



# Nickel West: Creating a Junior Miner Mindset inside the World's Largest Resource Company

**Eduard Haegel**  
Asset President  
8 October 2015



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# Nickel West: Creating a Junior Miner Mindset inside the World's Largest Resource Company



# Safe and sustainable operations above all else

Engaged  
Workforce



Simplified  
Procedures



Clear  
Accountabilities

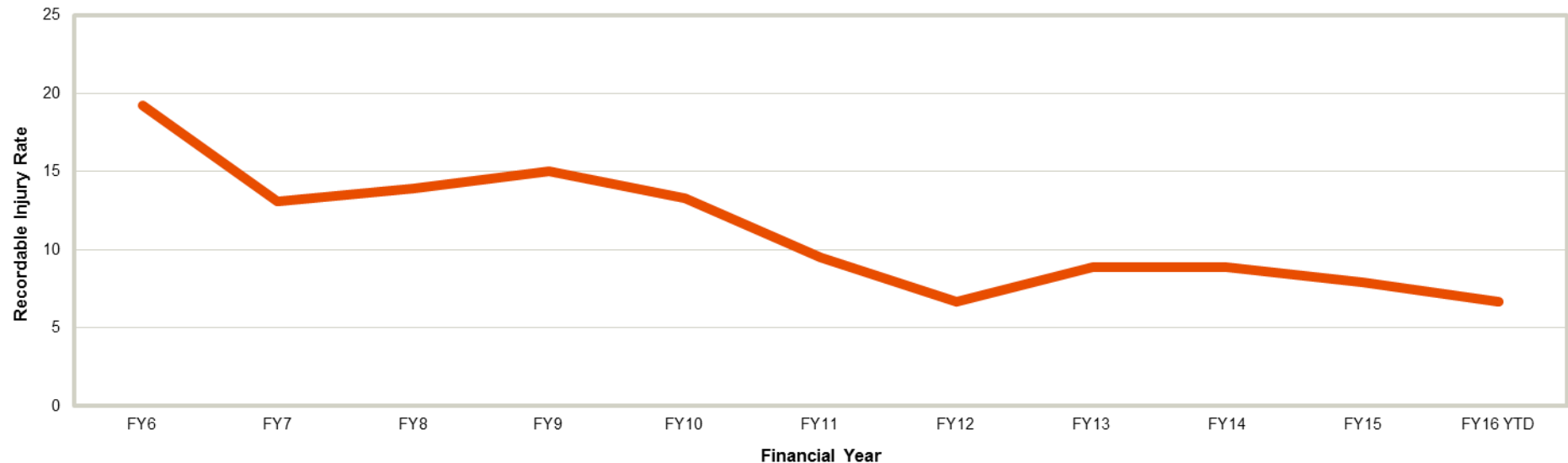


Enabling  
Supervisors



Focussed  
Verification

## Nickel West Total Recordable Injury Rate



Source: BHP Billiton



# Nickel West is a fully integrated Nickel business...



**Mt Keith Mine and concentrator**



**Cliffs**



**Leinster Mine and concentrator**



 Nickel West Operations



