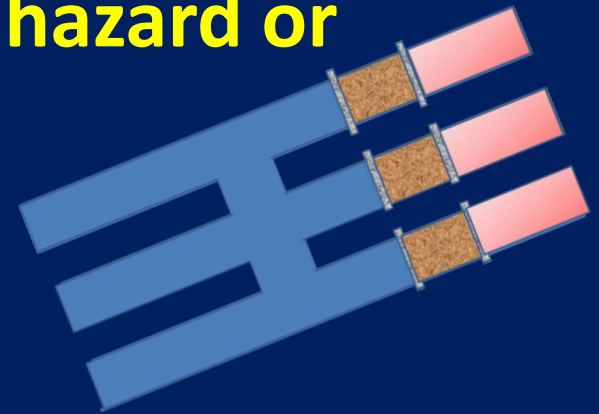


Global Methane Forum
Washington DC 28-30 March 2016

**Gas from sealed areas – a hazard or
resource?**

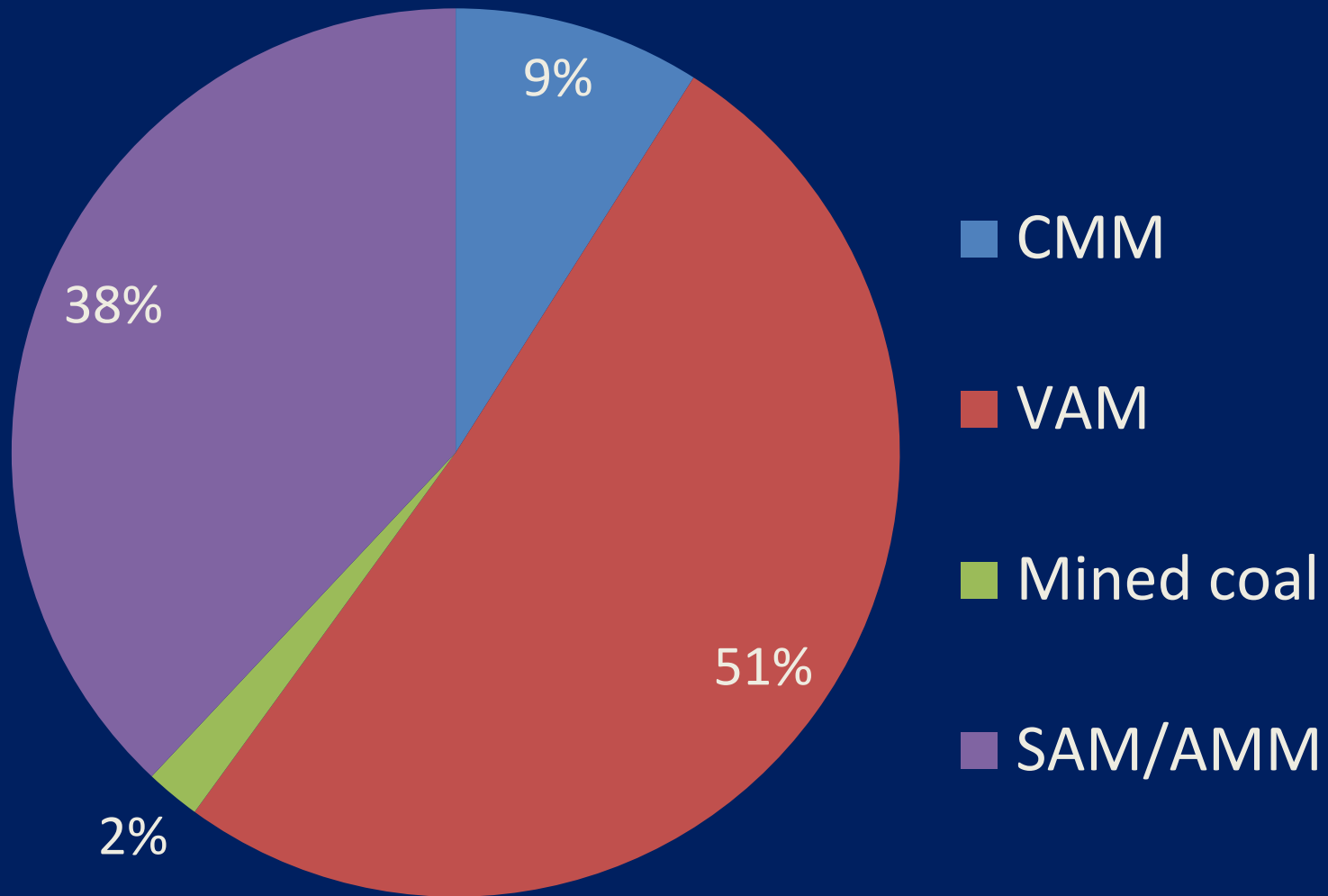


