Attachment H.3

SAPN H.3_PUBLIC _Skills Shortages in SA Power Networks

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SKILLS SHORTAGES IN SA POWER NETWORKS

Contents

1. Introduction

1. This document has been prepared by SA Power Networks' Human Relations (HR) group, principally to address assertions made by the AER in its Preliminary Determination for SA Power Networks for the 2015-20 regulatory control period (RCP) in relation to:

   a) skills shortages; and

   b) substitutability of resources.

2. This relates to the conclusion by the AER in its Preliminary Determination that '*[w]e do not consider the benchmark EA wage increases for private electricity service providers represents the current market conditions for electricity workers.*'[1] This refers to SA Power Networks' use of Enterprise Agreement (EA) outcomes to forecast its labour price growth for the 2015-20 RCP.

3. In reaching this conclusion, the AER states that *'[t]here is no evidence to suggest that there is a supply and demand imbalance in electricity labour*.'[2]

4. SA Power Networks challenges the validity of the above assertion and refers to work it has undertaken in recent times to highlight that we have experienced, and continue to experience, skill shortages in a number of areas. This is discussed in section 3 (Skill shortages in SA Power Networks) of this report and includes support from independent studies and government agencies.

5. The AER, in its Preliminary Determination, also refers to comments from the Consumer Challenge Panel (CCP) that *'[The CCP] noted that there was minimal wage pressure in the current Australian economy due to the end of the mining boom and skilled labour is more readily available.'*[3] Further, the AER in reference to its consultant for labour price growth, Deloitte Access Economics (DAE), states that '*DAE also notes that the skills shortages which underpinned strong wage growth in utilities in the past decade have diminished*.'[4]

6. In its supporting report to the AER, DAE maintains that '*The competition for utilities sector workers from the resources sector has dissipated and will decrease further over the outlook period…. Australia's resources sector is following global cost reductions and the subsequent reduced competition for workers will slow wage gains in the utilities sector*.'[5]

7. In the above comment, DAE appear to be referring to the 'utilities' sector as the Electricity, gas, water and waste services (EGWWS) industry sector defined in the ANZIC standard industrial classifications, and for which DAE has forecast labour price growth, whilst its reference to the 'resources' sector appears to be aimed at the Mining industry sector.

8. SA Power Networks maintains that the skills in the mining industry are not readily substitutable for those required by the electricity distribution sector and potentially those skills for which we have experienced resource shortages, and therefore contends that the conclusions made by the AER and its advisors are without substance. This is discussed in section 4 (Mining as a source of employees) of this report.

[1] AER, *Preliminary Decision: SA Power Networks determination 2015-16 to 2019-20*, April 2015, p 7-52.
[2] AER, *Preliminary Decision: SA Power Networks determination 2015-16 to 2019-20*, April 2015, p 7-54.
[3] AER, *Preliminary Decision: SA Power Networks determination 2015-16 to 2019-20*, April 2015, p 7-53.
[4] AER, *Preliminary Decision: SA Power Networks determination 2015-16 to 2019-20*, April 2015, p 7-53.
[5] DAE, *Forecast growth in labour costs in NEM regions of Australia*, 23 February 2015, p 3.

9. In section 5 of this report, SA Power Networks provides our conclusions from the analysis undertaken and independent supporting documents. A full list of external references and links to the relevant reports are included in Appendix A.

2. Background

10. In 2012, SA Power Networks undertook a Skills Shortage Project to identify the occupations where it experiences shortages and recruitment difficulties. This project was initiated by and reported to the Executive Management Group (EMG) of SA Power Networks.

11. As part of this project, a series of interviews were conducted during June and July 2012 between HR and nominated EMG members and senior leaders in order to:
    - identify which occupations and skills in SA Power Networks (then ETSA Utilities) experience shortages;
    - clarify whether the shortages manifested in difficulties in attracting people or retaining them (or both); and
    - determine what steps can be taken to reduce the effects of skills shortages now and in the future.

12. To support this internal work, the South Australian Centre for Economic Studies (SACES) was commissioned to provide a summary of the external environment relating to occupations where shortages were identified. This report is reproduced in Appendix B to this document.

13. Although the project was conducted almost three years ago, the main points of the Skills Shortage Project remain valid today.

3. Skills shortages in SA Power Networks

14. In SA Power Networks, shortages and difficulties in recruiting were found in the following occupations:
    - substation engineers;
    - protection engineers;
    - secondary designers;
    - substation maintenance planners;
    - technical officers;
    - electrical engineers (with suitable experience);
    - project managers (with expertise in emerging technologies such as smart grid);
    - telecoms engineers;
    - diesel mechanics; and
    - trade skilled workers (TSWs – both electrical and powerline, particularly with specialist knowledge such as fault identification and corrective skills, telecoms, commissioning).

15. Some of these occupations are recognised externally as in short supply, such as Electrical Linesworker (ie electrical and powerline trade skilled workers, ANZSCO 3422-11 occupation), which has a current labour market rating of 'regional shortage'. Note that caution needs to exercised with 'regional' and 'metropolitan' labels, as definitions of these differ depending on the context. For example, when skills shortages are identified for migration purposes, all of South Australia is deemed 'regional', but in other contexts, Adelaide is often regarded as 'metropolitan'.

16. Based on survey findings and National Centre for Vocational Education Research (NCVER) data, the latest labour market research[6] states that in relation to Electrical Linesworkers:
    - employers in regional areas experience considerable difficulty attracting suitably qualified electrical linesworkers;
    - regional employers filled 53 percent of their vacancies and attracted 1.4 suitable applicants per vacancy;
    - around three quarters of unfilled vacancies were in regional locations. While these employers attracted applicants, few possessed the pre-requisites for the job;
    - almost 60 percent of qualified applicants in 2014 were considered to be unsuitable;
    - the main reasons for applicant unsuitability was lack of mandatory requirements for the job, such as qualifications (mainly a Certificate III in Electrical Supply Industry), post trade certificates (such as Glove and Barrier Live Lines Certification), and state licences; and
    - apprenticeship and traineeship commencements for the Electrical Distribution Trades Workers fell by 37 percent from the series peak in 2008-09 to number around 440 in 2013-14.

17. South Australia has a limited resource pool for many of these occupations and skills, and for some of them SA Power Networks itself is the major resource pool. This makes recruitment for these positions a considerable challenge.