**Kalgoorlie smelter**



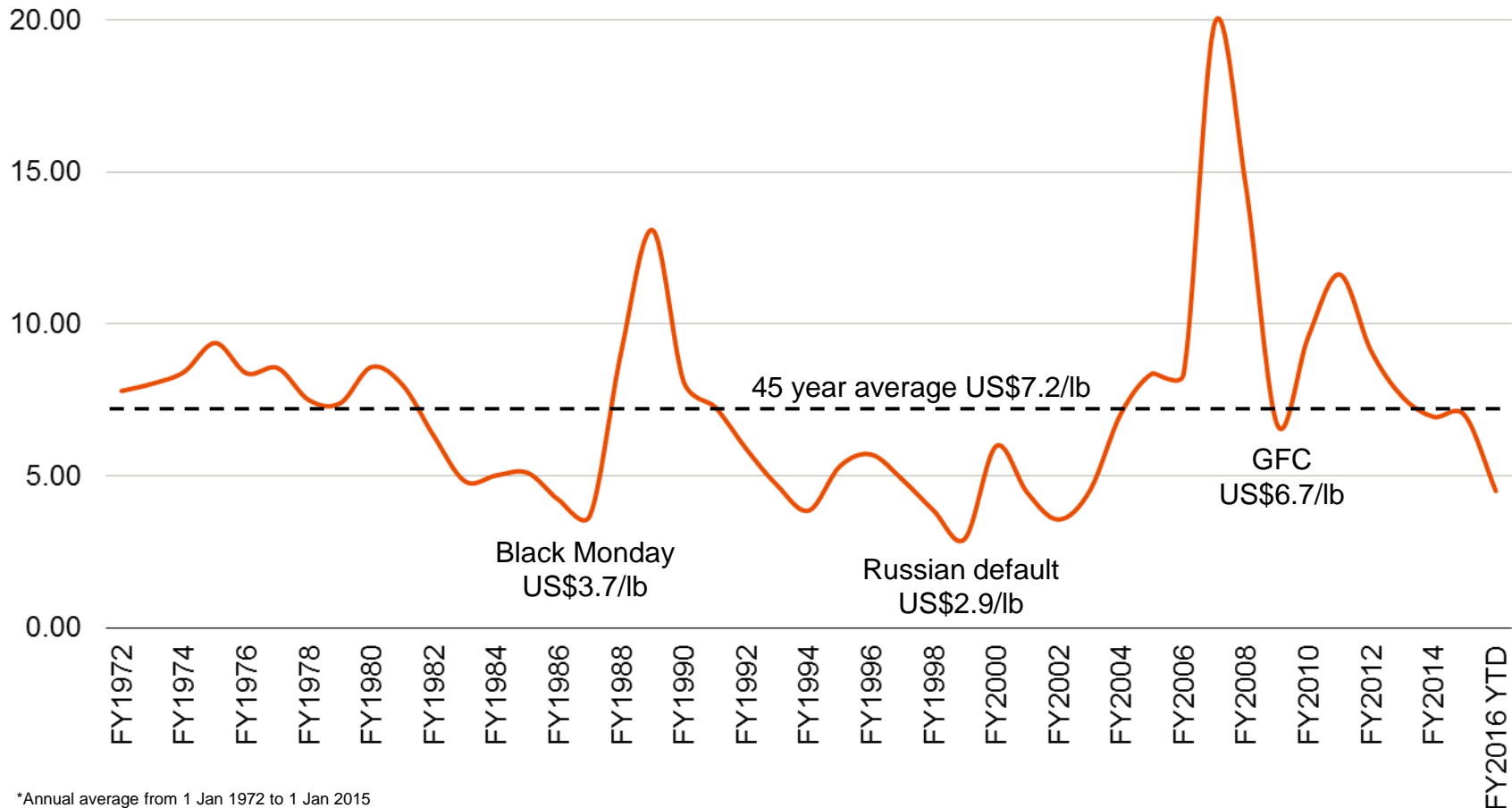
**Kambalda concentrator**



**Kwinana refinery**

# Nickel – no certainty except volatility

## Nickel historical prices (US\$/lb real Jan 2015)

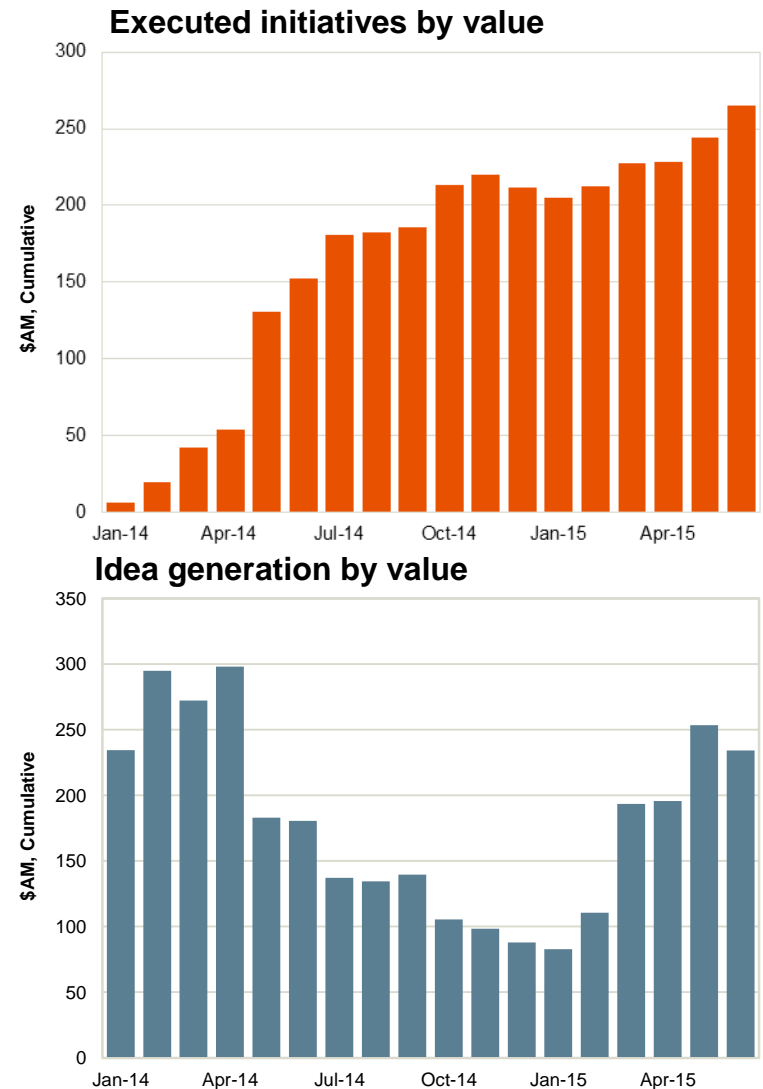


\*Annual average from 1 Jan 1972 to 1 Jan 2015

Source: Bloomberg

# Transforming Nickel West ...

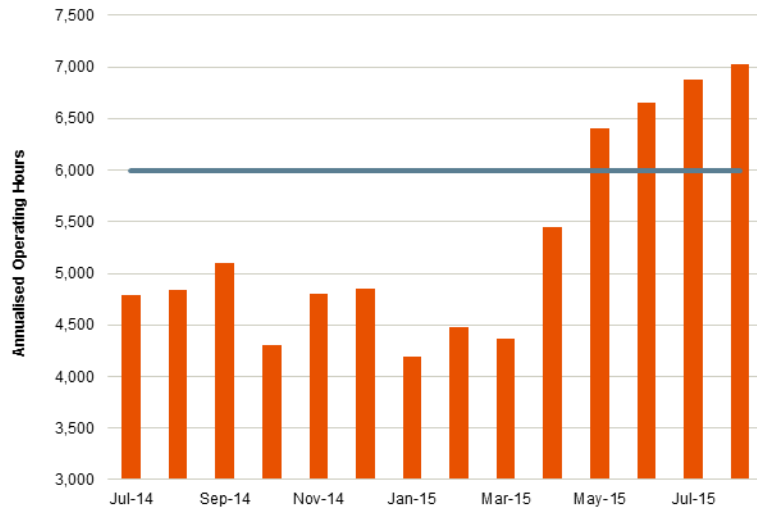
- Transformation involves the generation of ideas and the execution of opportunities to deliver increased earnings
- It provides the framework to develop world class performance ambitions
- Transformation has been an important vehicle for engaging our people, identifying opportunities and successfully executing them



