



Maintaining a skilled technical workforce in a high demand environment

Peter Mitchem

- **vic roads**
- **Executive Director
Technical and Information
Services**
- **Chair
Austroads Capability Task Force**
- **Peter.Mitchem@roads.vic.gov.au**



Presentation overview

- **Background**
- **Step 1: Capability analysis**
- **Step 2: Setting strategic direction**
- **Step 3: Development of marketing materials**
- **Conclusions**

Austrroads—promoting agency collaboration



Background

- **Road authorities in Australia and New Zealand face significant challenges to maintain required levels of technical expertise**
- **Current environment:**
 - High level of competition for civil engineers
 - Aging workforce within road authorities
 - Flat growth in number of graduate engineers
 - Requirements placed on road authorities by governments are becoming increasingly complex and require new skills
- **Risk: In the future, road authorities may have difficulty performing their key tasks of infrastructure construction, maintenance and management**
- **Austrroads response:**
 - **2005: established a Capability Taskforce.**
 - **Role: to ensure that core technical expertise is maintained, and to facilitate knowledge sharing within the industry**



Four key actions

- **Undertake a national workforce study to assist road authorities to identify and address future skill requirements**
- **Develop a national marketing plan to promote careers in road authorities**
- **Explore the development and delivery of postgraduate courses for road authority staff**
- **Develop a best-practice approach through sharing and jointly developing techniques and initiatives for addressing skill shortages**

Capability analysis 2006-2016

Step 1

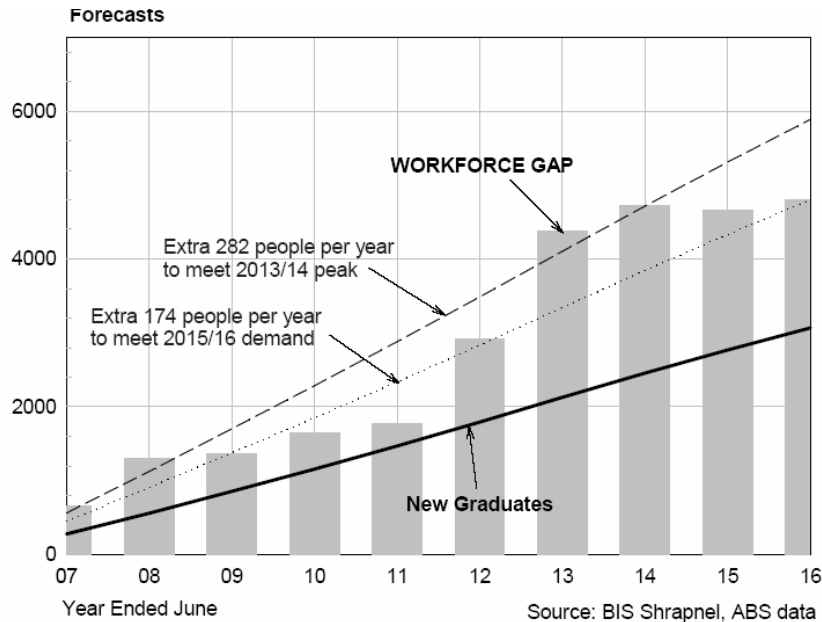
“Undertake a workforce capability analysis for member authorities on planned and forecast infrastructure development requirements in New Zealand and Australia over the next ten years”

Addressing five key questions:

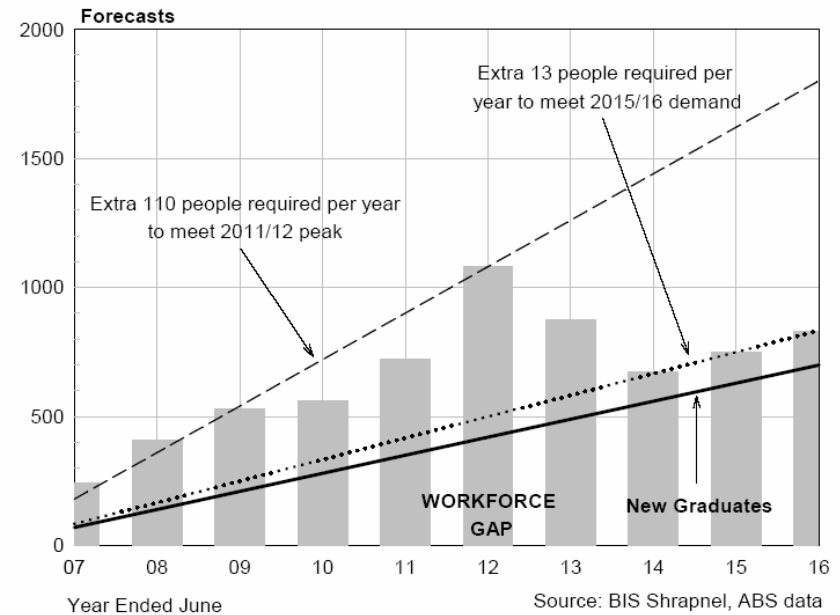
1. What is the size of the skilled engineering profession in the road sector?
2. What is the outlook for the coming decade, in terms of construction and maintenance?
3. What is the workforce demands implied by these forecasts?
4. Is there a gap between the demand and supply of skills?
5. What are the implications for the road industry?

