



31 January 2012

Committee Secretary
Senate Education, Employment & Workplace Relations Committees
PO Box 6100
Parliament House
CANBERRA ACT 2600

Dear Sir,

On behalf of the Association of Consulting Surveyors National (CSN) I would like to thank you for providing the opportunity for industry groups such as CSN to participate in contributing to the Government's Senate Education, Employment & Workplace Relations Committees Inquiry into the *Shortage of Engineering and Related Employment Skills*.

CSN is a proud advocate of the development industry. The Association represents the private sector of the land and engineering surveying profession and related spatial services nationally with three hundred and sixty private sector member surveying firms representing a significant portion of the industry engaged in the business of surveying or a related discipline. Firms are spread across the country and are well represented in the urban, regional and rural areas.

The surveying and mapping industry is broad-based, multi disciplinary and technologically advanced. It operates in a wide range of surveying sectors including land, spatial, mining, engineering, hydrographic and affiliated property professions. In NSW surveyors are qualified to provide engineering design services and the industry's international credentials have been established on projects not only in Australia but also in South-East Asia, the Middle East and Africa. The provision of 3 dimensional spatial data services by surveyors is ever increasingly sought by developers, architects and engineers and forms the base data for conceptual and detail design for major infrastructure projects. Surveyors are also critical on site professionals during the construction phase and play an important role in the creation and formatting of spatially accurate and reliable 'as constructed' and asset management records. Land and property development requires significant services infrastructure, both on site and for lead in and outfall services. The creation of titles relies on professionally qualified and registered surveyors' lead involvement in the subdivision process throughout Australia. The services provided by our members generate many billions of dollars worth of activity for the national economy annually.

Member qualifications are at a very high standard. The membership of the Association has undertaken a rigorous educational process which requires them to complete a Bachelor Degree and to subsequently become registered under various Surveying & Spatial Information Acts in each state which involves a further examination and completion of competency based tasks supervised by the state regulatory authorities. The

SURVEYORS vital to Australia's Development

quality of surveyors trained and registered in Australia is considered to be of the highest standard when compared internationally. In addition surveying services are an integral part of the property industry providing the foundation on which the economy is built. Development does not commence without surveying services.

The Association has enjoyed a productive relationship with various Governments since its inception. We have been consistent and public supporters of programs of reform that have a vision to make the delivery of infrastructure development economically viable and sustainable. Reform is critical to providing a stimulus for investment and certainty, efficiency and consistency for all stakeholders. CSN therefore values its ongoing working relationship with industry, government departments and infrastructure bodies dealing with the provision of land services. It is within this spirit of cooperation that CSN provides the following submission to the Senate Education, Employment & Workplace Relations Committees Inquiry.

Our submission responds to the Terms of Reference, specifically items 'c and d' which seek to articulate a way forward to address the skills shortage of surveyors and the effectiveness and efficiency of relevant policies, both past and present.

(a) The implications of the shortages for infrastructure delivery in terms of economic development, cost, efficiency, safety and disputation.

Our vision for the long term is for a sustainable industry which attracts investment to the Australian economy with all stakeholders able to efficiently provide their services in the secure knowledge that there will be a consistent and easily manoeuvrable body of legislation to assist their development plans across the nation.

We define infrastructure as the basic framework or underlying foundation of our economy. Infrastructure therefore includes roads, railways, airports, utility services, schools and other capital investment comprising the underlying systems within a country or region. The Cadastre is also a critical piece of infrastructure. This can be defined as the register of property boundaries and land ownership and is guaranteed by governments in Australia. We provide this definition to set the parameters of our discussion but also to provide the scope of the surveying profession's involvement in the development and provision of national infrastructure. Before a school can be built a surveyor establishes the current site conditions and defines the site boundary. Before a road can be constructed, a surveyor provides the boundaries of the construction. Before a tunnel is constructed, a surveyor will determine the position and alignment required. Before the challenges of rebuilding after an earthquake or a flood or a bushfire, a surveyor will determine the limits of the Cadastre and before a road accident will allocate costs surveying skills will determine the distance travelled by the offending party and a surveyor will determine the skid and road dimensions. Without surveyors, national development stops.