by Dr D P Creedy

Sindicatum Sustainable Resources

Vice-chair UNECE Group of Experts on CMM

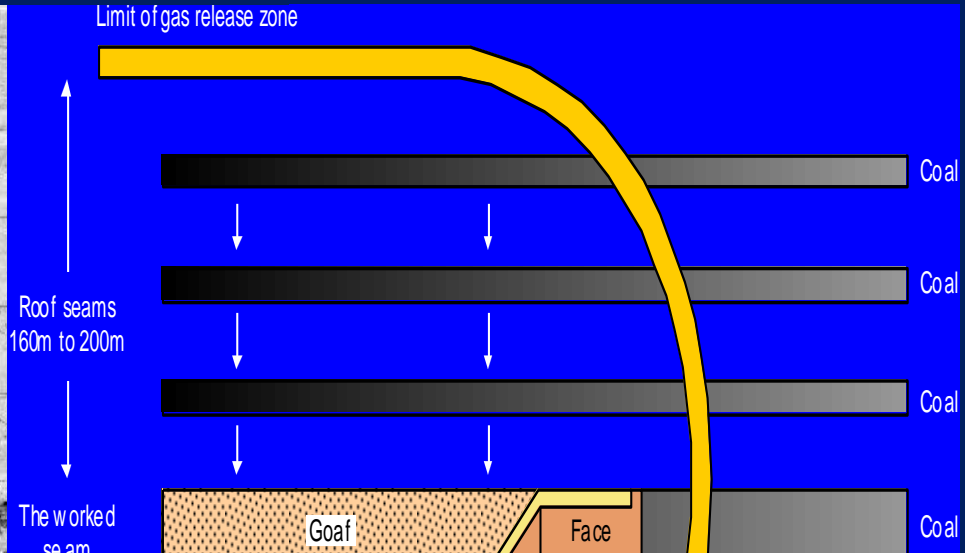
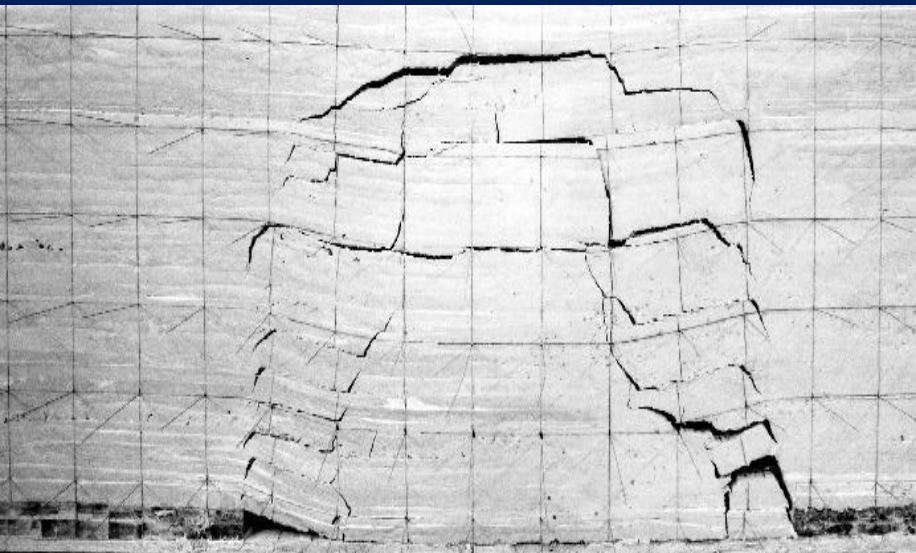
Global mine gas resource



