

Earth Science Technical Officer	New South Wales (NSW)
ASCO Code: 3112-13	March 2007
Labour market rating	No shortage
Comment: No significant shortages are evident in either field work or laboratory work.	

Occupational demand

Earth science technical officers collect and test earth and water samples, record observations, and analyse data in support of geoscience professionals. Most are employed in mining exploration companies and consultancies, laboratories, and government agencies concerned with geoscience. There is no reliable information on the size of the workforce for this occupation since the 2001 census recorded 570 employed earth science technical officers in NSW. However, the consensus of employer and industry contacts was that employment in this occupation had increased over the last two years due to the high level of exploration activity. The value of mineral exploration in NSW increased by 54 per cent in 2006 following growth of 52 per cent the previous year.

Occupational supply

There are no formal courses in NSW designed to provide entry-level training for this occupation. Various certificate and diploma courses in surveying, laboratory technology and electronics, however, may provide some relevant skills. Most earth science technical officers are trained by employers to use specialised survey and measurement equipment and to undertake a specific set of tasks. However, as the range of task undertaken by earth science technical officers varies significantly from employer to employer, technicians may need further training when they change jobs. The consensus of employer and industry contacts was that informal training of earth science technical officers was well attuned to demand and had consequently increased over the last two years.

Employer and industry comments/current labour market

A DEEWR survey of employers who had recently advertised for earth science technical officers was conducted for this report. All surveyed vacancies were filled within six weeks of advertising, with an average of four applicants per vacancy and 1.5 suitable applicants per vacancy. Employers in mineral exploration all filled their vacancies, although the degree of difficulty in filling the vacancies varied. Some employers attracted several experienced applicants after having advertised once or twice and were able to select the best of the applicants. Other employers thought the response to their advertisements was disappointing and considered themselves lucky to secure one suitable applicant. It was not uncommon for promising applicants to withdraw due to misgivings over working in remote locations or due to dissatisfaction with some aspects of the working arrangements (for example, fly-in fly-out arrangements to a number of different locations).

Employers in the laboratory sector also filled all the surveyed vacancies, although some had to fill positions through informal industry networks after having failed to secure enough suitable applicants through press advertising. Remuneration for earth science technical officers working in laboratories is lower than for field work and this may have made recruitment in this sector relatively more difficult. Nevertheless, the available evidence does not indicate a shortage in either sector.

Labour market outlook

High world prices for many key commodities are expected to continue over the short term and this should help underpin exploration activity and demand for earth science technical officers. Nevertheless, due to the variety and flexibility of entry paths to the occupation and the relatively short length of on-the-job training required, it is unlikely that a significant shortage of earth science technical officers will develop over the short-term.

Earth Science Technical Officer		Victoria
ASCO Code: 3112-13	February 2007	
Labour market rating	No Shortage	
Comment:		

Occupational demand

Demand for earth science technical officers is determined by environmental challenges, the level of construction and mining activity. According to the Department of Sustainability and Environment, Victoria faces numerous environmental challenges, including: land health and productivity, stressed water resources, threatened biodiversity, changing climate, increasing waste, population and urban growth. Demand for earth science technical officers has also been strengthened by the strong construction activity in Victoria. Since 2004 the value of total engineering construction completed has increased by around 67 per cent and total work yet to be done has doubled. Although the number of dwelling commencements fell by approximately 13 per cent between 2004 and 2006, the Housing Industry Association forecasts a three per cent increase in dwelling commencements in 2006-2007. Mining activity is also strong and according to the Australian Bureau of Agricultural and Resource Economics (ABARE) brown coal production in Victoria has remained stable and refined gold production has increased by 35t in 2005-2006. DEEWR Skilled Vacancies Index data shows that demand for earth science technical officers fell sharply over 2000 to 2002 but have remained relatively stable since 2003.

Occupational supply

ABD Education and Work figures suggest around 28 per cent of employed science technical officers do not have post-school qualifications and 26 per cent have bachelor degrees. DEEWR estimates the number of persons who completed tertiary education in the field of earth sciences remained stable in 2004, with an average of 24 completions since 2000. Supply to the occupation from net immigration has significantly increased, up by around 130 per cent from last year. Net immigration to Victoria during 2005-06 was around 23 science technical officer professionals.