18. South Australia has a small population, low population growth, and a net deficit in state migration.[7] In short, skilled workers are far more likely to leave South Australia to work in other mainland states than they are to come to South Australia from those states. This is highlighted in Table 1 below.

Table 1: Estimated residential population, 30 June 2013, and growth, year to 30 June 2013[8]

Mainland State	Share of Australian Population	Share of Population Growth
New South Wales	32.0%	25.1%
Victoria	24.8%	26.1%
Queensland	20.1%	22.1%
Western Australia	10.9%	19.9%
South Australia	7.2%	3.6%

[6] Australian Government, Department of Employment, *Labour Market Rating, Electrical Linesworker*, November 2014
[7] ABS, Catalogue No. 3101, *Australian Demographic Statistics*, September 2014.
[8] Queensland Government Statistician's Office, *Population growth highlights and trends, Queensland 2014*, p 3.

SKILLS SHORTAGES IN SA POWER NETWORKS

19. It can be difficult to validate externally which occupations and skills are in short supply at any given time for a number of reasons:
    - the federal Department of Employment (DoE) collates data on shortages for certain occupations but not all (in total, it collects data on 100 separate occupations, and certain clusters);
    - some occupations have data available at the national level and others at state level. Data is sometimes further divided into metropolitan and regional levels. These collection categories are not used consistently for all occupations;
    - some roles are re-assessed more frequently than others; and
    - the main source of DoE data on skills shortages comes from its 'Survey of Employers who have Recently Advertised' (SERA) database, which has a wide variation of experiences. As the DoE cautions: '*The Department measures whether vacancies are filled six weeks after advertising for professions and technicians and four weeks for other occupations. The results presented are averages across a large number of employer contacts and it is important to note that employers' recruitment experiences can vary widely, even within an individual occupation in similar locations. Employers' requirements can be highly specific and candidates for positions may be regarded as unsuitable even if they hold relevant, formal qualifications. In addition, advertised vacancies can remain unfilled despite attracting suitable applicants as applicants may not take up offers of employment for a variety of reasons.*'[9]

20. Even where an occupation is not listed as currently in short supply, there can be considerable difficulties in finding applicants with the right skills or experience, or in recruiting to a specific area. For example, the 'engineering professionals and associates' occupational cluster is currently not regarded as in short supply in South Australia, but the DoE labour market rating report[10] for this occupation states:
    - a large proportion of applicants were deemed unsuitable and the most common reasons across all occupations were that they lacked appropriate skills, qualifications, knowledge or specific industry experience;
    - in addition, some employers sought applicants with high levels of technical expertise, project management, advisory and consultation skills. There were few applicants who could meet these criteria; and
    - for some positions interstate applicants deemed SA remuneration levels to be too low.

21. Where there are shortages in one occupation, it seems reasonable to assume that skills will be readily transferable from other, similar, occupations. However, with many occupations this is not the case. The SACES report that was commissioned to complement the SA Power Networks Skills Shortage Project points out that some occupations are regarded as 'specialist occupations', which are '*occupations where there is a strong connection between a qualification, associated skills and job requirements*'.[11]

[9] Australian Government, Department of Employment, *Skill Shortages Australia*, 2014, p 18.
[10] Australian Government, Department of Employment, *Engineering Professionals and Associates, South Australia*, June 2014.
[11] South Australia Centre for Economic Studies (SACES), *Skill Shortages in Utilities Sector*, August 2012, p 5.

22. One criterion for a specialist occupation is that 'the skills are highly specialised and require extended learning and preparation over several years'.[12] The strong link between qualification and the job itself, and the amount of time required to build up the necessary expertise to carry out the job, means it is far harder to move into one of these occupations from other occupations than is normally the case.

23. Slightly less than a quarter of ABS recognised occupations are regarded as specialist[13], but in SA Power Networks approximately half of employees fall into a specialist occupation category. (Note: the term 'specialist occupation' has been replaced by the Training and Skills Commission since the SACES report was produced, and now goes by the term 'Qualification-Linked Occupation' (QLO)).

4. Mining as a source of employees

24. In terms of employment numbers, mining is at the smaller end of the 19 ANZSIC industries, employing approximately two percent of Australia's workforce (indirect employment numbers, because of other support industries, are somewhat higher).[14] More than 86% of mining-related employment occurs in the 'mining states' of Western Australia, Queensland and New South Wales.[15] Mining's large economic output, rather than its employment numbers, means that job losses and gains are well publicised.

25. While more than a third (35.1%) of workers in the mining industry hold a Certificate 3 or 4 qualification, a larger percentage (36.9%) have a formal educational attainment level of Year 12 or below.[16] This latter group is particularly well represented in sectors such as Coal Mining, Metal Ore Mining and Exploration, and these sectors are the three forecast to see the biggest job losses to the end of 2019.[17] This means that workers least qualified for a career move to SA Power Networks are the most likely to face job losses in the mining industry.

26. Approximately 29 percent of workers in the mining industry are employed in the occupations of 'drillers, miners and shot firers', and a further 22 percent employed as 'metal fitters and machinists' and 'truck drivers'. Less than five percent of mining workers are employed as electricians, and fewer still in each of the various engineering specialties.[18] Therefore, while on the face of it there are similarities between utilities and the mining industry - leading to a supply of workers with potentially transferable skills - when viewed by occupation the number of such workers is relatively small.

27. Employment in mining has been declining for some time; it fell by 13,300 in WA and by 7,300 in NSW in the two years from Sept 2012 to Aug 2014.[19] There has been no increase in applications for SA Power Networks' traditionally 'hard to fill' occupations from this reduction in mining numbers, and no increase in job applications for any vacancies in SA Power Networks from ex-mining employees in these states during or since this period.

[12] South Australian Government, Training and Skills Commission, *Skills for Future Jobs*, December 2014, p 19.
[13] South Australian Government, Training and Skills Commission, *Skills for Future Jobs*, December 2014, p 19.
[14] Australian Government, Department of Employment, *Industry Employment Projections to November 2019, Industry Projections* (xlsx).
[15] ABS, Catalogue No. 6291.0.55.003*, Labour Force, Australia, Detailed, Quarterly, May 2015, Table 05. Employed persons by State and Industry*.
[16] Australian Government, Department of Employment, *Industry Outlook – Mining*, August 2014, p 7.
[17] Australian Government, Department of Employment, *Industry Employment Projections to November 2019, Industry Projections* (xlsx).
[18] Australian Government, Department of Employment, *Industry Outlook – Mining*, August 2014, p 8.
[19] Australian Government, Department of Employment, *Industry Outlook – Mining*, August 2014, p 3.