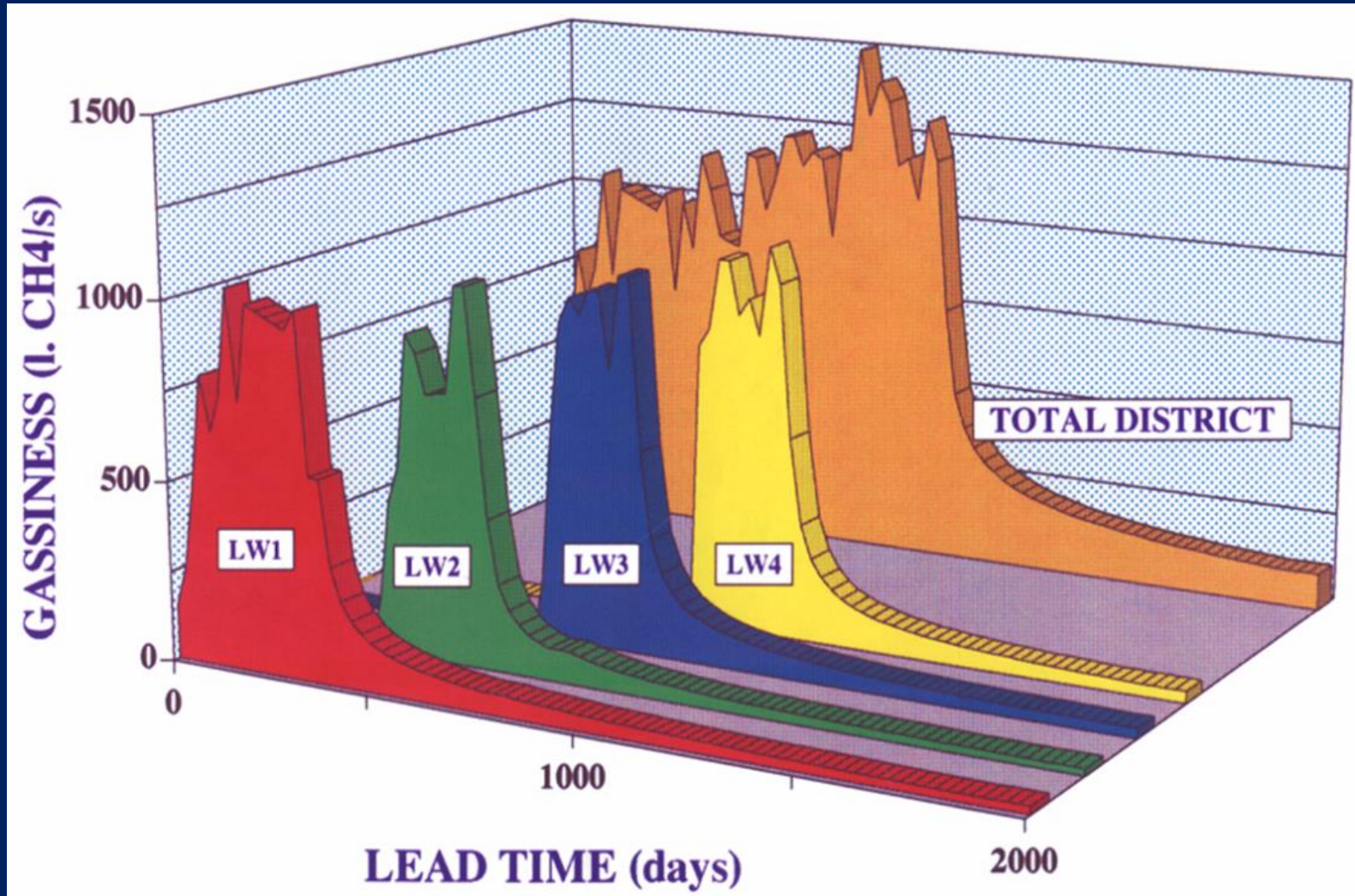
Mine gas in the life cycle of coal mining

Mining cycle	Gas exploitation	Gas composition
Exploration	CBM from surface wells	Mainly CH ₄
Development	Pre drained CMM	CH ₄ + air
Production	Post drained CMM	
Sealing	SAM	CH ₄ + air + N ₂ + CO ₂
Mine closure	AMM	CH ₄ + N ₂ + CO ₂