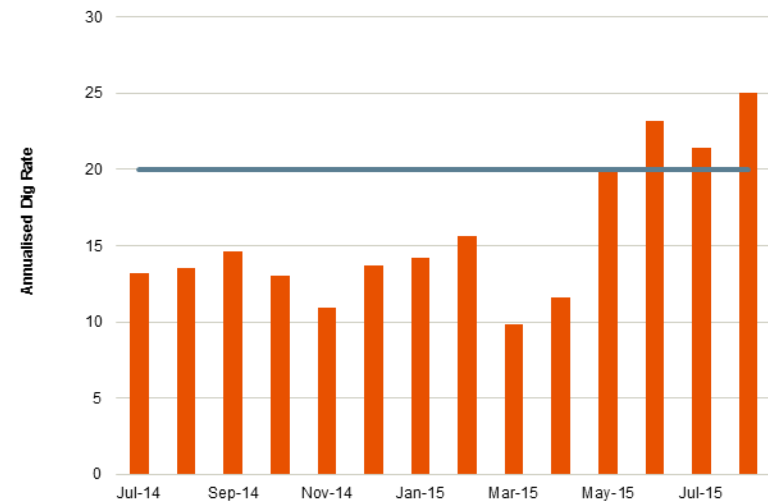
Source: BHP Billiton

# ...by becoming more productive...

## Annualised 793D hours at Mt Keith are exceeding BHP Billiton benchmarks for 220t trucks



## Liebherr 996 Annualised Dig Rate at Mt Keith



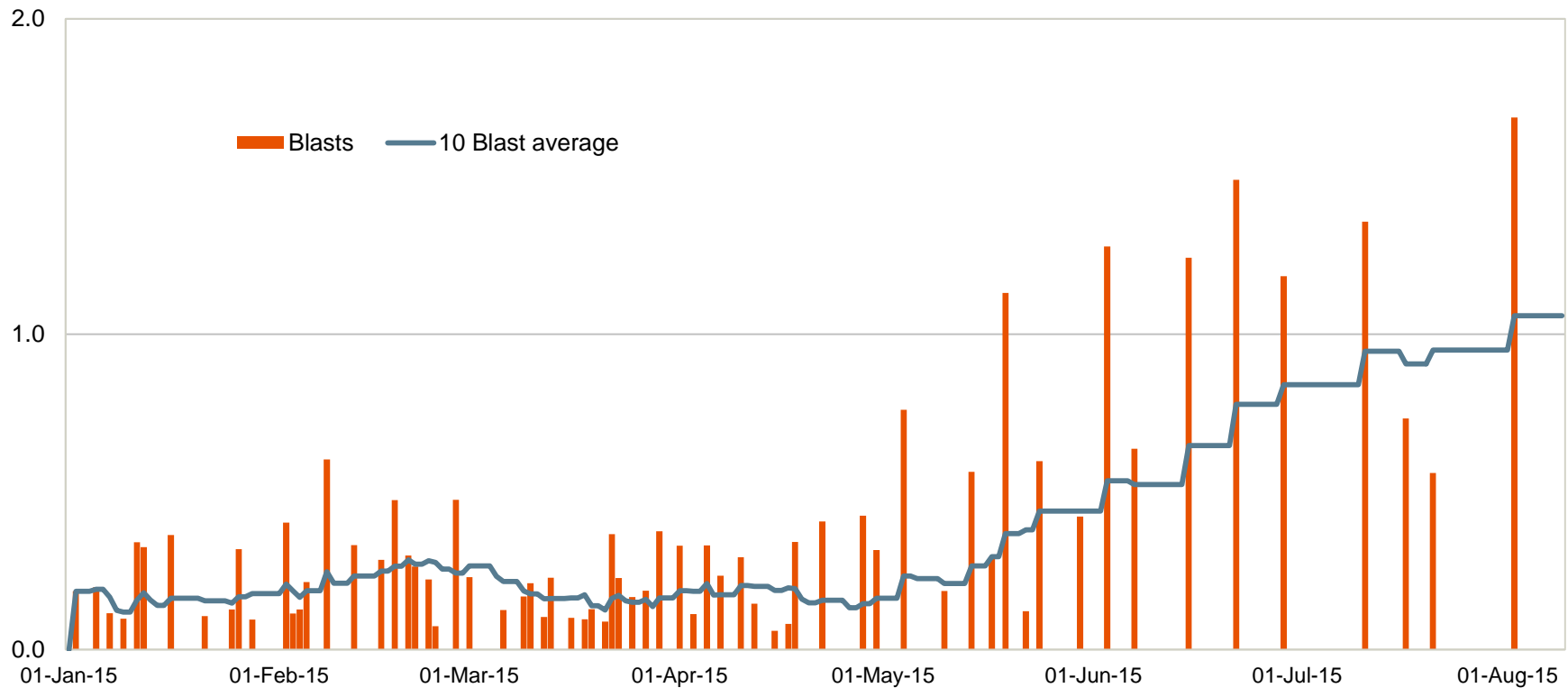
