Queensland Department of Transport and Main Roads

Leveraging R&D investment for the Australian built environment

Case Study Findings - Road Construction Safety

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Presentation Structure

Introduction
The QTMR initiatives
Data gathering & analysis
QTMR findings
Questions?
Our Mission
To be an enduring world-class research and knowledge broker in sustainable infrastructure and building design, construction and management
Program 1 - Greening the Built Environment

Program 2 – People, Processes and Procurement

Program 3 - Productivity through Innovation

» A nation-wide collaborative research centre
» Industry, government and research partners
» Applied research and industry outreach across three integrated themes
Core Members

QUT

John Holland

Swinburne University of Technology

Queensland Government
Department of Transport and Main Roads

Queensland Government
Department of Public Works

Queensland Government
Infrastructure and Planning

Transport Roads & Maritime Services

NSW Government

Queensland Government

Transport Roads & Maritime Services

Department of Treasury and Finance
Building Management Works
Office of Strategic Projects
Main Roads Western Australia
Department of Commerce

Parsons Brinckerhoff

Curtin University
Australian Construction Industry

- $60b pa turnover
- Employs 1 million people
- 250,000 firms - many small firms ...

Australia’s R&D spend is 2% of GDP compared to:
- Denmark & US 2.5%
- Finland & Sweden > 3%  (DIISR 2010:3)

Australian Government targets:
- 25% increased business engagement in innovation in next 10 years
- responses to climate change; improving workplace innovation capabilities; & business innovation
Project 2.7 - Leveraging R&D investment for the Australian built environment

Project Phases:

1. Audit R&D investment since 1990

2. Case studies of past investment

3. Develop a strategic roadmap for future R&D

4. Develop policy guidelines to maximise the value of R&D investments
Phase 2 - Case Studies

Examine mechanisms & impact of key past investments in research & innovation -

1. Road construction safety - QTMR
2. Green Building – Western Australian Gov.
3. Digital Modelling - QDPW
Thermal imaging camera unit

- Outcome of 14 incidents since 2003 & discussions with NSW RTA/RMS
- Early indication of possible collisions
- 6-week trial including operator’s feedback

Positive effect in reducing speeds & visuals around work sites.
Mechanical traffic aid

- Key finding of 2009 *Ombudsman* report*: speed around road work sites
- Desktop research identified use - Asia, Europe, & Australia
- Discussions with Tweed council – led to the trial
- Trial at 3 sites:
  - effective in reducing speeds
  - useful in night works & proximity to ‘live’ traffic

*Queensland Workplace Rights Ombudsman Report on Traffic Control (2009)*
Trailer-based CCTV

- Key finding from 2009 Ombudsman report: driver behaviour, especially traffic controllers

- 3-month trial (2010) at major sites - video monitoring & road signs

Effective in modifying driver behaviour. QPS can investigate traffic breaches.

Data gathering

• Departmental reports
• Meetings
• Literature review
• Interviews

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* External interviewees
2 step analysis

Step 1 – compile drivers, implementation activities; processes; impacts; successes; barriers; R&D activities and engagement

Step 2 - Interview data analysed & coded against criteria based on academic theory:
• Absorptive capacity
• Dynamic capabilities
• Open innovation
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QTMR CASE FINDINGS
Drivers for initiatives

- Risks to road workers & travelling public
- Vehicle safety
- Current research projects
- Implementation of new technology
- Road work operations
- Other government reports
Implementation activities

- Deployment & implementation guidelines
- Communications with stakeholders
- Procurement requirements
- Alignment to MUTCD* & other regulations
- Funding requirements
- Legal & privacy issues
- Staff education & training

* Manual of Uniform Traffic Control Devices
Impact on values / culture

- QTMR’s cultural change program
- Benefits of new technology
- Work site deployment & contractor expertise
- Awareness & understanding
- R&D initiatives
- Staff education, training & communications
Impact on supply chain

• Knowledge sharing across industry
• Workforce & union implications
• Technology available locally
• Industry funding
• Work site management
Successes

- Better risk identification
- Greater industry awareness
- Changed driver behaviours
- Improved safety at work sites

Barriers

- Lack of time & resources
- Internal awareness
- Negative perceptions
- Speed of research
- Technology deployment
- MUTCD requirements
- Design & manufacturing issues
- Internal procurement delays
R&D engagement & activities

- QTMR’s R&D funding
- Better technology & outcomes
- Role of R&D Senior Advisor is key
- Industry benefits
- Innovation
- Role of academics
- R&D increases safety
Pathway to innovation

- Barrier Truck retrofits 2003
- Thermal imaging camera unit trial 2009
- Option 3 adopted
- Mechanical Traffic Aid trial 2009/10
- Trailer camera CCTV trial 2010
- Deployment 2011/12
- Redesign & Deployment 2011/12
- Development 2011/12


**Trailer-based CCTV**

**Thermal imaging camera**
Capabilities exhibited

• Product & process development
• Organisational learning
• Customer focus
• Alliancing - industry associations & contractors
• Technology transfer
• Internal R&D engagement

Note: As coded for more than 80% of interviewee responses
Taking advantage of new knowledge

- Development of new products
- Staff skills & training
- Awareness of customer needs
- Technology development

Note: As coded for more than 80% of interviewee responses

Innovation pathways

- Abundant knowledge landscape – both internal & external
- Outbound flow of knowledge & technology
Criteria least coded

Coded by researchers from interviewee responses

- Time & cost
- IP creation & management
- Metrics for innovation performance
Impacts & Outcomes of initiatives

- *Thermal imaging camera* – now being installed in 27 Barrier Trucks

- *Mechanical Traffic Aid* - currently being redesigned re specs & deployment guidelines

- *TrailerCam* - approved for implementation; deployment guidelines being incorporated into QTMR’s systems
QUESTIONS?

Project Partners

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