It follows therefore that a critical skills shortage in surveying, which is currently being experienced is a national problem. Basic economics dictates that without roads to transport goods and services across the nation, economic growth is restricted. Without schools to educate our young, technological development and growth of future industries such as biotechnology are compromised. Without the ability to enforce democratic law and order, the economy falls into chaos. Surveying is the profession underpinning the provision of infrastructure for an economy that aspires to growth and future prosperity.

We highlight the importance of surveyors to the national economy to demonstrate the importance of a skills shortage in a profession that provides critical services to the provision of national infrastructure development, well before the related engineering professions engage with the construction services. Well planned infrastructure development to underpin national expansion is critical to sustained growth.

SURVEYORS vital to Australia's Development

COST

A skills shortage makes infrastructure delivery slower and therefore more costly. If contracts are signed but work cannot commence through boundaries and base data not being available because surveyors are employed on other tasks, completion dates are blown out and costs escalate.

In addition when demand is higher than supply then the equilibrium price will rise and the available firms to provide surveying services are not only able to but must charge higher costs. One of the key cost elements in a surveying firm is the cost of labour and the cost of labour resources increase is proportional to the skill shortage in that sector.

EFFICIENCY

It also follows that a skills shortage in surveying will hold up infrastructure project delivery. Should boundaries need to be redrawn or created and/or land tenure issues need to be resolved, as they often are in major projects, additional delays will inevitably be experienced.

SAFETY AND DISPUTATION

Surveyors operate within very strict Occupational Health and Safety guidelines. In NSW CSN through its state affiliate, Association of Consulting Surveyors NSW (ACS NSW) is in the process of delivering a whole of industry educational program in partnership with WorkCover NSW to bring the surveying industry up to date with the new national Health Safety and Welfare legislation. As other states adopt the national legislation, the program will be extended to each of these states.

Shortages in labour resources however put pressure on available resources. The subsequent tension of such pressure inevitably leads to problems with work practices and consequent issues in safety and disputation.

(b) The impact of long-term outsourcing of engineering activities by government on skills development and retention in both the private and public sectors.

Surveying firms have a strong involvement in the long term development of national infrastructure. They have enjoyed working relationships with government instrumentalities on all their levels and on many national infrastructure projects. Outsourcing of engineering and surveying services helps improve skills development in private sector firms and for those surveying firms that are big enough to ride out the skills shortage do well and are able to provide strong professional support to their staff. However in the long term sustained outsourcing of functions can drain public sector of knowledge and resources. It also creates a vacuum in public sector training ability to provide the sound underpinning of training programs such as cadetship programs to support young people embarking on training and opportunities for professional progression. This issue is discussed below.

Of particular concern to our profession is the integrity of the national Cadastre which can be compromised by surveying skills shortages. The national Cadastre is the responsibility of registered surveyors in all of the states and territories. A strong, reliable and accurate cadastre is of vital importance to economic activity and to national wealth security. It forms the security for the vast majority of financial transactions and the banking industry. A strong and reliable Cadastre is an important investment in the spatial industry and allows for vertical integration of a range of services and the production of a wide range of mapping services. These mapping services range from the most accurate systems right down to items used in the mobile phone industry.

SURVEYORS vital to Australia's Development

Surveyors are involved in the collection and presentation of information for the spatial industry. This is a growth industry that includes such everyday consumable items as Google maps and also extends to complex GIS systems used by government departments such as the Ambulance and the Rural Fire Services. Therefore skills shortages in this industry impact extensively on the whole national economy, not just the construction industry.

(c) Options to address the skill shortage for engineers and related trades, and the effectiveness and efficiency of relevant policies, both past and present.

