



## Sustainability in Heavy Civil Projects

Advancing Sustainability in Infrastructure  
 Richard Morwood  
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## Key Messages

- The largest impact we can have on sustainability is through our project work, across all of our business lines
- Sustainability is an opportunity for us to simultaneously:
  - Provide better solutions and better value for money for our clients
  - Build upon our core values as an industry
- Sustainability is an "integrated service" not a "bolt on"



## Elements of Project Sustainability

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| <ol style="list-style-type: none"> <li>1. Performance                     <ul style="list-style-type: none"> <li>– KRA's / KPI's</li> <li>– Global Reporting Initiative (GRI)</li> </ul> </li> <li>2. Stakeholder Engagement                     <ul style="list-style-type: none"> <li>– Community</li> <li>– Value-add service</li> <li>– Fundamental decisions</li> </ul> </li> <li>3. Innovation                     <ul style="list-style-type: none"> <li>– Thought Leadership</li> <li>– Sustainability flavour</li> <li>– Sustainability register</li> </ul> </li> </ol> | <ol style="list-style-type: none"> <li>4. Change Management                     <ul style="list-style-type: none"> <li>– Sustainability champions</li> </ul> </li> <li>5. Future                     <ul style="list-style-type: none"> <li>– Future focus</li> <li>– Investments</li> <li>– Climate change</li> </ul> </li> <li>6. People                     <ul style="list-style-type: none"> <li>– Common thread</li> <li>– Leadership</li> </ul> </li> </ol> |
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## Inner Northern Busway HUB Alliance – Sustainability KRA

- The overall project has a sustainability dimensions by virtue of its contribution to better transit access to the CBD
- A range of sustainability initiatives were identified early in the project, but did not really take hold until a sustainability KRA was established and supported by the Alliance Board. The KRA included several KPIs derived from the GRI
- Monthly tracking of sustainability performance focussed attention on issues such as:
  - Energy management and greenhouse gas emissions
  - Waste management and recycling
  - Impacts on local business continuity
  - Water resource management (especially since Brisbane was and is in the middle of its worst recorded drought, which some people attribute to climate change)



## Sustainability Initiatives

Because of its focus on sustainability through its incentivised KRA, the Alliance was able to consider many, and implement several, sustainability initiatives, including:

- Making the project 'carbon neutral'
- Establishment of a public access cycle centre
- Saving energy through advanced thermal modelling
- Relocating two massive fig trees
- Extensive (98%) recovery of demolished/excavated materials for reuse/ recycling
- Rainwater capture and use. Highly water-efficient plumbing fixtures and fittings. Wheel wash water recycling
- Consideration of innovation that were not ultimately adopted such as sewer heat rejection from air-conditioning plant and greywater re-use from the public showers



## Sustainability Initiatives (cont)

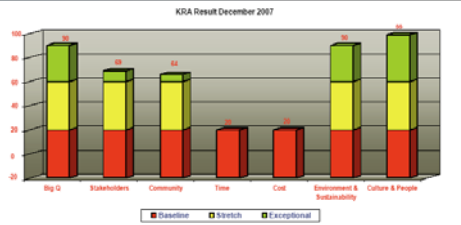
How were the initiatives funded? There were several options available:

- They were originally budgeted for in the Target Cost Estimate
- They led to capital cost savings
- They led to operational cost savings that were of value to the client
- They were low cost but high value/profile, or
- They could be cross-subsidised from other sustainability savings

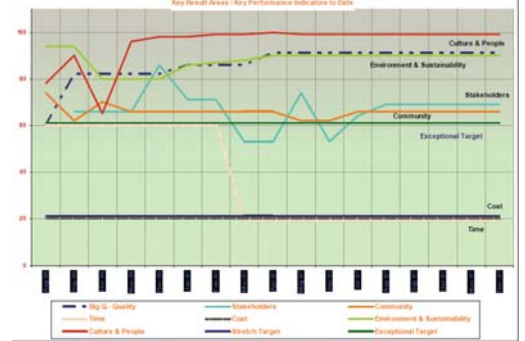


### Inner Northern Busway – KRA’s

- Big Q
- Stakeholders
- Community
- Time
- Cost
- Environment & Sustainability
- Culture & People



