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RISK BASED THINKING

AN AUSTRALIAN PERSPECTIVE

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RISK-BASED TTM – WHY DO WE NEED IT?

Exposing the PCBU to increased overall risk liability

Excessive TTM
Spending too much on TTM
20 – 50% of total works cost

Setup / management / removal of excessive TTM
adds 25 – 300% to the duration of a job

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WHAT RISK-BASED TTM IS NOT?

- About just saving money
  - Using risk-based TTM as a mechanism to cut costs because TTM wasn't properly budgeted
  - Focused on increasing works profits.
  - Saving money may be a consequential outcome – not the primary target
- Justification for unsafe practices
  - "We have always done it this way without an accident"
  - A reason to just accept Medium / High / Extreme risks – "I am prepared to accept the risk"
- A means to make work simpler
  - An easy way to cut corners and speed works up
  - Workers who do not want to put out TTM and just want to do their job

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WHAT RISK-BASED TTM SHOULD BE ABOUT

Risk based approach = Design balance

- TTM - appropriately scaled for the risk / extent of works / traffic impacts
- Each device / treatment installed should lead to a positive reduction in overall risk
- TTM should consider all available options
- PCBU accountable for total overall risk

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RISK-BASED TTM - PRINCIPLES WE APPLY

- Appropriate for the worksite
- Uniformity of application
- Fit for purpose
- Cannot solve poor alignment issues
- Design for the driver
- Clear and consistent messaging
- Understood by public

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RISK BASED TTM
START - CONSIDER ALL AVAILABLE COMPLIANT OPTIONS

Roadside Mowing – ride on mower

- Static worksite – lane / shoulder closures
- Mobile works – works convoy behind mower
- Short Term Low Impact

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OBSERVED OUTCOMES
TTM CURRENT INDUSTRY APPROACH (AUSTRALIA)

Conservatively safe

- Better to have more
- Better to slow traffic down
- Better to close lanes
- Place cones around all works vehicles
- Divert all pedestrians to the other side of the road

So what? – isn't that good

No - because

- Excessive TTM
- Works productivity reduced
- TTM costs increased
- WHS outcomes are actually worse

Redland Council (2 x tree crews)

- Crews could deliver 90% of sites themselves with signs they carry
- Productivity tripled
- TTM costs reduced by > $400k per year
- Safer overall