Basic concepts – gas release from longwall mining

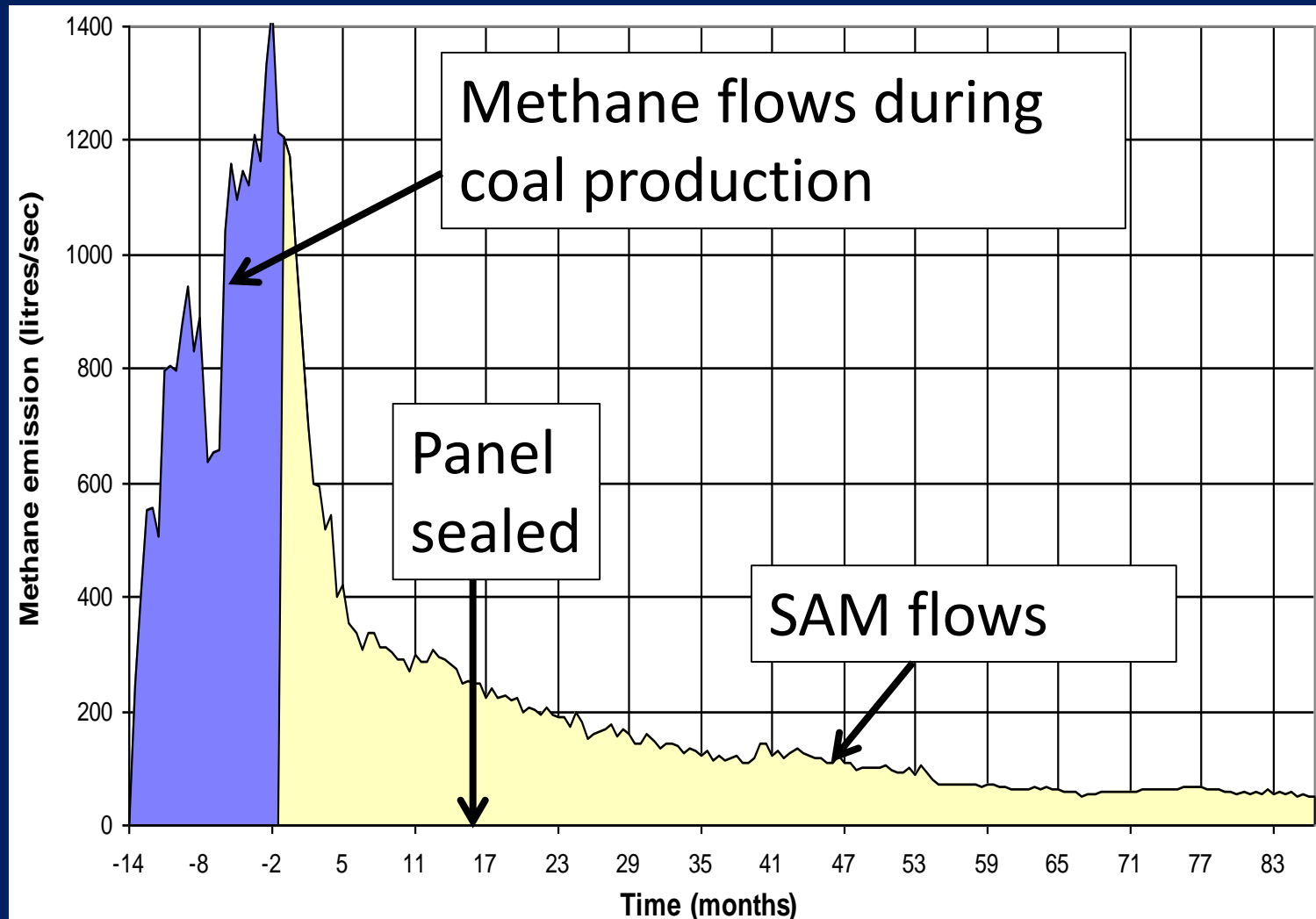


What is Sealed Area Methane (SAM)?