28. Job losses in the mining industry have coincided with increases in some other industries, most notably construction, which has increased nationally and particularly in the mining states. The construction industry is forecast to grow by 13 percent (a gain of 137,000 workers) by the end of 2019 (from Nov 2014 base figures), compared to the mining industry's contraction of just under 18 percent (a loss of 40,000 workers) over the same period.[20] Given that many of the skills in the mining industry are equally as transferable to construction as they are to other industries, this provides the potential for retrenched workers to find other employment locally, rather than seeking work with SA Power Networks in South Australia.

5. Conclusion

29. We have shown in section 3 (Skill shortages in SA Power Networks) that SA Power Networks has experienced, and continues to experience, skill shortages in a number of areas. There are a number of reasons for this, for example:
    - South Australia has a limited resource pool for many of the occupations and skills in short supply;
    - a large proportion of applicants are unsuitable as they lack appropriate skills, qualifications, knowledge or specific industry experience;
    - few applicants meet the desired criteria required;
    - interstate applicants deem SA remuneration levels to be too low for some positions; and
    - a high number of SA Power Networks' employees fall into a specialist occupation category, requiring specialised skills and extensive training.

30. We conclude from the above that supply and demand imbalance does exist at SA Power Networks and is a contributor to our negotiated EA outcomes. We contend therefore that the AER's rejection of the use of EA for forecasting labour price growth on this basis is unfounded.

31. To address the assertions made by the AER's advisors (DAE and the CCP) that resources from the mining ('resources') sector are likely to address shortages in the EGWWS ('utilities') sector, in section 4 (Mining as a source of employees) we have used analysis and government projections to show that:
    - the vast majority of mining-related employment occurs in the 'mining states' of Western Australia, Queensland and New South Wales;
    - workers least qualified for a career move to SA Power Networks are the most likely to face job losses in the mining industry;
    - the supply of workers with potentially transferable skills when viewed by occupation is relatively small;
    - employment in mining has been declining for some time; there has been no increase in applications for SA Power Networks' traditionally 'hard to fill' occupations from this reduction and no increase in job applications for any vacancies from ex-mining employees in the mining states during or since this period; and
    - job increases in the construction industry are forecast to increase by 13% (137,000) by 2019; as many of the skills in the mining industry are equally as transferable to construction, there is high potential for retrenched workers to find other employment locally.

[20] Australian Government, Department of Employment, *Industry Employment Projections to November 2019, Industry Projections* (xlsx).

SKILLS SHORTAGES IN SA POWER NETWORKS

32. SA Power Networks concludes that skills in the mining industry are not readily substitutable for skills in the electricity distribution sector as inferred in the AER's Preliminary Determination. SA Power Networks therefore refutes the AER's assertion of that there is no evidence of supply and demand imbalances in electricity labour, and consequently, the AER's contention that EA wage increases do not represent market conditions for electricity workers.

Appendix A – External References

South Australia Centre for Economic Studies (SACES) Skill Shortages in Utilities Sector, August 2012
Refer Appendix B

Australian Government, Department of Employment, Labour Market Rating, Electrical Linesworker, November 2014
http://docs.employment.gov.au/system/files/doc/other/342211electricallinesworkeraus.pdf

ABS, 3101.0 Australian Demographic Statistics, September 2014.
http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Sep%202014?OpenDocument

Queensland Government Statistician's Office, Population growth highlights and trends, Queensland 2014
http://www.qgso.qld.gov.au/products/reports/pop-growth-highlights-trends-qld/pop-growth-highlights-trends-qld-2014.pdf

Australian Government, Department of Employment, Skill Shortages Australia, 2014
http://docs.employment.gov.au/system/files/doc/other/skillshortagesaustralia_0.pdf

Australian Government, Department of Employment, Engineering Professionals and Associates, South Australia, June 2014
http://docs.employment.gov.au/system/files/doc/other/engineeringprofandassociatessa.pdf

South Australian Government, Training and Skills Commission, Skills for Future Jobs, December 2014
http://www.tasc.sa.gov.au/DesktopModules/Bring2mind/DMX/Download.aspx?Command=Core_Download&EntryId=567&PortalId=5&TabId=1047

Australian Government, Department of Employment, Industry Outlook – Mining, August 2014
http://lmip.gov.au/default.aspx?LMIP/Publications/IndustryReports (*Mining*)

ABS, 6291.0.55.003, Labour Force, Australia, Detailed, Quarterly, May 2015
http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/6291.0.55.003May%202015?OpenDocument (*Table 05. Employed persons by State and Industry*)

Australian Government, Department of Employment, Industry Employment Projections to November 2019
http://lmip.gov.au/default.aspx?LMIP/EmploymentProjections (*Industry projections – five years to November 2019*)

Appendix B – SACES Report - Skill Shortages in the Electricity Utilities Sector: A Brief Overview

Report commissioned by ETSA Utilities

Report prepared by The SA Centre for Economic Studies

August 2012

SOUTH AUSTRALIAN
CENTRE FOR ECONOMIC STUDIES
ADELAIDE & FLINDERS UNIVERSITIES

Skill Shortages in the Electricity Utilities Sector: A Brief Overview

Report commissioned by

ETSA Utilities

Report prepared by

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Contents

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1. Introduction

ETSA Utilities is in the process of identifying current and future potential skills shortages and recruitment difficulties in respect of its workforce. An ageing population, existing tight labour market and expectations of robust growth for sectors such as mining suggests that addressing certain skill requirements may become more difficult in the medium term. In light of this background, the Centre has been commissioned to provide a brief analysis of trends in demand and supply for occupations of relevance to the electricity utilities sector, and insight into the implications associated with the expansion of the mining sector.

2. Skill Needs and Existing Labour Force Profile

2.1 ETSA Skills Needs and Challenges

ETSA provided a list of current and likely future skill shortages based on internal discussions with managers. The skill shortages were framed in terms of particular occupations, with further information provided in some instances in terms of whether experienced personnel and/or particular areas of expertise were sought.

