Governments, Mining Companies Executives and Shareholders Allow to Leave Behind and Never to be Recovered Capitally Accessed and Broken High-Grade Ore Underground Worth Billions of Dollars - Why????

MINEX Europe 2020

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By Krzysztof (Kris) Biegaj
Ausvac Mining Pty Ltd
Australia

Mining Project Stages

- Exploration
- Pre-feasibility study
- Feasibility study
- Approved
- Access development and mine waste disposal
- Mining
  - Various reconciliation/camouflaging factors used
  - Cleaning of mine floors not yet part of mining cycle in Australia and most of other Countries in the World
    - Exact % of gold/metals/precious stones lost/left on mine floors not yet determined
- Rehabilitation of disposed mining waste on surface

Post “normal” mining activities

- Pillars recovery
  - Expertise still available in Australia and other Countries
  - Artificial pillars
    - Cement grout packs
    - Gypsum packs
    - Steel props
    - Other
  - Diamond wire saw
    - Jack pots

Post "normal" mining activities - continued

- Stope wash-down
  - Can argue re amount gold lost in stopes' floor cracks
    - South Africa
  - Stope supersucking/vamping
- Ore drives supersucking/vamping
  - Last cycle !!!!!!
- Sampling of recovered floor material

Floor sampling at CNGC Harlequin Mine in Western Australia *(April 2001)*

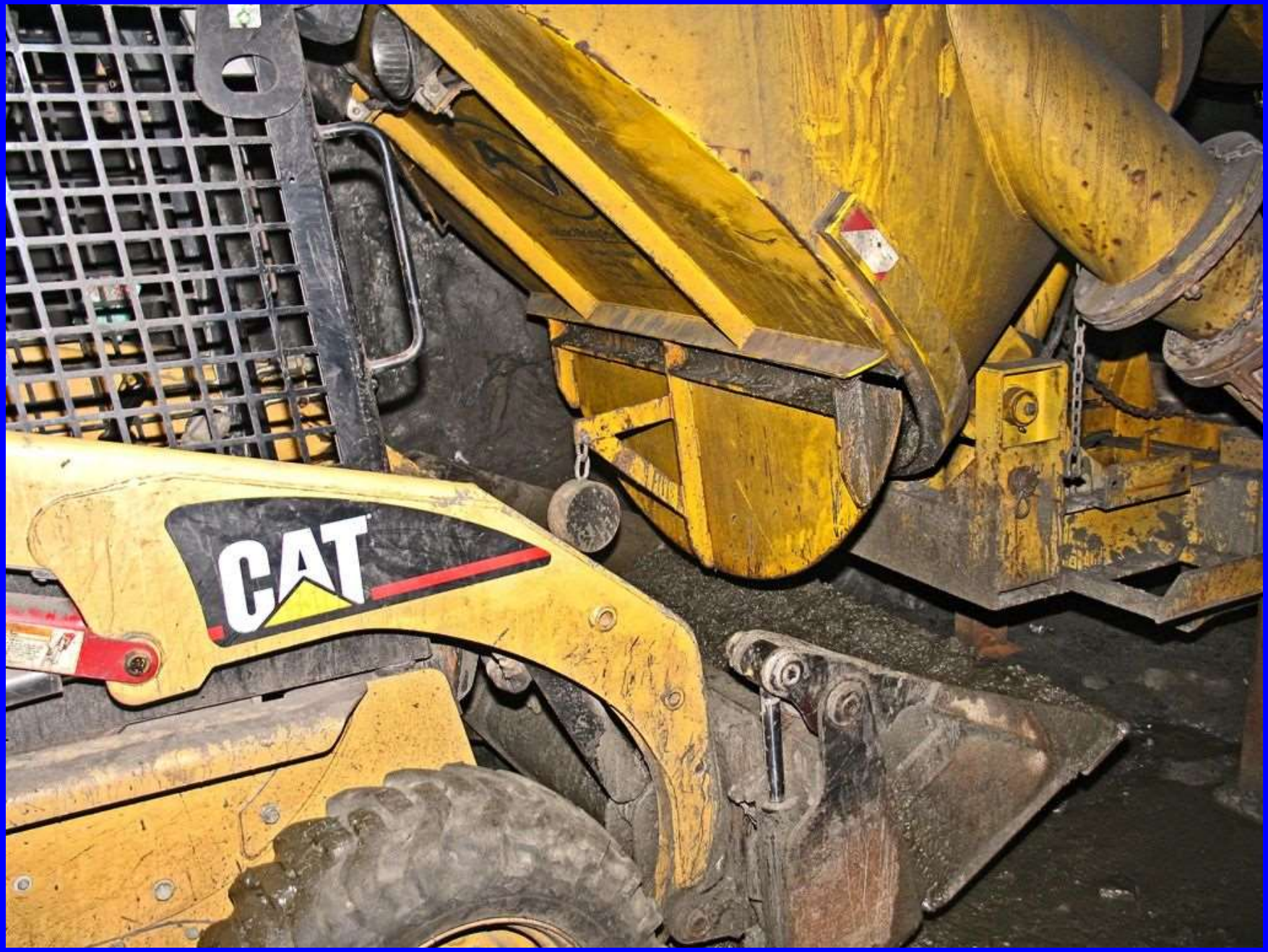
- Conducted by Kris Biegaj in 3.5m x 3.5m HV5F –41mRL in-stope single boom jumbo decline
- Mined through semi-horizontal quartz reef ~300mm thick containing 100-300g/t of nuggetty-type Au
- Five *(5)* separate layers taken across the 3.5m wide decline
  - With additional samples, nine (9) separate samples analysed
- Last layer taken with a small dust-buster vacuum cleaner
  - To the solid clean floor
  - Small weight of those samples
- Total weight of samples - 132kg
  - Unfortunately photos taken did not come out

