

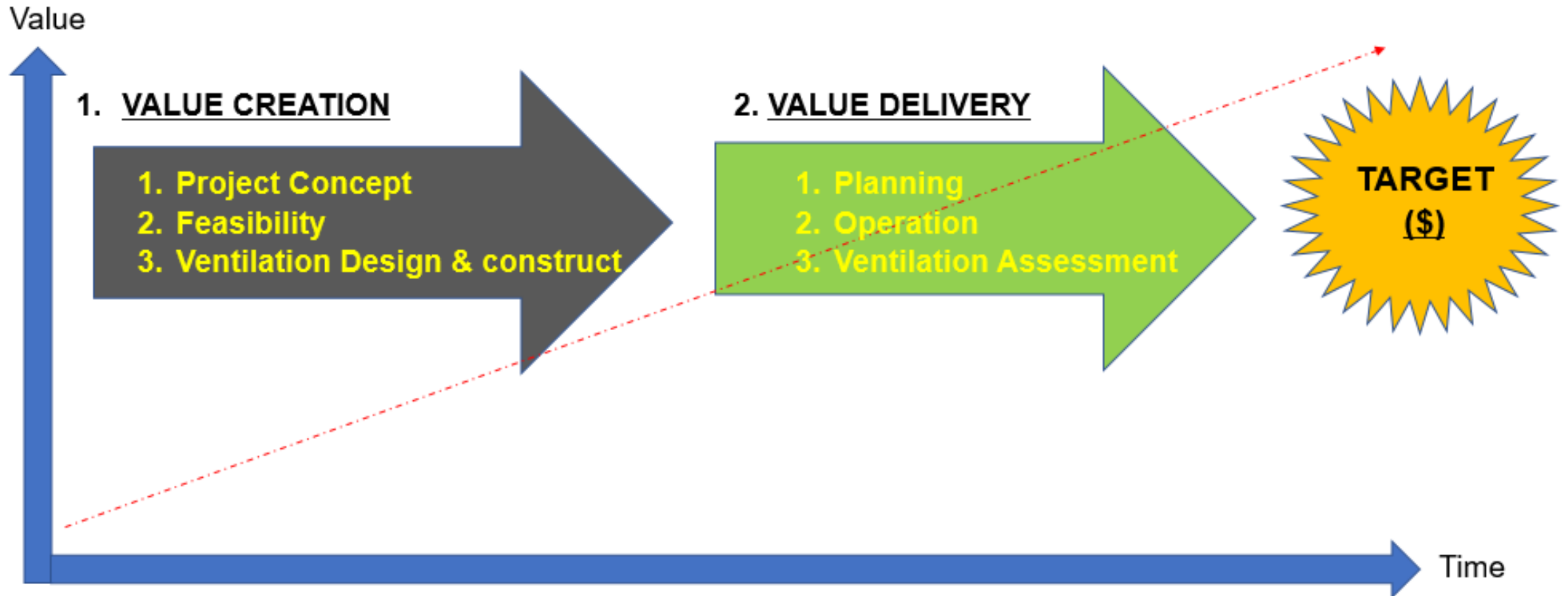
# **OPTIMIZE VENTILATION AND ADD VALUE TO THE SAFE MECHANIZED MINE**



# Introduction

- ❑ A good mine ventilation system must be able to provide an adequate quantity and quality of air to all work and travel areas. And this is essential for the health, safety and working comfort of the underground workforce and machineries. No ventilation system can remain adequate indefinitely. As far as the mine grows, ventilation characteristics such as system pressures, air volumes, leaks, resistances, and power consumption change dramatically. Continuous improvement led by ventilation engineer or and practitioners, needs to drive an appropriate ventilation system which provide an adequate health and safety UG-environment.
- ❑ Economically optimizing the ventilation system of a mechanized mine at low cost, opens up a major challenge in the definition of the ventilation method.
- ❑ we can simultaneously considerably improve the air flows delivered to the working faces (obviously in accordance with the regulations on health and safety at work) and reduce the expenses by a better combination of ventilation features.
- ❑ This can be achieved by managing the primary vent, identifying inefficient airways and poorly ventilated areas, defining the nature of activities, and implementing a suitable ventilation system for both development and production.

# Methodology



# Analysis

## Safety and health

- Meet statutory requirements, Duty of Care and ALARA/ALARP (as low as reasonably achievable/practicable). (i)

## Technical

- Technical strategies to get sufficient quantity and quality of air to the workplace
- Meet the required standards.
- Sufficient flexibility to handle the normal post-design changes that occur in an operating mine.