For analysis purposes, the occupations identified by ETSA were matched by the Centre with the corresponding occupational categories specified in the Australian Bureau of Statistics' Australian and New Zealand Standard Classification of Occupations (ANZSCO) – refer Table 2.1.

Two broad areas of skill shortages were identified in terms of electricity network related roles and information technology (IT) roles. Potential skill shortages were identified for a variety of occupations within these two areas of operation – see Table 2.1. Beyond electricity network and IT roles, additional occupational challenges were identified for category managers (i.e. in respect of procurement) and diesel mechanics.

ETSA's skills requirements go beyond raw qualifications. For certain occupations the company seeks workers with experience or specialist knowledge. For example, for a range of construction related roles – e.g. construction project managers, project estimators, construction engineers, designers and team leaders – there is a demand for workers with experience in commercial-scale projects, infrastructure, competitive environments and willingness to work under fly-in fly-out arrangements. With respect to electrical roles such as electrical engineers and powerline workers, there is a desire for workers with experience in emerging technologies such as smart meters and smart grid technology. Meanwhile, for information and communications technology roles, there is a need for workers with experience and skills in respect of specific applications and technologies (e.g. OMS, Click, CAD, SAP, SCADA/DMS support etc).

Table 2.1: Skill Shortages Identified by ETSA

Occupation	ANZSCO Classifications (SACES allocation) 4 digit level
Electricity network related roles	
Electrical engineer	2333 Electrical Engineers
Substation maintenance planners	3129 Other Building and Engineering Technicians 3123 Electrical Engineering Draftspersons and Technicians
Technical officers	3123 Electrical Engineering Draftspersons and Technicians
Construction project managers	1331 Construction Managers
Project estimators	3121 Architectural, Building and Surveying Technicians 2332 Civil Engineering Professionals
Construction engineers	1332 Engineering Managers 2332 Civil Engineering Professionals
Construction designers	2321 Architects and Landscape Architects 2332 Civil Engineering Professionals
Construction team leaders	1331 Construction Managers 3121 Architectural, Building and Surveying Technicians
Plant and electrical commissioners	3992 Chemical, Gas, Petroleum and Power Generation Plant Operators
Powerline workers	3422 Electrical Distribution Trades Workers
Information technology	
Support analysts	2632 ICT Support and Test Engineers
Application engineers	2613 Software and Applications Programmers
Systems architects	2613 Software and Applications Programmers 2632 ICT Support and Test Engineers
SAP knowledge, OMS knowledge	2621 Database and Systems Administrators, and ICT Security Specialists 2631 Computer Network Professionals
SCADA/DMS support	2611 ICT Business and Systems Analysts
Business Analysts	2611 ICT Business and Systems Analysts
Procurement related roles	
Category mangers	5911 Purchasing and Supply Logistics Clerks
Fleet workshop-related roles	
Diesel mechanics	3212 Motor Mechanics

2.2 The Electricity Generation, Transmission and Distribution Workforce

In addition to ETSA's internal information, another method for identifying potential areas of current and future skill shortages is to develop a profile of the electricity utilities labour force to identify major occupations employed by the sector and occupations that are relatively specific to the sector. The Census of Population and Housing provides detailed information on labour force characteristics for specific industries. Unfortunately 2011 Census data by occupation and industry of employment is not currently available (it is expected to be released later this year in October/November), so we must rely on 2006 Census data.

Table 2.2 presents 2006 Census data showing the 35 largest occupations in terms of employment for the electricity generation, transmission and distribution sector for Australia as a whole.[1] Occupations that were identified by ETSA as being challenging to address are indicated by an asterix.

The most significant occupations for the electricity utilities sector in 2006 related to electrical trades, with the largest occupations in terms of number of persons employed being electrical linesworkers (11 per cent of all persons employed in the sector), general electricians (10 per cent), electrical engineers (5.6 per cent) and power generation plant operators (4.8 per cent). All of these occupations with the exception of general electricians were identified by ETSA as being potential skill shortages. Of these occupations, the electricity utilities sector employed a relatively large proportion of all electrical linesworkers (61 per cent) and power generation plant operations (67 per cent) in the economy. Notwithstanding the potential for individuals to switch occupations, such high concentrations suggest that the scope to satisfy demand from the existing labour market may be limited (particularly for people with experience). Indeed, ETSA notes that the available pool of workers for certain occupations is small in South Australia, and that it must rely on internal training, particularly apprenticeships, to address future skill needs. In contrast, the electricity utilities sector employed only a small proportion of total general electricians in 2006 (4.0 per cent), which suggests there is significant scope to address any shortages from the existing labour market.

Other occupations among those listed in Table 2.2 that were identified as being potential challenges by ETSA include electrical engineering technicians, electrical engineering draftpersons, engineering managers, technical cable jointers and purchasing officers. Of these occupations, a relatively large proportion of all technical cable jointers (54 per cent), electrical engineering technicians (20 per cent) and electrical engineering draftsperson (19 per cent) were employed in the electricity generation, transmission and distribution sector.

For all those other occupations considered to be potential skill gaps for ETSA, such as information technology related roles, only a very small proportion of people employed in these occupations across Australia were employed in the electricity utilities sector. While this suggests that potential workforce requirements for these occupations may be obtained from the market place, it does not necessarily imply that individuals with those specific skills or experience sought by ETSA may be readily available (e.g. system architects with business experience).

[1] Data for South Australia was not readily available at the time of the analysis.