From: Briggs, Matthew
Sent: Tuesday, April 03, 2001 2:36 PM
To: Biegaj, Kris
Subject: Channel sample from 41dec.xls

	Au1 (ppm)	Au2 (ppm)	av gold (ppm)	sample mass (kg)		
HA20711	44.13	39.17	**41.65**	5.44	226.5869	1.717869
HA20712	61.62	69.10	**65.36**	6.88	449.6734	3.409199
HA20713	46.24	49.09	**47.67**	4.94	235.4799	1.785291
HA20714	35.61	42.47	**39.04**	20.50	800.361	6.067938
HA20715	83.31	65.45	**74.38**	10.30	766.1037	5.808216
HA20716	36.60	39.21	**37.91**	19.44	736.9121	5.5869
HA20717	28.23	40.11	**34.17**	23.18	792.0374	6.004833
HA20718	31.00	33.01	**32.01**	19.46	622.8562	4.722185
HA20720	30.81	28.77	**29.79**	21.76	648.2304	4.91456

Weighted average grade: **40.02** **g/t**


OTTER-JUAN
DECLINE


CAT

Underground Mobile Supersucker – Giant Mobile Vacuum Cleaner

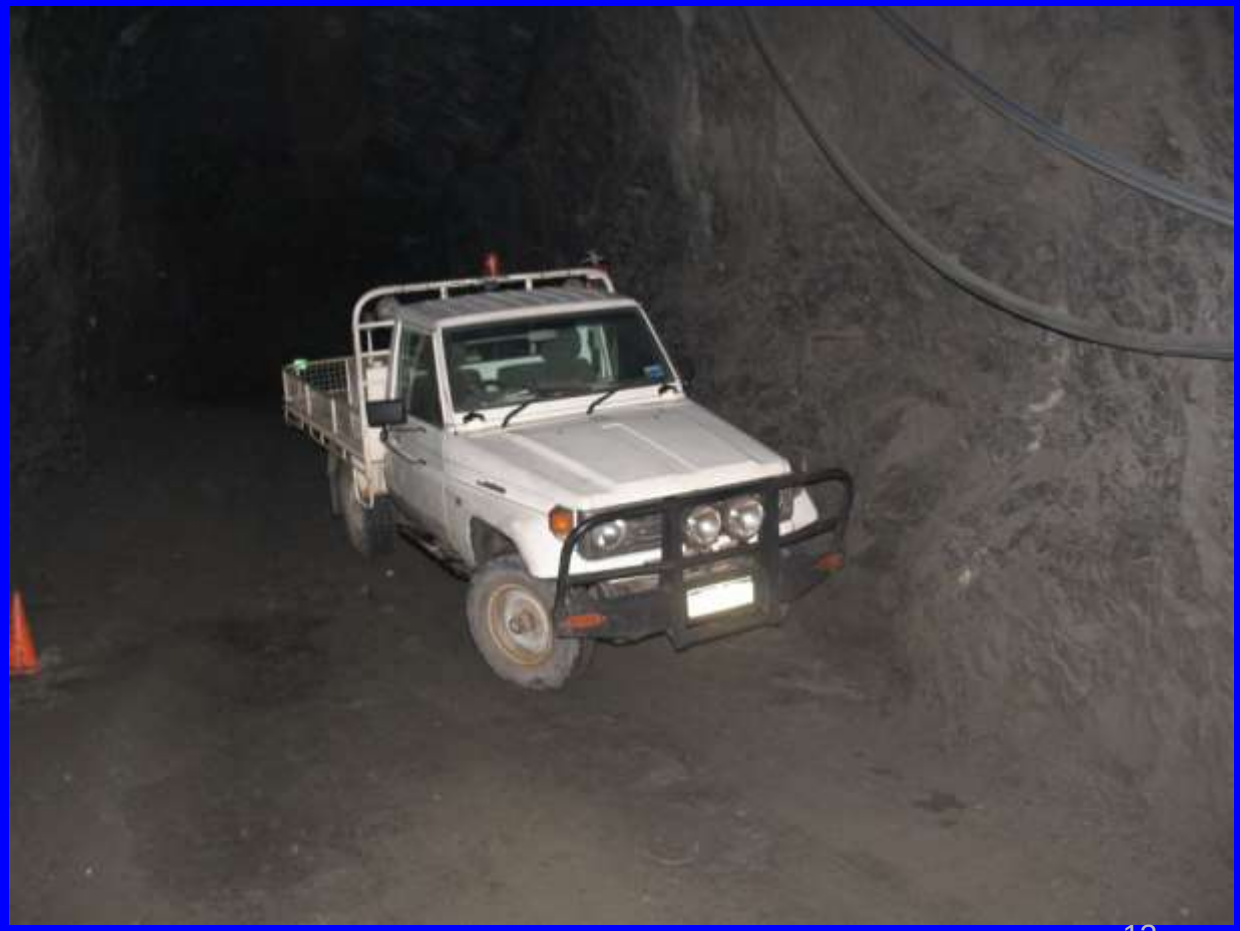
Construction/features

- First truly mobile Supersucker in Australia - possibly in the World – designed and built in Kalgoorlie, Western Australia
- Initially designed to carry-out underground exploration winzing
- Idea originated and first units built on opal fields in Coober Pedy in South Australia in the late 60-ties of previous Century
- Size: 2.2mW, 2.95mH and 5.3mL *(excluding 3.5m clean-down jib)*
- Track mounted, diesel-powered self-propelled unit
  - Easily detachable heavy-duty wheels for longer distance towing
  - Powered by diesel engine
  - Can be easily converted to be electrically powered
- Installed devices to eliminate potential dust problems
- ROPS/FOPS features installed
- Works in conjunction with a bobcat/skid steer or small LHD
- Remotely-controlled capabilities can be installed

Underground Mobile Supersucker

Re-fuelling underground

- At the start of shift
- Diesel hand-pumped to jerry cans from a 180ltr tank located on the utility vehicle – see photo
- Hand-pumped into supersucker with 220ltr tanks capacity



Underground Mobile Supersucker

Projects to date by Ausvac Mining Pty Ltd

- May 2003 – Mt Pleasant Gold Project, WA – **First Job**
