

ASBESTOS

2019
CONFERENCE

SAFETY



Australian Government

Asbestos Safety and Eradication Agency

11-13 NOV PERTH, WA



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Launch:
***National strategic plan for
asbestos awareness and
management 2019 - 2023***

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Keynote: International The global asbestos panorama

Laurie Kazan-Allen

Coordinator

International Ban Asbestos Secretariat

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Keynote discussion: The Wittenoom legacy

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Antoine Macmath

Director Property and Risk Management
Department of Planning, Lands and
Heritage

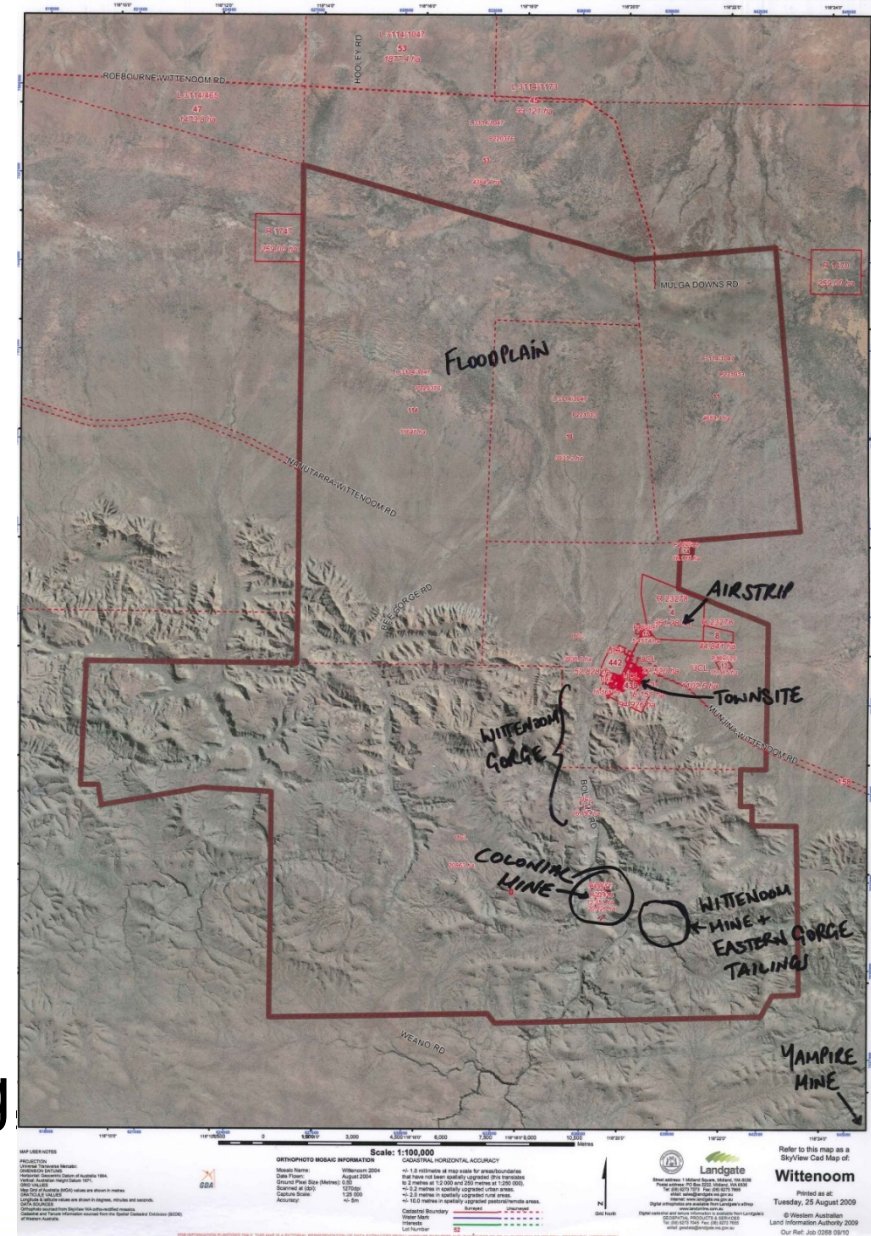
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Wittenoom context

- Largest contaminated site in the Southern Hemisphere – 50,000ha.
- Entire Wittenoom Asbestos Management Area (WAMA) classified as “Contaminated – Remediation Required” under WA CSA.
- WAMA managed by WA Department of Planning Lands and Heritage.





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Past Government Actions

- Phase down commenced in 1978 – acquisition of properties, disconnect services.
- Town deproclaimed in 2007.
- As at November 2019 there are 4 property owners remaining, total of 15 properties.
- Extensive warning signs in WAMA.