Table 2.2: Employment by Occupation, Australia, 2006
Top 35 Occupations for Electricity Generation, Transmission and Distribution

	Electricity generation, transmission and distribution		All industries	Electricity as Per cent of total
	Persons	Per cent	Persons	Per cent of Occupation
Occupation category[a]	Employed	of Total	Employed	Total
Electrical Linesworker*	3,800	11.0	6,230	61.0
Electrician (General)	3,524	10.2	87,774	4.0
Electrical Engineer*	1,924	5.6	8,865	21.7
Power Generation Plant Operator*	1,662	4.8	2,489	66.8
General Clerk	1,074	3.1	206,290	0.5
Electrical Engineering Technician*	1,048	3.0	5,129	20.4
Program or Project Administrator	934	2.7	71,182	1.3
Inquiry Clerk	872	2.5	51,155	1.7
Accountant (General)	547	1.6	112,789	0.5
Fitter (General)	517	1.5	54,146	1.0
Accounts Clerk	463	1.3	80,161	0.6
Specialist Managers, nec	449	1.3	15,122	3.0
Engineering Professionals, nfd	449	1.3	21,743	2.1
Contract Administrator	442	1.3	12,280	3.6
Electrical Engineering Draftsperson*	356	1.0	1,911	18.6
Meter Reader	352	1.0	1,628	21.6
Engineering Manager*	343	1.0	12,874	2.7
Data Entry Operator	343	1.0	37,379	0.9
Personal Assistant	311	0.9	44,027	0.7
Technical Cable Jointer*	293	0.8	539	54.4
Call or Contact Centre Operator	288	0.8	18,383	1.6
Storeperson	273	0.8	96,846	0.3
Electrical or Telecomm's Trades Assistant	264	0.8	2,973	8.9
Management Consultant	255	0.7	30,983	0.8
Human Resource Manager	245	0.7	28,603	0.9
Sales and Marketing Manager	233	0.7	79,192	0.3
Managers, nfd	229	0.7	49,362	0.5
Technicians and Trades Workers, nfd	198	0.6	17,856	1.1
Miner	198	0.6	23,671	0.8
Electrical Distribution Trades Workers nfd*	196	0.6	254	77.2
Finance Manager	194	0.6	38,905	0.5
Training and Development Professional	194	0.6	19,904	1.0
Purchasing Officer*	181	0.5	13,428	1.3
Fitter and Turner	178	0.5	13,841	1.3
Office Manager	174	0.5	92,273	0.2
Total	34,514	100.0	9,104,182	0.4

Note: nec = not elsewhere classified; nfd = not further defined.
[a] ANZSCO 6 digit level occupations.
* Denotes occupation identified as skill shortage by ETSA (as allocated to ANZSCO category by SACES).
Source: ABS, 2006 Census of Population and Housing, Unpublished data.

3. Current and Future Skill Shortages

As part of its annual five year plan for skills and workforce development, the Training and Skills Commission (TaSC) develops forecasts of the demand and supply of qualifications. The latest estimates were prepared in 2011 for the five year "planning period" period from 2009/10 to 2014/15.

The quantitative modelling undertaken by the TaSC takes into consideration a variety of factors that affect the demand and supply of qualifications. For example, the assessment of demand takes into account the impact of economic growth on underlying demand for employment, retirement and job turnover due to other reasons (e.g. change in occupation, health reasons). The supply of qualifications is developed based on extrapolations of recent trends in completions of VET and higher education level qualifications, the impact of training initiatives (e.g. Productivity Places Program) and migration trends. While the forecasts provide insight into future skill needs and appear methodologically sound, they should be interpreted with a degree of caution given the inherent difficulty of estimating future skill requirements over long periods of time at detailed levels, data limitations, the fluid nature of the economy and evolving policy environment. In addition, elements of the TaSC's methodology are being revised for the current round of forecasts.

For the labour force as a whole, the TaSC's modelling suggests that there will be a total net undersupply across the tertiary system of 31,000 qualifications over the 5 year period to 2014/15. The shortfall is expected to be greater for higher education than the VET sector (approximately 20,000 positions compared to 10,000 positions). These results suggest that in general, skill pressures may intensify over coming years. However, these results do not give insight into potential skill shortages for those occupations of relevance to ETSA, which we turn to next.

The results of modelling undertaken by the TaSC in respect of those occupations identified as potential areas of concern by ETSA (based on SACES allocation to ANZSCO occupation codes) are summarised in Table 3.1. In terms of aggregate numbers, the largest imbalance between demand and supply are in respect of:

- software and applications programmers;
- database and systems administrators, and ICT security specialists; and
- construction managers.

Shortfalls for ICT occupations would in part reflect strong demand for such skills across a number of industry sectors given the ubiquity of information and communications technology. For construction managers, it is possible that demand has declined somewhat over the past year given the downturn in construction activity.

The TaSC also assesses the outlook for demand and supply for 'specialist occupations' based on the quantitative modelling and consultations with industry. Specialist occupations refer to occupations where there is a strong connection between a qualification, associated skills and job requirements.[2] DFEEST (2011, p25) notes that "...where there is a much tighter relationship between the job and a specific occupation, there is potential for market failure because the training time is typically quite long and

[2] The criteria for specialist occupations are specified in Training and Skills Commission (2011).

the labour market is less able to adjust quickly". Assessments of likely supply shortages for specialist occupations are consequently made to identify and prioritise those skills sets (i.e. qualifications) that are eligible for public funding support.

The following specialist occupations that are relevant to ETSA were identified by the TaSC as likely to have insufficient supply over the 5 years to 2014/15:

- construction managers;
- civil engineering professionals;
- electrical engineers; and
- electrical distribution trades workers.

Of these occupations, the first three generally require higher education qualifications while electrical distribution trades workers are associated with VET-related qualifications. Electrical engineering draftpersons and technicians, which are not classified as a specialist occupation, were also assessed as likely to be in insufficient supply.

The assessment of the above specialist occupations as being likely to suffer a shortage is significant from ETSA's perspective as it suggests that funding may be available through the Skills for All program to support internal upskilling of workers – see section 5 for a further discussion of Skills for All.

We turn to a consideration of the potential outlook for each of those specialist occupations that are relevant to the skill and experience needs that ETSA believes may be challenging to maintain. The following discussion is drawn from the Training and Skills Commission's 2011 *Five-Year Plan for Skills and Workforce Development, Appendix 2: Industry Profiles and Priorities* and unpublished modelling data.

Construction managers (1331) [3]

Jobs growth for construction managers is expected to be above average over the analysis period, due in large part to construction activity associated with a number of current and planned major projects. Given an expected shortfall in supply of qualifications from the education and training system, little supply from net migration, and limited demand to upskill existing workers, the TaSC (2011a, p21) "believes that the projected supply may be insufficient to meet industry demand over the planning period, particularly for project management skills". TaSC modelling indicates a likely shortfall of just over 1,000 construction managers by the end of the planning period to 2014/15.

Engineering Managers (1332)

Labour market issues for engineering managers may be relevant to ETSA's labour requirements in respect of construction project managers, construction engineers and construction team leaders. TaSC quantitative modelling suggests a supply shortfall of approximately 600 engineering managers by 2014/15. Above state average jobs growth is expected for engineering managers given major engineering construction works in the pipeline. The TaSC concludes that projected supply from education and training is likely to fall significantly short of industry demand, with additional supply from overseas not expected to bridge the gap.