Key findings—a workforce gap

Australia



New Zealand



- **Skilled labour supply in Australia and New Zealand will not be enough to meet predicted skilled labour demand in road sector**
- **A capability deficit will occur**

Other findings

- **Rising public sector roads activity projected to be the main growth of roads labour demand**
- **Potential road construction/maintenance work foregone:**
 - 2007/08: \$AUD880 million
 - 2012-2014: \$AUD2.7 billion per annum
 - Across the decade to 2015/16: over \$AUD\$14 billion
- **The broader economic impact (congestion, travel times, accidents) likely to be greater still**
- **Variation in projected needs over time and between states**
 - Next 5 years - Queensland (weaker in NSW and Victoria)
 - In the five years to 2015/16 - NSW, Victoria and WA
- **Peak demand would mean doubling graduate enrolments**
- **Modelling indicates that the skill shortage will continue (and grow) beyond 2015/16**

Professional development for road engineering

Step 2

Set the strategic direction for the development of professional capability across road engineering

Scope:

- Identification of technical capabilities required by road authorities
- Evaluation of existing engineering-related postgraduate programs suitability for the road infrastructure sector
- Analysis of gaps between required capabilities and existing postgraduate offerings
- Recommendation on postgraduate programs to be developed, including proposed delivery strategies

Key findings

- **The fundamentals are being taught, although content varies**
- **More than half of the programs do not contain content that develops capabilities that are directly related to roads or highways**
- **Greater benefit if industry-focused development drove the content of course work**
- **Focused content on road, bridge and traffic design, construction and maintenance, project management and contract management would promote accelerated development opportunities**
- **If these opportunities were driven consistently and nationally, the entire industry would benefit**

Recommendations

- 1. Develop strategies to ensure postgraduate programs support road infrastructure**
- 2. Develop a range of postgraduate programs**
- 3. This should be provided by a suitably positioned, experienced and centralised function**
- 4. Form a partnership between universities, Austroads and the industry to increase engagement and support postgraduate programs**
- 5. Negotiate with universities to combine accreditations to form qualifications in road engineering**
- 6. Austroads and member authorities should commit to a range of education programs that would be used as part of each authority's continuing development and employment programs**
- 7. Austroads should maintain a watching brief on national higher education policy and on proposed changes to degree programs**

Development of marketing materials

Step 3

Develop a targeted marketing campaign to address the skills shortage in road engineering for road authorities in Australia and New Zealand

Objectives:

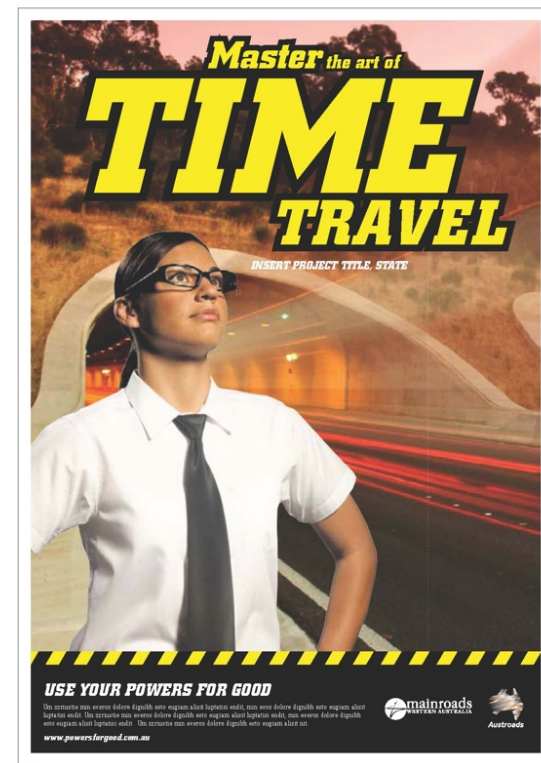
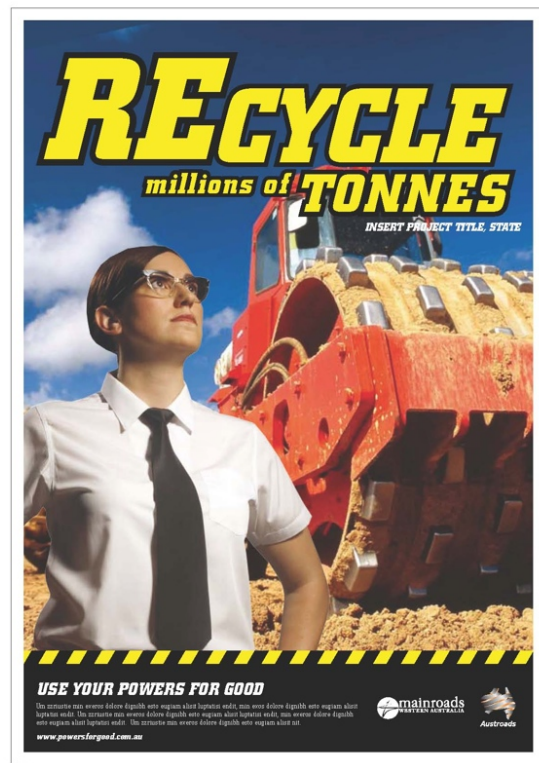
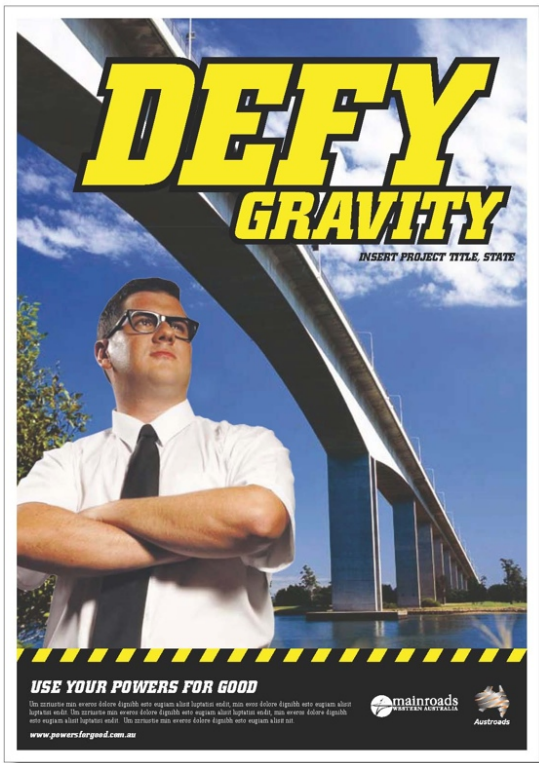
- Increase the number of final year secondary students selecting the subjects for a pathway into engineering degrees
- Increase the number undergraduate engineering students choosing road engineering as their study stream
- Promote opportunities available in road authorities and road industry to target audience
- Improve the perception of a career in road engineering



Key messages

- **Many career opportunities available in road engineering, with competitive salaries**
- **Road authorities contribute to society through providing much-needed infrastructure**
- **The next generation of road engineers will have to develop innovative and sustainable techniques that minimise the environmental impacts of roads**
- **There are opportunities to work in different countries with transferable skills**

Outputs





Outputs

- **Concepts designed to meet the objectives of the project and appeal to the key market segments**
- **Material can be customised by each road authority**
- **Materials are flexible and can be used in a variety of locations**
- **An exciting, contemporary approach that will reap benefits for authorities in the longer term**

Information sharing between jurisdictions

- **Forum established for sharing of information and strategies**
- **The forum focuses on enhancing staff development in key technical areas**
- **Task force has established a series of best-practice, practically-oriented seminars in:**
 - attraction and retention
 - implementing successful graduate programs
 - job design and competency profiling
 - knowledge retention and continuity
- **Austrroads provides support to the Centre for Pavement Engineering Education**
- **This includes the development and review of post-graduate studies and associated materials**



Conclusion

- **Austrroads has taken a proactive and strategic approach to developing and maintaining technical capabilities over the next decade**
- **It should assist in generating demand for road engineering courses by raising the profile and appeal of road engineering as a career**
- **Positive feedback has been received from member authorities during knowledge sharing sessions held earlier this year**



Forward direction

- **Work already undertaken is a sound basis on which to go forward**
- **Future tasks include:**
 - Development of a national model to provide more comprehensive road engineering courses at tertiary level which better meet the requirements of the industry
 - Working with universities and education policy makers to increase the number of engineering places offered in Australia and New Zealand
 - Improve the delivery and access to road engineering courses

About Austroads



Austroads

Austroads is the association of Australian and New Zealand road transport and traffic authorities. Austroads members are the six Australian and two territory road and transport authorities, the Australian Department of Transport and Regional Services, the Australian Local Government Association, and Transit New Zealand.

Austroads purpose is to contribute to the achievement of improved Australian and New Zealand transport related outcomes by: providing expert advice to the Standing Committee on Transport (SCOT) and the Australian Transport Council (ATC) on road and road transport issues; facilitating collaboration between road agencies; promoting harmonisation, consistency and uniformity in road and related operations; undertaking strategic research on behalf of road agencies and communicating outcomes; and promoting improved and consistent practice by road authorities.

www.austroads.com.au