



# Innovative Vent Duct Installation Method

## What's in a title?

Redpath Australia recently used multiple engineering aides as part of the ventilation duct installation for the construction of the drifts at Kestrel Mine Extension.

## Project Background

- Underground coal mine owned and operated by the Kestrel Joint Venture (Rio Tinto and Mitsui Kestrel Coal Investments)
- Located in the Bowen Basin 40km north east of Emerald in central Queensland



## Project Background

- The KME project is adjacent to the existing Kestrel coal mine currently producing high quality coking and thermal coal using the longwall extraction method
- The KME project is constructing a new mine, Kestrel South to access the 400/500 series of longwall coal panels in the German Creek coal seam

# Contract Scope of Work

- **Conveyor Drift**

- Excavation of 1430m at a Gradient of 1:6
- Arch profile 6.5m wide x 4.75m high
- Concrete segment floor

- **Transport Drift**

- Excavation of 1670m at a Gradient of 1:8
- Arch profile 6.0m wide x 4.5m high
- Concrete segment floor

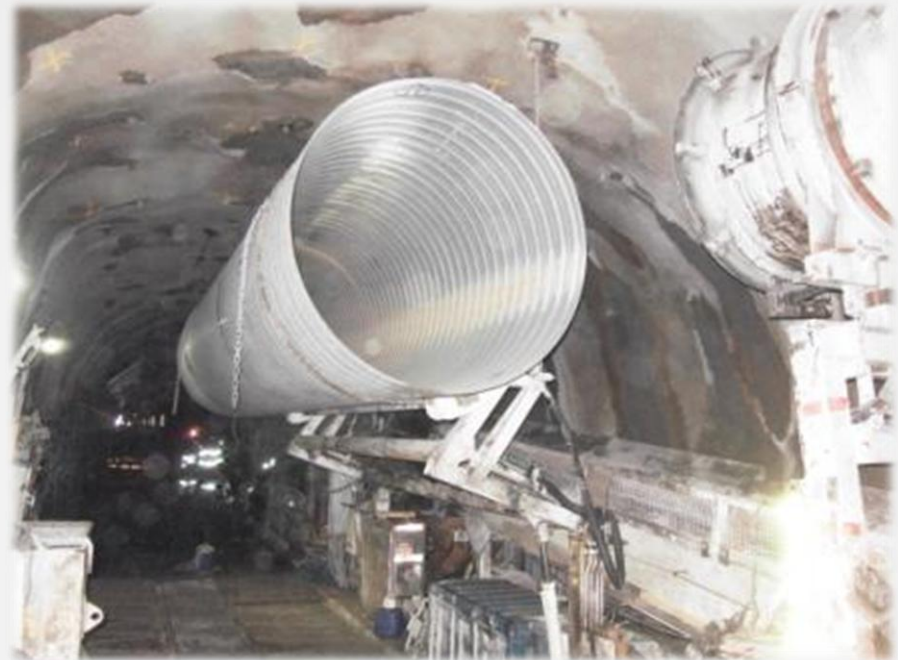
## Ventilation Scope of Work

- Supply and installation of rolled steel ventilation duct
- Duct to be installed in full length of drift
  - Transport Drift (1.4m dia.) – 1900m
  - Conveyor Drift (1.8m dia.) – 1600m
- Vent duct was supplied at 1.6mm thick
  - 1.4m duct weighed in at 450kg
  - 1.8m duct weighed in at 588kg

## Key Drivers to Success

- Eliminate the hazards or risks
- Provide a substitute to the traditional method
- Engineer a solution that reduces the risks associated with the tasks to an acceptable level
- Remove personnel from the line of fire
- Eliminate manual handling with the installation of the vent can

# The Integrated Solution





# Initial Installation



## Drift Installation

- Ventilation duct installation jig was incorporated into the sliding floor which was used as part of the construction works
- Installation jig functions through the use of a series of hydraulic rams
- Lifts the ventilation duct into position reducing manual handling
- Telescopic vent duct allows the location of the Explosion Risk Zone to be maintained inbye of the Sliding Floor















# Benefits of the System

- Manual handling risks eliminated
- Working at heights risks eliminated
- Personnel interface with open ventilation system eliminated
- Working under a suspended load risks eliminated
- Interface between personnel and mobile plant during installation substituted
- DPM levels reduced through hydraulic installation

# Questions?

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