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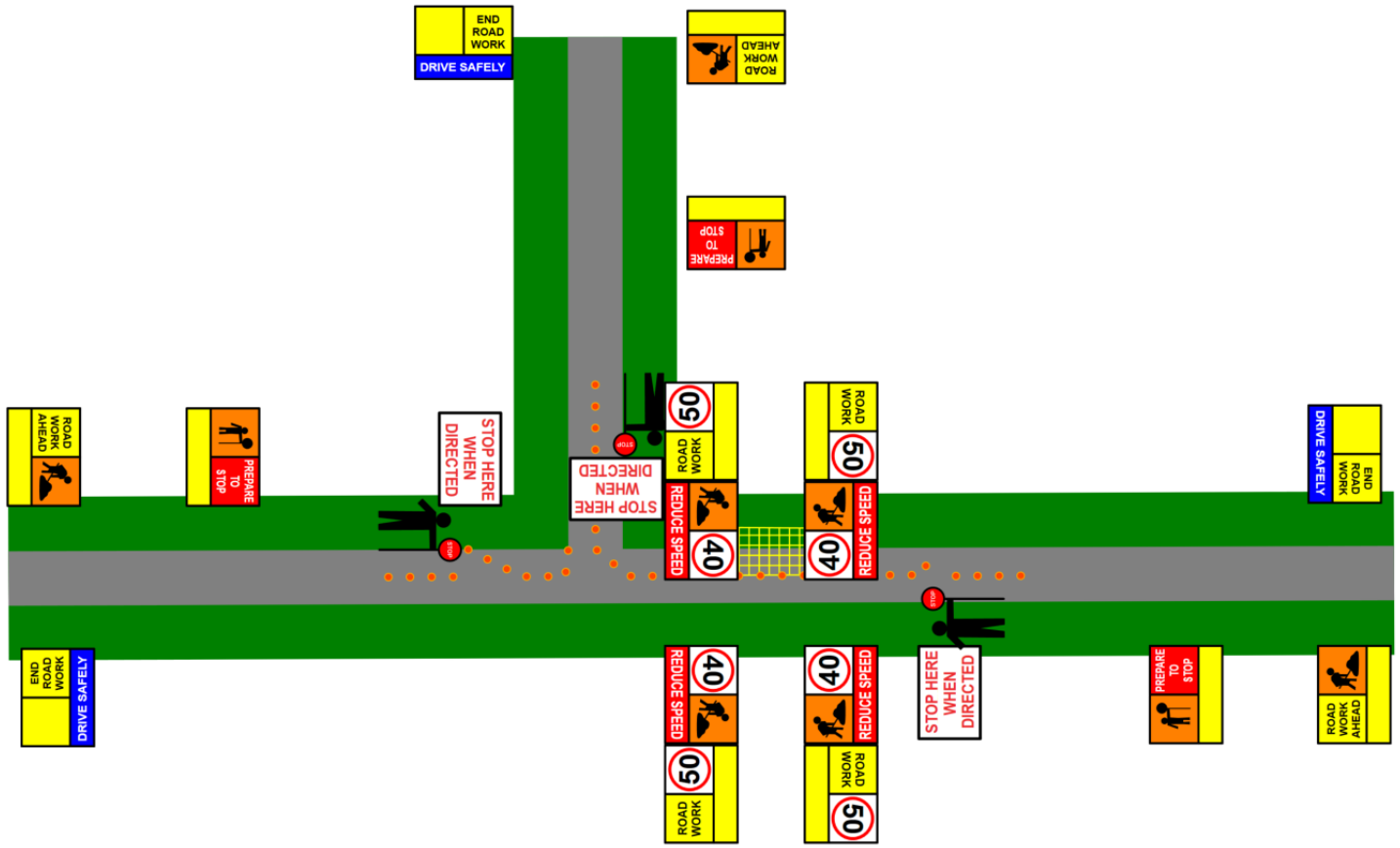
CASE EXAMPLE 1
SE QLD COUNCIL WORKS - TTM COMPANY DESIGN



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CASE EXAMPLE 1
WHAT WAS REALLY BEING DONE

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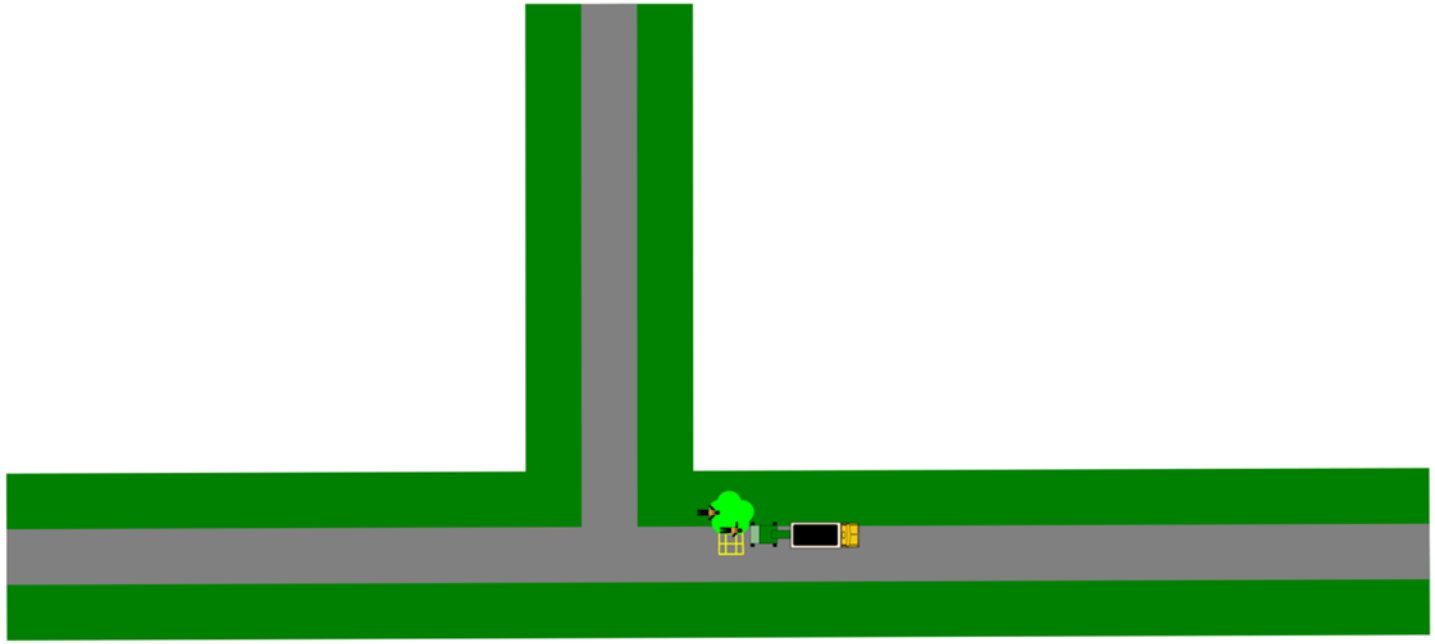
QUEENSLAND NORTHERN TERRITORY IPWEA INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALASIA

CASE EXAMPLE 1
MORE APPROPRIATE PRACTICE



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RISK-BASED TTM – WHO CAN / SHOULD DO IT THE AUSTRALIAN CONTEXT

Traffic Engineering discipline

- Permanent traffic management features - engineering design requirement
- Non-engineers must
  - follow the recipe - guides / codes / standards
  - Operate under engineering supervision
- Where the guides cannot be followed – engineering judgement is required
  - Extended design domain
  - Design exceptions

Temporary Traffic Management

- Subset of Traffic Engineering discipline
- Designers (TMD) – allowed to design
  - Must follow the recipe – AGTTM
  - Can do so without engineering supervision
- Where guides cannot be followed
  - Should / Recommended – TMD
  - Shall / Mandatory – Engineer with TMD
  - This requires risk assessment
- Registered Professional Engineer

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WHEN SHOULD RISK BASED APPROACH BE APPLIED

Major projects

- Absolutely
- TTM design starts at pre-construction
- Generally budgetary benefits
- Generally time to plan the works

- Opportunities for risk-based approach to provide project benefits

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WHEN SHOULD RISK BASED APPROACH BE APPLIED

Smaller projects

- Generally less opportunity
- Budgetary constraints
- Works program and methodology is often pre-determined

- Opportunities for risk-based approach but benefits may be limited

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WHEN SHOULD RISK BASED APPROACH BE APPLIED

Maintenance works

- Generally limited opportunity on case by case for risk-based approach
- Generic arrangements are more appropriate
- Risk assessed approach can be used for a practice in general as part of a package of solutions

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CASE EXAMPLE 2
CQ COUNCIL - MEDIAN GARDEN WORKS

TTM company design

- 25 signs, 575 cones
- Insufficient devices to be set up
  - Completed as 3 setups over 3 days
  - 2 hours to setup / pack-up each day
  - 2 TTM vehicles and 1 TTM Truck required
- 3 days to complete the works

Recommended alternative

- 8 signs, 0 cones
- 15-minute setup – single site
- Self-delivered by Council crew
- 4-6 hours to complete the works
- Review operational practices
- Crew reported feeling safe

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CASE EXAMPLE 3
SEQ COUNCIL – DRAINAGE CCTC INSPECTIONS

TTM company design

- TC Stop/Slow operation
- 14 signs, 15 cones, 2 lateral shift markers, 2 TC staff
  - 45 minutes setup
  - 30 minutes pack up
  - 2 hours on site
- Job itself only takes 10 minutes

Recommended alternative

- Partial lane closure - residential street
- 4 signs, 7 cones, 2 lateral shift markers
- Self-delivered by Council crew in less than 5 minutes
- Operational practice include a traffic spotter – workers stepped off road when traffic approached

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WHAT DOES RISK-BASED APPROACH REQUIRE

Design Exception process for variations outside of guides

1. What does compliant look like?

   Three Tractors for roadside slashing
   One shadow vehicle behind each tractor
   Lead vehicle to warn traffic in other direction
   Advance warning vehicles behind shadow vehicle