### Sustainability KRA’s



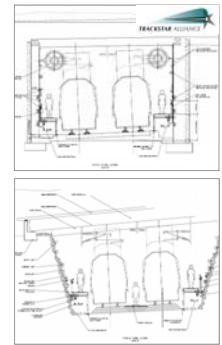
### Trackstar Rail Alliance - Sustainability KRA

- Maunsell is part of the Trackstar \$700m Alliance for delivery of rail line expansions North, South and West of Brisbane
- With Trackstar, we built upon the experience of the Inner Northern Busway and included an incentivised sustainability KRA
- The original (program) KRAs were:
  - Best Value
  - Stakeholder Happiness
  - Integration
  - Build Industry Capability
  - Sustainability
- KPIs: sustainability plan performance, awareness, green office, strategic environmental planning, passenger safety, security and accessibility, life cycle costing, safety and environmental performance
  - Alliance Health



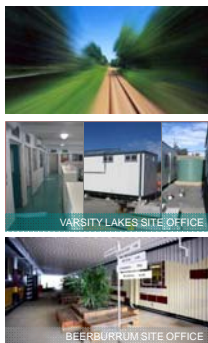
### Savings in CAPEX and OPEX From Sustainability Innovation

- One engineering innovation on Trackstar clearly demonstrated how sustainability did not necessarily lead to increased costs; in fact, it can achieve significant cost savings
- For the Gold Coast rail alignment (Robina to Varsity Lakes section) there was a stretch of line for which the client was requiring a tunnel, due to political commitments that had been given over the years
- The conventional tunnel design (top right) included jet fans for emergency exhaust, lighting and all the accompanying electrical equipment, a room for the sub-station and air-conditioners to protect the equipment
- The Alliance redesigned the tunnel (bottom right) by using a cantilevered concrete roof and allowing natural ventilation. Deep beams were included to form 'smoke curtains' to help drive smoke out vents, in lieu of the conventional jet-fan ventilation
- The new design eliminated the fans, and hence fan replacement; periodic fan testing and the related control equipment
- This saved at least US\$690,000 in capital, and likely greater than US\$100,000 per year in operating expenses and equipment replacement costs



### Trackstar Sustainability Initiatives

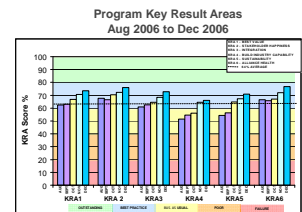
- Two site offices were established to house approximately 100 people at each location for 6-12 years. The original plan was to use unmodified, typical 'crib huts'
- Even within the urgency of the project, we were able to negotiate numerous modifications at limited additional cost that radically changed the offices and the experiences of the workers, including:
  - Higher (9') ceilings
  - Ceiling fans, door vents and additional windows
  - Highly efficient inverter, reverse cycle air-conditioners
  - Solar hot water systems and water efficient fixture
  - Marmoleum, natural product flooring
  - Rainwater capture for use in dust suppression
  - Native plant landscaping
  - T5 fluoro lights
  - 75mm wall and ceiling insulation (that would not have been included unless we asked!)