Source: BHP Billiton



# ...more efficient

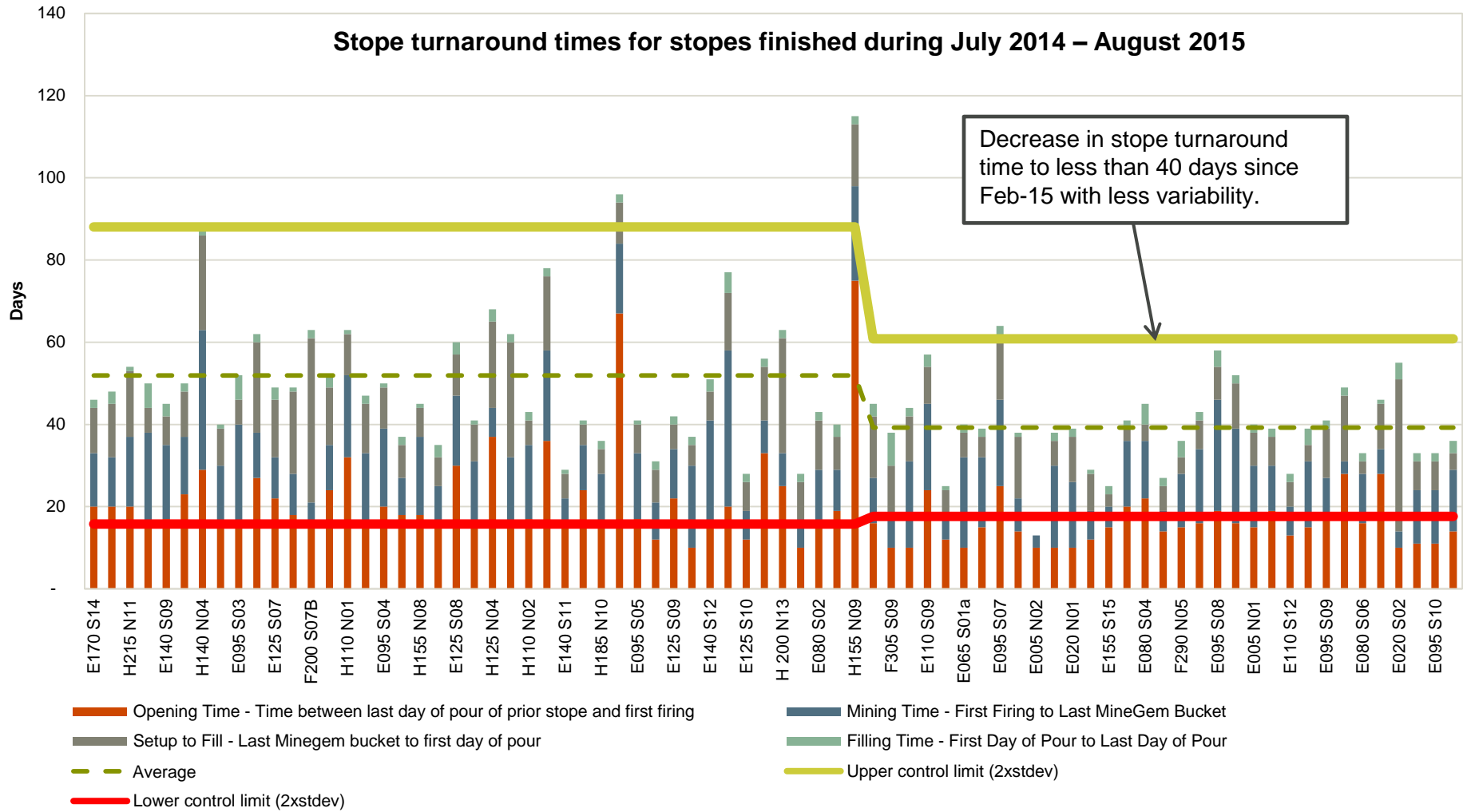
## Blast size (Mt)

(Mt per blast, rolling 10 blast average)



Source: BHP Billiton

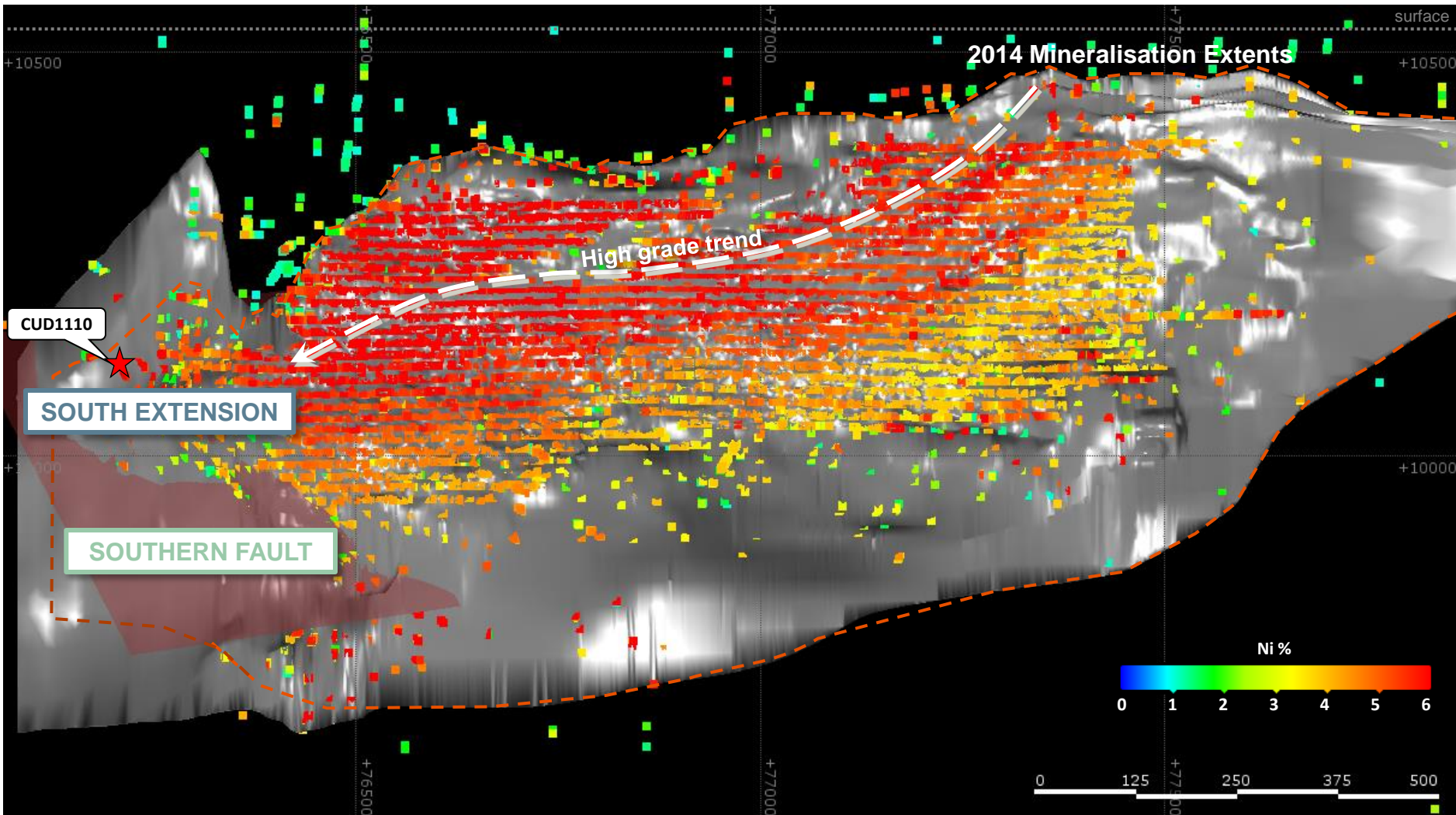
# While Cliffs operating performance is improving...



