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In essence, this report outlines the demand from employers for a skilled workforce over the period 2006 to 2010 and the demand for education and training. It documents existing employment and skills in the group of companies making up the membership of the Global

Evidence of skill shortages consists of national data (DEWR: on vacancies, skills in demand), trends in average hours worked and movement in wage rates, strong employment growth in the mining and minerals processing sector and listings of skills in demand on national and regional migration programs. There is considerable qualitative evidence that pre-vocational students are in demand by individual companies and group training organisations. Further, there are strong expectations within those companies interviewed and surveyed by the Centre that recruitment will increase out to 2010.

Survey Data, Workforce Profile ...

In Chapter 3 we report on survey data. Higher retirement rates are in prospect. The age profile of larger employers supports this fact, where in several cases more than 10-15 per cent of the workforce is expected to retire in the next five years.. For GMUSG companies the workforce profile reveals that 13 per cent of their workforce is in the age range 55-65 and 10 per cent U

For the six[2]

1. Introduction

1.2 Composition of the Heavy Industry Sector

Within the Upper Spencer Gulf and surrounding regions, the major manufacturing, mining and mineral processing and electricity and gas supply organisations include: OneSteel, NRG Flinders (at Port Augusta and Leigh Creek), BHP Billiton, Santos, EDI Rail and Zinifex. In Figure 1.1 we designate these organisations as Tier 1.

In turn, the Tier 1 companies are supported by a network of suppliers of heavy and light engineering services, construction services, instrumentation and electronics, manufacturing and fabrication, transportation logistics and equipment hire companies. In Figure 1.1 we

Supported by businesses located in the three major Provincial Cities and Roxby Downs are the following:

- Gas supply (Moomba), and the Point Bonython refractory plant, wholesaling of petroleum, refining of metal and minerals;
- Mining and extraction of coal (Leigh Creek), oil, iron ore, copper ore, gold, silver, lead, uranium and zinc ore, including exploration and mining services and specialist mining of opal (Coober Pedy, Andamooka);
- Civilian/military launch facilities (Woomera); and
- Agriculture including pastoral activities, wheat and barley production.

Global Maintenance: USG

The Global Maintenance USG group is an industry cluster of engineering and engineering service firms from the Upper Spencer Gulf that collaborate in an effort to improve their businesses and win work outside of the region. The purpose of Global Maintenance USG is to establish and promote the Upper Spencer Gulf as a regional centre of excellence in the provision of "maintenance services" to the local, national and international resource-processing sector.

and operations of plant, to then include shutdown repairs and maintenance, installation of electrical and electronic systems, sophisticated instrumentation and repair work, for the energy sector and minerals processing, port storage and handling, rail and the manufacture of rolling stock.

Table 1.1
GMUSG Companies and Their Location

Company	City/Suburb	Year Established
Roche Engineering Services	Olympic Dam Village	N/A
Crossroads Concepts	Port Augusta	N/A
EDI Rail	Port Augusta	1198
Max Crane & Equipment Hire (SA) Pty Ltd	Port Augusta	2002
Pearce Earthmoving	Port Augusta	N/A
Gadaleta Steel Fabrications	Port Pirie	N/A
Gobell Engineering*	Port Pirie	1944
SJ Cheesman	Port Pirie	1908
Sherrin Hire	Whyalla	1968
Sudel Industries Pty Ltd	Whyalla	1991
United Kilpatrick Green - Whyalla	Whyalla	1999
Whyalla Fabrications & Structural Engineers	Whyalla	1974
Northern Scaffolding	Whyalla	1971
Broadspectrum	Whyalla	N/A
Cognis (Betatene)	Whyalla	N/A
Brambles Industrial Services	Whyalla	1959
Action Engineering	Whyalla	1990
Amdel	Whyalla	1960

- Design and construct electrical sub-stations and transmission lines, design and construct wastewater treatment systems, major shutdown work, mechanical and electrical maintenance work;
- Instrumentation, design, calibration and validation, ongoing electrical installations and instrumentation maintenance, maintenance of mechanical systems (e.g., belt weighers, hoppers and weight bridges);
- Workshop activities including steelwork fabrication, surface treatment fitting and machining, hydraulics design, specialised welding of componentry, fabrication and construction of major works, electrical maintenance fitting and turning;

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2. Skills Shortages and The South Australian Economy

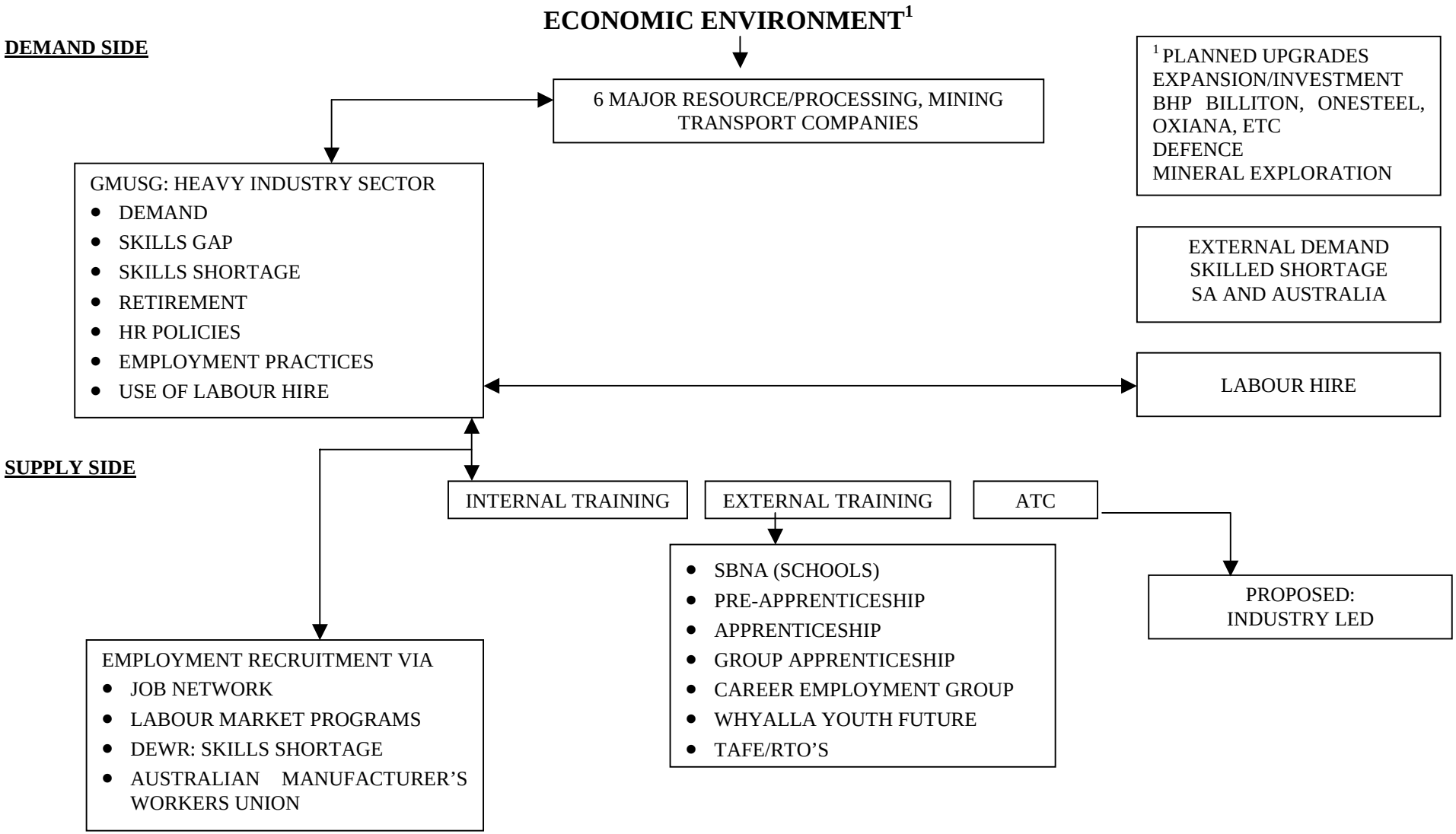
Terms of Reference

- Examine the issue of skill shortages and outline the situation in the Upper Spencer Gulf (USG);
- Identify why there is a skills shortage in these industry sectors in the USG region; and
- Consider the situation in the context of state and national skills shortage.