From Lunarzewski

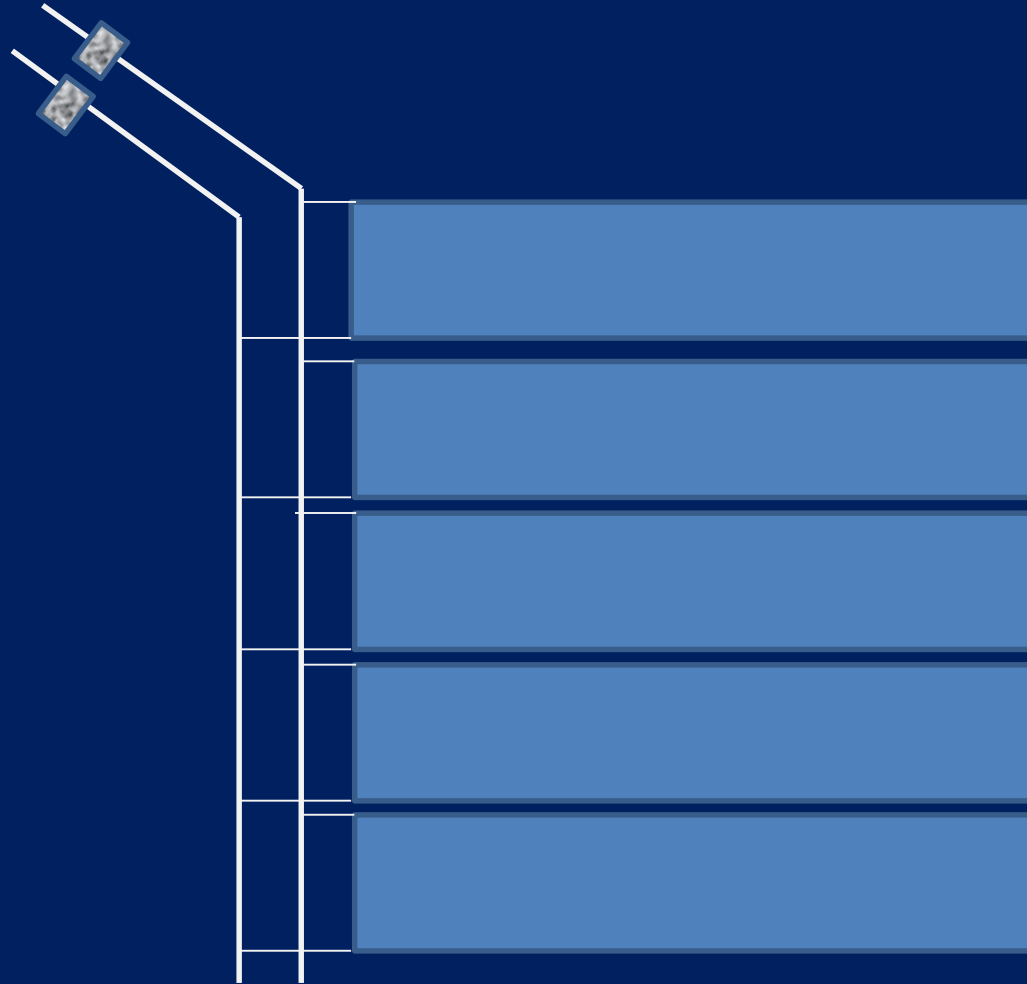
What is Sealed Area Methane (SAM)?