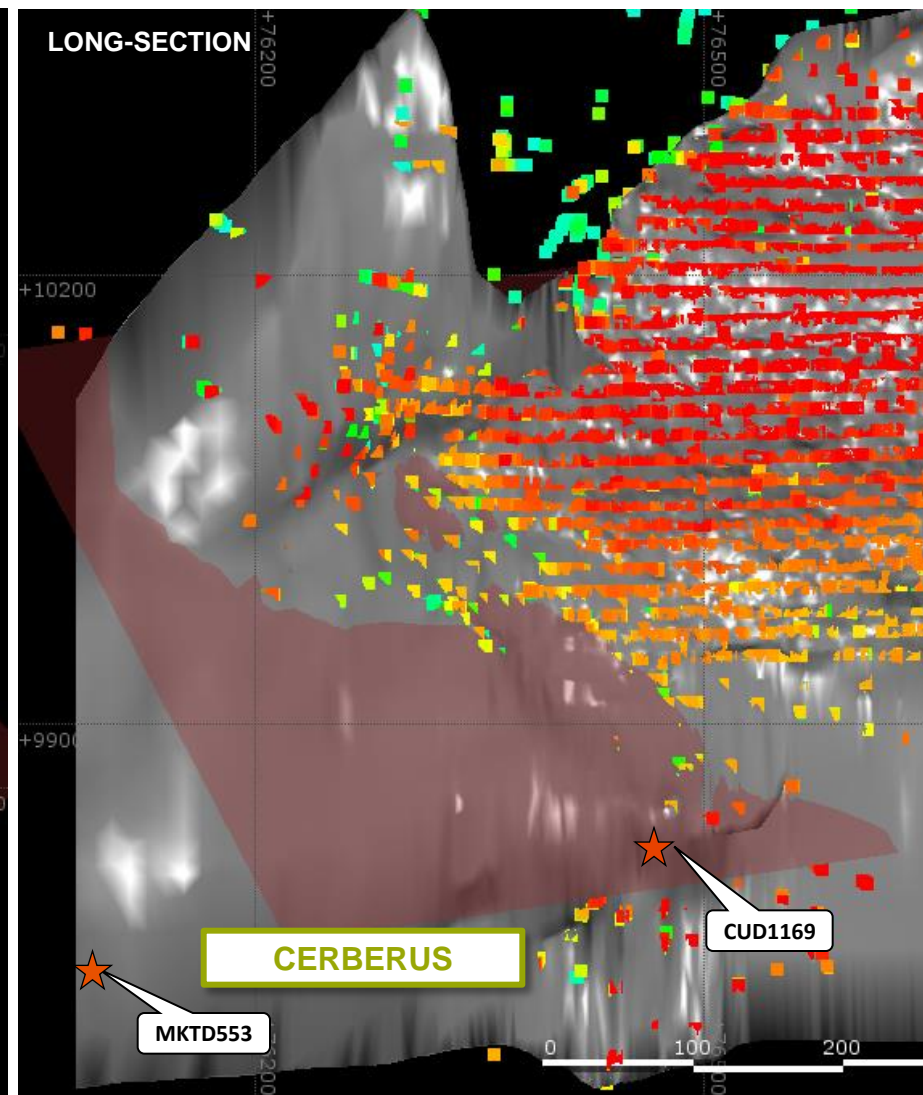
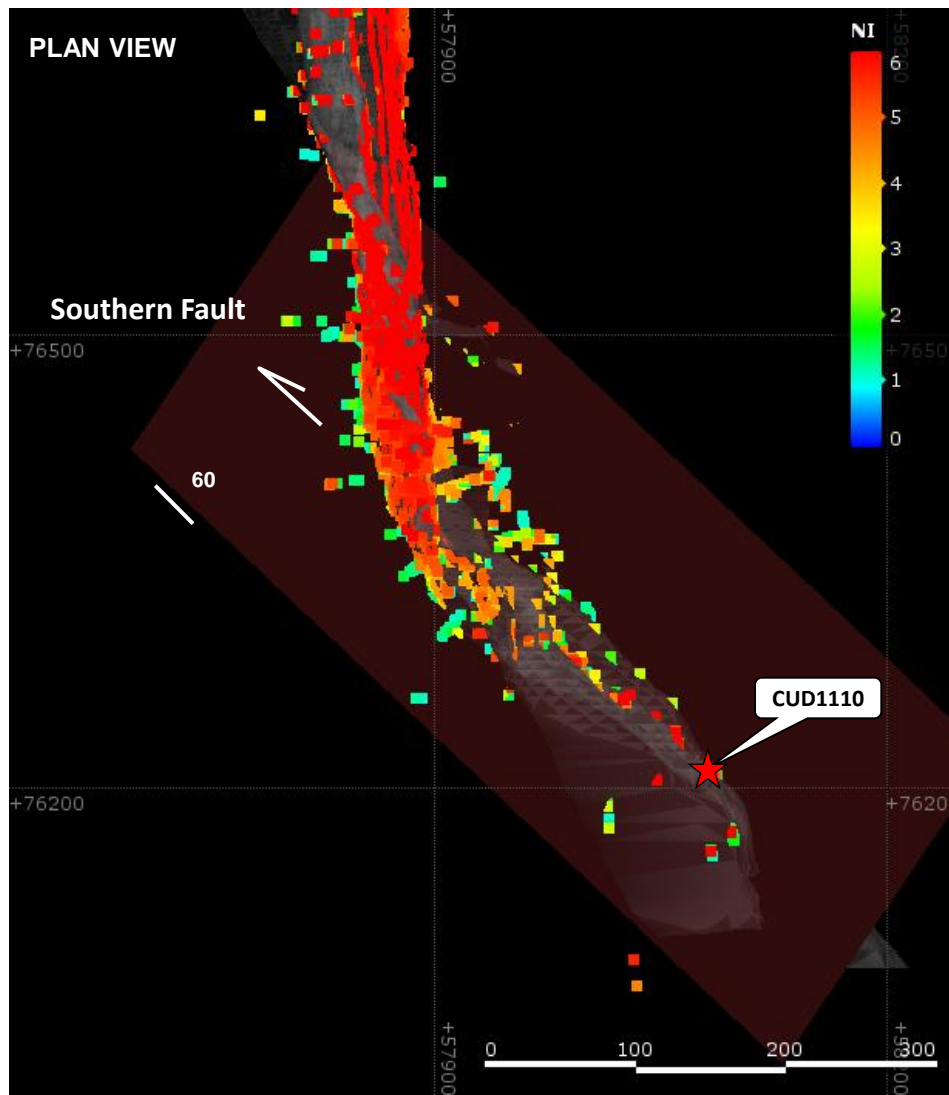
Source: BHP Billiton