Employer and industry comments/current labour market

The Survey of Employers who Recently Advertised (SERA) in metropolitan and regional areas found all vacancies were filled. The average number of suitable applicants per vacancy was 1.8 and the average number of unsuitable applicants per vacancy was 3.2. Despite 100 per cent of the surveyed vacancies being filled, some employers stated they had advertised the position several times before successfully recruiting. The main reason candidates were found to be unsuitable was a lack of experience and formal qualifications. Although regional employers successfully filled advertised vacancies, they did report having difficulty due to the location and industry competition. Employers commented attracting suitable applicants to regional areas was difficult as it required a lifestyle change that people were not always willing to make without a greater remuneration than was offered. Small business and government employers found competition from other industries, particularly the booming mining industry, a recruitment impediment as large private companies were able to offer higher remuneration and competitive work contracts.

Labour market outlook

The relatively balanced labour market for earth science technical officers in Victoria is expected to continue over the next six months, with no skill shortage.

Earth Science Technical Officer		Queensland
ASCO Code: 3112-13	February 2007	
Labour market rating	Not in Shortage	
Comment:		

Occupational demand

Earth science technical officers assist earth scientists such as geologists and geophysicists in their work, most commonly in locating and developing mineral and fuel resources. They make observations, collect and analyse samples, record information, and undertake other practical tasks required in field operations. In Queensland, earth science technical officers are employed in mining and exploration firms, government agencies and earth sciences departments of universities. This is a small occupation and job opportunities depend largely on staff turnover and the level of activity in the mining industry, particularly in exploration. Although exploration activity has been growing strongly in Queensland in recent times, demand for associate professional level workers in this area is low, with most employers using a combination of fully-qualified professionals and lesser skilled assistants to undertake the work required.

Occupational supply

Formal training for this occupation is available through a six month full time Certificate III in Geoscience course, or an eighteen month full time Diploma course in Geoscience or in Surveying in Mining and Engineering. Courses are available in Western Australia and South Australia but there are no comparable courses available in Queensland. The diploma courses provide fundamental training for employment as a mineral exploration field assistant, pit technician or underground sampler. Education contacts from interstate reported that most students, however, are able to gain full time employment after completing the six month certificate course. Since no students are graduating from specific courses in Queensland and overseas migration in the whole 'science technical officers' group is limited, the supply of workers with directly relevant formal qualifications is likely to depend significantly on interstate migration.

Employer and industry comments/current labour market

Over 92 per cent of the vacancies for earth science technical officers included in this year's survey were filled within six weeks of advertising. Around 85 per cent of survey respondents, which included employers and recruitment agencies, claimed that demand for this occupation has been relatively low compared to earth science professionals and that they have had little difficulty filling positions. These contacts reported that formal qualifications are rarely sought for this role and that most employers are willing to provide on-the-job training to suitable candidates as required. The remaining 15 per cent of contacts did report some difficulties filling positions and said that they had used a multitude of avenues to secure applicants, including networking and approaching employees of other companies directly. These respondents were, however, generally looking for applicants with specific experience and knowledge in exploration and mining. They also reported that it is easier to fill vacancies with more attractive remuneration and working conditions, such as a 'fly in-fly out' option.

Labour market outlook

Demand for qualified earth science technical officers may increase in line with future investment and growth in the State's mineral resources sector but, at present, the majority of employers are willing to employ lesser skilled workers to cover the broad job role. Specific accredited training for this occupation is not available in Queensland and this may be a major factor in why formal qualifications are not widely sought. A shortage of skilled earth science technical officers could emerge in future if more employers seek qualified applicants but they are not considered to be in shortage at present and they are not expected to move into shortage over the coming year.

Earth Science Technical Officer		South Australia
ASCO Code: 3112-13	January 2007	
Labour market rating	No Shortage	
Comment		

Occupational demand

Earth science technical officers are mainly employed in the business services industry, while the water industry and the government sector are also reasonably sized employers. Occupational demand may be influenced by a variety of factors, including the level of mineral exploration and engineering construction activity, along with other activities such as monitoring water treatment and quality issues. Investment in mineral exploration is currently at a record level, while SA engineering construction activity increased 10 per cent in the September quarter 2006. Anecdotal evidence indicates that demand from the mining and engineering sectors, both locally and interstate, remains firm. In addition, prevailing drought conditions have placed added importance on water testing and quality as a result of reduced water flows. Despite these positive indicators, DEEWR vacancy data show that newspaper vacancies for the broader category of science technical officers declined sharply in 2006.