2.1 Introduction

The Northern Statistical Division (SD) of South Australia covers over 800,000 square kilometres (82 per cent of South Australia's total area). Within this statistical division, the

Figure 2.1


ECONOMIC ENVIRONMENT[1]
DEMAND SIDE
6 MAJOR RESOURCE/PROCESSING, MINING TRANSPORT COMPANIES
[1] PLANNED UPGRADES EXPANSION/INVESTMENT BHP BILLITON, ONESTEEL, OXIANA, ETC DEFENCE MINERAL EXPLORATION
GMUSG: HEAVY INDUSTRY SECTOR
DEMAND
SKILLS GAP
SKILLS SHORTAGE
RETIREMENT
HR POLICIES
EMPLOYMENT PRACTICES
USE OF LABOUR HIRE
EXTERNAL DEMAND SKILLED SHORTAGE SA AND AUSTRALIA
LABOUR HIRE
SUPPLY SIDE
INTERNAL TRAINING
EXTERNAL TRAINING
ATC
SBNA (SCHOOLS)
PRE-APPRENTICESHIP
APPRENTICESHIP
GROUP APPRENTICESHIP
CAREER EMPLOYMENT GROUP
WHYALLA YOUTH FUTURE
TAFE/RTO'S
PROPOSED: INDUSTRY LED
EMPLOYMENT RECRUITMENT VIA
JOB NETWORK
LABOUR MARKET PROGRAMS
DEWR: SKILLS SHORTAGE
AUSTRALIAN MANUFACTURER'S WORKERS UNION

2.2 Understanding a Skills Shortage

A skills shortage exists when the supply of labour is insufficient to meet the demand at the going wage rate. A skills shortage may arise as a result of structural change in the economy

With reference to indicators outlined above we briefly examine the demand for skilled labour in the Upper Spencer Gulf and South Australia. In some instances data is only available on an Australia-wide level, although in the mining sector and mineral resource processing the competitive demand for labour is nationwide.[12]

Expectations of Domestic and World Economic Growth

Domestic and international growth prospects for the mining and the mineral processing sector appear to be favourable and more importantly, sustainable into the medium term. Table 2.1 gives selected forecasts for the growth of the Australian and global economy in 2004-05 and 2005-06. Expectations are, that both the Australian and global economy will experience positive growth over the next couple of years. In Australia much of this growth will be driven by an expansion of the domestic mineral production and mineral exports sector with continued strong growth in mineral exports. Rising oil prices in the international economy

Table 2.3
Average Weekly Earnings and Average Hours Worked:
South Australia May 2002 and May 2005

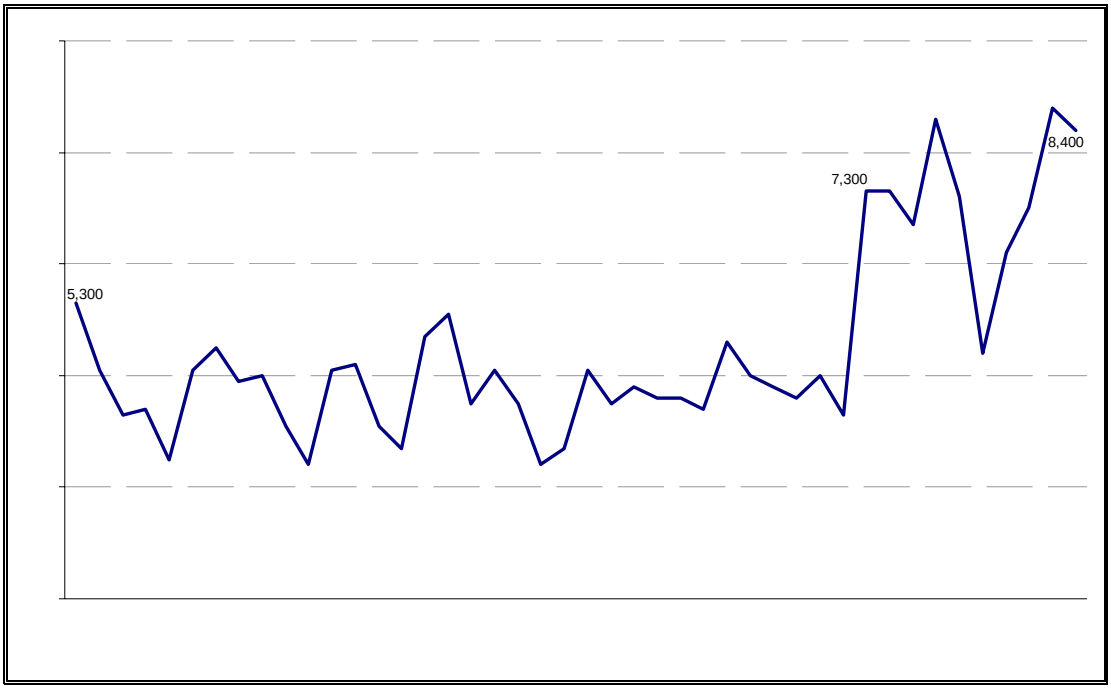
Trades	May 2002		May 2005		May 2002 to May 2005	
	AWE ($)	Hours	AWE ($)	Hours	Earnings: Percentage Change	Hours: Percentage Change
Mechanical engineering tradesperson	977	43	1,069	43	12	1
Fabrication engineering tradesperson	811	42	994	44	23	4
Automotive tradesperson	722	41	788	40	9	-2
Electrical and electronics tradesperson	965	41	1,004	42	4	1
Structural construction tradesperson	880	42	949	42	8	-1
Final finishes construction tradesperson	815	36	858	38	5	6
Plumbers	784	43	816	40	4	-8
Average	**851**	**41**	**928**	**41**	**9**	**0**

Note: Nominal wage growth has not been adjusted for increases in inflation.
Source: SACES calculations based on Employee Earnings and Hours, Australia, Cat. No. 6306.0

Employment Growth

Recent trends in employment in South Australia confirm the strong performance of the mining, manufacturing and construction sectors. Employment in mining and associated activities declined from a peak of 5,300 in 1994 to remain at approximately 4,000 persons until 2002, when employment "took off" to reach 8,400 persons by 2005. The share of total employment in mining in South Australia rose from 0.8 per cent to 1.2 per cent. See Figure 2.2.

Figure 2.2
Employment in the Mining Industry, South Australia, 1994 – 2005, (000s)



Source: ABS, *Labour Force, Australia, Detailed - Electronic Delivery, Quarterly*, (Cat No. 6291.0.55.001).

Employment in construction increased from 33,200 persons in 1994 to 48,000 persons in

Surveys to measure skills shortages, trends in trade training, vacancy rates and priorities for skilled immigration are important indicators of the state of the labour market.

The Department of Employment and Workplace Relations (DEWR) publishes the *Skilled Vacancy Index,*

In addition, evidence of skill shortages in the electrical and mechanical trades comes from the Federal Government's Skills Occupation List (SOL), which is issued for immigration purposes and is a list of particular occupations that are required in Australia. All electrical and mechanical trades have a high priority rating.

Localised shortages also arise due to high labour turnover, particularly in remote locations

3. Analysis of Survey Data

Terms of Reference

- From survey data and interviews identify skills and occupations in demand in the region;
- Identify training requirements;
- Categorise the age profile of the existing workforce.
- Review recruitment and training support policies; and
- Highlight any potential implications for the qualitative and quantitative data.