The surveying industry has recognised that registered surveyors and surveying technicians have been in short supply over a period of several decades. The supply/demand balance for surveyors has long fluctuated with economic cycles, but the significant and sustained shortfalls seem to have started about 20 years ago, and the circumstances do not appear to have been generally recognised until at least 10 years later.

Past government policies have been attributed to the situation in several property related professions including surveyors, engineers and valuers. Just over two decades ago redundancy packages were offered in Government-owned enterprises and utilities in an effort to make them more commercially focused. A few examples include Telecommunications – Telstra, Energy (State Electricity Commission of Victoria and Gas and Fuel), Transport (tram, metropolitan and country rail, ports) and the Australian Valuation Office

Many of those who accepted the packages never returned to their profession, some because they were already eligible to retire and others because they used the packages to enter small business such as newsagencies, milk bars, motels, etc.

However the services were still required resulting in industry dis-aggregations, privatization and outsourcing of surveying functions which began in about 1993 and mostly in the very same sectors. These policies created a greater demand for surveyors due to loss of critical mass (splitting up functions allows little redundancy for leave, training, promotion and departures).

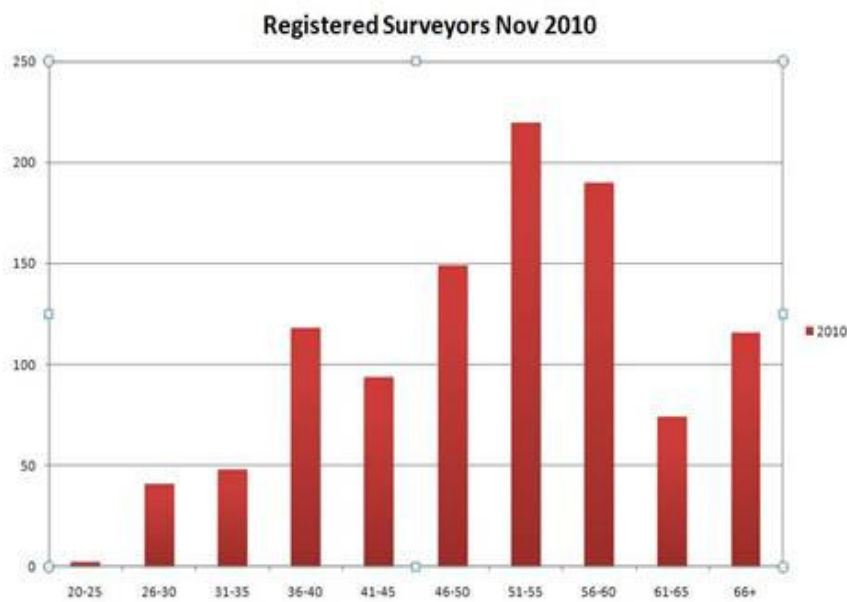
Most significant to this submission was the loss of training opportunities. Government instrumentalities were clearly recognised as on the job training grounds for professionals in many of the property and infrastructure related professions including surveying. There was time to teach the graduate and those on 3rd and 4th year cadetships to do the job right and there was a diverse range of work to extend skills. There was the opportunity of carrying out work for the Defence Department one day and then undertake the surveying work on a major highway the next or a small subdivision on yet another day. The diversity of such opportunities has disappeared and with it highly skilled surveying professionals that would often eventually go into the private sector. Currently Graduates who are not lucky enough to obtain reduced opportunities in the public sector go straight into the private sector where there is quite often less diversity and the opportunity to develop skills in smaller firms, is limited leading to a drain of skills from the industry as a whole.

In addition, diversion of surveyors into contractual, regulatory and compliance framework activities that became necessary for ring-fenced successor organisations created further problems. One of the most serious consequences of dis-aggregation was that the on-the-job-training and payment of surveying students via 3-4 year cadetships dried up. Many students were forced to seek alternative part-time employment, and missed out on a solid practical surveying exposure and purpose to accompany their rather theoretical studies.