Occupational supply

Entry into the occupation may be achieved via higher education, vocational education/training, or relevant work experience. Just over half of those working in the occupation have AQF Certificate III level qualifications or higher, while 35 per cent have no applicable qualification. In many cases, formal training is not mandatory. Technical officers working in the field of geoscience may undertake relevant Certificate III or Diploma level courses through TAFE. Training statistics show total completions (from both courses) numbered 13 in 2004, 8 in 2005 and 11 in 2006. However, given the variety of mechanisms available for entry into the occupation, overall supply trends are difficult to quantify.

Employer and industry comments/current labour market

The majority of employers contacted for this report were cold canvassed due to the small number of recently advertised vacancies. Two employers had undertaken recruitment action in the previous six months, with one position filled and one unfilled. The latter result was due to a lack of applicants with experience compatible with the National Association of Testing Authorities (NATA) standards. Most of the employers contacted had no specific preference with regard to formal qualifications, indicating that basic skills could be obtained in a short period of on-the-job training, augmented with specific training modules if required. (In contrast, technical officers working in NATA accredited laboratories generally require higher level skills and training, and there is a greater likelihood that these workers will have a Certificate III level qualification or higher. Skill and experience requirements may also vary depending on the ratio of field work versus more technical laboratory testing duties.) Activity levels were described as reasonably busy, although overall staffing levels were adequate to meet current demand. Some firms indicated that they recruited additional casual staff during periods of higher than usual workload, and were generally able to do so without difficulty. There were virtually no reports of unfilled vacancies amongst the firms contacted for this report, who between them employ around 50-60 earth science technical officers. Given this situation, the labour market rating for this occupation is 'no shortage'.

Labour market outlook

Demand for earth science technical officers may increase as a result of anticipated new mining and engineering work in South Australia over the medium term. The supply of experienced workers is unlikely to expand significantly during this period and therefore recruitment difficulties could potentially emerge.

Earth Science Technical Officer		Western Australia
ASCO Code: 3112-13	February 2007	
Labour market rating	No shortage	
Comment		

Occupational demand

The Department of Treasury and Finance mid-year review forecasts the WA economy to continue to grow strongly. During 2005-06 the value of minerals and natural gas/petroleum produced in WA was \$43.2 billion (\$28 billion minerals and \$15.2 billion natural gas/petroleum), a 29 per cent increase in the value of output the previous year. This industry contributes approximately 30 per cent of Gross State Product, 80 per cent of WA's export income and one-sixth of employment. WA hosts 560 commercial mineral projects, embracing 1222 operating mine sites that produce over fifty different minerals (mainly iron ore, alumina, nickel, gold, base metals copper, lead, zinc, and mineral sands), and has 67 operating oil and gas fields.

Earth Science Technical Officers collect and test earth and water samples, record observations and analyse data in support of geologists, geophysicists and hydrologists.

Occupational supply

Earth science technical officers usually need a TAFE or equivalent Diploma or at least three years relevant experience for this technical field and laboratory work. However, geological assistants (also called "geotechs") who help exploration geologists in the field and "pit technicians" who help in mine site operations usually do not have formal training and they are trained entirely on the job by their employer.

The WA Water Corporation offers a small number of trainee hydrographer positions to applicants who complete a Certificate IV in Hydrography through practical physical and theoretical on-the-job training.

Employer and industry comments/current labour market

Ninety four per cent of vacancies surveyed were filled, with position mainly for work with mining, laboratory services, drilling, and surveying companies and the Water Corporation. More than 60 per cent of vacancies were located in regional areas and most of the Perth-based positions involved travel to regional areas. Employers reported that their advertised positions usually attracted plenty of applicants. However, many lacked relevant industry experience and/or technical skills specific to the job. Slightly more than 15 per cent of candidates were considered to be suitable, with an average 2.8 suitable applicants per vacancy. Although employers indicated that applicants with well developed analytical skills are hard to find in the Goldfields region, they fill entry level technician and on-the-job trained positions and use fly in/fly out people for some drilling and surveying services. Some employers who require people with a technical tertiary degree indicated that applicants with poor communication and reporting skills were unsuitable.

The WA Labour Economics Office has not previously assessed this occupation.

Labour market outlook

A high level of activity in the WA resources sector is expected to continue over the next six to 12 months. The WA Department of Industry and Resources has estimated more than \$81 billion is pledged or planned for future resources projects in WA, therefore, demand for earth science technical officers is likely to be steady. No shortage of earth science technical officers is anticipated over the next six to 12 months.