[3] Number indicates the relevant 4 digit code in relation to the Australian and New Zealand Standard Classification of Occupations.

Civil Engineering Professionals (2332)

This category covers several occupations of relevance to ETSA including construction engineers, construction designers and project estimators. Jobs growth for civil engineering professional is expected to be above the state average given scheduled major projects. The Department of Education, Employment and Workplace Relations (DEEWR) identified current skill shortages in South Australia for quantity surveyors, civil engineers and structural engineers. Although overall demand for quantity surveyors is low, employers were finding it difficult to find people with the preferred characteristics, namely experience with industrial and large-scale projects and at least two years experience (TaSC 2011a). Recruitment difficulty was also being experienced in respect of civil and structural engineers, with employers typically seeking experienced applicants (at least 5 years), including people with strong technical and design/analysis skills. The TaSC concludes that "projected supply from the education and training sector system may fall short of that required to meet industry demand over the planning period and to alleviate the current shortage". While the supply of qualifications from the education and training sector is expected to fall short of demand, the TaSC modelling suggests that overall supply will be broadly in line with demand due to overseas migration bridging the gap.

Electrical Engineers (2333)

Electrical engineers are a key occupational requirement for ETSA, with engineers with knowledge and/or experience being specifically sought. A DEEWR survey of employers in respect of this occupation showed "a low proportion of vacancies filled and a low ratio of suitable applicants per vacancy" (TaSC 2011a p58). Most employers were seeking additional experience or specialist knowledge in respect of their particular industry. In addition to electrical production and distribution, areas of experience being sought included water treatment, design work in the defence sector and construction. Jobs growth is expected to be above the state average over the planning period, with the main source of demand for qualifications related to this occupation being existing workers expanding their skills followed by new entrants. The supply of candidates with appropriate qualifications from the education and training sector is unlikely to meet expected demand while overseas migration is unlikely to bridge the gap. TaSC modelling suggests a shortage of 300 electrical engineers over the 5 year period to 2014/15. The TaSC concludes that "efforts should be made to address the current shortage".

Electrical Distribution Trades Workers (3422)

ETSA has identified a need for powerline workers with experience – an occupation classified to the category of electrical distribution trades workers. While DEEWR has previously identified a national shortage for the occupation, no assessment was made for South Australia. Modelling by the TaSC suggests a likely shortage of approximately 180 electrical distribution trades workers over the 5 year period to 2014/15. Jobs growth is expected to be above the state average over this period while the supply of qualifications from the education and training sector is unlikely to be sufficient to meet demand. The TaSC's modelling suggests that existing workers upskilling will be the main source of demand for qualifications related to the occupation, followed by new entrants and existing workers broadening their skills.

Table 3.1: Estimated Demand and Supply of Select Occupations, 2009/10 to 2014/15

Occupation Description[a]	Employment 2009/10	Job openings to 2014/15	Demand for qualifications	Supply of qualifications	Imbalance estimate	Skill Shortage[a]
Construction Managers[b]	4,210	1,824	1,766	666	1,099	S
Engineering Managers[b]	1,970	817	919	331	588	NS
Architects and Landscape Architects[b]	1,520	199	713	780	-68	RD
Civil Engineering Professionals[b]	1,930	410	1,092	1,186	-94	S
Electrical Engineers[b]	980	261	640	351	289	S
ICT Business and Systems Analysts	1,440	423	995	182	813	NA
Software & Applications Programmers	6,040	1,719	3,870	2,043	1,828	NA
Database & Systems Administrators, and ICT Security Specialists	2,490	1,012	1,938	534	1,405	NA
Computer Network Professionals	2,120	614	1,563	649	914	NA
ICT Support and Test Engineers	950	303	701	16	685	NA
Architectural, Building and Surveying Technicians[b]	4,270	972	1,248	1,444	-196	NS/S
Electrical Engineering Draftspersons and Technicians	890	266	337	150	188	S
Other Building and Engineering Technicians	780	351	355	142	213	NS*
Motor Mechanics[b]	7,060	1,391	1,630	3,156	-1,526	S
Electrical Distribution Trades Workers[b]	1,050	211	311	128	183	S*
Chemical, Gas, Petroleum and Power Generation Plant Operators	610	8	201	144	57	NA
Purchasing and Supply Logistics Clerks	4,570	621	1,195	366	828	NA
Total All Occupations	802,520	162,618	298,154	267,925	30,229	

Note: [a] specified at the 4 digit ANZSCO level.
[b] defined as 'specialist occupation' by DFEEST.
S = shortage SA, RD = recruitment difficulty SA, NS = no shortage SA, RS = regional shortage SA, NA = not assessed, * = national assessment.
Source: DFEEST, unpublished data.

Architectural, Building and Surveying Technicians (3121)

The category of architectural, building and surveying technicians may apply to the following occupations of interest to ETSA in terms of skill shortages: construction designers, project estimators and, possibly, construction team leaders. An existing shortage of construction estimators was identified by DEEWR at the time of their last skills shortage list in 2011. According to the TaSC, employers were "reported difficulty identifying applicants with sufficient skills and experience". Otherwise, for the architectural, building and technicians category as a whole, the TaSC expects that projected supply should be sufficient to meet industry demand over the period to 2014/15.

Summary

The modelling and analysis conducted by the Training and Skills Commission together with analysis from DEEWR point toward expected skill shortages over the medium term for a number of occupations of importance to ETSA. For specialist occupations, a theme from employer feedback provided to DEEWR was recruitment difficulty for occupations with experience and/or large scale project/industrial experience. Such feedback is consistent with current tight labour market conditions, and points toward potential recruitment challenges for ETSA in respect of demand for experienced workers for certain occupations (e.g. construction project managers, electrical engineers, powerline workers).

Occupations with respect to information and communications technological roles are generally not considered specialist occupations and therefore subject to the same level of analysis as electrotechnology and construction/engineering trades. Nonetheless, high level modelling by the TaSC suggests large supply shortages over the planning period for a number of ICT occupations. Significant shortages are forecast for software and applications programmers, database and system administrators, and ICT security specialists, computer network professionals, ICT business and systems analysts and ICT support and test engineers. While the extent of potential supply shortages for those specialist ICT skills sought by ETSA are not known, the modelling results suggest potential recruitment difficulty for these roles.