  - Ore drives clean-down **Plus cleaning of sump on surface**
- Aug 2003 – Otter-Juan Nickel Mine, Kambalda, WA
  - 15 deg. air-leg stope and ore drives clean-down
- Oct 2003 – Bendigo Gold Project, Victoria
  - Ore drives clean-down
- Dec 2003 – Cosmos Nickel Project, WA
  - Ore drives clean-down
- Feb 2004 – Agnew Gold Project, WA
  - Ore drives clean down
- Oct 2005 – Long-Victor Nickel Complex, WA
  - Stopes and ore drives clean-down at Gibb South
- Feb 2007 – Redross Nickel Mine, WA
  - Ore drives clean-down
- Nov 2010- Jan 2011 – Norseman Gold NL, WA
  - Stopes and ore drives clean-down at Harlequin Mine

Underground Mobile Supersucker

- **Excavation size requirements**
  - 3.2mW x 3.5mH drive
    - Designed to fit small 2 - 3 yard LHD size ore drives
- **Ventilation required**
  - Secondary: ~ 10 m^3/s (S/sucker 7.0m^3/s + bobcat 3.0m^3/s)
    - For 140 kW diesel engine
    - ~60kW bobcat
      - Based on 0.05m^3/kW - maximum diesel engine rating as per Western Australian *(WA)* Mines Regulations
- **Fresh** water supply required – due to high salinity of mine water in most u/g mines in WA

Underground Mobile Supersucker

Capabilities/parameters

- Suction hose diameter - 200mm *(8 inch)*
  - **Can be easily upgraded to 250mm *(10 inch)* hose**
    - **Fundamental for vacuuming bigger size rocks/increasing productivity**
  - Oversize ore picked up/loaded into/by bobcat bucket at the end of vacuuming cycle
- Vertical lifting/suction - up to 50m
- Horizontal lifting - up to 50m +

Underground Mobile Supersucker

- **Productivities in an ore drive**
  - **15 - 20 t/10hr shift with one *(1)* operator**
  - **40 t/10hr shift with two *(2)* operators**
  - **80 t/day with two *(2)* operators/shift - two *(2)* shifts/day**
    - **>2,000 t/month *(assuming only 85% availability of equipment and working places)***
      - **Ore that is "normally" wasted**
- **Highly successful floor material recovery on a nickel mine in a 15 degrees flat–dipping air-leg /hand-held mining stope conducted in 2003**