In this section we summarise the information provided by all companies, profile their workforce, current recruitment and intake of apprentices and consider the demand for labour as reported by the companies.

Three surveys were developed and delivered to GMUSG members (Tier 2), larger employers (Tier 1) and labour hire firms (Tier 3) to gather information on the following:

- profile of the organisation;
- employment data including number, age, gender, apprenticeship intake;
- assessment of current and future skills in demand; and
- support for employee training, H-R policies, etc.

In addition to the survey data the Centre conducted personal interviews with more than 16 companies, with training providers, labour hire firms and collected data outside of the survey from the mining and heavy engineering sector. At the time of interview the Centre sought to document the inter-relationships (i.e., contracting) between Tier 1, 2 and 3 companies in order that any modelling of the demand for labour avoided the potential problem of double counting.

We commence with a summary of interviews for four Tier 1 companies and an outline of the scale of expansion of the Olympic Dam project.

3.1 Company Summary

OneSteel (Whyalla)

The OneSteel plant, formerly BHP Steel's Long Products Division recently announced a $325 million commitment to convert the plant to the use of magnetite ores (Project Magnet)[17] This follows recent investment and upgrades to reline smelting and blast furnaces. Project Magnet will involve significant contract work (e.g., Thiess, Brambles and others) with a reliance on local labour input. The project also extends to new pipelines, rolling stock and rail facilities and the construction of barges to facilitate exports. The diversity and scale of the projects presents an obvious demand for a range of engineering skills. Project Magnet has already commenced and will run until the end of 2007.

[17] BHP Billiton will act as the exclusive agent to market products from Project Magnet, particularly in the Asia Pacific. Additional mining contracts will also be let to mine the ores.

It is reported that at the peak of construction the contractors (all contractors in total) will have

Zinifex[18]

Zinifex is one of the world's largest integrated zinc and lead companies that operates two mines and two smelters in Australia (in Hobart and Port Pirie). The smelter at Port Pirie produces refined lead and lead alloys, silver, zinc, copper, gold and sulphuric acid. Located adjacent to port facilities it is the largest primary lead smelter in the world with a capacity of 270,000 tonnes per annum. Current employment is approximately 700 persons with 144 (about one fifth) being classified as tradespersons or related workers. In addition, there are 100 contractors on the site at any one time handling transport and shipping and various maintenance and security functions. On average, Zinifex recruits 8 first year apprentices although it had 17 as at May 2005, proposed to recruit 25 in 2006 and up to 33 in 2006-08

There are three critical trades important to the operations of the company – boilermakers, fitters and electrical trades. Recent "drivers of growth" include the Adelaide to Darwin rail link requiring the modification of freight carriages and 8 locomotives, the building of 4 new locomotives, 65 Ballast Wagons and 55 5Pack container wagons. Planned work includes the build of 58 new wagons for OneSteel to replace older wagons not suitable to transport new ores. EDI Rail has supplied a variety of rolling stock to Pacific National, to sites in Queensland and New South Wales.

The recent trades skill shortage is the result of higher demand but also a "catch-up" from the old system where the major enterprises took on excess apprentices and trained them in their

Table 3.1 summarises the current operations and the impact of the proposed expansion, notably an increase in the workforce from 1,750 to somewhere between 3,250 to 3,500. As we indicated earlier, this expansion and the impact on the demand for labour is not analysed in this report, but is taken up in a study on the mining sector. Suffice to say, the proposed construction and operations workforce will require additional skilled workers for all facets of operations (engineering, EH&S, mining and processing).

3.2 Comparison of Tier 1 and Tier 2

The profile of employment in the larger Tier 1 companies and the heavy engineering and maintenance sector, Tier 2 GMUSG group, is quite different as illustrated in Table 3.2

Table 3.2
Occupational Profile: Tier 1 and Tier 2 Companies and all Region

	Tier 1		Tier 2: GMUSG		ABS All Region
Occupation	**Number**	**Per cent**	**Number**	**Per cent**	**Per Cent**
Managers & Administrators	67	1.7	71	8.8	5.0
Professionals and Assoc. Professionals	417	10.5	65	8.0	25.0
Tradespersons and Related Workers	911	23.0	347	42.9	17.0
Clerical	168	4.2	56	6.9	30.0

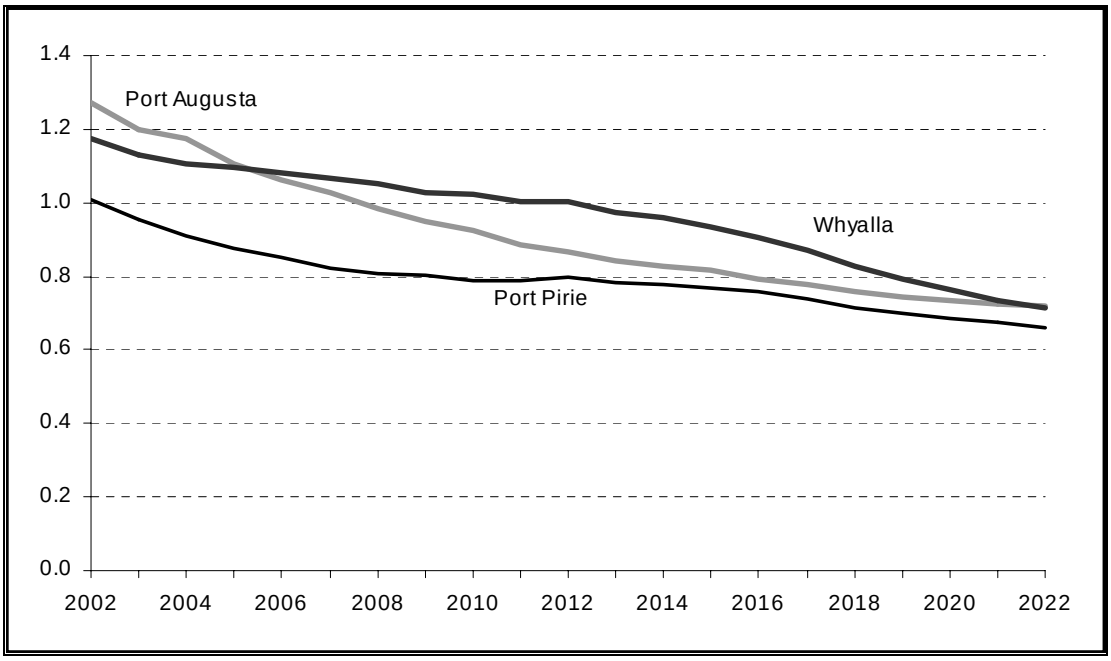
Table 3.3
Employee Characteristics of GMUSG Members: Age

Employee Characteristics	Number	Per cent
Age		
15-24	83	10
25-39	391	48
40-54	231	29
55-64	94	12
65+	9	1
Total	**808**	**100**

Source: SACES Calculations based on returned surveys and projections.

Table 3.4

Figure 3.1
Ratio of Population Aged 15-24 years to Population Aged 55-64 years
Port Augusta, Port Pirie and Whyalla, 2002 to 2022



Source: Projections prepared by the ABS according to assumptions agreed to by the Department of Health and Ageing.

The change in ratio of the population aged 15-24 years to the population aged 55-64 years from 2002 to 2022 for the three Provincial Cities and Roxby Downs (not shown in Figure 3.1) is as follows: Port Augusta 1.3 to 0.7; Port Pirie 1.0 to 0.7; Whyalla 1.2 to 0.7, and Roxby Downs 3.8 to 1.5.