4. Impact of the Mining Industry

The continued expansion of the mining industry may exacerbate skills issues in the medium to long term. The Training and Skills Commission (2011) notes that the "numerous upcoming mining projects will increase competition for jobs and infrastructure, and place pressure on the education and training system to deliver the critical skills required for the workforce". Growth in mining activity will not only increase competition for labour, it will increase demand for electricity and therefore ETSA's production and distribution activities, which will increase ETSA's direct labour needs. For example, electricity supply is expected to be one of the largest expanding industries in response to an expansion of Olympic Dam; real value added for the sector is forecast to be $730 million higher with the expansion relative to a business-as-usual scenario over a 30-year analysis period.[4] A back of the envelope calculation suggests

[4] Olympic Dam Expansion Draft Environmental Impact Statement 2009.

that an additional 200 to 250 workers would need to be employed in the electricity supply sector to satisfy this demand.

Any impact in terms of increased competition for jobs from the mining industry will be mitigated to the extent that mining is not a labour intensive industry (despite the growth in mining activity, the sector accounts for only about 1.3 per cent of total employed persons in South Australia, while the electricity supply sector accounts for about 0.5 per cent).[5] Nonetheless, the mining sector has significant purchasing power in the labour market such that non-mining sectors may find it difficult to compete for or retain workers attracted by high remuneration offered by the sector. For instance, national data indicates that average weekly total earnings for persons employed in the mining sector was $2,270 in February 2012 compared to $1,630 for persons employed in the electricity, gas, water and waste services sector. While the utilities sector has less purchasing power compared to mining, the industry has the second highest level of average weekly total earnings relative to all other industry sectors (average weekly earnings for persons employed across all industries was $1,056). However, high average wage levels for both industries in part reflect the relatively high level of full-time and male employment in both industries.

Advantages for mining in terms of higher earnings are mitigated somewhat by the majority of jobs being located in remote and rural regions and the fly-in fly-out nature of certain operations which are unattractive for many individuals. Related to this, ETSA noted that construction project managers used to remote/FIFO arrangements were a recruitment challenge for the company.

Although mining accounts for only a relatively small share of total employment in the state, employment for the industry has grown strongly over recent years – refer to Figure 4.1. Employment in the sector has more than doubled over the past decade, rising from around 4,000 persons in 2001 to approximately 9,000 persons in 2011. In comparison, employment in the electricity supply sector rose from around 2,500 persons to just over 4,000 persons over this period.

The Labour Force Survey data suggests that employment levels in the mining sector have fallen from a peak of about 10,500 persons in 2007. The decline may reflect temporary surges associated with construction activity and, just as likely, "noise" in the data given its survey basis.

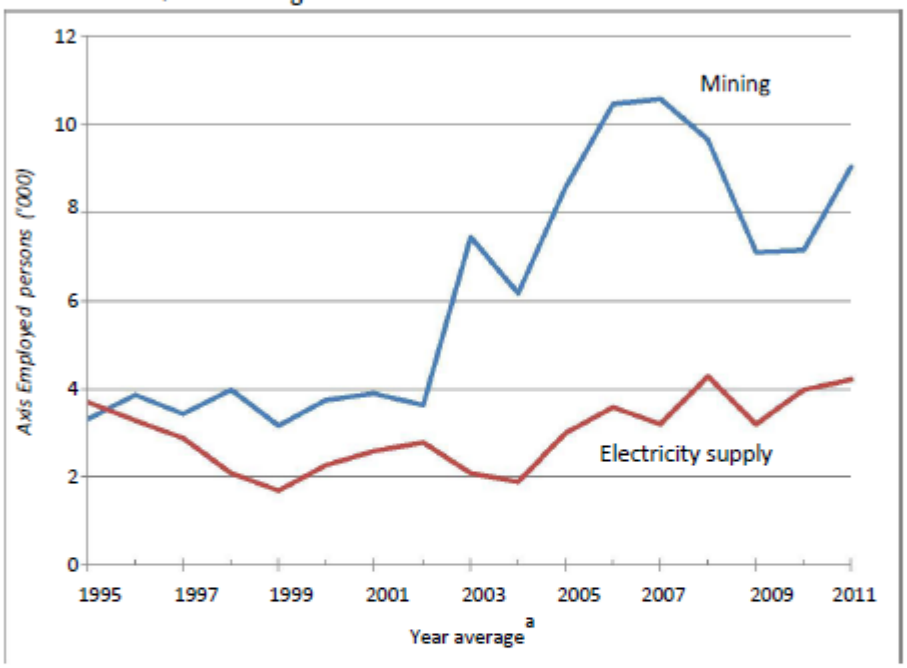
With approximately 30 "developing projects" in South Australia, including the massive proposed expansion of Olympic Dam, mining activity and therefore employment is expected to grow relatively strongly in the future.[6] Looking specifically at the Olympic Dam expansion, an estimated average construction workforce of 4,000 workers, peaking at up to 6,000 workers, will be required during the construction phase (which may last up to 11 years), while workforce requirements for ongoing operations are expected to double from around 4,150 for the current operation to approximately 8,000 for the ongoing operation.

5 Based on average of employment for four quarters to May 2012. Source: ABS, Labour Force, Detailed Quarterly, Cat. No. 6291.0.55.003.

6 Developing projects are defined to include those undertaking or having completed feasibility studies, possibly progressing mine proposals, and those at the assessment and approvals stages.

The growth of the broader mining sector will increase demand from the sector for occupations sought by ETSA, increasing competitive pressures for key skills. For instance, a Training and Skills Commission (2011) workforce study for the resources sector in the Eyre Peninsula region identified a demand for electrical engineers, electrical technicians and electricians. For the metals and engineering sector for the state as a whole, a demand for workers with an electrical licence and restricted electrical license (Class 1 and 2) – driven in large part by licensing requirements – was identified.

Figure 4.1: Employment in the Mining and Electricity Supply Sectors
South Australia, Year Average[a]



Note: [a] Based on average of the four quarters to November of the year. Data is based on survey data and subject to survey error; short term changes should be interpreted with caution.
Source: ABS, Statistics, Labour Force, Australia, Detailed, Quarterly, Cat. No. 6291.0.55.003.