SURVEYORS vital to Australia's Development

Furthermore government instrumentalities also employed surveying technicians who were then provided with opportunities to undertake a TAFE qualification. The work was interesting and they were encouraged with cadetships to go on to university qualifications. The cadetship programs provided an attractive pathway for many students and encouraged them to grow their skills to maximum capacity. The programs also ensured a steady stream of highly qualified and skilled surveyors entering the industry with strong support and encouragement from mentors that understood the industry and its needs.

The change in the supply of surveyors can be clearly demonstrated with an industry age profile. The graph created by the NSW Surveying Registrar clearly demonstrates the correlation of the two events on the supply time line. Those in the 51 – 60 age group were part of the system before it was changed. There a huge drop in numbers in the 41 – 51 age group reflecting the change. Numbers are beginning to pick in the 36 – 40 age group which is benefiting from the industry mentoring program to assist graduates obtain registration. This correlation is reflected in other states. What is also alarming is the numbers retiring demonstrated by the drop in numbers in the 61 – 65 age group. If this level of exit persists, the industry is in trouble.



Source: NSW Board of Surveying and Spatial Information register of surveyors

A compounding government policy throughout the 1990s to the discussion above was the change in funding arrangements for Australian universities. Universities are required to generate a significant amount of income from their own endeavours. Many universities have moved from around 90-95% government funding to some funded around 60-70% from external sources/fees. This has led to a much more corporate business model and approach. The gaining of research grants and fee paying overseas students are very important. There has also been a tendency to larger class sizes, reducing teaching overheads and staff numbers with a focus on increasing numbers in low-cost courses. The benchmark of what constitutes program viability has risen significantly over the years – programs, like surveying with small intakes, few overseas fee paying students, attracting little in research funds, are particularly at risk of closure, with the resources being diverted elsewhere.

SURVEYORS vital to Australia's Development

The surveying program at QUT has reported that it has serious problems relating to: small enrolments; a high attrition or transfer rate; few full time academic staff; very low postgraduate numbers; the few staff have to cover a wide range of expertise areas where they may not be experts. It is in a vicious downward spiral – few students, mean fewer staff/resources, higher teaching loads, less time to research and publish, lower meeting of university norms.

This situation is reflected in other universities teaching surveying degrees such as University of NSW and Melbourne University. In South Australia there is no longer an undergraduate surveying course and entry into the profession is now by completing a generalised non surveying three year undergraduate degree, with a one year surveying postgraduate coursework followed by a year in the workforce doing projects. For a profession that is responsible for the integrity of the Cadastre in each state, critical for nation building, this situation reflects a dire set of circumstances but it is difficult to see how a high quality output can be guaranteed under these circumstances. As an example of the problems created by this funding model for both the industry and the nation, at the UNSW graduation ceremony last year, there were five PhD graduates but none attended the ceremony. They had all gone back to Indonesia, Malaysia and other Asian homes. The benefit of their training to the Australian economy is minimal to say the least.

A further educational problem exists in the TAFE sector. Prior to the commercialisation of the education sector, the TAFE system in each state sat under one umbrella with shared resources. As with universities the changing nature of the system that now requires the colleges to compete limits resources sharing. No one wants to give away their competitive advantage. An example of problems so created can be demonstrated in NSW where on-line delivery of Certificate III and Certificate IV on-line courses was becoming critical. These courses provide skilling upgrade for those surveying technicians already in the industry because they require access to technology and equipment. They are potentially not open to part time students that are working outside the industry because of the lack of access.

With industry financial assistance both courses were eventually delivered through Illawarra TAFE and Sydney Institute of Technology respectively. Both have been operating successfully for a couple of years. However given the competitive nature of the TAFE structure, Canberra Institute of Technology is seeking substantial funding from DEWR to establish exactly the same on-line provision of Certificate III and Certificate IV even though they will not attract one new entrant into the profession due to the access to equipment requirement. This is a regrettable waste of resources when each institution could have shared the available resources already established.