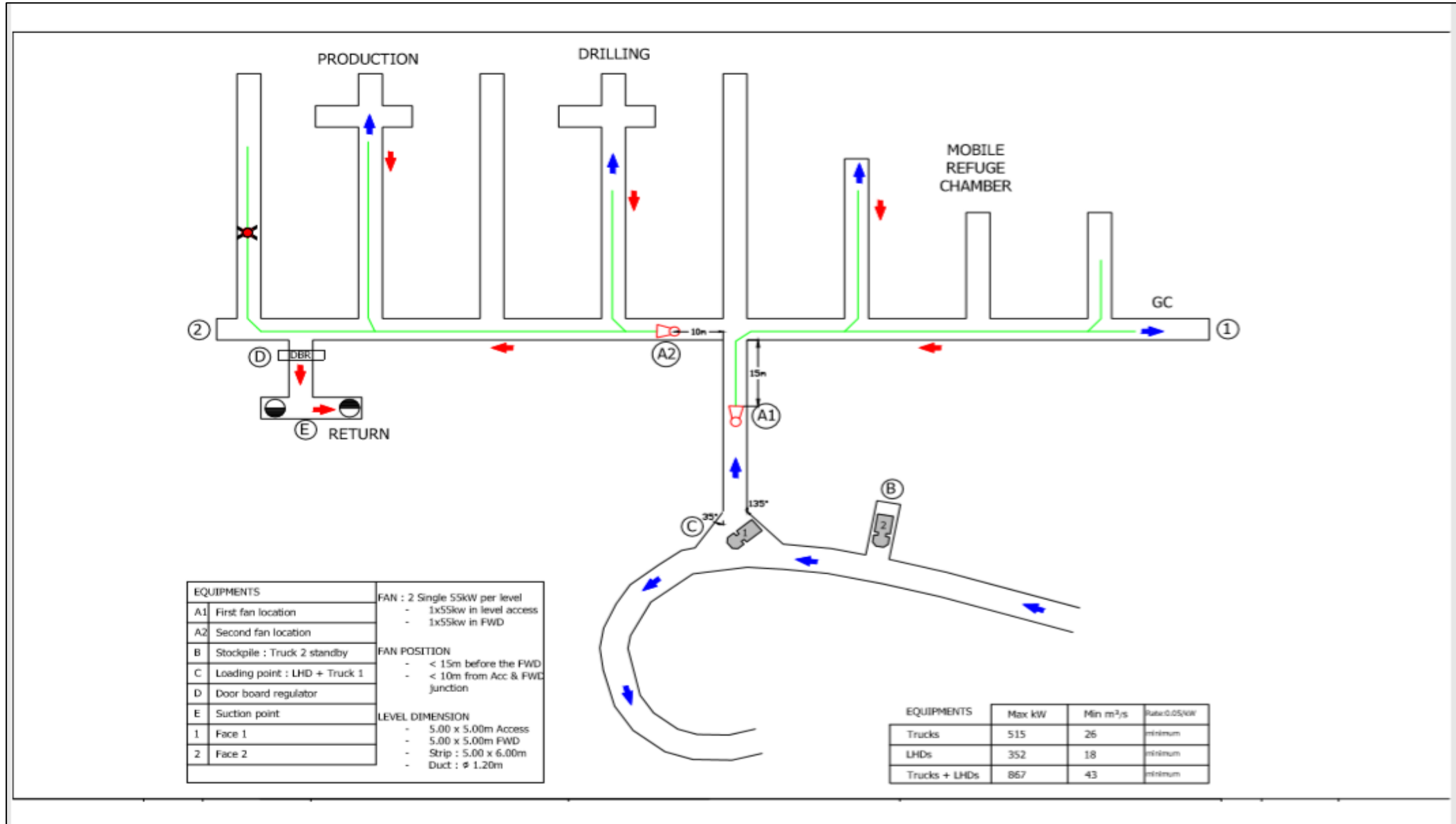
## Economics ( Add value)

- Minimize LOM cost
- Maximize LOM value

## Communication

- Communicating ventilation requirements to all stakeholders

# Ventilation Level Plan



# Conclusion

- Mine ventilation as the continuous supply of adequate and qualitative air to all parts of a mine underground, where people are required to travel or work. (ii)

This safe and healthy air is required for mine workers, mobile equipment, fixed plant and also the rock or strata mass itself.

High powered secondary (auxiliary) fans are a major consumer of power (\$/kW).

Experience have identified that we can simultaneously significantly improve the airflows delivered to the working faces and reduce OPEX \$/cost due to fan power consumption by better selection of the ventilation method from the design, ventilation system flexibility and 'fan/duct combinations'.

- Ventilation is the blood of the underground mine, any single district of the mine needs a an airflow for airborne pollutants dilution.

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(i) : *Mine Ventilation A Practitioner's Manual, D J Brake PhD (Curtin)*

(ii) : *COM : Intermediate Certificate in Mine Environmental Control, Book1, P. du Toit*

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