

**SUSTAINABILITY AND CAPACITY
POLICY WORKSHOP**

NORTHERN TERRITORY

OUTCOMES AND ANALYSIS REPORT

Darwin, 18 February 2014

Purpose of policy workshop

Government and industry representatives in Darwin recently met to discuss the Northern Territory's sustainability policy priorities and its public and private sector capacity to deliver improved sustainability outcomes for transport systems.

Workshop participants were asked to consider seven questions. The questions and their responses are detailed on pages 3 – 5 of this report.

Analysis of policy workshop discussion

Darwin is Australia's most accessible city to the growing economies in Asia.

Access to and from Darwin presents an economic development opportunity for the nation. Reliable access to transport connections within the Northern Territory are vital for servicing regional customers. Agriculture, energy, tourism and services are key markets for growth.

Flood immunity for the Northern Territory's three major highways is now essential to retaining productive freight corridors in and across the Territory. All weather road access for communities dispersed across a vast 22,000km network, most of which is unsealed, is top priority to offer equitable access to food, health and education, particularly during the monsoon season.

The policy workshop discussion revealed a need to:

- recognise there are different requirements between remote Australia and east coast Australia when designing, developing, operating and maintaining transport systems
- enable municipalities and shires with different physical and socio-economic environments the opportunity to tailor their response to sustainability policy to implement effective transport systems within their community
- review design standards to offer improved climate resilience and help communities protect themselves against extreme weather conditions
- offer better assessment of alternative tenders which bring in sustainability
- create new funding streams such as leveraging development to fund roads
- use and recycle local road materials and local contractors for road construction/maintenance
- manage community expectations about the level of road service that can be delivered.

Following the policy workshop outcomes on pages 3 - 6, pages 7 – 10 of this document offer sustainability insights from other states. Topics discussed include the challenges of building resilience into transport infrastructure, improving sustainability outcomes in road construction, enabling sustainability and innovation in procurement, integrating policy and collaborative actions from Western Australia and project examples from New Zealand.

Policy Workshop

Part 1 – Sustainability

OBJECTIVE: To identify the key sustainability goals associated with road infrastructure and the road environment in the Northern Territory

OUTCOMES

1. What is your understanding of sustainability?

- Longer term strategies and framework to ensure sustainable infrastructure
- Targeting economic, environmental and social outcomes
- Ability to maintain road infrastructure to appropriate standard
- Ability to grow for future use
- Minimising impact on environment
- Reuse of road materials (\$\$ for equipment inhibiting)
- Impact on society and built environment – cost in

2. In thinking about NT roads – what would you like to see change to promote more sustainable outcomes in the design, construction and management of roads?

- What are the roads going to be like for our grandchildren?
- Maintaining level of service
- Material supply (environment)
 - Remote areas: natural versus manufactured selection
- Basis of cost-benefit ratio
 - Intangible too
 - Funding
- Remote versus east coast
- Remote solutions for remote areas
- Manage increasing social concern for the environment

3. Which are the three most important sustainability issues that you would like to see addressed in a sustainability policy for NT roads and road environment?

- Funding
 - \$\$ to do sustainability option
 - Population size restricts
 - No specialised machines
- Design
 - Local/tailored for Northern Territory conditions
 - Consistent standards with Territory influence
 - Different standards in city versus small remote area – are standards applicable?
- Community expectation on policy for quality of roads
- Suitable resource planning
 - Available source
 - Land ownership
 - Economic/distances
 - R&D alternate resources

- Security of access in remote areas
 - Equity of service

4. What do you think are the barriers?

- Remoteness
 - Vast network
 - Weather (few communities cut off for 6 months of the year)
 - Limited resources (funding, contractors, gravel/materials)
 - Ageing assets (maintenance)
 - Increased loads
 - Increased user expectations (public, communities)
 - Dispersed population
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Policy Workshop

Part 2 - Capacity

OBJECTIVE:

To consider the capacity of the Northern Territory's private and public sector to address the sustainability issues.

OUTCOMES

5. Given the current level of competition in the market place, are sustainability issues given enough consideration, or does the lowest price drive behaviour?

- No, sustainability issues aren't given enough consideration.
- Be open to proven alternatives (in specifications and design)
- Need funding for research and testing
- Require assessment criteria.
- Need better assessment of alternative tenders which bring in sustainability.
- Low appetite for risk taking by government
- Life of government term view – political versus long term view
- Consulting is very competitive in the Northern Territory. Construction is less competitive.
- Clients need to better define their sustainability strategies.
- '2 envelope' strategy required with emphasis on sustainability.

6. What do you think could be done to improve the implementation of sustainable road construction in the NT?

- Review the procurement process, particularly around design and construction.
- When work packaging, look to local supply of materials. Use local sub-contractors to deliver.
- Help local contractors to get accreditation.
- Refer to different contract models. D&C, ECI...
- Increase weight for innovation in design/construction.
- Consider whole of life cycle cost.
- Grow sustainability champions in industry.

7. Are there alternative design standards or specifications used by other Australian Road Authorities that could be adopted by DoT NT to provide better sustainability outcomes and achieve cost efficiencies?