3.3 Skills Demand and H-R Policies

Specifically, for GMUSG members there were 6 occupations consistently referred to as difficult to recruit – and a perception this situation would persist into the future:

- electrical/electronic engineers;
- fitters;
- boilermakers/welders;
- instrument technicians;
- electricians; and
- mechanics.

Some companies interviewed indicated that the inability to attract skilled workers (for example, two companies stated it could employ 10-15 more tradespersons if available) in the occupations of high demand is having a negative impact on the performance of their company in terms of constraints in bidding or accepting new projects. Other companies indicated that although these skills shortages were only impacting at certain times of the year, for example shutdown periods or major projects, this required considerable planning and scheduling effort to overcome.

While some companies indicated that the average hours worked by its employees had increased (in one case from 40 hours to 52 hours per week, in another a 20 per cent increase in overtime) other firms stated that their employees were not working longer hours or undertaking more overtime than normal. A number of companies indicated that they were willing to offer above award wages, productivity bonuses, or other terms such as paid untaken sick-leave to attract and maintain good employees. However, the general perception amongst most companies was that the larger companies had more scope to offer these conditions to attract the skills most in demand.

The agreement amongst most companies interviewed was that skill shortages in the region had emerged in 2002 and were increasing. Within the USG region there is other evidence that the skills listed above have been in demand in the region and for an extended period of time. The identified shortages also match the findings of the Department of Employment and Workplace Relation of those skills in high demand South Australia in 2004.

A review conducted in mid-2003 for the Whyalla Economic Development Board (WEDB) of skills in demand by the heavy engineering and maintenance firms based in Whyalla,[22] found specific skilled trades identified by the report as being in shortage were the metal and electrical trades – skills in pressure welding, automated electronic systems (programming and maintenance) and programmable logic controllers, electricians, instrumentation, boilermakers and fitters. A more detailed analysis of this review can be found in Appendix 2.

The feeling amongst GMUSG companies is that the current levels of skills shortages in the region are both cyclical (caused by favourable economic conditions in the region) and structural (caused by a change in the structure of employment in the region particularly with the growth in the mining sector) in nature and therefore, will continue over the medium to longer term.

Expectations amongst GMUSG companies are that the primary influence on their demand for skilled labour in the USG region over the next 5 years will be the introduction and/or expansion of new industries in the region, the largest of which is likely to come from the impact of the expansion of Olympic Dam. Other influences outlined by firms (in order of importance) were:

surveyed stating that they expect to increase their use of contractors over the next 5 years. Other influences outlined by firms (in order of importance) were:

- Market expansion of operations;
- Introduction/ expansion of industries; and
- Upgrades of regional infrastructure

Labour hire companies expect the greatest influence on demand over the next 5 years to come from an ageing workforce in the region and from the expansion of the mining sector most notably Olympic Dam. The companies surveyed indicate that their main methods of recruiting labour came from the existing workforce in the region, followed by their own network of offices and finally from the workforce outside of the USG region.

Labour hire companies have in the past been criticised for taking away skilled workers from the core industries in the region, as they can offer higher wages due to their lower overheads (for example lower Workcare levels on employees). One argument put to us was that fewer skilled workers employed in Tier 1 and Tier 2 companies may result in less tradespersons to train apprentices and other workers and as the labour hire companies do not employ apprentices or train their workforce,[23] then over time the overall level of skilled workers in the region will decline.

Indeed this is a view held by some GMUSG companies. However, as stated above approximately 77 per cent of GMUSG companies use contract labour, some of which is sourced from labour hire companies. Since their introduction in the region in approximately 1992, labour hire companies have increasingly facilitated GMUSG companies and others to maintain a smaller, more skilled or 'core' workforce in the knowledge that during periods of peak demand labour can be sourced from elsewhere.

3.4 Current Recruitment Methods

A recent study of labour demand in the minerals sector[24] across Australia reported shortages of skills and high labour turnover in the following key trades and regions:

- in the mechanical trades (heavy diesel mechanics, fitters, welders, mechanics and technicians) and electrical trades;
- shortage exist at both construction and operational sites;
- skill shortages are most acute in remote regions; and
- turnover is relatively high within both construction and operational sites.

Recruitment difficulties were most severe for technicians and trade areas — specifically many of the skilled trades employed in the heavy engineering and maintenance sector. The nationwide shortage of particular trades is similar to the experience of the GMUSG group. The industry has identified that this has resulted in a lowering of the quality of applicants and new hirers, increased the likelihood of a salary-bidding war, placed greater reliance on contractors and labour-hire firms and heightened concern in relation to an ageing workforce and low apprenticeship intakes.

[23] While one labour hire company did indicate that it undertook training of its workforce and employed apprentices, it is true that most did not.

[24] "Prospecting for Skills: The Current and Future Skills Needs in the Minerals Sector", by NCVER and NILS (2005).

The principal methods of recruiting for GMUSG companies is shown below and are in order of most popular methods used.

- Advertising in Newspaper;
- Employment Recruitment agency;
- Apprentice Schemes; and
- Word of Mouth.

The Internet, which is growing in importance as a source of job advertisements in all industries, was used only marginally by GMUSG companies in attempts to recruit employees.

A number of firms interviewed had attempted to recruit employees over the past year either locally, within the broader Spencer Gulf Region or throughout the State. The response rate

In recruiting employees, the GMUSG companies listed the four most important grounds for

Some 77 per cent of the GMUSG companies surveyed had used contract workers within the past year. Table 3.6 indicates those occupations for which contract worker were sourced. As expected trades such as fitters, boilermakers and electricians experienced the greatest demand, as they are traditionally associated with the heavy engineering sector. These trades are also -SkilSk Cic-17neirf

It appears that evidence is widespread in the USG region of the existence of skill shortages in a number of occupations traditionally associated with the heavy engineering sector. Skill shortages in the region began to emerge in 2002 and over recent years there has been an acceptance by a number of companies that these shortages are as much structural as cyclical and are therefore likely to remain for a number of years.

In an effort to combat the smaller pool or skilled workers in the region and as a result of difficulties experienced when trying to recruit workers from surrounding regions, a number of firms have concentrated on up-skilling and multi-skilling of their current workforce, as well as improving working conditions and remuneration. This is being undertaken not only to improve the efficiency and productivity of employees, but as an attempt to insure against approaches from other companies in a competitive labour market where 'poaching' is evident.

The "labour market environment" and potential responses can be understood as:

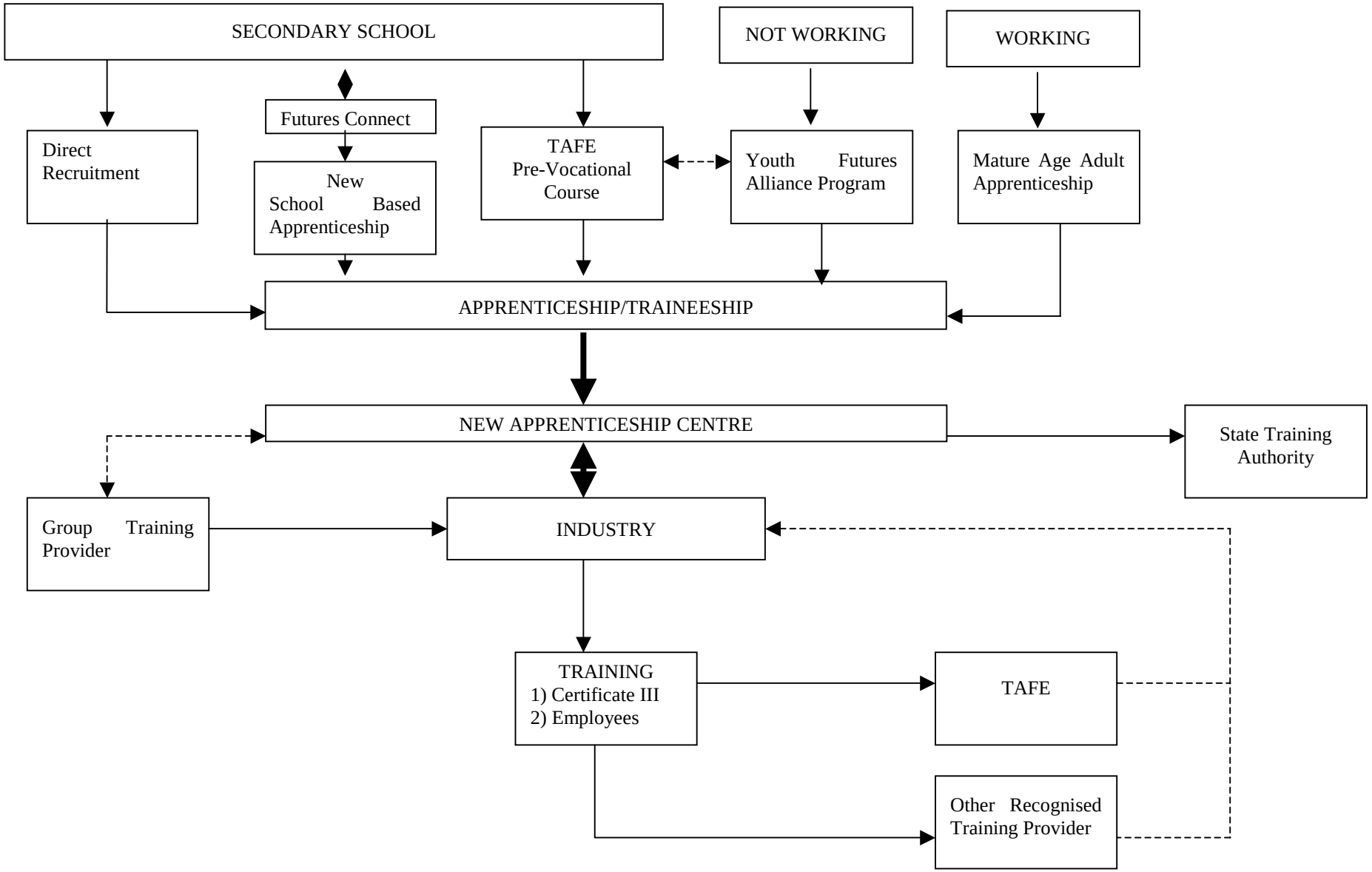
- increasing competitive pressure to acquire skilled labour;
- active recruitment of pre-vocational students and strong competition for these students;
- an ageing workforce combined with a number of larger projects means there is more emphasis on recruitment;
- given the above conditions, the internet will need to be used more often by GMUSG, government programs to attract skilled labour will need to be harnessed, while the labour pool could be expanded to include young women and indigenous workers; and
- there will need to be more commencements in pre-vocational courses and an increase in the number of courses.

4. Analysis of Current Training Response

Terms of Reference

- Describe the current training response and consider opportunities for new recruits to enter the workforce;
- Identify training programs and opportunities to increase intake to meet projected skills/occupation shortages; and
- Consider current training support by GMUSG members.

Figure 4.1: Apprenticeship/Traineeship - Process in the Upper Spencer Gulf Region



labour with then, specific training to match occupations can never be that precise. Our principal interest therefore, is with the actual number of enrolments, completions or graduations to assess whether the supply of graduates is at least sufficient to match demand.

Figure 4.1 provides an outline of the process involved with the intake of apprentices and trainees in the Upper Spencer Gulf Region. Applicants gain an apprenticeship or traineeship either having undertaken one of the listed vocational programs, with current industry experience or whilst currently enrolled at secondary school. A Training Contract is then signed which complies with industrial agreements or awards and is forwarded to a New Apprenticeship (or other relevant) Centre for registration with the State Training Authority. The employer selects a registered training organisation (RTO), and a Training Plan is agreed with the apprentice/trainee. When all the units of competence specified in the training program have been attained a Certificate Level II or III qualification is awarded and the RTO informs the State Training Authority, which enables the completion of the training contract.

4.2 Secondary Schools and School Based New Apprenticeship (SBNA)

With over 2000 secondary school students (of relevant apprenticeship age) in the USG region, secondary schools are a prime source of supply for apprenticeships and traineeships. A number of apprentices and a larger share of trainees employed in the re6oded arded0.0021 Tc0B5iaom secondaryatieehfetc.,-10.47c
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Figure 4.2

Amongst the companies interviewed, only very small minority was actively involved in the SBNA scheme at the apprentice or trainee level and less than 5 per cent of apprentices and traineeships employed by GMUSG companies came from SBNAs.

Some of the smaller companies stated that they would be attracted to the part-time employment nature of the SBNA scheme where an apprentice would attend the workplace for 1 or 2 days of the week. However, many of the larger organisations viewed the scheme less favourably with most commenting on the need to have an apprentice full-time as part of the team building process. One important reason for this, whatever the educational merit of SBNA, is that a SBNA student is offered without skills to an employer on a part-time basis, whereas a pre-vocational student has attended a training course, possesses skills that are useful to an employer and is more valuable to an employer.

In general, we identify a lack of knowledge amongst companies interviewed of the SBNA scheme and an unwillingness to commit to this form of employment and training. The majority of firms did not know of the availability of support staff acting for industry and secondary schools who were responsible for coordinating the scheme with industry in South Australia.

Knowledge of pre-vocational courses was widespread amongst employers interviewed. During interviews with GMUSG members a number of issues were raise concerning pre-vocational courses.

A surprisingly large number of employers commented on the literacy and numeracy skills of their new apprentices, predominantly as they apply to the engineering trades. Although this problem is likely to have roots in the primary and secondary school sectors, suggestions by employers of a greater emphasis on engineering numeracy and literacy at the pre-vocational level were offered. We consider it would be advantageous to employers and the training providers if discussions were hens if d4 havonetye10.5(if div)-im3(ovide)5(he)5.rainl(he)55(he)5l(a

In general, industry opinion of pre-vocational courses was positive with most employers preferring a pre-vocational qualification when recruiting apprentices. A number of employers said they would be willing to take a wider interest in the content and design of pre-vocational courses should they be asked. This invitation needs to be acted upon.

Again, we restate that to do the following:

- fill all commencements, increase retention and completion rates provides an additional 24 apprentices a year or approximately 100[29] over 5 years;
- one more course per year of 15 students via recruitment through the Whyalla Youth Futures program (and its equivalent in Port Augusta and Port Pirie) provides 40 additional apprentices a year or 200 over 5 years; and
- one more "regular" pre-vocational course in each of Whyalla, Port Augusta and Port Pirie per year provides 40 additional apprentices a year or 200 over 5 years;[30]

and this would approximate employer requirements (see later discussion).

4.4 Whyalla Youth Futures Alliance Program (WYFAP)

Table 4.9
Contact of Training – Total Numbers in Training by Qualification, Selected Heavy Engineering Vocations, Upper Spencer Gulf Region: 2000 to 2004

Training Package Qualification - Numb0004r(r)9.5: Tta( )TJET69.36.72.00409.48

Intake of Apprenticeships and Trainees– GMUSG Companies

Table 4.11 shows the number of apprentices currently in training with GMUSG companies in the Upper Spencer Gulf region. It is not the total number of all apprentices, as several companies did not complete the survey questions. However, amongst respondents the largest intake of apprentices/trainees occurs in the trades of boilermaker, fitter and electrician, which are among the skills most in demand in the region. Nearly one third of the companies surveyed indicated that they intended to slightly increase or substantially increase their take-up of apprentices over the next 5 years.

Table 4.11
Apprenticeships by Trade, GMUSG Companies – Number and Percentage

Apprenticeship by Trade	Number	Per cent
Fitters	18	33
Boilermakers	18	33
Electrician	5	9
Boilermakers/Welders	4	7
Instrument Technician	4	7
Mechanics	4	7
Riggers	2	4
Total	**55**	**100**

Source: SACES calculations based on survey data.