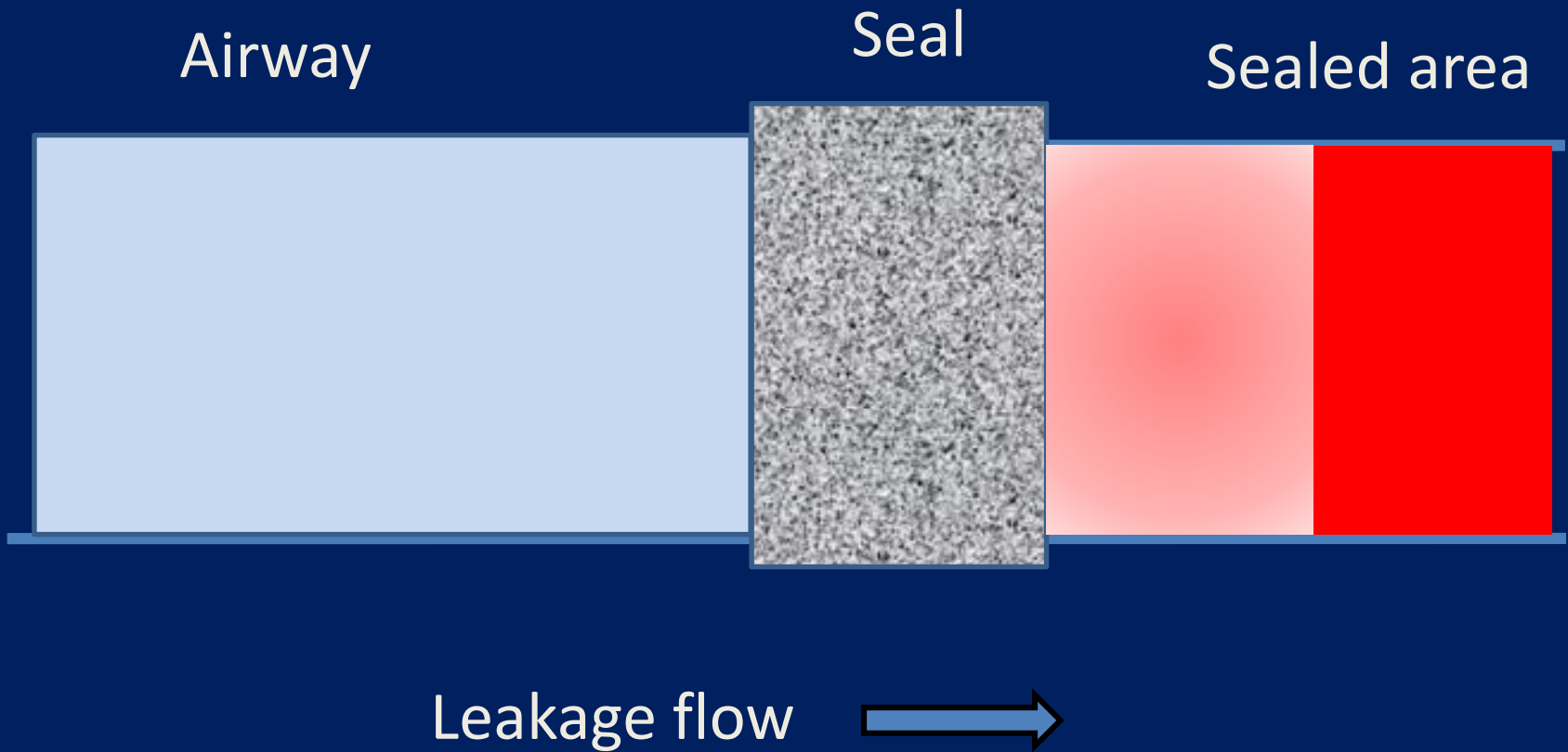
SAM resources and reserves

- SAM resource = residual volume of gas available in un-mined coal and void spaces
- SAM reserves = gas recoverable at commercial flow rates at a suction pressure that can be applied without inducing significant increase in CO and O₂ concentrations. Flooded areas are excluded.