Extra Revenue form Gold and Nickel left behind and recovered from mine floor with vacuuming

Extra Revenue from Gold or Nickel left behind and recovered from mine floor with vacuuming

17 05 2020

Nickel

Nickel Mine A Calculation

Nickel price US$/t			12,247.00		
Exchange rate Aus$/US$				0.64	
Ni credit to Mine A				65%	
Mill recovery				85%	
Mine A costs Aus$/t:					
Loading and trucking to surface				8.0	
Carting to the mill				6.0	
Milling				0.0	
Diesel fuel @ $1.0/l with 200l/shift @ 40t/shift				5.0	
Other				6.0	
		Total $/t:		25.0	
Revenue calculations					
X level					
SG		3.0			
Length		140.0			
Width		4.0			
Thickness of floor material		0.1	0.2	0.3	0.4
Ore tonnes	168	336	504	672	
Y level					
SG		3.0			
Length		200.0			
Width		4.0			
Thickness of floor material, m		0.1	0.2	0.3	0.4
Ore tonnes	240	480	720	960	
Total ore tonnes	408	816	1,224	1,632	
Total Ni T @ credit of		65%	65%	65%	65%

Grade %:				
1.50%	4.0	8.0	11.9	15.9
2.00%	5.3	10.6	15.9	21.2
2.50%	6.6	13.3	19.9	26.5
3.00%	8.0	15.9	23.9	31.8
3.50%	9.3	18.6	27.8	37.1
4.00%	10.6	21.2	31.8	42.4
4.50%	11.9	23.9	35.8	47.7
5.00%	13.3	26.5	39.8	53.0
8.60%	22.8	45.6	68.4	91.2

Value of Ni in Aus$

Grade %:					
1.50%	76,123	152,246	228,368	304,491	
2.00%	101,497	202,994	304,491	405,988	
2.50%	126,871	253,743	380,614	507,485	
3.00%	152,246	304,491	456,737	608,982	
3.50%	177,620	355,240	532,859	710,479	
4.00%	202,994	405,988	608,982	811,976	
4.50%	228,368	456,737	685,105	913,473	
5.00%	253,743	507,485	761,228	1,014,970	
8.60%	436,437	872,874	1,309,311	1,745,749	

Value of Ni less Mine A costs

Grade %:					
1.50%	65,923	142,046	218,168	294,291	
2.00%	91,297	192,794	294,291	395,788	
2.50%	116,671	243,543	370,414	497,285	
3.00%	142,046	294,291	446,537	598,782	
3.50%	167,420	345,040	522,659	700,279	
4.00%	192,794	395,788	598,782	801,776	
4.50%	218,168	446,537	674,905	903,273	
5.00%	243,543	497,285	751,028	1,004,770	
8.60%	426,237	862,674	1,299,111	1,735,549	

* Additional revenue from by-product metals not included
* Toll Ni treatment

*8.6% Nickel ore vacuumed in an airleg/hand-held mined stope in 2003

Ausvac Mining Pty Ltd website: www.ausvacmining.com.au

Gold

Gold Mine B Calculation

Gold price US$/oz and per g			1,742.20		56.02
Exchange rate Aus$/US$				0.64	
Gold credit to Mine B				100%	
Mill recovery				95%	
g/ounce				31.10	
Mine B costs Aus$/t:					
Loading and trucking to surface				8.0	
Carting to the mill				3.0	
Milling				15.0 (Variable costs only)	
Diesel fuel @ $1.0/l with 200l/shift @ 40t/shift				5.0	
Other				6.0	
		Total $/t:		37.0	
WA State gold revenue				2.5%	
Gold bars transportation and refinery @ Aus$/oz				22.0	
Revenue calculations					
X level					
SG	2.5				
Length	140.0				
Width	4.0				
Thickness of floor material	0.1	0.2	0.3	0.4	
Ore tonnes	140	280	420	560	
Y level					
SG	2.5				
Length	200.0				
Width	4.0				
Thickness of floor material, m	0.1	0.2	0.3	0.4	
Ore tonnes	200	400	600	800	
Total ore tonnes	340	680	1,020	1,360	
Total Au ounces @ credit of	100%	100%	100%	100%	

Grade g/t:				
5.0	54.7	109.3	164.0	218.6
10.0	109.3	218.6	328.0	437.3
15.0	164.0	328.0	492.0	655.9
20.0	218.6	437.3	655.9	874.6
25.0	273.3	546.6	819.9	1,093.2
30.0	328.0	655.9	983.9	1,311.9
35.0	382.6	765.3	1,147.9	1,530.5
40.0	437.3	874.6	1,311.9	1,749.2
120.0	1,311.9	2,623.8	3,935.7	5,247.6