In 2006, the Centre projected that total employment in the mining sector would rise by approximately 4,000 persons over the period from 2004 to 2014 (SACES 2006). A further 13,200 additional jobs were estimated to be generated by indirect impacts associated with consumption and production induced impacts flowing from the expansion of the mining sector. While these estimates are now dated, projections of gross demand for select occupations and trade skills were developed thus providing insight into the types of skills and occupations that would increase in demand with the mining boom.

Table 4.1 shows the gross demand from the mining industry for the top ten VET trained occupations for the period 2005 to 2014 as forecast by the Centre. A majority of the listed occupations were not identified by ETSA as being relevant occupations or recruitment difficulties for the organisation, suggesting limited labour supply implications for the organisation from the mining boom. However, a significant increase in demand was projected for electricians. Furthermore, a large increase in demand for

diesel motor mechanics was projected – an occupation considered a potential recruitment difficulty by ETSA.

Table 4.1: Future Demand for Selected Skilled Trades and Occupations, 2005-2014

Qualification	Estimated Gross VET Requirement
Metal fitters / machinists	263
Motor mechanics (diesel)	152
Electricians	145
Miners	133
Structural steel / welders	97
Sales assistants	95
Production managers	79
Truck drivers	66
Other building / engineering associate professionals	61
Engineering production system	58

5. Possible Training and Education

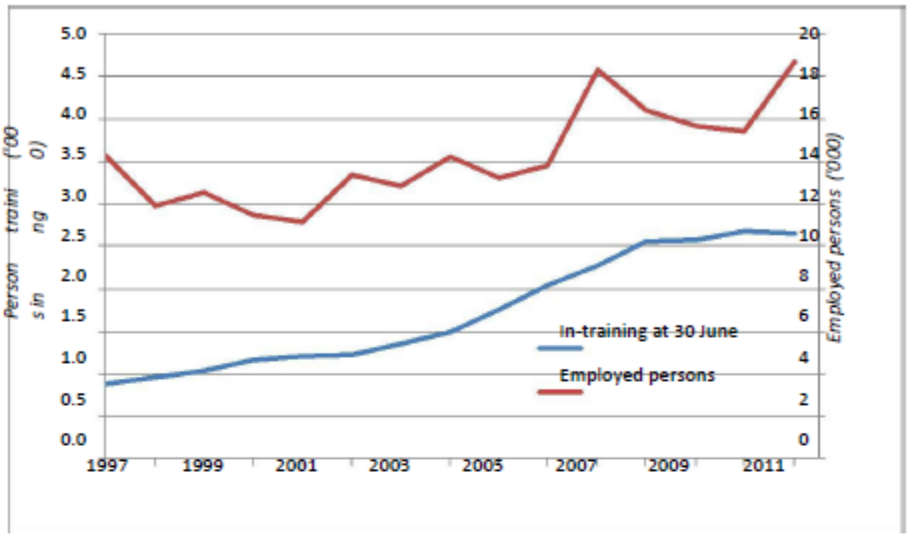
The analyses in the preceding sections suggest a number of current and potential future skills shortages for occupations that are of significance to ETSA. A combination of existing tight labour market conditions, an ageing population and continued expansion of the mining sector suggest that certain occupations may become more challenging to address in future.

Although there has been a significant increase in education and training at the VET level for electrotechnology and telecommunications trades workers over the last decade – see Figure 5.1 – modelling by the Training and Skills Commission suggests that supply from the education and training sector will be unable to meet demand for a number of key occupations over the 5 years to 2014/15. Among the affected occupations include construction managers, engineering managers, electrical engineers and electrical distribution trades workers. A shortage of supply from the VET sector suggests that meeting ETSA's future labour force needs may require a combination of greater internal training effort, recruitment/retraining of employees (including displaced workers) from other sectors, and recruitment via migration.

We briefly consider some potential opportunities or avenues for addressing skill requirements, which may already be under consideration or underway by ETSA.

Workers displaced from certain sectors currently undergoing transition may be a potential source of labour in the short to medium term. A number of construction companies have entered into administration in South Australia over the past year while the manufacturing sector has experienced contraction in the face of a difficult external and internal environment (i.e. weak global economy, high exchange rate, competition for labour from the mining sector etc). There may be opportunities in engaging and/or retraining workers displaced from these sectors. ETSA offers stable, long-term employment, which may provide the organisation with a competitive advantage in the labour market.

Figure 5.1: Electrotechnology and telecommunications trades workers: In-training (at 30 June) and Employed Persons, South Australia



Source: NCVER.

The State Government's Skills for All program provides support which may assist internal efforts to engage in up-skilling, retraining and skill-broadening of existing and new workers. Under the program, eligible individuals receive subsidised training for Skills for All courses. A number of courses of direct relevance to ETSA's skill requirements are eligible for Skills for All funding. Examples include:

- Certificate II in ESI Generation (Operations Support) (fully subsidised);
- Certificate III and IV in ESI Generation (Systems Operations);
- Certificate III and IV in ESI Generation (Operations);
- Diploma of ESI Generation (Systems Operation), (Operations), (Maintenance);
- Advanced Diploma of Engineering Technology – Electrical (fully subsidised);
- Certificate IV in Electrotechnology – Systems Electrician; and
- Certificate IV in Electrotechnology –Electrical Contracting.

In additional to electrical and electrotechology qualifications, there are a number of courses available in respect of information and communications technology, engineering, sustainable and renewable energy, management and other relevant fields.
A further opportunity may exist with Indigenous workers who may prove good candidates for occupations such as linesworkers and help to address skill shortages in rural and regional areas. Opportunities may include traineeships and cadetships – new programs could be delivered that provide intensive support, including assistance with literacy and numeracy, with the end result being a possible job offer. ETSA Utilities Davenport Training Centre at Port Augusta could be leveraged as part of any Indigenous training scheme. Commonwealth funding support could potentially be accessed through the Indigenous Employment Program, which supports activities such as pre-employment training, employment training, mentoring, literacy and numeracy development etc. Meanwhile, the University of Adelaide offers various scholarships for Indigenous students who undertake a program of study in relation to engineering, science, maths, computer science etc. Not only are such initiatives a source of potential future graduates, there may be opportunities for ETSA to develop/support similar schemes.