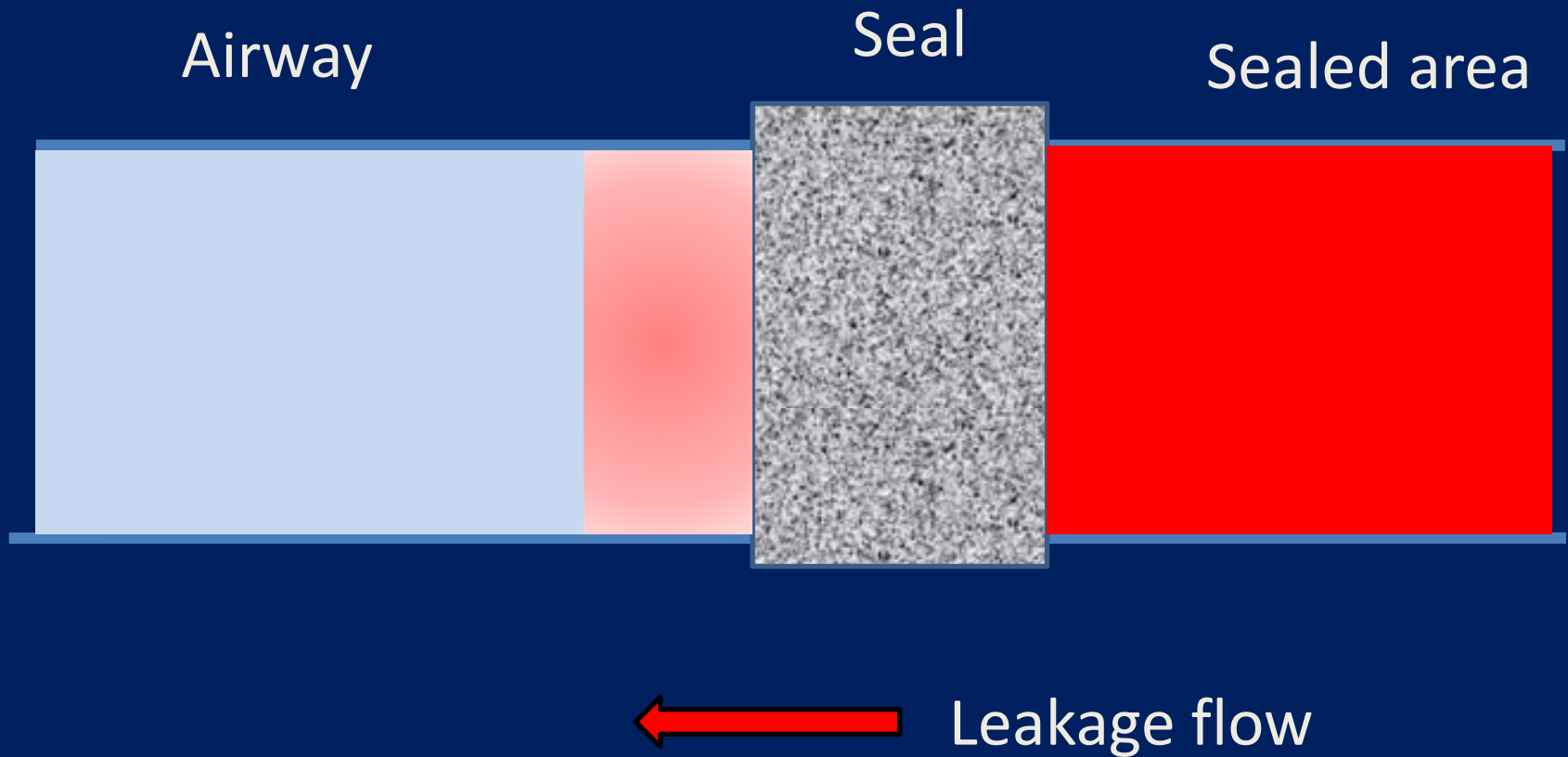
Why seal off mined-out areas?



