

The Australian Surveying & Spatial Workforce

A National Roadmap

Create jobs for the future of
Surveying and Spatial sector

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April 2022



Paper Summary

Workforce shortages for Surveying and Spatial occupations have been looming for over a decade. **Unless action is taken by the industry, the growing shortfall will continue unabated** – The time for action is now

It is plausible that had a coordinated, structured plan been implemented at the time of the earlier workforce analysis, the current situation may have been avoided. This is not to criticise past decisions but rather to emphasise the **time for action is now**.

This call to action is further heightened by recent initiatives such as the Council of Reciprocating Surveyors Boards of Australia & New Zealand (CRSBANZ) National Standard of Competency for Surveyors being led by Michael Nietschke, the review of cadastral endorsement process by the Surveyors Board of Queensland, a review of the licensing system by the Surveyors Registration Board of Victoria, and the University-Industry Collaboration in Teaching and Learning Review led by Emeritus Professor Martin Bean CBE, former Vice-Chancellor of RMIT, and Emeritus Professor Peter Dawkins AO, former Vice-Chancellor and President of Victoria University. These initiatives and others set out in this paper, provide a **platform for the industry to target its engagement and advocacy in taking forward the recommendations**.

In recognising a critical need for action, the Surveyors' Trust commissioned work to review and collate research of the Australian Surveying and Spatial sector workforce to have a better understanding of the landscape, issues therein and opportunities to inform a collective industry approach to address the workforce crisis impacting the surveying and spatial industry in Australia.

This paper advocates for the industry to adopt a **sustainable, holistic approach** to workforce planning and implementation underpinned by collaboration of a wide range of industry sectors and representative bodies. To fully address workforce capacity and capability needs, it is recommended that planning and program design be informed by long-term workforce development strategies and implementation building on evidence-based decisions relating to policy and regulatory frameworks, education and training pathways, workforce structure and economic development influenced by technology adoption, investment and global competition for talent.

The paper recognises and commends previous efforts to address workforce issues and seeks to communicate the value of **sustaining the momentum** to realise long-term transformation.

About the Paper

Report objectives

- A consolidated summary of industry workforce and skills gap analysis for the surveying industry and associated occupations (nation-wide) including:
- Recommendations on how the industry should best address identified productivity risks associated with declining workforce and a narrowing of the skills pipeline; and
- Terms of Reference for an industry group to address key risks.
- The basis for planning for a Workforce Industry Forum to be held in 2022.

Methodology

- 1:1 consultations with over 45 stakeholders representing over the period November 2021 to March 2022
 - Surveyor's Boards
 - Universities
 - Surveyor-Generals
 - TAFE
 - Schools
 - Employers (small – medium – large/enterprise)
 - Research organisations
 - Consulting organisations
 - Industry associations & professional bodies representing surveying and geospatial organisations
 - Not-for-profits (providing career advice)
 - Intergovernmental organisations
- Literature review of over 40 reports, articles, websites, policy papers, etc, relating to the workforce, global trends, national education and training programs/policies and workforce planning and development initiatives
- Review of current Surveying and Spatial sector workforce initiatives being conducted throughout Australia
- Consultant advice drawing on over 20 years of global workforce development policy and program design

Snapshot of the workforce & influences

17,700 (Surveyor and Spatial Scientists)

Surveyors
8,500

Australian unemployment
4.2%

1/5th of global workforce to be impacted by **AI & Automation** by 2030

STEM occupations grew by **106.2%** over 20-year period to Feb 2020

QLD: **30%** of Cadastral Surveyors to **retire** over next *5 years*

Global Smart City Industry set to double to **USD821** billion by 2025

Increasing **competition** for skills: infrastructure related jobs shortfall of **93,000** in early 2023

Digital maps supported over USD1trillion of yearly sales globally for businesses (2016)

Global geospatial imagery analysis market size to reach **USD37.5 billion** by 2026

Key Findings

Through literature review and desktop research

The pace at which technology is growing is such that more consideration is needed around how education and training structures keep pace with emerging tech

There is a need for the GIS profession to be a 'legitimate' field requiring formal recognition through a GIS accreditation

Alternative pathways will enable greater participation in the surveying workforce by professionals who take on surveying later in the career, regional and remote students and/or those who are more interested in a practical style of learning

US 2017 Study on "technological unemployment" found one of the most susceptible was Surveying and Mapping Technicians. Frey and Osborne calculated a 96% probability that workers in that occupation will be displaced by automation in the coming decade or two

It is increasingly critical for the sector to remain relevant to attract and retain its future workforce. It must be ahead of the curve by evaluating workforce trends impacted by digital transformation.

Key issues identified relate to the recognition of skills and where those skills come from often resulting in the exclusion of vocational educational pathways and recognition of cross-industry skills.

The current education and training pathways for the Surveying and Spatial sector are too narrow resulting in reduced student numbers to transition into the workforce to meet the needs of industry. As such its ability to access the skills they need, when they need it and where they need it is negatively impacted.

Nearly 70 per cent of Australian employers surveyed by the World Economic Forum in 2020 were seeking to reskill workers in less than six months.

Systemic issues

Feedback from over 45 stakeholders

The question for consideration is how far does the industry need to go to open pipelines and recognise valuable skills for the industry? How deep is the appetite to facilitate change by evaluating and addressing the symptoms in a different way?