Yes, there are alternatives.

The Northern Territory:

- Currently use Austroads for main roads
 - Use council standards in remote areas
 - Use alternatives, although should look at more local options, particularly around city versus remote standards
 - Because the Northern Territory deals with tropical versus arid conditions (or example: Darwin – Alice Springs).
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Insights from Australia and New Zealand

A selection of insights taken from the minutes of
Roads Australia 2013 Sustainability Chapter workshops

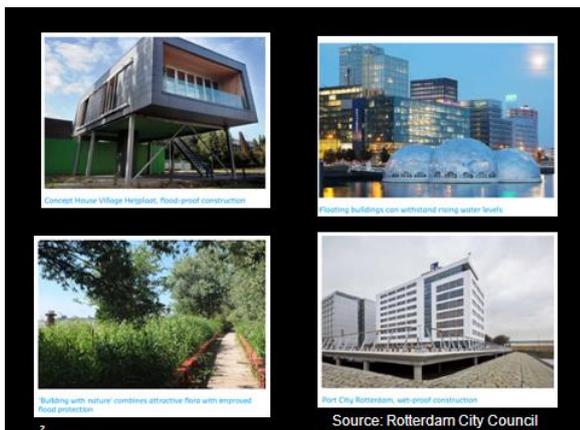
VICTORIA

How could sustainable road construction be improved?

- Undertake further work with industry (through ARRB) to develop more sustainable materials/products for road construction
- Look at including sustainable road construction outcomes (i.e. use of warm mix asphalt) in their specification and/or provisional quantity items in project contracts (written into specification)
- Provide financial incentive within their contracts for contractors to implement alternative sustainable outcomes to certain aspect of the project (i.e. running vehicle fleet on biofuel)
- Revise pavement specifications to allow for the increased use of recycled materials/products in the pavement design

Resilient Infrastructure – examples and establishing guidelines

Net Balance introduced many examples of innovative design, in terms of materials and the built form that are being integrated across the City of Rotterdam and at the port.



Examples such as the 'sponge function' building in small infiltration zones to manage high intensity rainfall and flooding was discussed.

The City of Geelong recently updated their infrastructure guidelines to incorporate climate change adaptation for settlements and infrastructure.

Initially the principles and examples were difficult to apply, particularly when the engineers in the room started to ask questions about how they work with these principles, along with their standards.

However, when teams from different disciplines began to brainstorm ideas/examples for ways for Geelong to respond, the follow observations were made:

- Principles often needed to come in earlier in the decision making process, so that the most resilient infrastructure could be built.

- These principles needed to be incorporated, with all the appropriate information and knowledge, as early as possible and added into the decision making processes. For example, the location of assets really defines its exposure to climate variables. This is often determined prior to the tender for or design of infrastructure.



When establishing resilience principles climate information and principles must inform decisions as early as possible. Note that the pressures of tendering can mean that climate change elements are not considered adequately. And once budgets and designs are set, it is often difficult to make any change.

The importance of climate information being accessed early in the process and understood, so that it can shape design and budgets is vital. Retrofits can be more expensive if completed down the track.

Organisations need to think about climate risks in a more strategic, systematic approach, to embed the principles and establish the boundaries early. This is where climate risks are incorporated into organisations risk management frameworks and where individuals have the capability to consider climate risk and apply its principles earlier.

Consider developing a climate change adaptation toolkit in collaboration with a local university and local government to outline a process for incorporating climate risk and its principles. Particularly in cases where there is no guidance to assist organisations to modify their internal processes, and leverage the information stored in their climate risk assessments to inform their work.

Innovation using salt water

AECOM discussed a current rail project which incorporates 21 sustainability targets that must be met. Sustainability can't be seen as an additional cost to projects. We need to find a way to deliver the desired outcomes cost effectively.

The Regional Rail Authority and MTM (the asset owner) were convinced to accept construction of embankments for the project using salt water. This is not commonly done in Victoria.

The process involves storing and treating water (to eradicate ecoli) for staff safety reasons. This is a great example of where a sustainability principle has been introduced at a lower cost (compared to using potable water or treated effluent). Hopefully this idea will set a precedent for future projects.

BRISBANE

Enabling Sustainability and Innovation in Procurement

Thiess discussed the allocation of risk, level of contract involvement, the tender process and performance measurement. The discussion included methods of improving outcomes and reducing cost, and suggested using rating tools as a proxy.

Examples of KRA performance incentives were given with different levels of “pain and gain” share split for projects valued over \$1million and \$10million projects with sustainability objectives showing incentives and loss. Outcome-based measures can go beyond environmental legislation and compliance can be built into a systematic “road map”.

Discussion

Questions after the presentation included topics such as the number of regulations and discussion included examples of innovation where sustainability was a project KRA.

The examples included:

- The Eastern Bus way where dollars were saved by placing a well-insulated demountable on a worksite rather than less-insulated accommodation to reduce energy costs.
- Innovation around tunnel lighting and ventilation in tunnels, such as shade cloth to degrade the light before entering the tunnel to save \$220-\$300k in operating expenses from higher intensity lighting.