# ...it is Cliffs discovery that has created the most excitement

Long-section Cliffs massive NiS orebody (looking West)



# ...especially with the increasing confidence of continuity to Cerberus





# Nickel West is becoming more innovative...

## Rocky's Reward

- Nickel West tendered for the work on the basis of paying a lump sum amount divided by the known resource payed as ore is delivered to the Leinster Concentrator
- The model attracted considerable interest and secured very competitive bids
- Contractor carries the financing of the waste movement
- CIMIC through Thiess won the A\$160Million tender



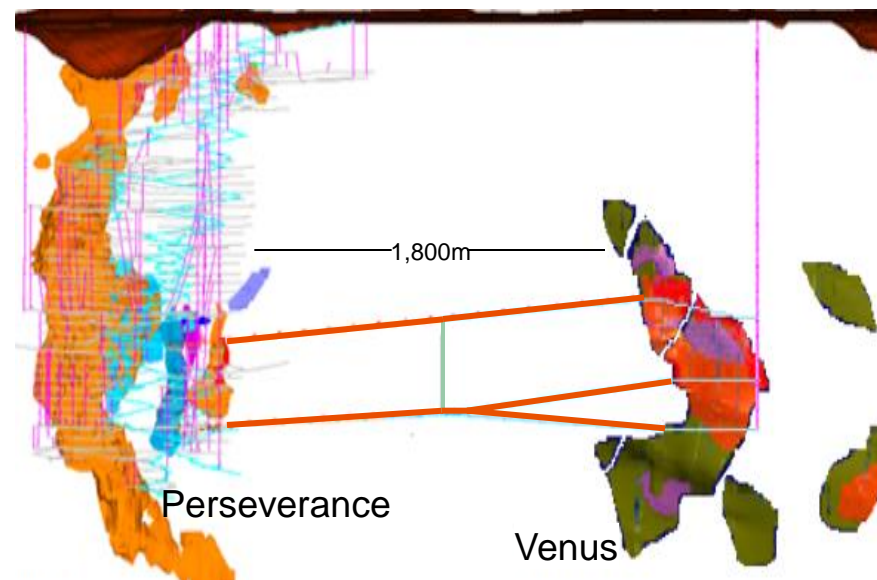
BHP Billiton Nickel West Rocky's Reward



# ...and is rethinking Venus

## 193kt of Nickel currently in Resource\*

- Venus is one of the most attractive nickel deposits in the world
- It is open in all directions providing significant upside potential
- New thinking minimises capital by utilising the existing infrastructure at Perseverance
- Focus is on the high grade core to generate early cash