Lack of national standards

Lack of regular data on the state of the workforce (current and emerging)

Narrow approach taken to career pathways

Excessive time to be licensed

Lack of awareness of the sector and profession

Confusion around language

Education & Training not keeping pace with technology

Rate of pay not commensurate with similar occupations

Lack of impactful advocacy

Too many representative bodies – over 20 bodies representing a workforce of 17,700

Previous workforce programs have lost momentum, due to funding and lack of ownership

The Opportunity – leveraging education & training sector reforms

Currently there are efforts led by the Federal Government to address industry relevance across national education and training curriculum and standards.

Australian Education & Training System:

- VET Sector Reform
- AQF Review
- Emerging Occupations (Data Analysts/Scientists)
- Review into University-Industry Collaboration
- Establishment of Industry Clusters to foster closer alignment to industry needs



Surveying & Spatial Sector:

- CRSBANZ National Competency Framework and Mutual Recognition
- QLD Surveyors Board – Cadastral Endorsement Competency Assessment
- VIC SRBV – Review of licensing system
- ACT Office of Surveyor-General – Act amendment, Engineering Surveyors accreditation, implementing Automatic Deemed Registration under Mutual Recognition Act
- FIG Commission 2 – Professional Education (foster greater alignment with industry needs)
- ANZLIC strategy – focus on workforce

Recommendations - The Roadmap

1. Led by the industry, formalise a national **Surveying & Spatial Industry Workforce Taskforce** to shape workforce development programs, influence skills investment, evaluate impact and ensure continuity. The Taskforce should represent the ecosystem of stakeholder groups underpinning skills development, employment and licensing of professionals across the workforce. It needs to drive a program of work that aims to achieve goals and report back to industry in its performance. Its primary focus should be on workforce capacity and capability issues not industrial issues. Ensure the Taskforce is aligned with all industry-related workforce development initiatives including Space+Spatial 2030 Roadmap.
2. Led by the Taskforce and supported by Industry (including associations), conduct biennial **Environmental Scans** to understand the problem, forecast peaks and troughs in workforce demand, evaluate the skills pipeline, anticipate changing market conditions that will impact productivity and access to skills. Importantly this is to enable evidence-based decision making and must inform programs and support industry in its planning, provide information to better inform government advocacy and profile the breadth and depth of the industry.
3. Led by the Taskforce, develop a national **Surveying & Spatial Competency Framework** integrating jurisdictional requirements and mapped to CRSBANZ national surveying framework (in development) and jurisdictional frameworks to support greater harmonisation and clarity around skills needed throughout the workforce.
4. In consultation with Industry develop a **Taxonomy of Occupations** to give definition to job families, functions and tasks across the surveying and spatial workforce aligned to the competency framework. Incorporate ANZSCO and industry defined occupations.
5. Led by the Taskforce, develop a **National Skills and Career Pathway** to help inform and influence career choices and provide greater visibility with education and training pathways into the industry. Undertake a national audit of courses offered across School, VET, University, and Industry certifications (peer review, micro credentialing, etc).

Guiding principles to address the workforce shortfall through planning processes and program design through:

1. Knowing what the problem is and forecasting possible impacts on the supply of skills;
2. Understanding clearly the factors impacting the workforce such as narrow pipeline of students, competition for skills across multiple sectors, decline in educational institutions delivering courses, profile of the sector and relationship with other sectors etc;
3. Designing a sector-wide and cross-industry workforce strategy comprising programs to attract and retain workers across the sector;
4. Developing a consolidated careers pathway that promotes the broad range of skills applied across the sector such as those commonly found in aligned sectors to enable cross-sector transition (into and out of);
5. Anticipating trigger points for when market conditions change, and programs need to be re-set; and
6. Supporting greater workforce participation by ensuring the workforce is diverse in terms of age, gender, culture, abilities, religion, location etc.

Conclusion

Observations gained through the development of this paper indicate that the greatest risks associated with the sector's ability to address workforce issues relate to a lack of sustained coordination and a disaggregation of funds to support long-term program delivery due to silos and over representation.

Wherever possible, it is recommended that programs support a **rationalisation** of program ownership to drive the greatest impact and that The Surveyors' Trust funds projects that fit within the recommendations of this paper to drive greater collaboration which is overseen and evaluated by the Workforce Taskforce. The value of greater rationalisation would include:

1. Targeted effort to address issues and support opportunities for the industry (professionals, employers and suppliers)
2. Ensure concentrated effort is maintained and achieves greater impact
3. Increase the profile of the industry through greater coordination and unified messaging
4. Drive sector-wide development and endorsement of standards
5. Reduce the number of industry bodies that organisations and professionals feel compelled to join to consolidate program investment and achieve greater return on investment
6. Enable targeted advocacy and influence over workforce policy
7. Support greater cross-industry collaboration to access relevant skills

The time for action is now and timing is critical. The Surveying and Spatial sector has an opportunity to leverage national efforts to improve the quality of training and education. Increasing the supply of talent is an immediate priority and must leverage non-linear pathways into the sector. Ensuring the sector has in place agreed positions around the recognition of skills for harmonisation of competence is encouraged and an industry-led provision of training and education is the only option.