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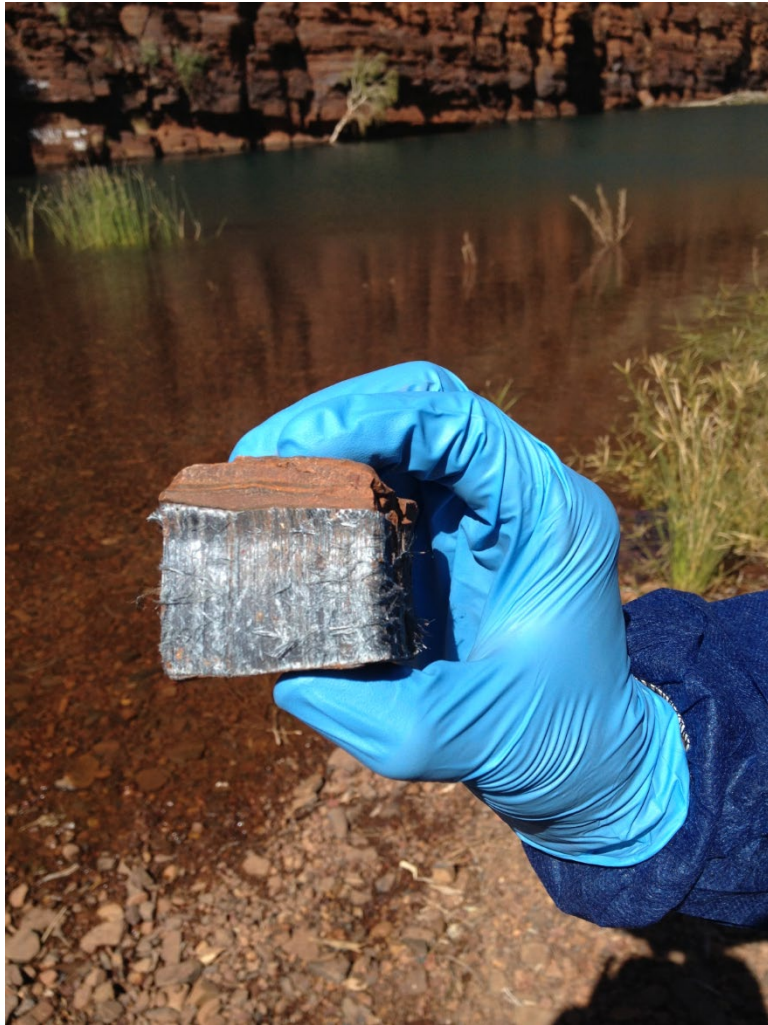
Contamination

- Historical mining activities have resulted in approx. 3 million m³ of tailings in Wittenoom Gorge.
- Tailings mobilised through movement of water through Wittenoom Gorge.





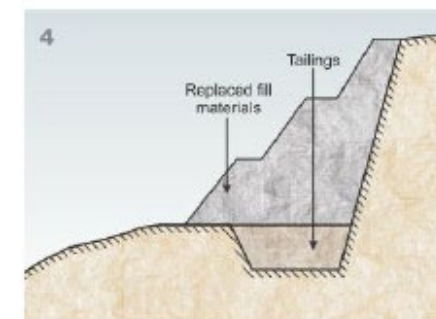
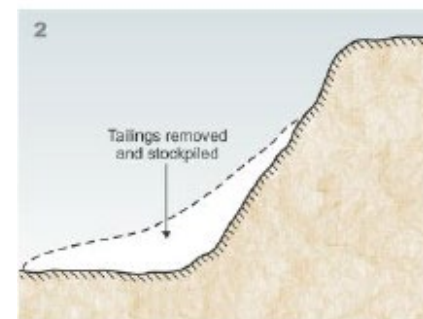
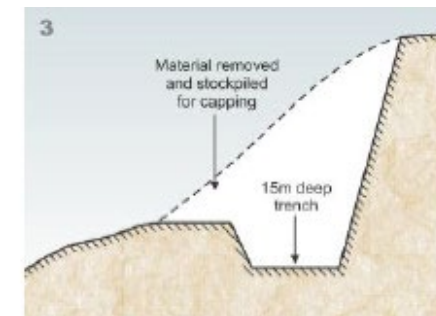
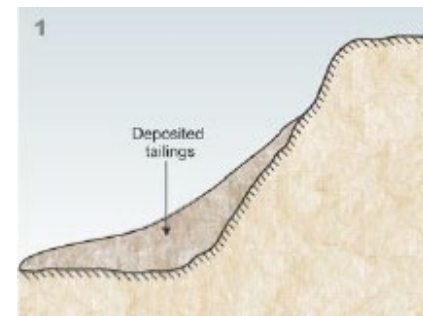
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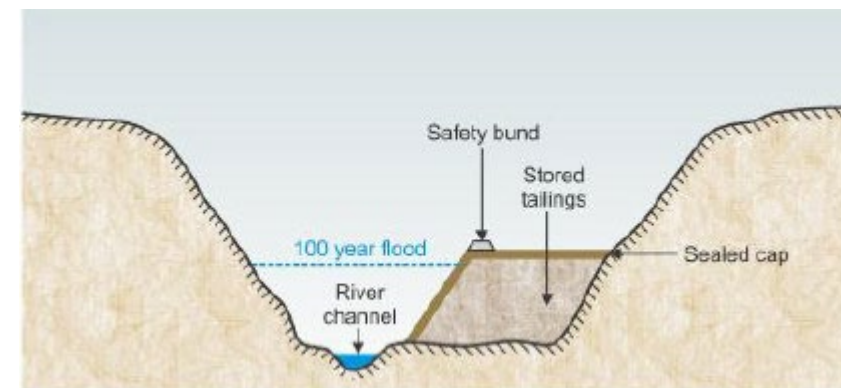


Remediation feasibility

- 2 year, comprehensive study looking at priority locations and remediation strategies.
- Objective to contain and stop further movement of source material.
- Options such as in-situ encapsulation and armoured levees investigated.
- Cost prohibitive. Focus on restricting access and risk management.



In-situ encapsulation



Armoured levees



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Legacy issues: Roebourne-Wittenoom Road

- Historical transport of asbestos bags between Wittenoom and Point Sampson.
- Hessian bags fell off trucks and hessian has since degraded exposing raw blue asbestos.





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- Some large localised deposits, some spread over 100m+.
- Impacts on road surface and shoulders.



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- Human Health Risk Assessment undertaken to determine public health risk.
- Dust and soil monitoring during removal of known bag locations and during simulated activities.
- Public health risk limited to dust generating activities.
- Risk mitigation works underway.





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Legacy issues: Impact on Banjima People

- Determined holders of Native Title.
- Strong cultural connection with the area, in particular Wittenoom Gorge.
- Low level of awareness of risks – highest risk user group.
- Work underway to quantify current exposure and develop management strategies.





What is being done to manage the risks?

- *Wittenoom Closure Bill 2019.*
- Demolition of townsite infrastructure.
- Restrict access to area.
- Further investigation into movement of tailings.
- Development of culturally appropriate risk communication materials.