**Venus Resources declared June 2015\*\***

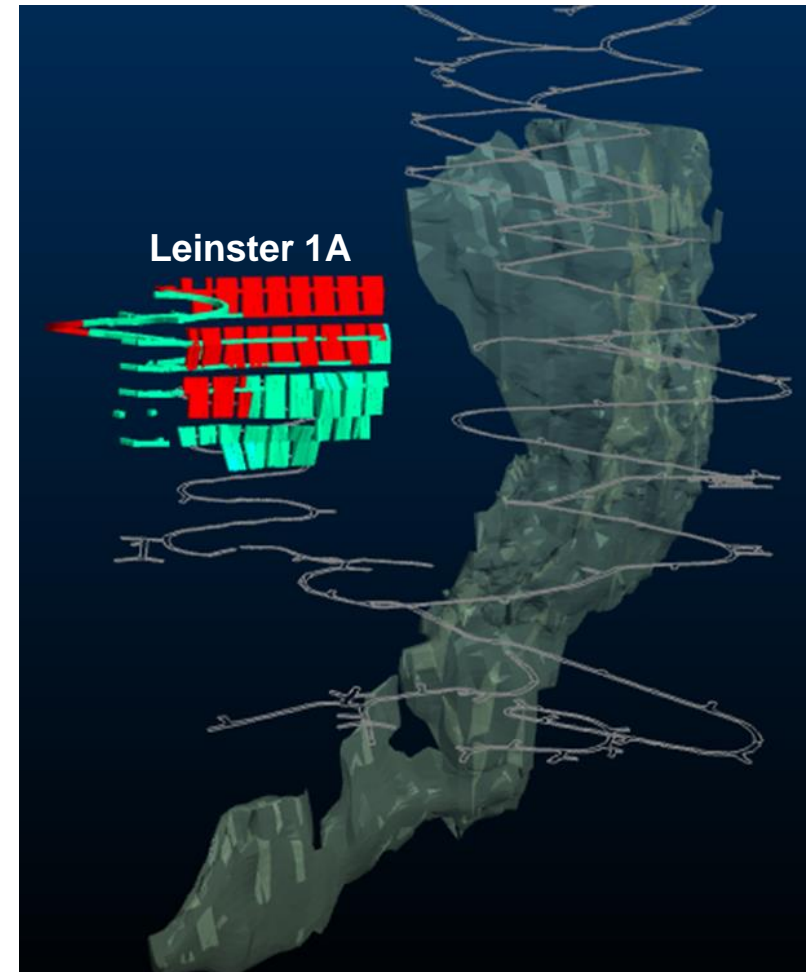
Mineralisation Type	Indicated Resources		Inferred Resources		Total Resources	
	Mt	%Ni	Mt	%Ni	Mt	%Ni
Massive Sulphide	-	-	1.5	5.8	1.5	5.8
Disseminated Sulphide	0.47	2.4	5.4	1.7	5.9	1.8

\* Total tonnes of nickel is estimated multiplying the total resource tonnes converted to kilotonnes (kt) by the Ni grade (%Ni) before rounding of tonnes and grades for reporting.

\*\* Venus Mineral Resources are reported for the year ended June 30 2015 in the 2015 BHP Billiton Annual Report which can be found at [www.bhpbilliton.com](http://www.bhpbilliton.com), and is compiled by M Menicheli (MAusIMM). M Menicheli is a full time employee of BHP Billiton, has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". M Menicheli consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Persons' findings are presented have not been materially modified from the original market announcements. All tonnes and grade information has been rounded, hence small differences may be present in the totals.

# Nickel West is also exploring other opportunities including Leinster 1A

- Nickel West has a rich resource endowment
- Mining method is the same as Cliffs
- It is geotechnically remote from Perseverance SLC
- It is already partially developed



# Kambalda will however need to change...

- A number of our Third Party Providers have either reduced or suspended production resulting in a significant reduction in ore deliveries to the Kambalda concentrator
- As such, we recently made changes to our Kambalda operations to reflect this reality
- To ensure we retain skilled staff, we are exploring every opportunity to redeploy impacted employees within Nickel West, should deliveries increase

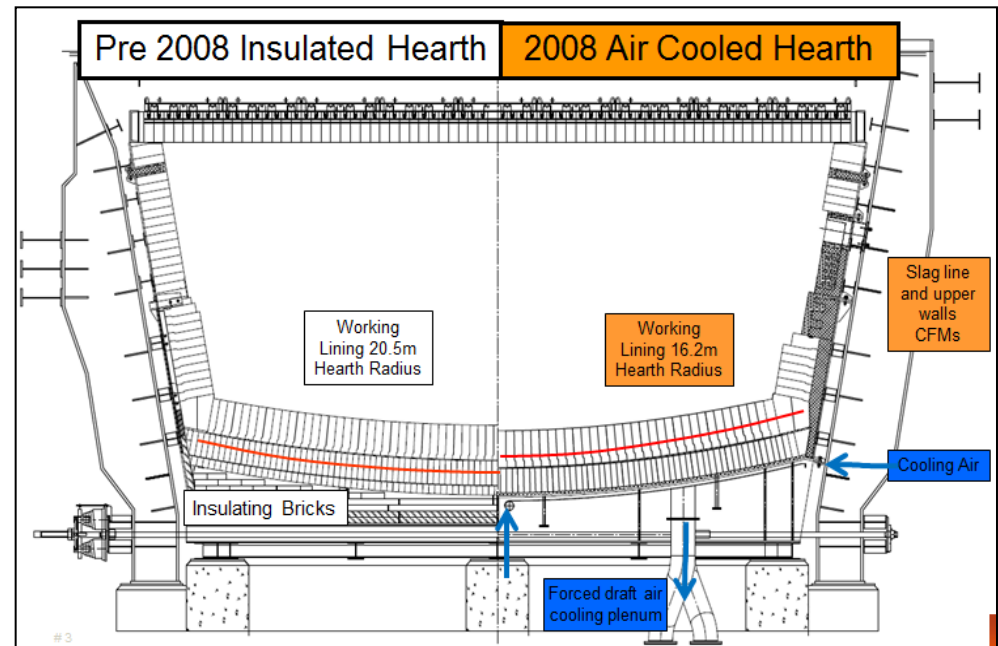
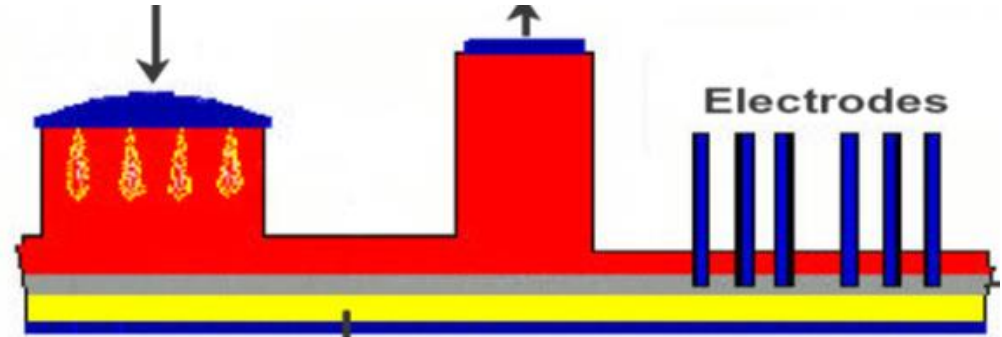