Value of gold in Aus$

Grade g/t:				
5.0	141,361	282,722	424,084	565,445
10.0	282,722	565,445	848,167	1,130,889
15.0	424,084	848,167	1,272,251	1,696,334
20.0	565,445	1,130,889	1,696,334	2,261,779
25.0	706,806	1,413,612	2,120,418	2,827,224
30.0	848,167	1,696,334	2,544,501	3,392,668
35.0	989,528	1,979,057	2,968,585	3,958,113
40.0	1,130,889	2,261,779	3,392,668	4,523,558
120.0	3,392,668	6,785,337	10,178,005	13,570,674

Value of gold (i.e. extra revenue) less: Mine B costs, State gold revenue charge and refining

Grade g/t:				
5.0	127,577	255,154	382,732	510,309
10.0	267,734	535,469	803,203	1,070,938
15.0	407,892	815,783	1,223,675	1,631,567
20.0	548,049	1,096,098	1,644,147	2,192,196
25.0	688,206	1,376,412	2,064,619	2,752,825
30.0	828,363	1,656,727	2,485,090	3,313,454
35.0	968,521	1,937,041	2,905,562	3,874,083
40.0	1,108,678	2,217,356	3,326,034	4,434,712
120.0	3,351,194	6,702,388	10,053,582	13,404,775

* Additional revenue from by-product metals not included

* Much higher grades were sampled on stopes' and drives' floors in 2010/11 (i.e. >> 40 g/t)
* After eight (8) hands-on trials on nickel and gold mines in Australia Ausvac Mining P/L can now vacuum/recover 40 tonnes/shift with two (2) operators from underground mine floors or 80 t/day with >2,000 t/month on two-shifts arrangement (with only 85 % equipment and workplaces availability)
* It is common that up to 0.5 m thick of already broken ore is left behind on ore drives floors never to be recovered by conventional machines
* Due to "milling" action of conventional LHDs and scrapers on mine floors and gravity force, the grades of vacuumed ore are <u>much higher than</u> those mined from the stopes
  * Refer to 40.02 g/t of Au vacuum floor sampling result conducted by Kris Biegaj in the in-stope decline in April 2001 -Slides 5 & 6 (Hence low milling/grade enchancement in a new in-stope decline compared to stope mining)

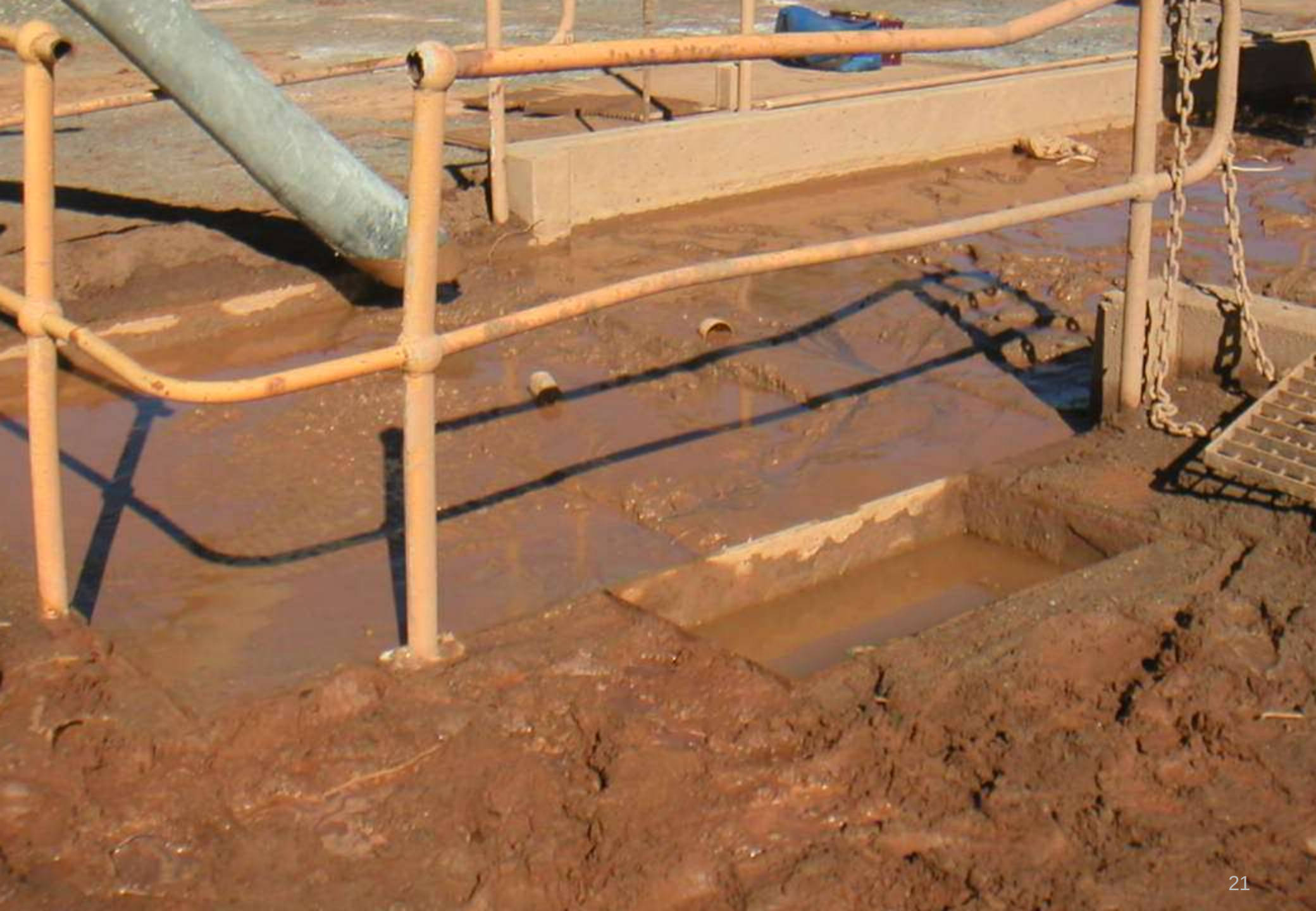
Why do Governments continue to Allow Mining Companies to Leave Behind Never to be Recovered High-grade Capitally Accessed and Broken Ore Underground i.e. Wasting Billions of Dollars including Additional Pollution to Environment