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How can you get involved?

- Townsite demolition tender – early 2020.
- Industry engagement sessions – coming soon.
- Innovation in addressing the risks and managing access – get in touch.



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**ASEA National 2019
Asbestos Safety Conference**

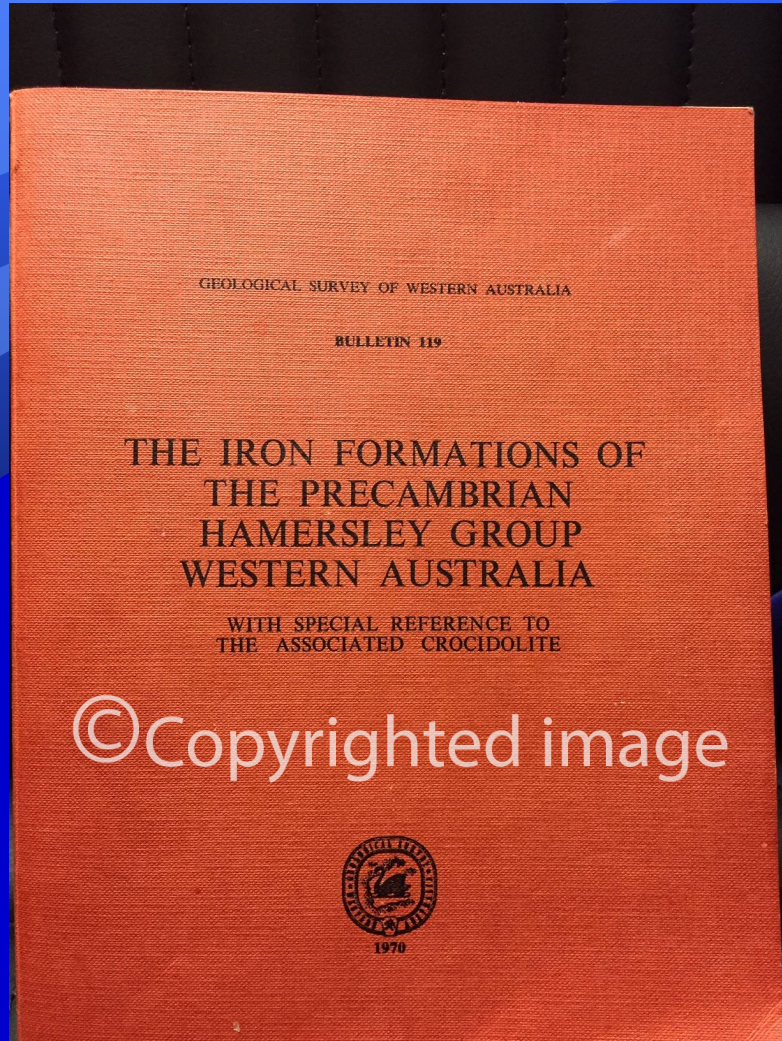
Wittenoom Geology and History

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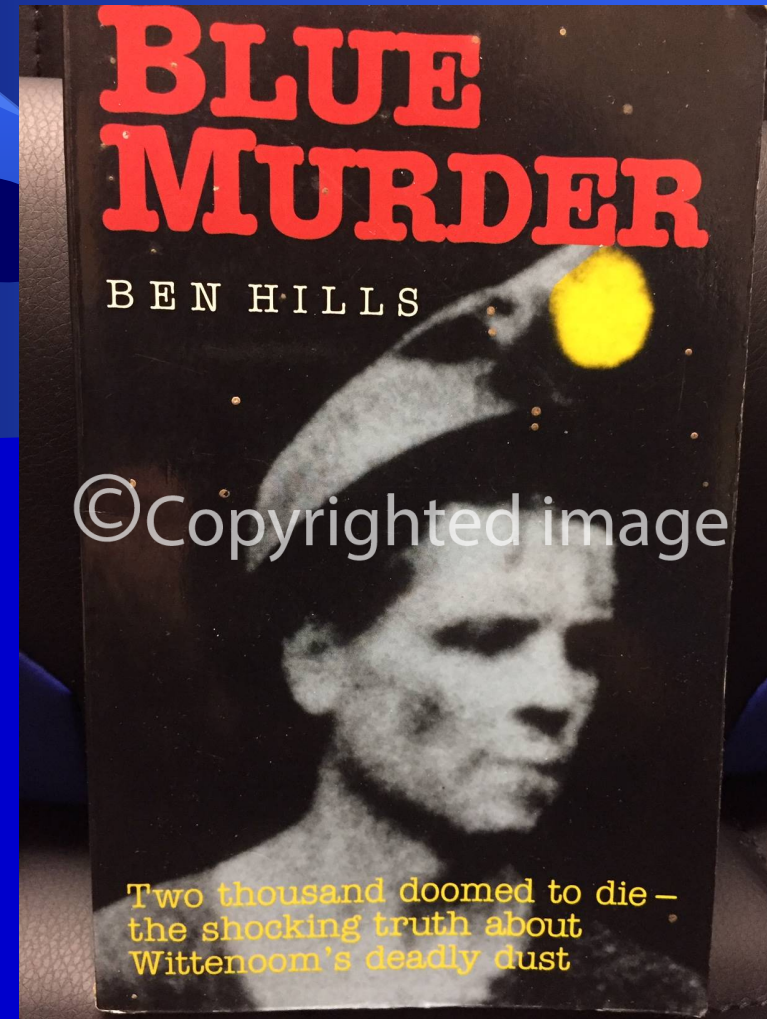
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*Laurie Glossop - Glossop Consultancy
B.Sc (Hons) Ph.D COH MAIOH FAIOH*