Training and GMUSG Companies

On going skill shortages in the region and difficulties associated with recruiting employees with the required skills levels has resulted in a mindset amongst most of the employers surveyed of the need to train employees not only for productivity and workplace performance, but also to improve workplace morale and prevent the migration of workers to other companies. In this context, there was acceptance by most firms of training costs as a component of normal business operating costs. Some firms were also willing to employ persons whose skills did not match exactly the job requirements and then accept the cost of providing the required training.

Table 4.12
GMUSG Firms who Undertake Training - by Category of Training

Training Category	Per cent
New technologies and equipment	55
Health and safety issues	64
Equal employment issues	18
Environmental issues	55
Quality issues	64
Improved work skills	82

Source: SACES.

Almost all firms surveyed indicated they conducted some form of internal training to improve work skills. Training for health and safety issues and quality issues were the next highest categories. Training for equal opportunity and employment issues was only provided by 18 per cent of companies.

Amongst the firms surveyed there was an expectation of a continuing demand for courses that

4.7 Apprentice and Traineeships –Employer Comments

This section summarises comments by GMUSG companies as they relate to other oraAs.hsaion s 46 Tc-0.00omments b–Emcruitm2 7ips a(p)6(na)6.84(g)9002 Tpm2 7io4.1(a2.8(24(e)a5(ap

HunterNet has established a Group Training Company to support member companies who lack the resources to provide structured "on-the-job" training programs. Trainees and apprentices are employed by the HunterNet Group Training Company on behalf of companies who will guarantee their positions for the duration of their training. During their apprenticeships, students are placed in several different member companies so as to broaden their skills-base and their understanding of operations across a number of industries and work-places. A manager is employed by HunterNet Group Training Company to co-ordinate the skills development as required by each member.

Should a GTO within the GMUSG be considered, it should also be noted that the Federal Government offers a Targeted Initiatives Programme (TIP) is to enable Group Training Organisations to generate Apprenticeship opportunities in priority areas. The Programme funds projects which contribute to the establishment of a sustainable apprenticeships market in critical, under-serviced or challenging areas.

4.8 Australian Technical College (ATC)

With recognition of the difficulty that exists in attracting secondary students in the region towards apprenticeships, and the continued support for industry and training organisations to enter schools to promote apprenticeships, there was considerable interest expressed in the concept of an Australian Technical College in the region (see Box 4.1).

Box 4.1
Australian Technical Colleges in the Upper Spencer Gulf Region

The Commonwealth have recently proposed the concept of an Australian Technical College (ATC) for Whyalla/Port Augusta — colleges to be located in regions suffering skill shortages, with high rates of youth unemployment and which are supported by a significant industry base. Both Whyalla and Port Augusta submitted an expression of interest to locate such a college. The proposed college will be required to offer a trade from four industries (out of five), four of which are considered relevant to labour demand in heavy engineering, maintenance, mineral processing and mining, including *inter alia*:

- Metal and engineering (e.g., machinists, fabricators, toolmakers, welders, sheet metal workers);
- Automotive (mechanics, auto electricians, panel beaters, vehicle painters);
- Building and construction (bricklayers, plumbers, carpenters);
- Electro-technology (including refrigeration, air conditioning, electricians); and
- Commercial cookery.

It is proposed that courses will link to School Based New Apprenticeships (SBNA) at the Certificate II or III level.

There was a feeling amongst some GMUSG firms surveyed that the entry of the Commonwealth Government into the apprenticeship training debate highlighted the disjuncture that currently exists between the training system and the requirements of the mining and heavy engineering sector in the region. Most did not want to see the ATC duplicate what TAFESA currently does; rather they felt the intervention of the Commonwealth should help to expand the number of courses, improve retention rates and improve the quality of courses.

Table 4.15

Table 4.15 (continued)
Spencer Institute of TAFE, Course Enrolments: 2000-2004

Roxby Downs	Business, Finance, Retail and Property Services	Clerical Administration	147	95	112	39	40	(27.78)

With Private sector firms conducting most of the training in the Upper Spencer Gulf region, Table 4.15 displays the number of enrolments between 2001 and 2004 for industry training courses, prevocational courses and more "general" study courses at the Port Augusta, Port

5. Estimation of Demand: Upper Spencer Gulf region

Terms of Reference

- Identify the projected skills/occupation shortages over the next 5 years and examine projected training needs to address the shortages described above;
- Identify training programs and potential providers (within and outside the region) available to address the proposed training needs;
- Provide estimates of skills in demand in the USG for 2006-2010; and
- Highlight any potential implications from the qualitative and quantitative data obtained.

5.1 Introduction

This chapter considers the estimated demand for skilled labo.3(s the) Tfg.4003 rvl.e2the l.e2ting2 54.0I 200i

Table 5.1

Although the paths that persons in the first two groups are following into VET are often very different, the types of VET courses they demand are very similar, as for both groups these courses provide the required education to enter an occupation. This means that in general the course demanded will be of Diploma or Advanced Diploma Level where the occupation of interest is an Associate Professional, or a Certificate III or IV for a less education intensive occupation group such as a Trade. This is not always the case, however, as lower level courses sometimes act as a pathway into the course required for the occupation. For example, some apprentices initially enrol in a Certificate I pre-vocational course, with the student

The skilled trades and semi-skilled labourers and related workers are the two principal groups in demand by the companies in this study.

Included in the estimated employment growth rate is the increase in on-going operations employment arising from Project Magnet. The project is currently being undertaken by OneSteel and is due for completion in late 2007.

Interviews by the Centre with OneSteel and contracting companies indicates that at the peak of the project the number of contractor employees will be approximately 300 workers with 50 per cent of these coming from within the USG region. During the construction phase, existing workers in the region can Si3(r)8oknyar c(work1.1p0.8.006)-4.3(h)-2.k530.ss ;ehelitxuch45 2cmerkers Durir

Allocated across the 4 broad trade classification group as shown in Table 5.1 the estimated additional demand in the number of trades and related workers required each year and then for the five year period is shown below:

- Electrical Instrumentation 30 per year (150 over 5 years);
- Mechanical 27 per year (135);
- Construction 24 per year (120); and
- Automotive 19 per year (95).

This is likely to be the upper bound, because all companies will endeavour to retain retiring workers or provide encouragement to defer retirement, and as well, we have assumed zero net inward migration. To the extent Australia and South Australia is successful in securing skilled overseas migrants and regional programs encourage their location to the Upper Spencer Gulf then the demand for VET trainees will be reduced.

For GMUSG group and Tier 1 companies some 700 "labourers and related workers" will be required over the 5 years or 120 persons per year. For the entire region it is estimated approximately 1,000 workers or 200 persons per year. There is obviously some training effort required for this group.

5.3 Supply Growth

Chapter 4 discussed the current training effort in the USG region. With estimates of the additional demand for labour required in the region between 2006 and 2010 indicating the need to train between 90 to 95 extra tradespersons per year, the question remains as to how this figure compares to the current training effort.

Table 4.8 indicated that Contracts of Training commenced per year by selected vocations increased from a very low base of 29 in 2000 to 215 in 2005. With a four-year time lag for any increase to flow through to the pool of labour in the region, the effects of low intakes of apprentices in 2000 and 2001 are currently being felt through the emergence of skills

That is to say, there is confidence going forward that 90 additional pre-vocational places should be offered.

Further, with the model estimating the growth in demand for machine operators, process and transport workers in the USG at over 200 per year, recent trends indicate that a significant percentage of these will be sourced from the stock of those with trade qualifications as employers strive to build an efficient workforce that can manage, operate and maintain plant and machinery.