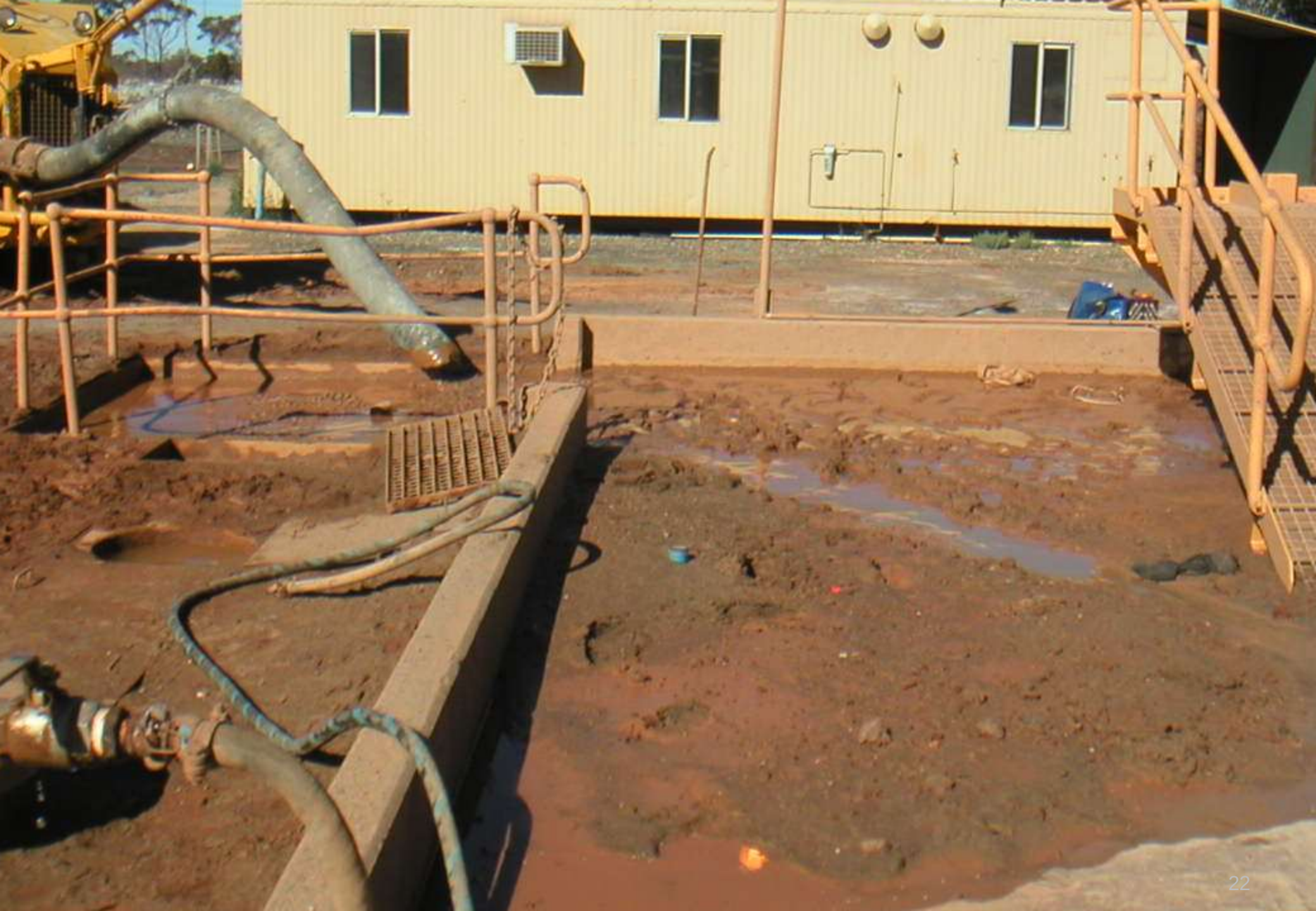
????