   5 Utes to protect three tractors that
   are not even on the road

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WHAT DOES RISK-BASED APPROACH REQUIRE

Design Exception process for variations outside of guides

1. What does compliant look like?
2. What are the problems with this?

Utes are at more risk than tractors
Utes at risk from debris thrown from tractors
Traffic needs to get past five utes on road edge
Tractors are not even on the road
Large expense and increase in risk for no benefit

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WHAT DOES RISK-BASED APPROACH REQUIRE

Design Exception process for variations outside of guides

1. What does compliant look like?
2. What are the problems with this?
3. What are the alternatives?

Tractors operate in accordance with road regs

Remove shadow vehicles – are they really a benefit

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WHAT DOES RISK-BASED APPROACH REQUIRE

Design Exception process for variations outside of guides

1. What does compliant look like?
2. What are the problems with this?
3. What are the alternatives?
4. Risks associated with the alternative?

   Drivers not aware of subsequent tractors
   Reduced protection for tractor driver

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WHAT DOES RISK-BASED APPROACH REQUIRE

Design Exception process for variations outside of guides

1. What does compliant look like?
2. What are the problems with this?
3. What are the alternatives?
4. Risks associated with the alternative?
5. Mitigations put in place?
   - Tractors to remain in sight of each other
   - Ensure all tractors have VMWD
   - Communication when tractors enter the road

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WHAT DOES RISK-BASED APPROACH REQUIRE

Design Exception process for variations outside of guides

1. What does compliant look like?
2. What are the problems with this?
3. What are the alternatives?
4. Risks associated with the alternative?
5. Mitigations put in place?
6. Comparative risk assessment

   Is overall risk higher or lower?

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RISK ASSESSED ALTERNATIVES

RPEQ approval

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IMPLICATIONS
NOT APPLYING RISK-BASED APPROACH

- Short task taking < 1 minute
- Single person operation

- “An industry expert” stated that no works should be undertaken without signage and / or spotters

- What are the implications of this?

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IMPLICATIONS OF NOT APPLYING RISK BASED APPROACH

- Option 1 – signs at every site
  - One minute task becomes 10 minute task
  - Total time on site roughly doubles
  - Productivity halved or worse
  - Vehicles cannot carry 4 signs required

  - Current national workforce = 6,000
  - To double / triple workforce will cost $600m to $1.2b per annum

  - Is the total risk reduced with the signs or is it increased? Is this a reasonably practical treatment?

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IMPLICATIONS OF NOT APPLYING RISK BASED APPROACH

- Option 2 – spotter at every site
  - Additional person required
  - Current national workforce = 6,000
  - To double workforce with a basic entry level worker will cost $420m per annum
  - Is the total risk reduced?

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IMPLICATIONS OF NOT APPLYING RISK BASED APPROACH

- Mitigations
  - Wait for gap in pedestrian traffic before commencing
  - Place ladder on side(s) of pole away from traffic
  - Selective about times of day to do work

  - Is the total risk acceptable?

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IS AUSTRALIA READY FOR RISK-BASED APPROACH?

- Designers often not even willing to consider compliant alternatives
- Industry attitude to be "conservatively safe" with larger static sites
- Risk assessment process in Australia is not well applied in the TTM industry

- Concerns over justifying exceptions
  - Is the designer personally liable?
  - How will they defend a decision against an expert with a significantly different perspective?
  - TMD
    - 3-day Diploma level qualification
    - Do they have sufficient skills to undertake comprehensive risk assessment?
    - Can they defend their decisions?

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THE ROLE OF THE RIM IN RISK-BASED ASSESSMENT

- How should a RIM react when receiving a risk-based TTM justification?
  - Ensure person undertaking the assessment is suitably qualified
  - Ensure risk assessment is documented
  - Ensure justification is clearly outlined – a lay person should be able to understand it
  - Understand the works implications
  - Ensure organisations implementing it have accepted the responsibility
  - Independent check if not sure

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A COPY OF TODAYS PRESENTATION AVAILABLE AT

https://solutionsintransport.com.au/nz-tarmac-2025

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