Further support for the need to increase apprentice numbers over the period 2006-2010 can be found in an analysis of the trends in course enrolments at TAFE for the region between 2000 and 2004. Enrolment in those courses classified as being in the engineering sector (electrical, mechanical, automotive, construction) have remained relatively constant over this period (see Table 4.15). Whilst this may have to do with the emergence of the region from recession, there is no doubt that it has contributed to the dearth of skills found in the region today.

5.4 Expected Shortages by Occupation

Based on those trades in short supply and the current recruitment difficulties of employers surveyed and supported by interviews conducted by the Centre, employer assessments of future skill requirements, and information provided by labour hire firms and Group Training Organisations, the estimated demand for tradespersons is summarised in Table 5.4. The number of trades required for Tier 1 and Tier 2 (GMUSG) companies is shown in column one and for the USG region in column 2 for the five years to 2010.

Table 5.4
Estimated Growth in demand by Trades, Numbers Required per Year, 2006-2010

Occupations	Tier 1 & 2	Region
Electrical/Refrigeration	13	19
Boilermakers/ welders	10	14
Instrument Technician/Fitter	6	8
Fitters	12	17
Riggers	4	6
Machinists	4	6
Mechanics (petrol and diesel)	5	7
Plumber	3	5
Carpenters	2	3
Toolmakers	3	4
Electronic/ radio technician	2	3
Sheet metal workers	2	3
Crane Driver/Operator	1	2
	67	**98**

6. Addressing Skills Training: The Future

Terms of Reference

- Present options for retaining/integrating the skills of the ageing/retired workforce and opportunities to recruit new entrants to the workforce;
- Identify training programs and potential providers (within and outside the region) available to address the proposed training needs; and
- Report all findings and provide conclusions and recommendations.

6.1 The Future

The USG is well positioned for strong economic and employment growth into the medium term

Further, the comparative unemployment rates in 2001 and 2005 were:

- Whyalla: 13.1 to 7.9;
- Port Augusta: 10.3 to 7.3;
- Port Pirie:[35] 13.8 to 5.1;
- Roxby Downs: 2.9 to 0.5.

In summary, even leaving aside the planned expansion at Roxby Downs by BHP Billiton and at Prominent Hill by Oxiana for which we have not modelled in this report, the USG region faces the following challenges:

- continued growth in demand for labour;
- expansion of industries in the region
- an ageing workforce
- a need to increase apprentice intakes and to retain more students in existing course in order to achieve higher graduation rates; and
- limited in-migration of tradespersons from other regions as demand is high elsewhere and therefore regional migration programs will be important.

There is a recognition that the previous system of recruitment and training of apprentices has gone forever, whereby larger companies did the majority of training on the job, within the company training facilities and provided a pool of apprentices to be recruited by the medium

A Centre of Excellence for Mineral Resources and Heavy Engineering?

Towards the conclusion of this study we were made aware of preliminary investigations into such a centre. There is considerable merit in such a proposal; it would be likely to draw industry support; it may potentially draw in overseas students[36] and create pathways from schools to pre-vocational courses, apprenticeship training and links into university courses. One of the most important attractions of such a proposal is that it would raise the profile of education, training and skills development in the region. It may extend to the delivery of tertiary degrees in engineering at the University of South Australia, Whyalla Campus.

At the tertiary level, there is a shortage of graduates with mining and metallurgical experience, environmental professionals and engineers. It is likely that courses in these areas could only be sustained in a regional centre such as Whyalla, with overseas student enrolments.

6.3 Demand-Side Responses

Employers are aware of the need to replace retiring workers and the potential loss of skills this could involve. There is support for mature age apprenticeships and employers clearly do encourage existing employees to upgrade skills. However, it appears that many employers and employees are not aware of the potential reduction in the term of an apprenticeship for mature aged workers. While this is likely to vary on a case-by-case basis, we consider there is merit in TAFESA working more closely with employers to publicise the benefits of mature age apprenticeships.

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Appendix 1

Population Employment and Industry Profile: Upper Spencer Gulf Region

A1.1 Introduction

Background information is provided on selected characteristics of the Upper Spencer Gulf Region including demography, labour force, employment, industry structure and qualifications. Most of the data is drawn from the 2001 Census (now somewhat dated) but is presented as a baseline for the region.

A1.2 Employment Profile of the Upper Spencer Gulf Region

The resident population in the Northern Statistical District (SD) at June 2003 was 78,184 with 64 per cent of this population concentrated in the local government areas (LGA) of Whyalla (21,604), Port Pirie City and District (17,490) and Port Augusta (13,795).

Tables A1.1 to A1.11 below contain selected comparisons of demographic characteristics between the Upper Spencer Gulf cities of Port Augusta, Port Pirie and Whyalla and in some cases, Roxby Downs. Roxby Downs has been included in this comparison as the Olympic Dam project and its possible expansion has important implications for the demand for skilled labour in the Northern Region.

Population

Table A1.1 shows that while Port Augusta, Port Pirie and Whyalla have all experienced declining population levels to 2001 or thereabouts. Roxby Downs in contrast has achieved positive population growth and this is expected to continue over the next decade.

Table A1.1
Population Growth, Selected Areas – 1991 to 2003

	Estimated Resident Population				Compound Annual Average Growth Rate		
	1991	1996	2001	2003	1991 to 1996	1996 to 2001	1991 to 2001
Port Augusta	15,234	14,318	13,756	13,795	-1.2	-0.7	-1.0
Port Pirie – City	15,011	14,373	14,118	14,490	-0.9	-0.4	-0.6
Whyalla	26,382	24,371	22,209	21,604	-1.6	-1.8	-1.7
Roxby Downs	-	-	3,633	3,732	-	1.8	-
Adelaide SD (000s)	1,057	1,078	1,111	1,119	0.4	0.6	0.5

Source: ABS,

indicating a movement of potential skilled workers away from these regions or a confirmation of the trend that young people leave for education/training and are reluctant to return.

Table A1.2
Population by Age – Provincial Cities: 2002
(Per cent)

	0-14	15-24	25-44	45-64	65+	Total
Port Augusta	22.4	12.9	28.9	23.9	11.9	100.0
Port Pirie	22.6	9.1	34.3	25.7	8.3	100.0
Whyalla	22.2	12.6	29.1	23.3	12.8	100.0
Roxby Downs	30.7	11.5	44.1	13.0	0.7	100.0
South Australia	19.3	13.1	28.6	24.3	14.8	100.0

Source: DFEEST, Regional Employment and Skills Formation 2004.

Table A1.3 indicates that Port Augusta has the largest indigenous population of the comparative regional cities. All four centres have a higher proportion of indigenous population that the State average and given the long-standing challenge of indigenous employment this cohort represents an important source of skilled labour, especially because the indigenous population is much younger. The rate of employment for the indigenous population is shown in Table A1.5.

Table A1.3
Indigenous Population Selected Areas: 2001

	Number	Per Cent
Port Augusta	2,041	15.1
Port Pirie	319	2.3
Whyalla	632	2.9
Roxby Downs	75	2.0
South Australia	23,425	1.6

Source: ABS, Unpublished data.

Employment and the Labour Force

Table A1.9
Change in Employment by Industry, Selected Areas: 1996 to 2001
(Number & Per cent)

	Port Augusta	Port Pirie	Whyalla

Table A1.10
Employment by Occupation, Selected Areas: 2001
(Per cent)

	Port Augusta	Port Pirie	Whyalla
Managers & Administrators	4.3	4.8	5.2

Table A1.11
Persons Employed in Region by Industry of Employment and Age Group

Education and Qualifications Profile

Table A1.12 shows the 'level of education' profile of those workers in the USG region and South Australia with a non-school qualification and the higher representation of certificate level qualifications. The USG workforce tends to be under-represented among higher-level qualifications.