Atmospheric pressure rising



Atmospheric pressure falling



Seal control

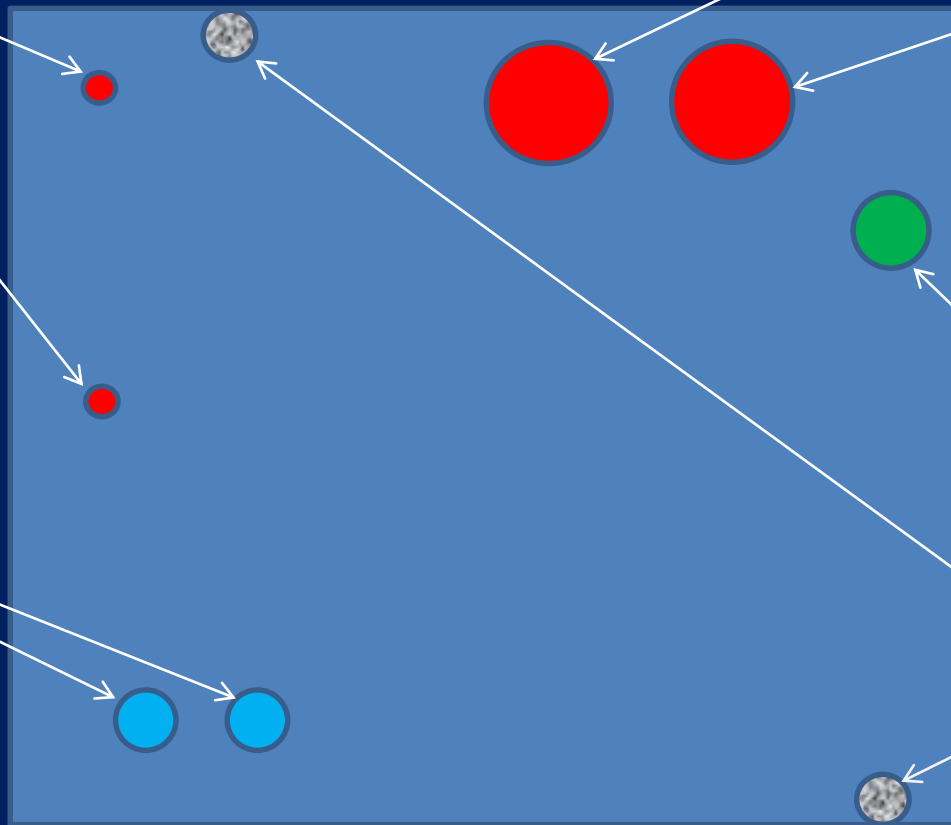
Gas
sampling

Gas
drainage

Water
drainage

Nitrogen
injection

Packing
injection



Control of sealed areas creates best conditions for methane recovery

- Good standard of sealing – high quality gas
- Gas and water monitoring – good data for planning
- Underground gas drainage or surface venting arrangements – gas production facility

Feasibility of SAM extraction and use

SAM resources & reserves

- Residual gas content of coal seams
- Quantity of unworked coal comprising the gas reservoir
- Dimensions of the sealed area
- Water inflows
- Gas quality

Feasibility of SAM extraction and use

Gas extraction

- Access to sealed areas –
underground, surface borehole, shaft
- Methane drainage capacity
- Expertise and skills in gas extraction
and use

Feasibility of SAM extraction and use

Commercial and legal factors

- Gas and power price
- Accessibility of market – pipeline, customer, grid connection
- Carbon revenues
- Ownership of the gas and land access rights

Revenue from SAM



Where are the opportunities?

Extensive sealed areas in working, gassy, longwall mines represent potential mine gas production opportunities.

Where mining depths are relatively shallow SAM can be accessed easily from surface boreholes drilled into abandoned mine roadways.

Conclusions

Sealed Area Methane (SAM) is similar in origin to Abandoned Mine Methane (AMM).

The difference is in the accessibility and controllability of the gas for SAM compared with AMM.

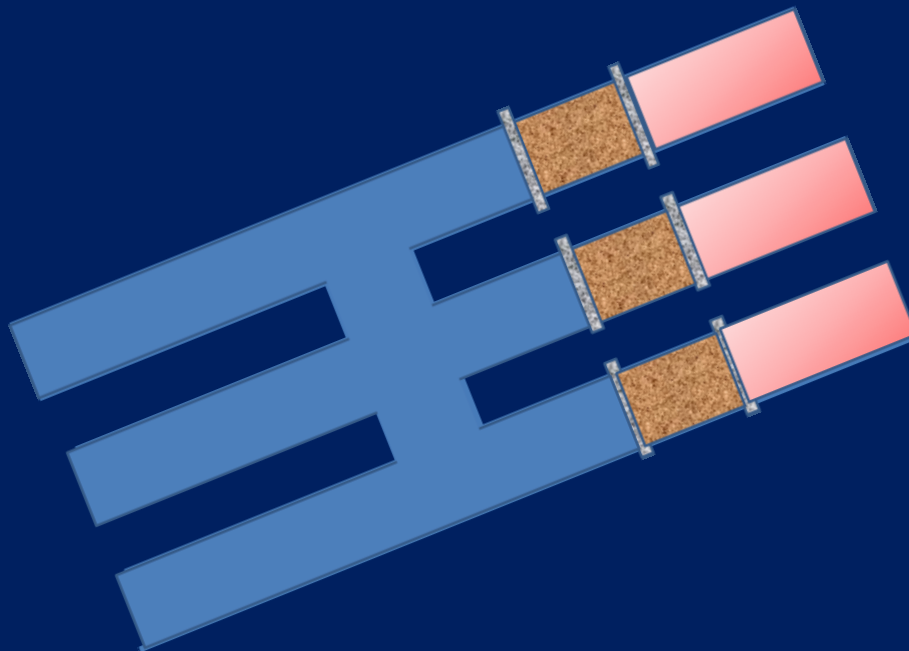
Conclusions

SAM is a potential asset that can provide :

- Additional value from mining using proven technology
- Clean energy
- Carbon revenues from emissions mitigation

Conclusions

Attention to SAM production detail will reduce sealed area explosion risk and vice versa



For further information please email:

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Thank you for listening