### Peak Performance Culture

Program Key Result Areas (KRAs)– Regular Tracking Different KPIs and Weighting for Every Project

- KRA 1 - Best Value
- KRA 2 - Stakeholder Happiness
- KRA 3 - Integration
- KRA 4 - Build Industry Capability
- KRA 5 - Sustainability
- KRA 6 - Alliance Health



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TRACKSTAR ALLIANCE

Area	Objective	Key Performance Indicators (KPIs)	Current Status	Target Status	Notes
Environment	Minimise environmental impacts and ensure compliance with all applicable laws and regulations.	Number of environmental incidents, compliance audit results, stakeholder satisfaction.	Low	Low	Compliance maintained throughout project.
Social	Engage and consult with stakeholders, including the community, to address their needs and concerns.	Stakeholder engagement score, number of community meetings, resolution of issues.	Medium	High	Regular community meetings held, issues resolved.
Economic	Maximise economic benefits to the local community and create jobs.	Local employment, procurement of local goods and services, community investment.	Medium	High	Local contractors used, community investment programs implemented.
Health & Safety	Ensure the health and safety of all project personnel and the public.	Number of safety incidents, lost time due to injury, safety training completion.	Low	Low	Zero major incidents, high safety training completion.
Quality	Deliver high-quality project outcomes that meet or exceed client expectations.	Client satisfaction score, project completion rate, budget adherence.	High	High	Client satisfaction high, project completed on time and budget.

VALUE SAFETY ENVIRONMENT

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Q1.6 KPIA 3 - Sustainability Performance to Date

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### Maunsell's 3-Pronged Approach

Overall, Maunsell takes a 3-pronged approach to sustainability:

- 1) Embed sustainability into projects
- 2) Sell sustainability services
- 3) 'Walk the talk'

How we will embed sustainability (diagram right):

- Integration
- Confidently raising sustainability with clients
- Tangible examples with clients
- Sustainability Leads established in each office to support and coach the key sellers
- The Sustainability Leads will be able to work directly with clients in interpreting sustainability for projects, draw from the Excellence Areas to feed technical expertise into projects, and directly sell generalist sustainability services
- The Excellence Areas are the bedrock of our market proposition on sustainability
- Leaders in Sustainability Excellence Areas will develop their abilities to deliver services within the holistic sustainability context

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### Safelink Alliance & Townsville Port Access Road

- We are able to continue developing the ideas we have applied in the INB and Trackstar alliances and aim to improve sustainability performance and outcomes on successive jobs
- Maunsell is working on the US\$690 million SAFELink Alliance with its partners Leighton Contractors, BMD Major Projects and Arup, which is a 5 km, multi-lane road upgrade. The project has a sustainability strategy and a full-time coordinator seeking to embed sustainability in the project and contribute to industry learning
- Similarly, Maunsell has been working with the Queensland Main Roads Department on the Townsville Port Access Road. The client has become very enthused about the opportunities that sustainability brings, including providing some 'good news' for the community with a potentially controversial freight road

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### Footscray Transit City Access and Mobility Plan, Melbourne

- Our transport planning and advisory business allows us to look at the 'big picture' of transport, as well as the design and construction of infrastructure
- To encourage people in the Transit City to use Sustainable Transport, Maunsell developed an Access and Mobility Strategy to present a potential solution for the access and mobility issues to support the development of Footscray Transit City
- Based on the principles of Transit Oriented Development, Footscray Station is earmarked for major urban development to become a Transit City. Footscray Transit City is intended to provide a core of high quality public transport services and facilities surrounded by an upgraded residential, commercial student and municipal precinct
- In preparing this Strategy, we have emphasised:
  - Enhancing pedestrian and cycling activity near the transit city and improving connectivity to surrounding areas
  - Encouraging more effective modal interchange between forms of public transport and improving access for road based modes
  - Integrating the station, university and commercial precincts, and
  - Removal of inappropriate traffic, such as heavy vehicles

## Southport Broadwater Parklands

- Maunsell is working with EDAW on the comprehensive master planned redevelopment of one of the most prominent public spaces on Queensland's Gold Coast, the Southport Broadwater Parklands
- Stage 1 is a US\$22 million capital project
- Together, we are taking every opportunity to incorporate sustainability, including:
  - One of the largest solar PV installations in urban Australia
  - Advanced Water Sensitive Urban Design
  - Wetland water treatment with wind-powered pumping
  - Passive thermal and sustainable design of the main building
  - Endemic plantings and community garden areas
  - Recycled materials