Earth Science Technical Officer		Tasmania
ASCO Code: 3112-13	February 2007	
Labour market rating	No Shortage	
Comment		

Occupational demand

The term earth science technical officer is not widely used in Tasmania, if at all, and as such it is difficult to establish a rating when employers do not recognise the term. The Australian Standard Classification of Occupations (ASCO) identifies the fields of geology, hydrology and water resources generally and meteorology as some of the fields earth science technical officers might work in.

There were only 88 earth science technical offices counted at the 2001 Census in Tasmania. The number of people in an occupation generally reflects the level of demand for that occupation, and the small number recorded at the Census suggests that demand for the occupation is low. However, due to the difficulty defining the occupation, it is likely that at least some people who were classified as “science technical officers” or “science technical officers not elsewhere classified” may work in some of the fields identified above.

Occupational supply

Given the diverse nature of activities covered by this occupation it is difficult to identify clear sources of supply, or pathways into the occupation. The University of Tasmania offers a range of science degrees, including specialisations in geology and environmental science which are both areas that earth science technical officers may work in. In the field of geology, it seems to be the case that degree qualified geologists may start out providing assistance to more experienced geologists, and as such may be classified or described as technical officers. In addition TAFE in Tasmania offer a diploma course in laboratory technology which provides people with a background in which scientific analysis and reporting are important.

Employer and industry comments/current labour market

No positions for earth science technicians were advertised in the lead up to this report. Other industry sources generally struggled to understand the term “earth science technical officer”, but many indicated that for technical officer/associate professional positions generally, they often used new graduates who they hoped would progress to more senior positions as their skills developed.

Labour market outlook

The combination of low demand, indicated by low numbers in the occupation, and the apparent ability to recruit people from a range of scientific backgrounds at either diploma or degree level, suggests that there are no shortages in this occupation in Tasmania at present.

Earth Science Technical Officer		Northern Territory
ASCO Code: 3122-13	January 2007	
Labour market rating	Shortage	
Comment: <i>Shortage is particularly for field technicians</i>		

Occupational demand

ABS Census data show that there were 103 earth science technical officers employed in the Northern Territory (NT) in 2001. Since 2001, ABS labour force survey data indicate that the number of science technical officers (which includes agriculture, chemistry and life science as well as earth science technical officers) declined over 2002 and 2003, before increasing again from 2004 onwards. Expenditure on mineral exploration (other than for petroleum) in the NT has more than doubled over the past three years (ABS 8412.0 – September quarter 2006), which indicates increased demand for earth science technical officers.

Occupational supply

There are no local training courses available for earth science technical officers. Businesses often resort to attracting people into trainee roles and getting them to study part time in addition to on the job training. Interstate transfers from within parent companies is another common way of sourcing technicians. Some employers are investigating sourcing technicians from overseas in order to cover their staffing needs.

Employer and industry comments/current labour market

There was a mixed response from employers who had advertised vacancies, with some having much greater difficulties filling vacancies than others. Some employers had to compromise on the skill and experience level of applicants they were willing to accept and as a result filled their vacancies by downgrading them and accepting people without qualifications or equivalent experience.

Employers commented that although demand is currently high for technical officers, this has been the case for the past couple of years and in the previous ten years demand had been weak. Therefore, over this period, there were few new entrants to the occupation and relatively high attrition of experienced people. Now that demand is strong, supply of experienced earth science technical officers is low. With increased demand some businesses have invested in equipment upgrades, however have had growth constrained due to difficulty securing additional experienced technicians. Current demand for assay work is such that a proportion is outsourced to interstate businesses.

Wastage (people leaving the occupation) is considered to be an issue for the occupation. For field officers this is typically due to the tough physical and travel requirements of the role causing people to look for alternative jobs as they approach middle age. For laboratory based roles, wastage is typically due to people leaving to study or take up a position in a related professional role (such as a geologist or geophysicist).

Increased demand and a shortage was also identified for similar soil technician roles (classified under the civil engineering technician occupation area) for the construction industry.

Labour market outlook

Employers commented that the mining boom was likely to continue and there would be strong demand for earth science technical officers for at least another two years. Attracting new supply is likely to remain difficult and so the occupation is likely to remain in shortage over the coming year.