The audience discussed how lessons could be communicated across project teams.

A question from the audience was the suggestion that if a project is wrong in the first place could an organisation work with a client to change the scope of a project? Such as in the case of a university car park in the UK.

The result was \$100k was spent on improving public transport access and active transport channels, rather than spending \$2.4 million pounds by creating a new car park.

The result was spending less and using mechanisms to change travel behaviour and patterns of traffic. There was a no build solution to achieve a better outcome. Money was saved and the land could be used for another purpose.

The last question was around how sustainability could drive innovation. The response: if industry states the outcome, the market finds the best solution at the lowest cost. Using performance pain/gain the pace of innovation in sustainability will accelerate.

Building resilience in transport infrastructure

ARUP discussed the opportunities for building resilience on existing road infrastructure:

- Drainage and culvert design and implementation – although need to be mindful of potential for a double-edge sword
- Slope stabilisation – greater robustness through design can reduce the impact of washout effects of the slope, provide controlled drainage to help avoid the most vulnerable points in the road
- Material selection for resurfacing works – cement modifying to assist with water retardation, foamed bitumen (promote capacity for movement)
- Sealing the shoulder past the hinge point to reduce water inundation under the road surface
- Design with inundation in mind – i.e. can't be helped, how can we build resilience to an existing road that we know goes under at least once or twice a year?

ARUP discussed building resilience into new infrastructure:

- Climate change modelling to inform route selection – what's the impact of not considering this option (i.e. repeated failure) vs. what are the potential constraints of choosing another option
- Consider the lifecycle assessment of the road – is it financially viable to build in an area where inundation is a continual problem? What impact will this have on your ongoing maintenance and operation costs

Looking at Queensland as an example, ARUP shared these thoughts:

An immediate effect of extreme weather events has been to prevent transport infrastructure systems from operating effectively.

A long term effect of increased weather on highways infrastructure is to increase defects in road surfaces and structures.

The knock on effect of these defects can lead to:

- Negative impact on economic growth and productivity due to lack of connectivity and accessibility
- Negative impact on social wellbeing, health and safety
- Building resilience across our road network

Here are some areas of recent action that have led to good outcomes:

- Queensland TMR Climate Change Framework
- Victoria – Infrastructure and Climate Change Risk Assessment
- VicRoads Sustainability and Climate Change Strategy 2010 - 2015
- NSW Long Term Transport Master Plan

Other, international examples include:

- UK – Climate Resilient Infrastructure: Preparing for a Changing Climate. Government vision and policy on adapting infrastructure to climate change
- USA – California Climate Adaptation Strategy for Land Use and Infrastructure. To help planners identify where and what impacts are likely to occur to guide planning and investment
- Denmark – Road regulations and railway standards are being/will be reviewed and revised with consideration of expected climate changes
- New Zealand – National Infrastructure Plan 2010. Identified the impacts of climate change as one of the long-term key trends that will need to be addressed

The real value benefits of resilience we outlined:

- Enhanced social and economic outcomes for affect communities
- Better understanding of key risks and hazards likely to impact assets can enable better planning
- Better understanding of how your asset will respond and perform in the face of shocks and stressors
- Reduced maintenance and repair costs for asset over its lifetime (if considered from the outset)

WESTERN AUSTRALIA

Integrating policy and collaborative actions

A stakeholder workshop in Perth last year highlighted collaborative actions for the transport sector to consider to improve sustainability outcomes across the supply chain.

These included to:

- Establish governance structure/champions within agencies
- Establish appropriate governance structure/organisation that achieves sustainability initiatives and land use planning (legislative)
- Climate change risk assessment of WA's transport infrastructure in collaboration with other agencies (e.g. electricity)
- Investigate potential of digital communications in informing individual travel choices (including trip substitution/telephone access, journey planning, real time system information)
- Develop and implement a measure of operational environmental footprint (including use in reporting).

Policy statements were created and voted on by stakeholders at the workshop. The statement voted by participants as the best was:

We are committed to ensuring a sustainable and integrated transport system to accommodate our community and its changing transport needs by supporting economic prosperity and social equality by providing access to an integrated transport system.

This includes:

- Integrated transport and land use (both urban and rural)
- Minimising emissions, pollution and waste
- Optimising resource use through maximising whole of life benefits (social, environmental, economic)
- Promoting project governance through clear but flexible objectives to allow innovation
- Promoting stakeholder and community engagement
- Seek climate change resilience
- Protecting and restoring natural resources
- Promoting cultural and heritage values
- Promoting positive shifts in behaviour
- Providing a safe transport system and
- Transparent decision support methodology.

NEW ZEALAND

BECA suggests early contractor involvement and changes during the design and construct phase (or detailed design stage) can offer great capacity and sustainability outcomes. Open discussion between government and industry partners will help to achieve better outcomes. Recent projects include:

- Auckland Motorway Alliance – a project that developed a list of guidelines to help their group understand what sustainability elements they needed to work with.
- Wellington Roadway – a project that developed a risk-based approach to seismic roads to be able to manage natural events – as costs to protect infrastructure were becoming prohibitive and unviable.