

INQUIRY INTO SKILLS SHORTAGES IN RURAL AND REGIONAL NSW

Organisation: Association of Professional Engineers, Scientists and Managers,
Australia (APESMA)
Name: Mr Joe McKay
Position: NSW Branch President
Telephone: 02 9263 6500
Date Received: 5/08/2005

Theme:

Summary

Association of Professional Engineers, Scientists and Managers, Australia (APESMA) submission outlines skill shortages in the technical professional labour market in NSW.

The submission outlines both causes and suggested solutions that NSW Government could adopt to address these shortages.



*The Association of Professional
Engineers, Scientists and
Managers, Australia*

NSW BRANCH

Phone: (02) 9263 6500

Facsimile: (02) 9264 1224

Level 1 491 Kent Street

Sydney NSW 2000

nswbranchexec@apesma.asn.au

<http://www.apesma.asn.au>

SUBMISSION

To: NSW Legislative Council
State Development Committee
SKILL SHORTAGE IN REGIONAL AND RURAL AREAS

From: Joe McKay NSW Branch President
Association of Professional Engineers Scientists and Managers Australia

Date: 2 August 2005

The Association

The Association of Professional Engineers, Scientists and Managers, Australia (APESMA) is the nation's largest not-for-profit organisation representing professional employees and contractors representing 40,000 members Australia wide.

We represent engineers, scientists, veterinarians, pharmacists, surveyors, IT professionals and architects across a broad range of industries in both the public and private sector.

We have an active membership of student and young professionals in NSW.

In NSW we have a strong representation by members who are responsible for the planning, design, construction, regulation and maintenance of public infrastructure - power, water, road, rail and telecommunications.

APESMA owns and operates ETM Placements, which is recruitment firm specialising in the recruitment of technical professionals and a key partner with many local government and public utility operators.

The APESMA is an affiliate of Unions NSW and supports its submission to this enquiry.

This submission will focus primarily on our issues relating to professional engineers and scientists.

Areas of labour shortage

Specific areas of high skill shortage in engineering

- railway engineers
- electrical power engineers
- road engineers

- civil engineers
- mining engineers

These areas are of particular important to the economy because of their role in planning, designing, constructing, operating and maintaining public infrastructure.

While employment of engineering is highly dependent on the economic cycle the skill shortages reflect underlying skill shortages

The shortage in professional engineering labour is beginning to delay development of both public and private infrastructure.

Specific shortages of science professionals

- physicists
- mathematicians
- material scientists

The science professional workforce is very specialised and segmented. Vacancies in specialised areas can be very protracted.

Measurement of Demand

APESMA believes the current statistical measurement of vacancies and demand of technical professionals is becoming increasingly inaccurate:

- a. the broad ASCO definitions fails to track changes in technology and required skill changes
- b. the increased use by of database searches and internet searches rather than public advertisement of vacancies.

Internet database searches and private recruitment is not reflected in many indexes of technical professional skill vacancies which are traditionally based on reviews of newspaper advertisements.

A more accurate position of the skill shortages is being reflected in increased salaries being offered for technical professions and by surveying directly of employers needs.

The acknowledgement of skill shortage in technical professionals critical areas is increasingly becoming a commercially sensitive issue in many industries.

Causes of Skill Shortages

(a) Image of Manufacturing

There is a wide spread belief that manufacturing in Australia is a dying industry. A view exists that all manufacturing will be replaced by imported products and this is discouraging young people at both the professional and trades level entering engineering fields.

Australians in the 1950-60s had an very different outlook on technical skills and we are still reaping the reward of post war investment in infrastructure and the skilled migration that made it possible.

Today those same Australian's are retiring from the technical professions but many have not been able to hand on their skills to a new generation.

(b) Change in Training

Prior to the 1990's organizations employed cadet engineers and scientists directly.

There was a mistaken belief that the general increase in university places during the 80s/90s would mean that businesses could reduce costs of training engineering and science professionals and the number of students employed in part-time as engineering/science cadets fell. NSW Government Owned Enterprises and Departments followed the commercial trends and downsized their cadet intakes.

Some organisations changed from providing cadetships to funding scholarship programs but APESMA estimates that over 300 cadets jobs disappeared annually.

Many universities stopped providing courses based that could fit in with sandwich/part-time in industry. Both University of Technology and Wollongong University had good reputations for providing courses run at night and in day blocks to allow companies to employ student 4 days a week at work. This does not exist now

The numbers of students in engineering and science has steadily fallen since 1995. Engineering recently seen some increase in student intake as employers are increasingly offering cadetships/scholarships. Many courses were unable to fill available places due to lack of suitable applicants.

Australia higher education sector has become student-consumer market driven combined with the government funding not growing universities have been increasing places for low cost. Engineering and science education are a high cost in equipment and the need to keep pace with due to technical change training are a high cost. Several universities have found difficulty to maintain the quality of the courses and discontinued high cost science and engineering programs –example Canberra University.

(c) Change in Industry Structure - Global Industry

During the 1980/90s there was a shift in both private and public sector to outsource professional technical services.