With decreasing numbers of mentors and role models school students are not encouraged to enter the profession thus further hampering the growth of the profession. It is a major problem on many fronts and if not addressed will create significant difficulties for the cost and efficiency of delivering infrastructure development to the Australian nation. More and more employers are looking to 457 Visas to provide them with additional surveying employees.

Collaboration between the industry and government can alleviate some of these issues and we address the possibilities of collaboration in the next section.

(d) Options for infrastructure delivery using alternative procurement models which aim to foster collaboration and achieve effective community outcomes, including skills development and retention.

Universities following the prescribed model as described above are struggling with student numbers and teaching staff. There is one university however that is going against the

SURVEYORS vital to Australia's Development

trend. The surveying and spatial information program at the University of Southern Queensland has grown strongly over the years which it considers to be sustainable and has strong support of its management. It provides technician and first degree training to those mostly already in the workforce through flexible distance education and integrated industry training. Although some other universities are struggling to graduate double figures per annum, in 2009 USQ had 85 graduates. Its Postgraduate program is also developing well although similar to other universities, most of these students are from overseas and probably not destined for the Australian industry. The USQ program has 11 full time staff and staff numbers have increased over the years with increasing enrolments. There are Sydney residents that find the USQ model much easier to access than attending UNSW because the former is provided on-line. It would appear that a university education system that provides more flexibility, evening subjects and on-line subjects would attract additional students and USQ provides a successful example of such delivery. The QUT survey estimates that only 45% of USQ students reside in Queensland therefore a survey of USQ students as to their choice of university would provide valuable data for a model that other universities should follow with government encouragement.

Others propose that there is a skills shift rather than a skills shortage. They claim that there are employees available and they can be attracted if the position is interesting, the salary is good and it is a coastal location. Several firms in this category say that they have employed staff over the last six months and have found no real skill shortage although in all cases the salaries they paid were very competitive for both surveyors and civil engineers.

However there are other firms that lament that it is very difficult to attract surveyors/civil engineers especially to country positions or any regional areas that are not located on the coast. Traditionally country salaries have lagged city salaries for several reasons. Although changes have been noticed and they have been driven by the need for country practices to attract quality professionals and offer salaries which are greater or equivalent, and they need to be, to get surveyors/civil engineers to move to the country areas. However only competitive businesses with good clients and solid business systems can succeed as the salaries have to be collected in fees and reasonable fees are a problem with many country surveyors.

The real perceived threat to a shortage of engineer/surveyor skills is the ever growing resources boom. The salaries that are paid in remote areas and even in many not so remote areas, are incredible drawing in a lot of the young professionals. The salary benefits of remote and resource areas have always been around but the difference today is the density of the resource operations. They cover the Australian inland and with fly in fly out strategies, they are difficult to compete against.

The skills shortage in the surveying industry, despite falling numbers of graduates has been alleviated somewhat with the development of digital technology which is driving process development in many sectors. The exponential escalation in the use of technology such as GNSS (GPS), laser scanning etc. has created improvements in work processes which have complemented skills shortages. The personnel requirements for the use of digital technology can be much less. Instead of a surveyor and an assistant it is now possible to use a technician in the field for field work whilst the professional is in the office doing the calculation and building the business.

Surveyors are not only proficient in surveying skills but they also provide engineering services and wide experience with project management. However there appears to be conflicting anecdotes in what exactly would improve the delivery of services. CSN proposes that an industry wide Demand Study would provide effective and much needed data as to where and what kind of resources should be directed. The Association would greatly appreciate assistance from the government to project manage such a study.

SURVEYORS vital to Australia's Development

(e) Effective strategies to develop and retain engineering/surveying talent in the private and public sectors through industry training and development at enterprise, project and whole-of sector levels.