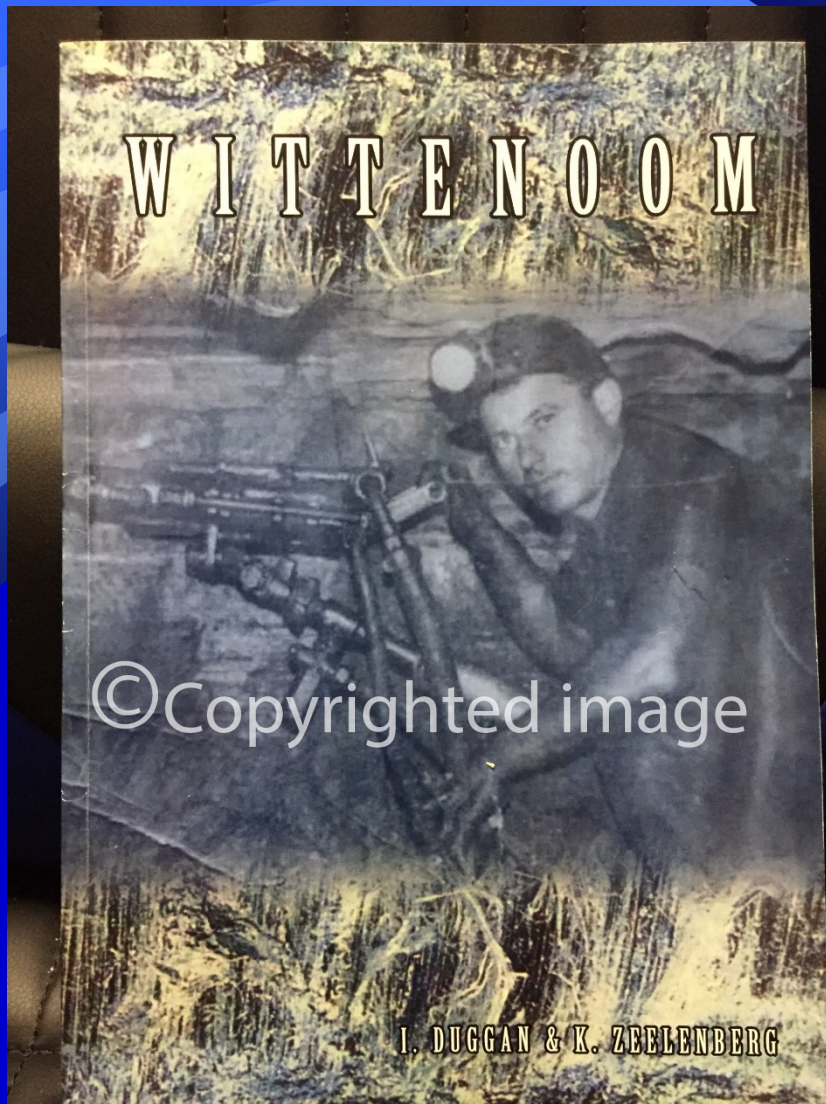
Book References for this Presentation



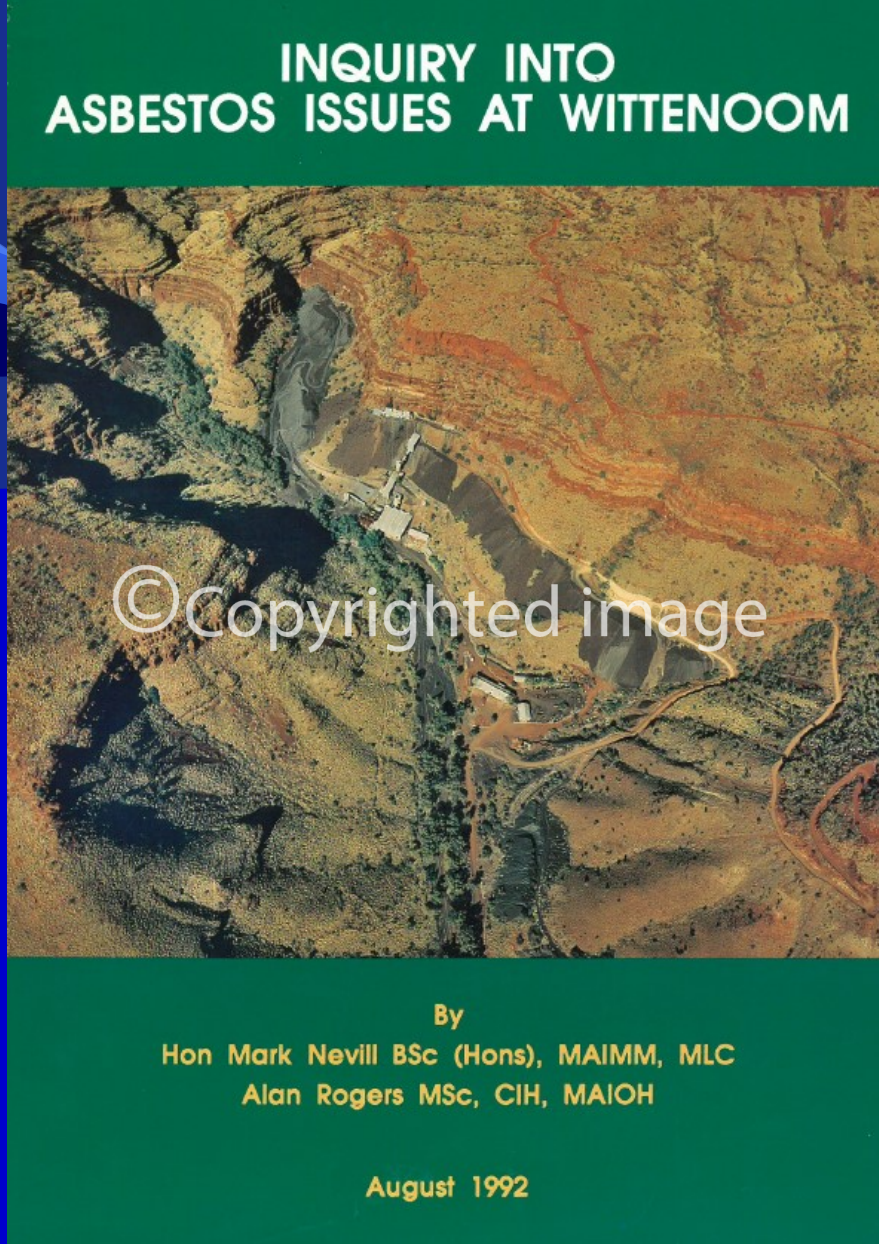
Published by Trendall and Blockley 1970



Published 1989



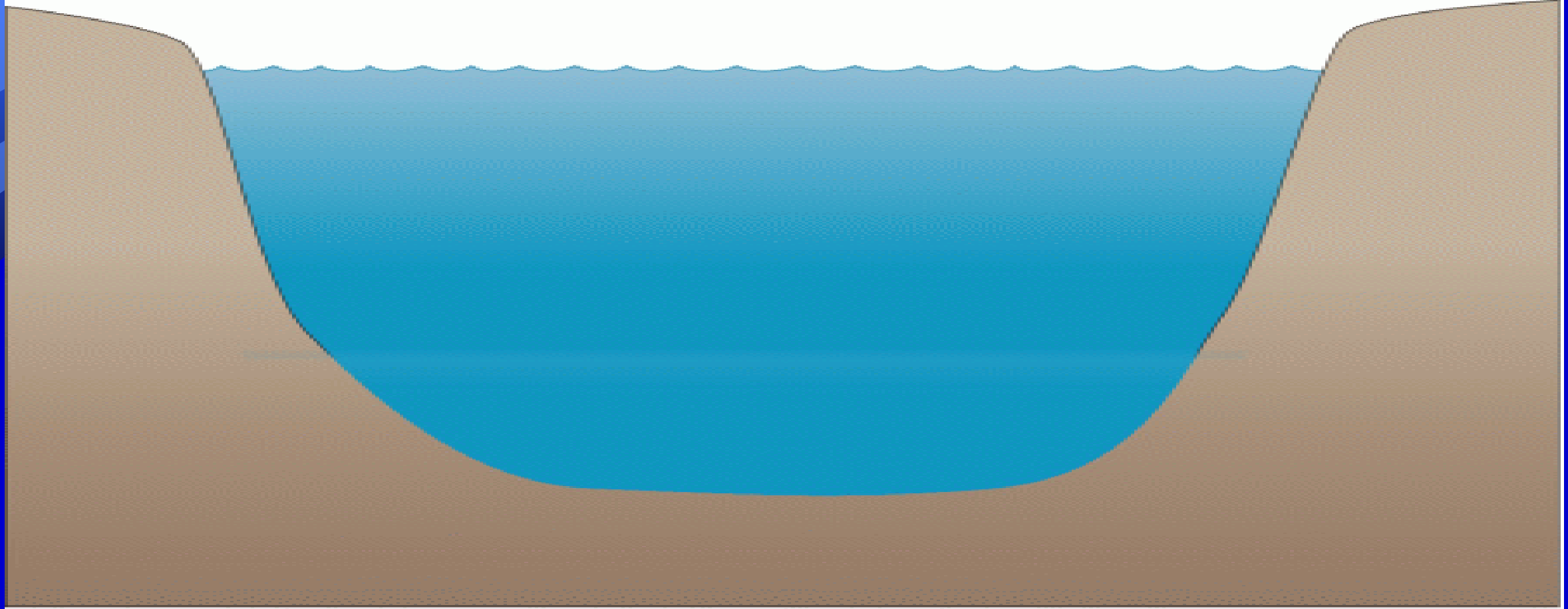
Published by Duggan
and Zeelenberg 2018



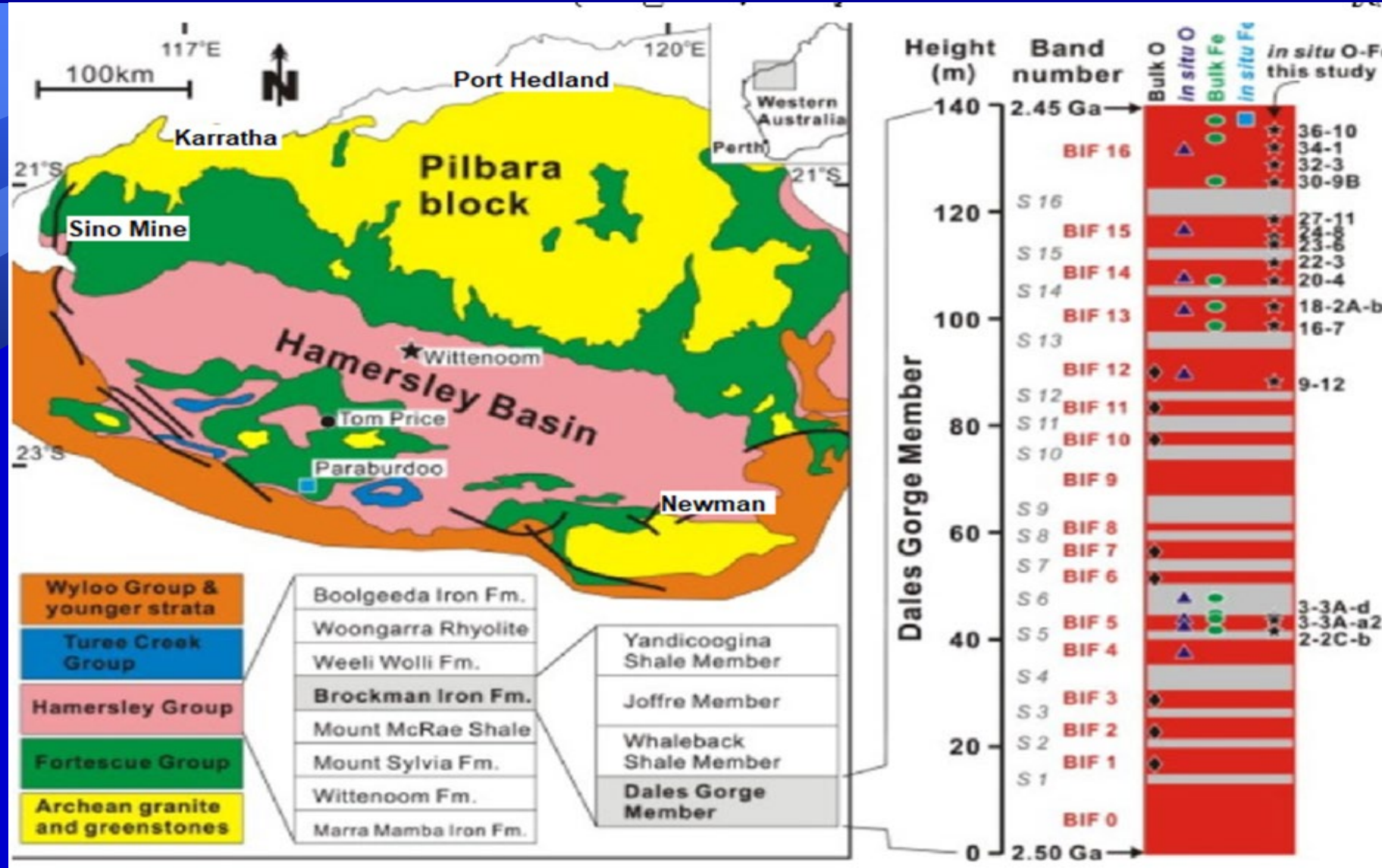
Nevill and Rogers Inquiry 1992

Hamersley Basin Formation

- *About 2.7 billion years ago the Hamersley Basin began to form. It was believed to be a shallow sea which over time sunk about 11km in the middle. Sediments flowed into the basin with different periods of iron, silica and clays. The basin is about 600km long and 300km wide.*