The Australian consulting engineering sector undertook a large-scale rationalization with firms merging and international firms also entering the market by acquiring Australian firms.

The ability of Australian trained engineers/scientists to work overseas increased with lowering of barriers to employment overseas as European and USA experienced skill shortages.

Many NSW professional engineering firms are still dominated by people who received their professional experience in the NSW government corporations.

The science consulting and technical services industry failed to the same growth as the engineering sector. Changes in R&D funding saw many companies close their research arms and increase direct funding of university/CSIRO research.

APESMA believes because of the outsourcing trend both government and private sector failed to manage the training of new entrants into the engineering field and left it up to the universities to encourage students into the fields they needed.

The Australian professional technical services industry rapidly grew during the 90s and has yet failed to mature and develop the training and development model for new engineers and scientists entering the industry workforce.

(d) Shortage of Specialist Science and Engineering Teachers

Both the public and private school systems have a shortage of specialist teachers in mathematics and the sciences. APESMA believes that this is affecting the exposure of young people to science and technology.

(e) Reluctance to Leave Sydney

Professional workers have a reluctance to leave Sydney and work in rural and regional areas because of several factors

- Fear of not being able to re-enter the Sydney housing market
- Opportunities for their children
- Lack of access to professional education and development
- Fear of missing career opportunity
- Lack of job opportunity for their spouse

Any must strategies to address rural and regional skill shortages must address these fears.

(f) Particular case - Local Government Engineers

The local government sector in NSW is finding increasingly difficult to source experienced professional engineers, particularly in rural and regional areas.

The shortage of civil engineers and the relatively low pay that local government can provide are increasingly effecting the operation and maintenance of local government infrastructure.

(g) Region and Rural Skill Shortages

The skill shortage is being felt in regional and rural areas because of the general skill shortage of professional engineers and scientists not only in Australia but across OECD countries.

Solutions to Skill Shortage of Technical Professionals

(a) Migration not the an answer for technical professional skill shortages.

The already Australia has 38% of new entries into its professional engineering workforce coming from migration and 40% of Australia's engineering were born overseas. This compares with 17% for the USA and 5% Germany.

There is a skill shortage in professionals in OECD countries and Australia is competing in increasingly competitive international markets for both students and experienced professionals.

APESMA supports a skilled migration program to build Australia's skill base however this cannot be at the expense of increasing investment in educating our skill base.

Employers should not only be required to show that inability to fill position but should show that they have or will contribute to investing in training before being allowed to be considered for sponsored migration.

APESMA is concerned about the Australian's government ability to regulate skill-based migration during economic booms particularly when not employer sponsored. The slow response to reassessing IT skills demand in the skilled migration program after the dot.com crash is perceived by many to have lead to increased unemployment after the boom and also deterred entry level students from undertaking IT training.

The importance of matching demand/supply in the technical professions is particularly important because graduates who do not enter the employment rapidly find their technical skills redundant and are unable to fund the continuous education required by the industry.

Another issue with migration is that it does not address the region and rural skill shortage. Overseas technical professionals are just as attracted to the Sydney region.

APESMA recommends

- ***NSW Government departments and agencies have a human resource plan that shows how they will develop the technical professional skills they require.***
- ***Where NSW Government agencies intend to outsource or "buy in" technical professional skills to meet their operations they should be required to show how they will monitor and intervene to ensure their labour requirements are met.***
- ***The Auditor General should be asked to report to Parliament on the human resource shortages and needs of all Government agencies on an annual basis.***
- ***That no Government department or agency sponsor skilled migration to fill a skill shortage unless they have a cadet/graduate development program that can be mentored in the area of need.***

(b) Investment in Education is an answer

Australia has a very low percentage of its tertiary training dedicated to the training of scientists and engineers compared to the rest of the OECD.

7.9% of graduates in Australia are in engineering and science related fields compared to an OECD average of 14%. In Australia the level of students entering and graduating in science has dropped since the introduction of HECS and has been further effected by user pay reforms of the Australian Government

In other OECD have increased investment in engineering and science education to address their skill shortage and they structure their economies to aim for a high skill/high wage to compete with growth in competition with India, China and South East Asia generally.

APESMA believes that Australian Government needs to preferentially invest in engineering and science education places and should consider HECS discounts and scholarships to encourage more students to consider a career in engineering and science.

APESMA recommends:

- ***NSW State Government and agencies takes an active role in ensuring that the University sector provides the professional technical skills required for public infrastructure development.***
- ***NSW Government look at ways of encouraging the Universities and High Education Sector to develop on-going professional development technical courses that are delivered online or in a concentrated format***
- ***Review APESMA/Victorian government program to train engineers and scientists as teachers to meet the shortage of specialist science and mathematics teachers. APESMA supports this as a career change program,***

(c) Promotion of Cadetships

APESMA strongly believe that an increase in the number of part-time work opportunities for students in engineering and science in their field of study will promote an increase in the number of students choosing to do engineering and science.

Currently the percentage of engineering and science students employed is high because of the need to fund the additional cost of technical courses. The need to work to cover university costs is cited as reason by students from withdrawing from courses.