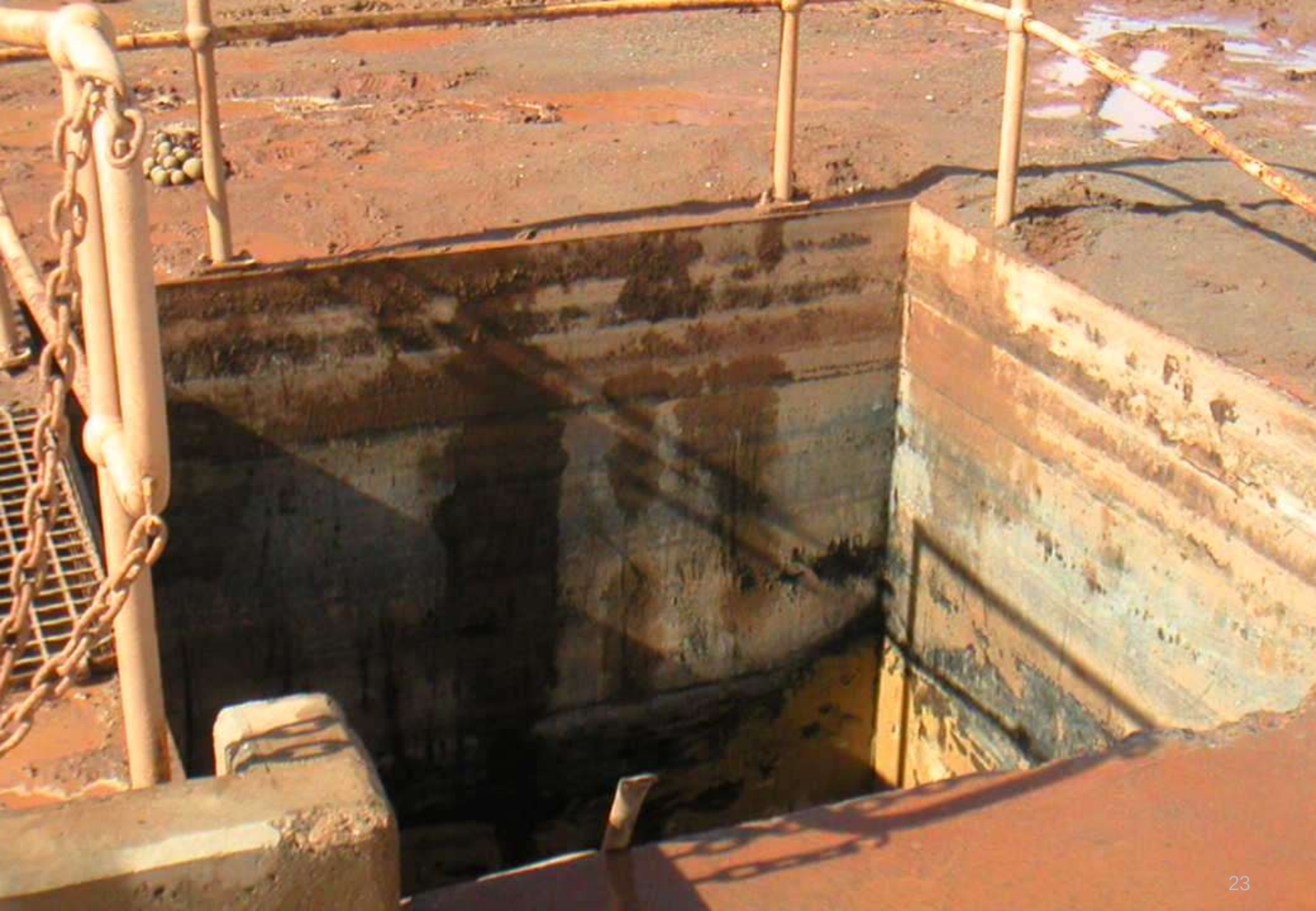
Underground Mobile Supersucker

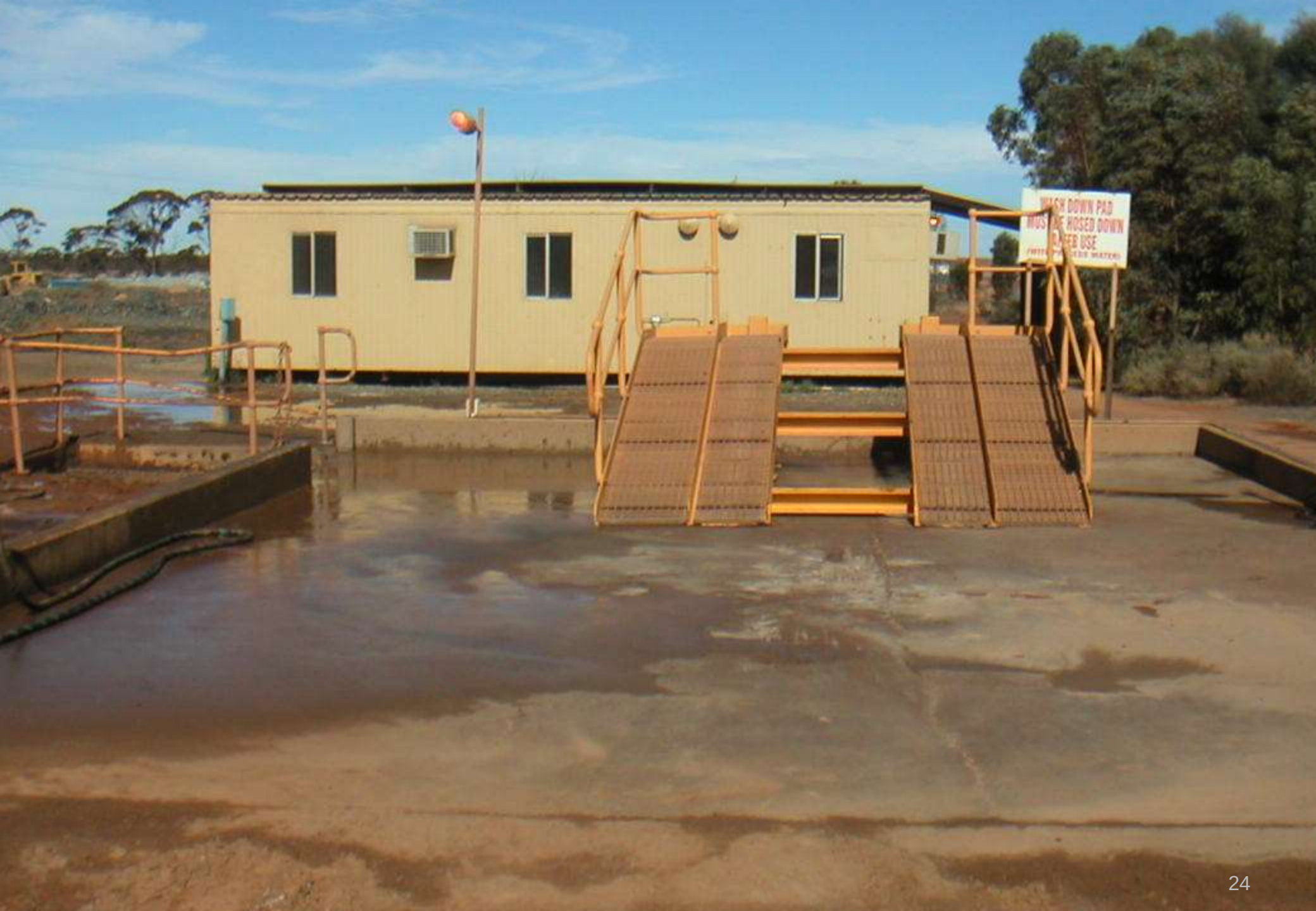
Other applications

- Surface/mill/underground fast sumps/tanks clean-down
- Underground winzing – **originally designed for that application**
  - Old Timers knew what they were doing
    - Examples in Australia and in the World
- Mining of bottom sections of ore shoots not warranting capital development or pit stripping/cut-back
- Environmentally friendly, alternative mine access and ore hoisting system
  - "Modified" Western Australian Norseman access and hoisting to high-grade low tonnage orebodies *(Regent/Crown/North Royal inclined shafts)*
    - **No decline access in waste required i.e. less pollution to environment**
- Surface construction excavations and cleaning industry
  - Swimming pools included








WASH DOWN PAD
HOSED DOWN