Table A1.12
Persons by Non-school Qualification, Selected Areas: 2001
(Per cent)

	Port Augusta	Port Pirie	Whyalla	South Australia
Postgraduate Degree Level	**0.9**	**0.9**	**1.3**	**3.1**
Doctoral Degree Level	0.2	0.2	0.3	1.1
Master Degree Level	0.7	0.7	1.0	2.0
Graduate Diploma and Graduate Certificate Level	**1.7**	**1.5**	**1.9**	**2.9**
Graduate Diploma Level	1.5	1.3	1.8	2.6
Graduate Certificate Level	0.3	0.2	0.1	0.3
Bachelor Degree Level	**11.8**	**12.8**	**12.4**	**19.5**

Appendix 2

Terms of Reference

The Skills and HR Audit will provide baseline data and recommendations allowing for workforce development across the region through the completion of a skills audit of member companies and major customers. A review of HR practices/policies of members of Global Maintenance USG Inc (GMUSG) the Upper Spencer Gulf's maintenance services Cluster will be incorporated and best practice disseminated. Through the Cluster quarterly customer-supplier forums (hosted by GMUSG) it is evident that members of the Cluster and associated Regional Development Boards require a strong understanding of:

- where skills gap exist;
- how these can be addressed; and
- through which mechanisms.

These tasks represent the core objectives of the skills audit.

From within the membership base commonly faced issues that compliment the skills audit include staff retention and turnover, staff absenteeism, conflict management within the workplace, succession planning, Workforce planning and scheduling across member

Member's businesses for work experience and industry awareness opportunities. This initiative will allow a whole of region approach to new employee and workforce development.

The specific terms of reference include the following:

- Describe the population of the Heavy Industry sector (including resource processing,

Appendix 3

A Skills Audit of the Whyalla Heavy Industry Sector

The Whyalla Economic Development Board (WEDB) in mid-2003 commissioned a review of

In summary, the reasons for the existing skill shortage were stated as:

- a decade of neglect of apprenticeship recruitment due to economic conditions and downturn in the steel industry;
- retrenchments and natural attrition reduced the skills base;
- on the demand side, cost of apprenticeship training acted as a disincentive including the cost of funding block release training;
- on the supply side, apprenticeships were seen to be less attractive for young people, the training wages were low and group schemes did not offer/guarantee a job on completion; and
- the school system was not seen to be supportive of apprenticeships or to prepare students for the workforce, while the efficient delivery of TAFE courses was sometimes questioned.

Specific skilled trades identified were the metal and electrical trades – skills in pressure welding, automated electronic systems (programming and maintenance) and programmable logic controllers, electricians, instrumentation, boilermakers, fitters – see Table 1.4 for a summary of the projected skill shortages for the heavy industry sector in Whyalla as at March 2003. Non-trade areas included a demand for scaffolders and riggers.

The review of skills in demand in Whyalla included a survey population of 660 employees,[40] comprising 266 qualified trade based employees, non trade and management/design staff. Only 22 apprentices were identified as "in-training". The estimated current shortage of staff was 42 positions or 6.4 per cent of the total surveyed workforce of which 20 positions (or 50 per cent of positions) were in the non-trades and 11 positions (25 per cent) in trade organisations. In addition, the age distribution of the firms surveyed demonstrated the following (see Table A3.1).

Table A3.1
Age Distribution of Firms Surveyed

offered in Whyalla "invariable meant they were lost to Whyalla". This is a concern shared by a number of regional centres.

The report presented to the WEDB estimated current and future skill shortages (over next 5 years), as set out in Table A3.2, noting the potential for serious skills shortages with the now completed blast furnace reline project to be undertaken by OneSteel. Since that time OneSteel has announced further investment, WMC announced a very significant expansion at Roxby Downs and the Warfare Destroyer Contract at Osborne possess even further potential to compete for skilled labour. The construction/blast furnace reline project for OneSteel was projected to require 350 personnel: 50 refractory/civil workers, 50 pipe fitters, 20 welders, 80

- regional collaboration (rather than "beggar-thy-neighbour") is required across the northern and upper Spencer Gulf;
- develop training responses that are structural in nature, because the pathways to training have altered;
- explore training responses to reduce cost to employers and employees including apprentice training, short-term, skill specific courses, multi-skilling, that address the needs of new entrants and training/re-training of older age employees; and
- industry initiative, support, funding and collaboration will be a critical driver of success**.**

Appendix 4

Prospecting for Skills: Skill Shortages in the Australian Mining Industry

A recent report from the National Centre for Vocational Education Research (NCVER)[43] has highlighted the skill shortages that currently exist in the Australian Mining Industry and the anticipated impact on output and expansion of the industry that this might have. The report highlights the recent growth in the demand for skilled labour of over 50 per cent between 2002 and 2004, particularly for the mechanical trades (heavy diesel mechanics, fitters, welders, mechanics, and technicians) and electrical trades (technicians). This growth has been a consequence of 74 new mineral projects ($22.6 billion) across Australia that are either committed or under construction since 2002.

The study found that skill shortages were equally prevalent in both the construction and operational phases of the mining industry. Evidence of skill gaps in these areas included rising vacancy rates, difficulty in recruiting, as well as growth in relative wage rates. The report noted that employers were seeking to improve the retention rate of their workforce through improved terms and conditions.

The presence of a labour shortage in the mining sector and related industries is highlighted by the emergence of a skills gap; to overcome recruitment difficulties firms are effectively lowering their expectations and hence lowering the quality of new hires. "Quality" here refers to things such as prior experience in the workforce, experience in the mining sector rather than a reflection on the qualifications of the applicant. The report acknowledges evidence of a skills gap emerging in the mining industry but does not attempt to measure the size of these gaps due to the difficulty in quantifying them.

Technical or highly specialised skills take time to acquire. In the short-term, the response to a skills shortage may come from companies 'poaching' from other companies or hiring contract workers sourced from labour hire firms. Increased competition for labour may result in bidding wars pushing up wages in an industry experiencing skill shortages.[44]

The report notes that the recent and sustained economic growth in China, potential emergence of India, along with high world commodity prices and strong domestic demand, all indicate a sustained continuation of the mining boom. This, coupled with the planned expansion of mining and exploration activities in Australia, points to sustained employment growth in the industry including the mining services sector which is likely to remain strong over the next decade.[45]

The future demand for labour in the mining sector will be influenced by not only the cyclical nature of the industry but other important factors such as: the ageing demographic profile of the workforce;[46] the retirement rate of existing workers; the high level of skills attrition from qualified persons leaving the industry; and the increasing use of contract labour which has an affect on apprentice intakes and commitments to training.[47]

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43 NCVER (2005), *Prospecting for Skills: Current and Future Skill Needs for the Minerals Sector.*

44 Currently many mining companies do not have a salary cap for recruiting skilled employees and are often willing to offer whatever salary and benefits are required.

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In response to the predicted continued strong employment growth in the mining and mining services sectors, the report offers three initiatives to avoid the emergence of a skill shortage:

- aim to improve retention rates of employees within the industry through remuneration packages, flexible rostering (5 days on, 5 days off, etc.), fly-in, fly-out working arrangements, career pathways etc;
- widen the labour pool through migration, improved gender mix, Indigenous recruitment, school leavers, etc;[48] and
- enhance the capability of the workforce by up-skilling of existing workers through training and the introduction of multi-skilling.

Finally, the report highlights concerns within the mining industry relating to the quality of vocational educational training (VET). TAFE, in particular, was seen as not meeting the needs of industry due to the organisation being supply rather than demand driven. There was recognition of the need for a more coordinated approach between the industry and vocational training institutions to better deliver courses that meet industry needs. Examples include on-site and less campus based training which in the past has not always been viable due to the 'thin' nature of the training market.

[48] Measures for attracting employees, especially younger employees have revolved around informing school leavers of the prospects and employment opportunities in the industry through trade fairs, advertisements in regional schools/regional television, and scholarships in universities.