

# Haul Road Watering Project

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## 2006 Queensland Mining Industry Health & Safety Innovation Awards

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## Business Drivers

- **Key Business Driver**
  - Safety
    - reduce haul road watering safety incidents
  
- **Secondary Business Drivers**
  - Costs
    - decrease accident & tyre damage
  - Health & Environment
    - improve dust control & reduce water usage

Contractor  
 BMA  
 Peak Downs  
 Water Trucks  
 Operating

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## Safety

- **BMA Wide Issue**
  - Large number of safety incidents over many years
  - Similar incidents at all BMA surface mines
  - BMA and contractor operations experiencing similar incidents
  
- **Cause of Problem**
  - Clay based haul road surfaces
  - Inflexible water delivery control systems
  - Unfocussed water truck operator training
  - Water trucks used for tasks unrelated to haul road watering

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## Safety Incident Analysis

- **Type of Equipment**
  - Empty rear dump haul trucks over-represented
  
- **Location of Safety Incidents**
  - Approximately equal number of incidents from:
    - straights / corners
    - downhill / flat

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## Previous Situation

- **Training Systems**
  - Generic training focused on water truck operation, not haul road watering practices
- **Water Delivery Systems**
  - Limited operator control over water delivery rate
  - Most water trucks unique
  - No BMA standard specifications
- **Haul Road Over-watering**
  - Inappropriate water delivery systems and inadequate training systems resulted in over-watering of haul roads
- **Safety Incidents**
  - Similar haul road watering safety incidents throughout BMA

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## Co-operative Approach

- **Management Support**
  - Full support for development of improved haul road watering
- **Company Wide Approach**
  - Inter-disciplinary BMA team plus equipment suppliers
  - Team included operators, supervisors, and managers
- **Employee Involvement**
  - Water truck operators and maintainers involved in developing specifications and inspecting construction of new water trucks
- **Outcome**
  - No customisation required after water trucks delivered
  - Excellent operator acceptance of new equipment
  - Immediate improvement in quality of haul road watering

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## Philosophy

- **Right Equipment**
    - Supply appropriate water delivery tools
- +
- **Trained Operators**
    - Design training program relevant for haul road watering practices
- =
- **Good Result**
    - Operator has ability to water haul roads correctly



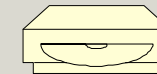
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## Training

- **Focus**
  - From → water truck operation
  - To → control of the water delivery system and assessment of amount of water required
- **Format**
  - From → long, wordy manuals
  - To → shorter, picture based manuals and DVD based training systems



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## Selected Specification Detail

### > Spray Nozzles

- > 3 high flow rate (8 mm gap) above spray bar
- > 2 low flow rate (3 mm gap) below spray bar
- > Nozzle placement minimises overlap



### > Combing & Overflow Pipes

- > Protects mechanical and electrical components from water damage

### > Water Tank Level Gauge

- > Two water tank level gauges – one in cab, one external and visible from cab

### > Cab Layout

- > User friendly, everything within easy reach of operator

### > Retro-fit Capability

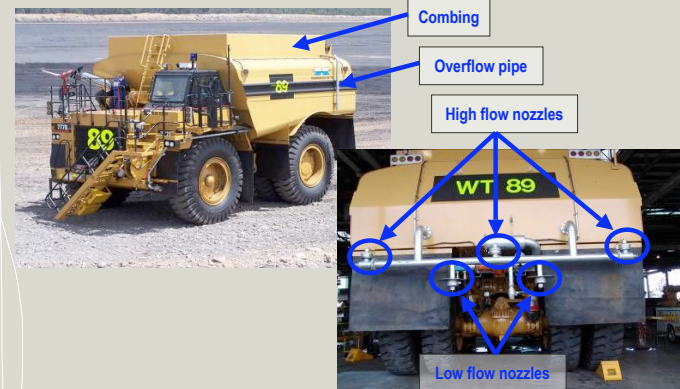
- > Can be retro-fitted at minimal cost to any make, type, or size water truck

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## Cat 777D Water Truck



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## Operator Cab

### > Cab Size

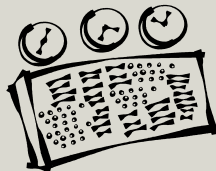
- > Standard truck cab
- > Sufficient room for trainer in second seat, but could be improved

### > Control Location

- > All cab controls located within easy reach of operator

### > Control Functionality

- > Controls simple to use
- > Full operator control over all functions
- > Independent control of nozzles
- > 4 pump speeds
- > Pulse spraying capability

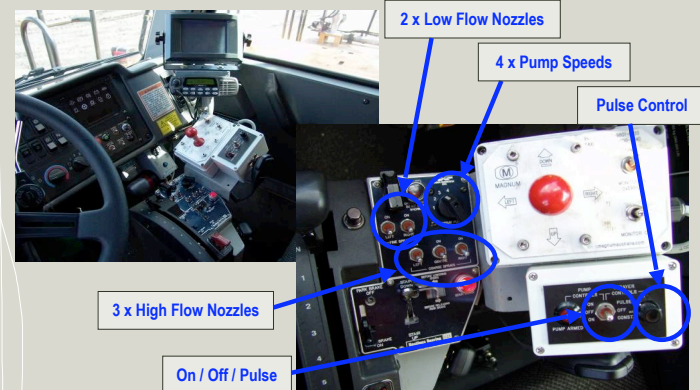


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## Cab Controls



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## Peak Downs Results

- **Safety** → Promising early results
  - No BMA safety incidents since new water trucks introduced
  - Less evidence of haul truck tyre marks on berms, skid marks, or wheelspin
- **Operator Acceptance** → Positive feedback from operators
- **Water Truck Usage** → Unchanged
- **Water Consumption** → Difficult to quantify
  - Operator feedback is that water trucks are being filled less often
- **Maintenance** → Improved
  - No evidence of water entry to electrical boxes, engine components, cab etc....
  - Less damage to water fill points

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## Project Replication

- **Implemented**
  - BMA Peak Downs
- **Being Implemented (new water trucks)**
  - BMA Saraji
- **Being Implemented (retro-fit existing water trucks)**
  - BMA Blackwater, Norwich Park, Goonyella Riverside
- **BHP Billiton**
  - Intranet meeting
  - Electronic bulletin board
  - Registered replication project

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## Questions?



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