BHP Billiton Nickel West Kambalda

# Kalgoorlie Smelter – maximising furnace life to FY2023

The improvements referred to include:

- Variable air cooling on hearth
- Concentrate burner performance
- Heat balance control
- Metallurgical process control
- Hold-down bolts
- Outage furnace management



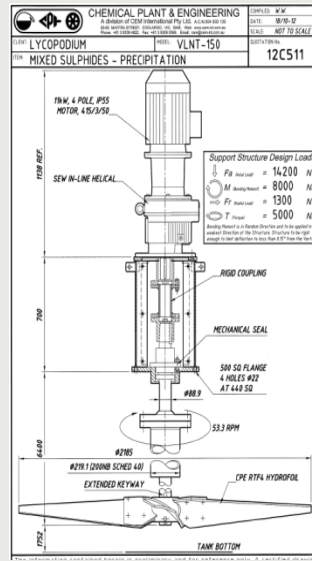


# Kwinana debottlenecking project

## 66kt to 72kt

### Implementation of best practise

Eliminate descales of mixed sulphide tank



### Benefit

↑ Availability: Descales reduced from 12 per annum to 1 annually

↑ Recovery: End metals reduced from 0.5g/l to <0.1g/l

Amsul throughput and quality significantly improved

Eliminate Thickener issues via Centrifuges



Increase iron removal capacity

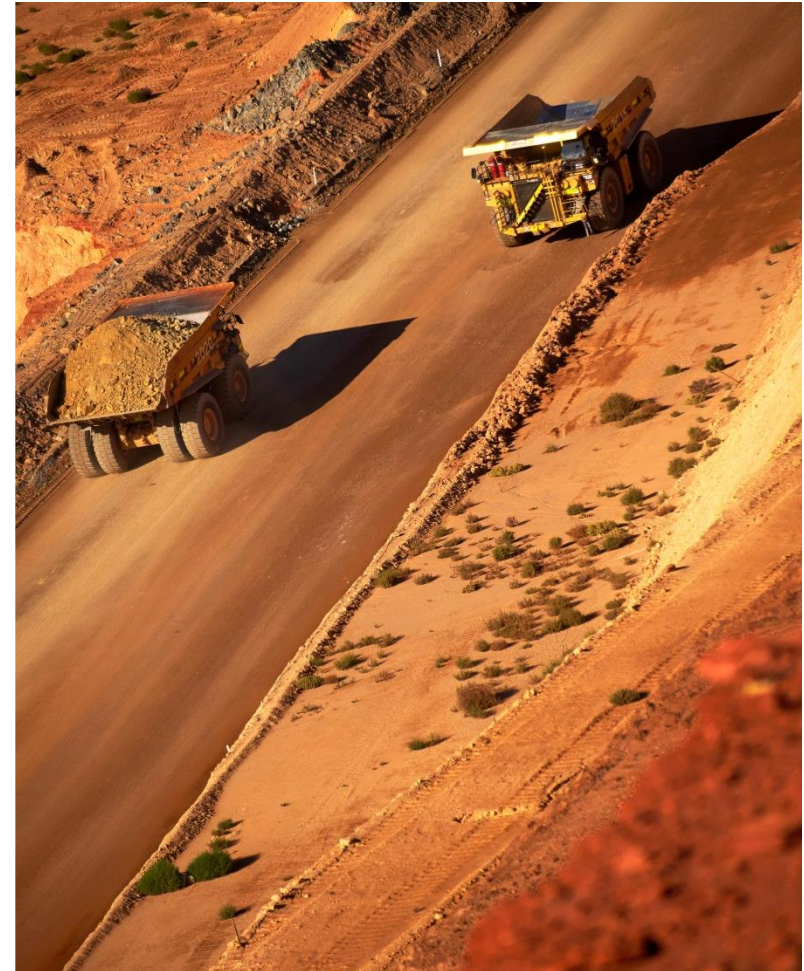
Minimise thickener torques and filtration losses

Utilise redundant thickeners for increased ullage

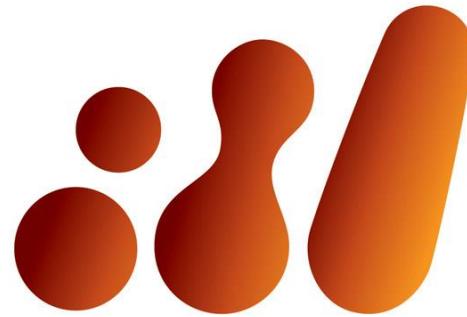


# Creating a Junior Miner Mindset inside the World's Largest Resource Company

- Nickel West has embarked on a journey to become a resilient and flexible producer that can navigate the low part of the cycle
- We are on this journey and when successful it will bring with it the substantial upside that exists when prices inevitably rise again



BHP Billiton Nickel West Mt Keith



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resourcing the future