- *On sinking, pressure and heat metamorphosed the sediments producing banded iron, chert, shale and on rare occasions, riebeckite. Diamond core samples are on display.*



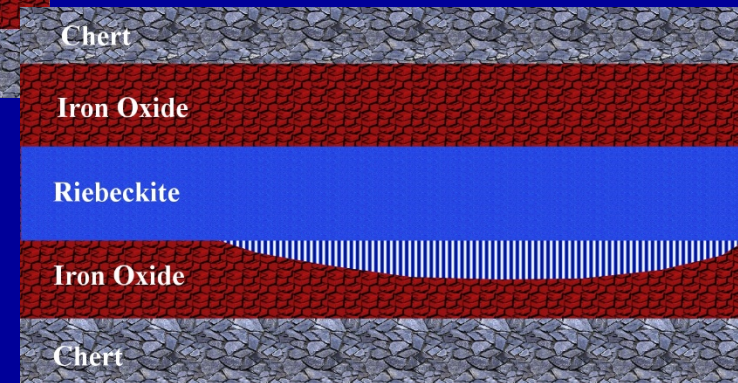
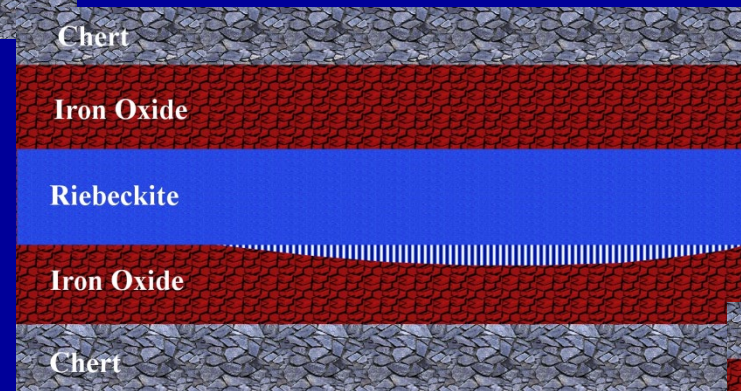
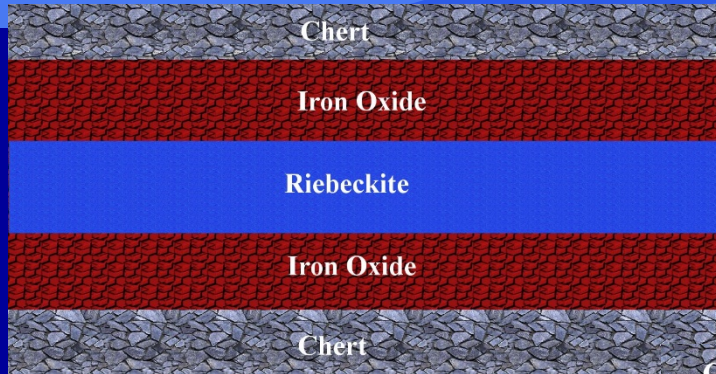
Geology of the Surface of the Pilbara and Macrobands of the Dales Gorge Member



Massive Riebeckite Bands in Dales Gorge, Marra Mamba and Joffre Members

- *In several of the macrobands of the Banded Iron Formations of the Dales Gorge, Marra Mamba and lesser extent Joffre Members are mesobands of massive riebeckite (bright blue).*
- *Riebeckite (amphibole minerals) have occurred because of the chemistry (elements) and the metamorphism of the sedimentary layers.*

Formation of Asbestiform Riebeckite (Crocidolite / Blue Asbestos)





Dales Gorge Member has two major seams of crocidolite within BIF1 and BIF2. Within the seams are multiple mesobands of crocidolite. The crocidolite mesobands can be from 10cm thick down to a few mm. There are two major seams at Wittenoom Gorge referred to as the Upper Seam (BIF2) and Lower Seam (BIF1). There is more crocidolite in the Upper Seam which is about 6m above the Lower Seam. There are smaller amounts in other BIFs.



