work team** | Persons entering a confined space must do so in accordance with the relevant Australian Standard. Where members of a work team are expected to undertake multiple roles in regard to the confined space entry, then they must be competent in all those roles. This skill set is targeted at such a work team. This training would occur before starting work requiring entry to a confined space. This may occur either as part of safety training to work on the site or more commonly as separate training after initial safety induction. | 4 units from MSA07 Manufacturing Training Package  
MSAPMOHS200A Work safely  
MSAPMPER200C Work in accordance with an issued permit  
MSAPMPER202A Observe permit work  
MSAPMPER205C Enter confined space  
These units can provide credit towards Certificates II and III in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
| **PMA08 Contractor induction**   | Much non-operational work (in particular maintenance and shut-downs) is conducted by contractors who are not permitted to work on site until they have been assessed as meeting minimum OHS requirements. This Skills Set reflects those minimum industry requirements before commencing work on site. However, there may be other requirements before a contractor can start work on some sites. | 2 units from MSA07  
MSAPMOHS200A Work safely  
MSAPMPER200C Work in accordance with an issued permit  
These competencies can provide credit towards PMA20108 Certificate II in Process Plant Operations. |
| **PMA08 Emergency centre team**  | Significant incidents will require a support team operating from the emergency centre to assist with the management of an incident. These may be operational or support staff who require specific competencies to undertake this work | 5 units from PMA08, plus an optional or elective from PMA08  
PMAOMIR320B Manage incident response information  
PMAOMIR317B Facilitate search and rescue operations  
PMAOMIR449B Monitor legal compliance obligations during incidents  
PMAOMIR523B Manage corporate media requirements in a crisis  
PMAOMIR575B Coordinate welfare support activities in response to an incident  
In some situations it may be appropriate to add:  
PMAOMIR424B Develop community awareness networks.  
These units of competency can provide credit towards Certificates III and IV and the Diploma in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
| **PMA08 Hot work observer**      | Persons undertaking ‘hot work’ frequently require a ‘hot work observer’ (or ‘fire watch’). This training would occur before starting work of this nature. Training may occur either as part of safety training to work on the site or more commonly as separate training after initial safety induction | 4 units from MSA07  
MSAPMOHS200A Work safely  
MSAPMPER200C Work in accordance with an issued permit  
MSAPMPER202A Observe permit work  
MSAPMOHS212A Undertake first response to fire incidents  
These units of competency can provide credit towards Certificates II and III in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
| **PMA08 Incident response commander** | An incident commander takes charge of the organisation’s response to an incident and may have several incident response teams under their direction. This role requires specific non-operational competencies. | 5 units from PMA08  
PMAOHS310B Investigate incidents  
PMAOMIR418B Coordinate incident response  
PMAOMIR444B Develop incident containment tactics  
PMAOMIR320B Manage incident response information  
PMAOHS511A Manage emergency incidents  
These units of competency can provide credit towards Certificates III and IV in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
| **PMA08 Incident response team**  | Incident response teams require a team leader. Typically, these are senior operational personnel with additional competencies | 4 units from PMA08  
PMAOHS311B Lead emergency teams  
PMAOMIR317B Facilitate search and rescue operations |
| Leader covering incident response. | PMAOMIR320B Manage incident response information  
PMAOMIR346B Assess and secure an incident site  
These units of competency can provide credit towards Certificates III and IV in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
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| PMA08 Incident response team member  
Organisations in this industry often require employees to undertake non-operational work as members of an internal incident response team. Specific incident response competencies are needed to meet these requirements. | 4 units from MSA07, 1 unit from PMA08  
MSAPMOHS205A Control minor incidents  
MSAPMOHS210B Undertake first response to non-fire incidents  
MSAPMOHS212A Undertake first response to fire incidents  
MSAPMOHS216A Operate breathing apparatus  
PMAOHS213A Undertake fire control and emergency rescue  
PMAOMIR301B Undertake initial rescue  
These units of competency can provide credit towards Certificates II and III in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
| PMA08 Offshore crane drive  
Personnel working in an offshore environment require specific competencies before they can independently operate a crane. | 1 unit from MSA07, 2 units from PMA08  
MSAPSUP205A Transfer loads  
MSAPSUP305A Operate offshore cranes  
PMAUP237B Undertake crane, dogging and load transfer operations  
These units of competency can provide credit towards Certificates II and III in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
| PMA08 Offshore incident response team member  
Offshore operations require an incident response team to have additional capabilities to an onshore environment. Team members are typically operational personnel with specific incident response competencies. | 4 units from MSA07, 3 from PMA08  
MSAPMOHS210B Undertake first response to non-fire incidents  
MSAPMOHS212A Undertake first response to fire incidents  
MSAPMOHS216A Operate breathing apparatus  
PMAOHS213B Undertake fire control and emergency rescue  
PMAOMIR301B Undertake initial rescue  
PMAOMIR302B Respond to a helideck incident  
These units of competency can provide credit towards Certificates II and III in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
| PMA08 Offshore operator safety induction (CSTP plus TBOSIET)  
Persons working in an offshore environment (such as oil/gas platforms, FSO/FPSO) require additional induction to those working in an onshore environment (in particular HUET and related competencies). This would be initial training before being deployed to an offshore site. | 3 units from MSA07, 2 units from PMA08  
MSAPMOHS110A Follow emergency response procedures  
MSAPMOHS200A Work safely  
MSAPMOHS205A Control minor incidents  
PMAOHS214A Undertake helicopter safety and escape  
PMAOHS215A Apply offshore facility abandonment and sea survival procedures  
These units of competency can provide credit towards Certificates II and III in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
| PMA08 Pipeline transmission  
In the hydrocarbons industry, personnel operating pipelines that move hydrocarbons vast distances require a specific set of operational skills that must be achieved before independently operating a pipeline | 4 units from PMA08  
PMAOPS221B Operate and monitor prime movers  
PMAOPS222B Operate and monitor pumping systems and equipment  
PMAOPS223B Operate and monitor valve systems  
PMAOPS230B Monitor, operate and maintain pipeline stations and equipment  
These units of competency can provide credit towards Certificates II and III in PMA08 Chemical, Hydrocarbons & Refining Training Package. |
| PMA08 Workplace assessor  
Many senior operators in the chemical, hydrocarbons and refining industries are required as part of their role to undertake or assist with workplace assessment of PMA08 competencies. | 3 units from TAE10  
TAEASS401A Plan assessment activities and processes  
TAEASS402A Assess competence  
TAEASS403A Participate in assessment validation  
These imported units of competency can provide credit towards Certificates III and IV in PMA08 Chemical, Hydrocarbons & Release 3 Refining Training Package. |
### Other skill sets of relevance to oil and gas operation: Examples only

| Common safety training; a new mandatory skill set | This is a new mandatory skill set being rolled out from 2010 and required by all workers to enter and remain working in the oil and gas industry. Behaviours are required to be recorded in six pre-determined areas: the safety case and safety management system; work under an issued permit; identify hazards and risks; contribute to safe working practice; control minor incidences; and respond to an emergency | Based on PMA units MSAPMPER200B Work in accordance with an issued permit MSAPMOHS200B Work safely MSAPMOHS205A Control minor incidents MSAPMOHS110A Follow emergency response procedures |