There are traineeships available to member firms however the process is very complicated and difficult to manoeuvre. The mixture of Federal and State funding which depends on new workforce entrant, or existing worker status, further complicates the issue. The consequence of the complexity is not only a shortage of students but a shortage of qualified teachers to teach these subjects. As outlined above, there has been no support from governments to improve this situation. A simplification of the processes especially with access for private firms to funding during the course rather than on graduation would greatly assist the training potential.

Public sector offering cadetship style support for school leavers as also discussed above would encourage retention especially if accompanied with remuneration, professional progression and appropriate skilling. Currently surveying firms undertake the task in a small way, but it could be very much improved.

The Government could greatly assist in creating an efficient educational system for this industry by encouraging universities to undertake development of online/distance education to increase flexibility of delivery. A restructure of the funding model in sectors with skills shortages would also assist the industry.

In NSW, CSN through its state affiliate, ACS NSW, provides competency based courses to assist graduate surveyors reach their final qualification in achieving Registration. Since this system was introduced five years ago, NSW has demonstrated the programs' success with the largest numbers of registrations in the country. At present these courses are subdivided by the industry. They are in dire need of Government support in other states which would serve the important long term strategic goal of providing trained professionals to service the economy.

The benefits of educational support by the government for this sector are multifaceted. To support the drive of digital technology Government support for research and exposure through education to non traditional sectors would provide the government with an opportunity to promote a technologically advanced economy that encourages innovation and the uptake of new advanced technology. Such innovation can already be seen with the integrated E-Plan Platform undertaken by state governments.

On a national scale support to encourage school leavers to move into surveying and related courses would greatly benefit the industry. The industry is attempting to do this on a state by state basis. The Victorian Surveying Taskforce, essentially industry funded, has done an excellent job in providing face to face and on line advice to school students. Early results suggest the increased profile of surveying, generated through the Taskforce has increased student enrolments in Victoria. It would be very useful to be able to extend this initiative to other states in a coordinated way but it needs national support which is not easily available just from current resources.

(f) Opportunities to provide incentives to the private sector through the procurement process to undertake skills development.

Outsourcing of projects is providing incentives for the private sector and in order to deliver it must invest in the development of skills. With the limited resources available, a consequence of this has been the creation of a vacuum in public sector

SURVEYORS vital to Australia's Development

(g) Consequences of skills shortage in the construction sector to the public sector's capacity to effectively produce and manage infrastructure projects.

Skills transfer from public to private sector makes it difficult for the public sector to procure and manage infrastructure projects entirely on its own. Even with the support of the private sector, the lack of necessary skills obviously makes the delivery of infrastructure projects more difficult, less efficient, more costly and time consuming.

(h) The impact of delayed and stalled infrastructure projects on economic development, workplace productivity and employment.

Infrastructure projects provide the basis for development and the foundations on which both public and private sector operate. Delays in delivery will conceivably slow economic development and cause bottle necks.

The Cadastre is a vital piece of infrastructure that is constantly in a state of flux through development. The timely and accurate recording of these changes is fundamental to the financial transactions supporting this development. It is the integrity and guarantee of this infrastructure that provides financial institutions the confidence to accept property as security which underpins the strength of our economy. Any loss of confidence in the integrity of the Cadastre could have dire economic consequences.

(i) Other related matters.

National Property Transfer System:

CSN is aware that State Governments have been working on the National Property Transfer System. We see this as an important element to enable professionals to relocate and to reduce the complexities of transfers in cross border areas. CSN proposes that it should be a priority to inject renewed enthusiasm into resolving this system as it would be an important investment in a flexible workforce that operates under similar provisions for businesses in whatever State they are located.

Consulting Surveyors National would be very pleased to take part in further discussions on this topic.

The Association would be pleased to be given a further opportunity to present to you the challenges that our profession faces nationally. If you require any additional information or wish us to elaborate on any issues please do not hesitate to contact the Association CEO Veronica Bondarew on _____ or email _____

Kind Regards

Phil Dingeldei
Chairman
Association of Consulting Surveyors National

SURVEYORS vital to Australia's Development