Seam of crocidolite cross fibre

- Sheen of densely packed fibres
- Change to lighter colour when pulled apart
- Friability of fibres
- Flexibility of fibres

Many Asbestos Mines in Western Australia

- *Chrysotile (white asbestos) mines at Nunyerry and Nullagine*
- *Crocidolite (blue asbestos) above ground (benches – knapping/cobbing) in Hamersley Basin:*
 - *Yampire Gorge, Wittenoom Gorge, Bee Gorge, Range Gorge, Dales Gorge, Calamina Gorge, Asbestos Gorge, Millers Gorge and Junction Gorge*
- *Crocidolite (blue asbestos) underground mines in Hamersley Basin:*
 - *First: Yampire Gorge Mine*
 - *Second: Wittenoom Gorge Mine*
 - *Third: Colonial Gorge Mine*

Crocidolite (Asbestiform Riebeckite) *Underground Mines*





Wittenoom Gorge Mill
- Also called Old Colonial Mill



Wittenoom Gorge Mill 1948
Asbestos everywhere –
Copyright photograph



Wittenoom Gorge Mine



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Vibrating Screen with crocidolite staying on the top of the screen and rock falling through the screen



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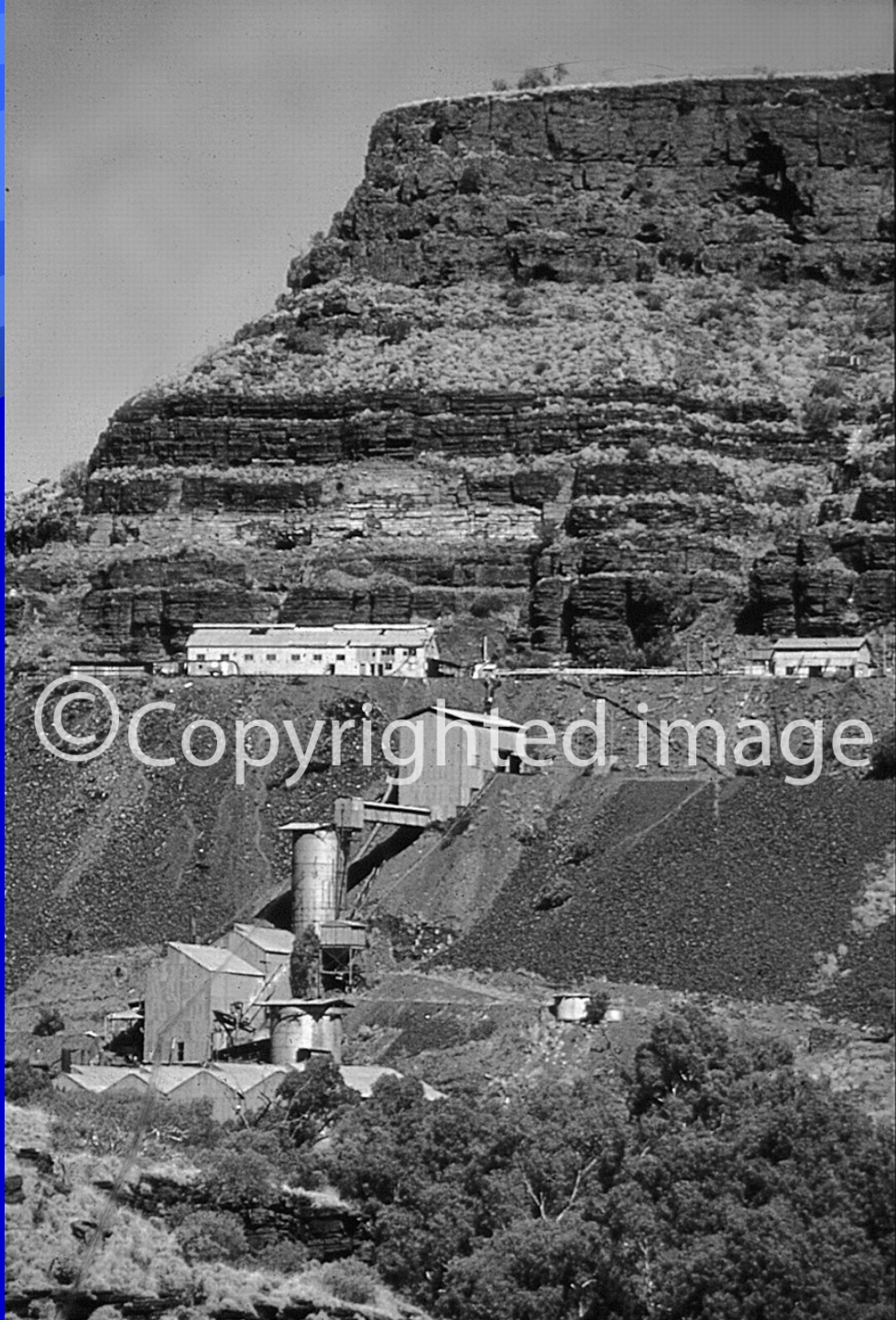