However future engineers and scientists are not being exposed to industry and technology but to the hospitality industry. Our future industry leaders are flipping burgers.

We should be encouraging the skilling of our tourist/hospitality industry by employing people who intend to make it their career. We should be providing our future industry leaders with jobs in industry.

APESMA supports a program that ensures that engineering and science students enter the workforce at the earliest possible point to develop on the job skills required by the industry.

Currently some engineers and science graduates never step onto an industrial or professional worksite until after they have completed their degree.

APESMA recommends that NSW Government

- ***Fund engineering and science cadetships programs particularly in areas of :***
 - ***environmental monitoring***
 - ***infrastructure planning***
 - ***power industry***
 - ***water industry***
 - ***local government***
 - ***RTA***
 - ***railways***
- ***Review the Department of Commerce to address its ability to be an "informed client" and put in place a human resource program to ensure the development of qualified engineers who can protect the government's interest in public work development.***
- ***Review the program suggested by APESMA and established in the rail corporations where near retirement engineers are encouraged to mentor cadets/new graduates to pass on their technical skills.***
- ***Review Government agencies to ensure that they have appropriate graduate development programs for technical professionals for the skills required by that agency.***
- ***Liase with Universities to ensure they can deliver part-time and night courses so that industry can hire engineering and science students***
- ***Call an industry wide meeting of technical service providers to government (and infrastructure industry) to develop training models to ensure they are can continue to provide an ongoing service to government.***

(d) Promoting Science and Engineering

APESMA believes that we need to do more to promote an interest in science and engineering in our children

Currently there is little coordination between the Federal funded Science and Engineering Weeks and the state government agencies. These events would be more effective if all levels of government and greater industry was involved.

APESMA supports increased funding for establishments such as Powerhouse Museum and Questacom and also to schools to provide excursion from school or well-resourced travelling science shows so that young students can be exposed to interactive science learning.

NSW Government should also ensure that Powerhouse Museum remains focused on its original objective of being

APESMA recommends:

- ***Review of focus and mission of the Powerhouse Museum to ensure one of its primary goals is to promote careers in engineering and science.***
- ***Increase funding for school excursions to visit manufacturing businesses and interactive science display.***
- ***Review the appropriateness of a development of a travelling science show to rural and regional schools.***
- ***Increased involvement and investment by government department and agencies in Science and Engineering Week.***
- ***Look at developing a Science and Engineering Meets Parliament based on the Federal model so that parliamentarians can be kept informed of science required by both NSW industry and by government agencies.***

(e) Promoting Women in Engineering and Science

Engineering and science professions remain very male dominated fields with the notable exception of biological and environmental fields.

In many engineering course the proportion of male to female students is in the ratio of 80:20.

APESMA encourage NSW government to act as a model employer in developing family friendly work policies to encourage more women into engineering and science.

APESMA recommends

- ***NSW Government invests in developing role models of women in Engineering and Science***
- ***NSW Government reviews its human resources so that it becomes an industry leader in providing family friendly policies for women working in engineering and science as part of a strategy to encourage more women entering these professions and to retain staff.***

Effect of Engineering and Science Skill Shortages

Many of the areas of skill shortages are for engineering and science are in the area of the development, design, construction, operation and maintenance of public infrastructure and utilities.

In the power industry the Queensland Government increased investment in response to recent power failures has lead to an even increase. NEMCO has indicated that the eastern power grid must develop more generating capacity but we may not have the professional engineering labour resource to plan, design and operate an expanded network.

The state road departments in Australia are currently in a bidding war to retain engineers.

The mining industry is finding it increasingly difficult to source engineers and scientists to take advantage of the resources boom. The Western Australian and Queensland mining boom is starting to effect not only future developments, but current operations in NSW as they headhunt qualified staff.

Local government is increasing finding it difficult to find civil engineers and planners as they are priced out of the market by the strong construction industry.

European and USA are experiencing a similar problem to Australia. UK recruitment firms are actively targeting Australian students while all these countries hiring from the limit pool of suitably qualified and experienced engineers from India and China.

NSW Regional and Rural labour markets, even Newcastle and Wollongong are experiencing a shortage of skilled technical professionals to manage development in their local industries.

The largest restraint on development of NSW infrastructure will not be lack of government capital or willingness to invest, it will be a lack of a skilled engineering workforce to design, construct, operate and maintain the infrastructure expected.

Conclusion

APESMA several months ago was attacked for saying that 10% salary increases were reasonable during the next 12 month for many professional engineers.

Now we are being increasingly invited to provide speakers to talk about our proactive approach to building Australia's engineering and science workforce as the reality of the technical professional skill shortage hits home.

We are recognized by employers as suggesting solutions not only industry wide but for individual businesses.

APESMA is proud to be a key sponsor of the Australian Financial Review "Skilling Australia" conference in September in Melbourne.

APESMA would be available to present detailed information to the committee, in person or by correspondence, about skill shortages we are aware of in both NSW public and private sectors. We would also be available to expanding on our proposed solutions to skill shortages in the technical professions.

Joe McKay
NSW Branch President
APESMA