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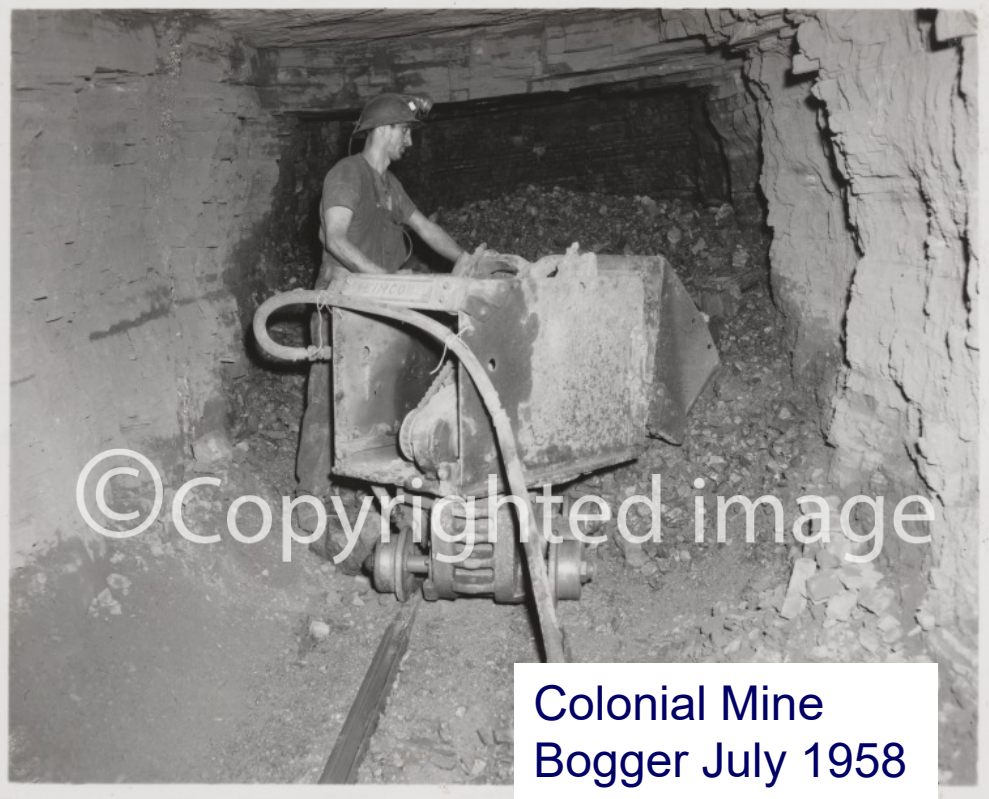
Filling 100 "pound" bags at Wittenoom Gorge Mill

Wittenoom Gorge Mine and Town Settlement



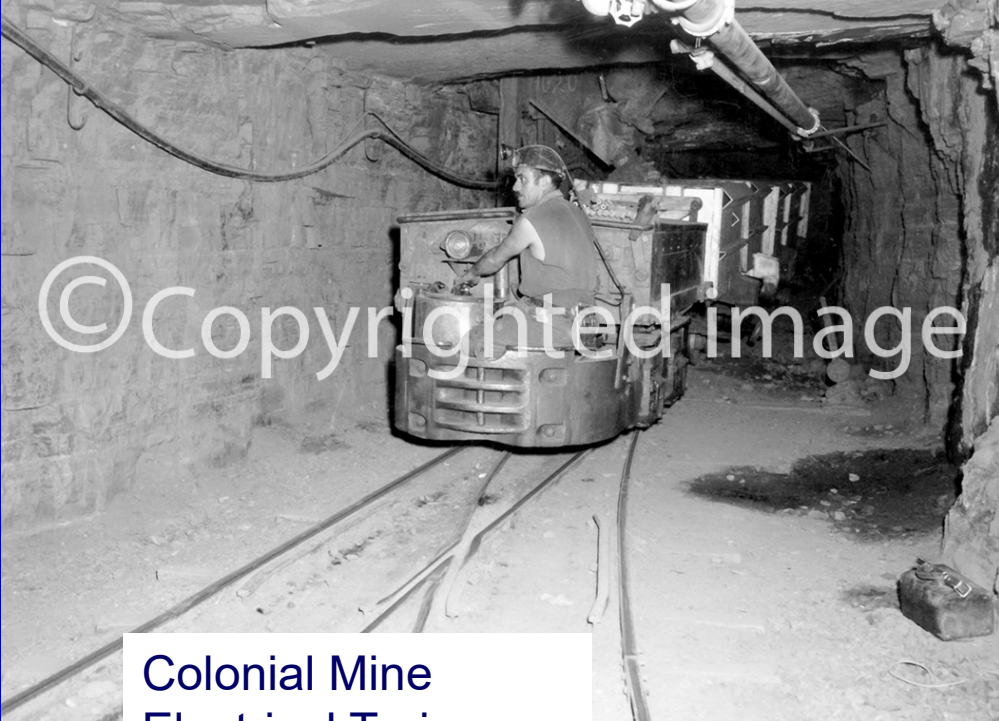


Colonial Mine Just After Closing.
Adit 1, Miners Changing Room,
Primary Crusher, Secondary
Crusher, Mill (1958), Waste but
no Tailings



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Colonial Mine
Bogger July 1958



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Colonial Mine
Electrical Train

Electric locomotiv

ry of Western Australia 000195D.



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Drill bit either 4' or 7'
Compressed air to drive drill bit.
Water through centre of drill bit.
Noisy!
Note stope height 38 to 40"



Loading explosives
with fuses



Scraper Man

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Mine, Mill, Waste and Tailings – after Mine closure

Respiratory Diseases from Wittenoom

- *Mesothelioma – latency median 43 years*
- *Lung Cancer – 30 or more years latency.*
- *Asbestosis – not a cancer, but can be fatal*
- *Pleural Plaques – non serious problem*
- *Silicosis*
- *Some tuberculosis*

Deaths from Mesothelioma

- *Much research in WA – Mesothelioma Register and the National Centre for Asbestos Related Diseases.*
- *Mine and Mill – 318*
- *Still 5 to 10 a year – mainly children now.*
- *Residences - 101*
- *Non-ABA Workers – 52*
- *Wharfies Point Samson – 23*
- *Wharfies Fremantle - 46*

Approx Total Deaths from Wittenoom

- *Meso – about 500 to date.*
- *Lung cancer (about 0.7 of mesos) 350.*
- *Asbestosis – quarter of mine and mill workers.*
Premature deaths difficult – roughly 100?
- *Total deaths to date about 1,000 - low precision.*
- *People staying short time means more people with disease.*

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Sue Weston

CEO

Comcare

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