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AUSTRALIAN NICKEL CONFERENCE

Odysseus Mine – “Greek Mythology to Nickel Reality“

DAN LOUGHER | 15 October 2019

WESTERN AREAS LTD



AGENDA

CORPORATE



GROWTH



NICKEL MARKET



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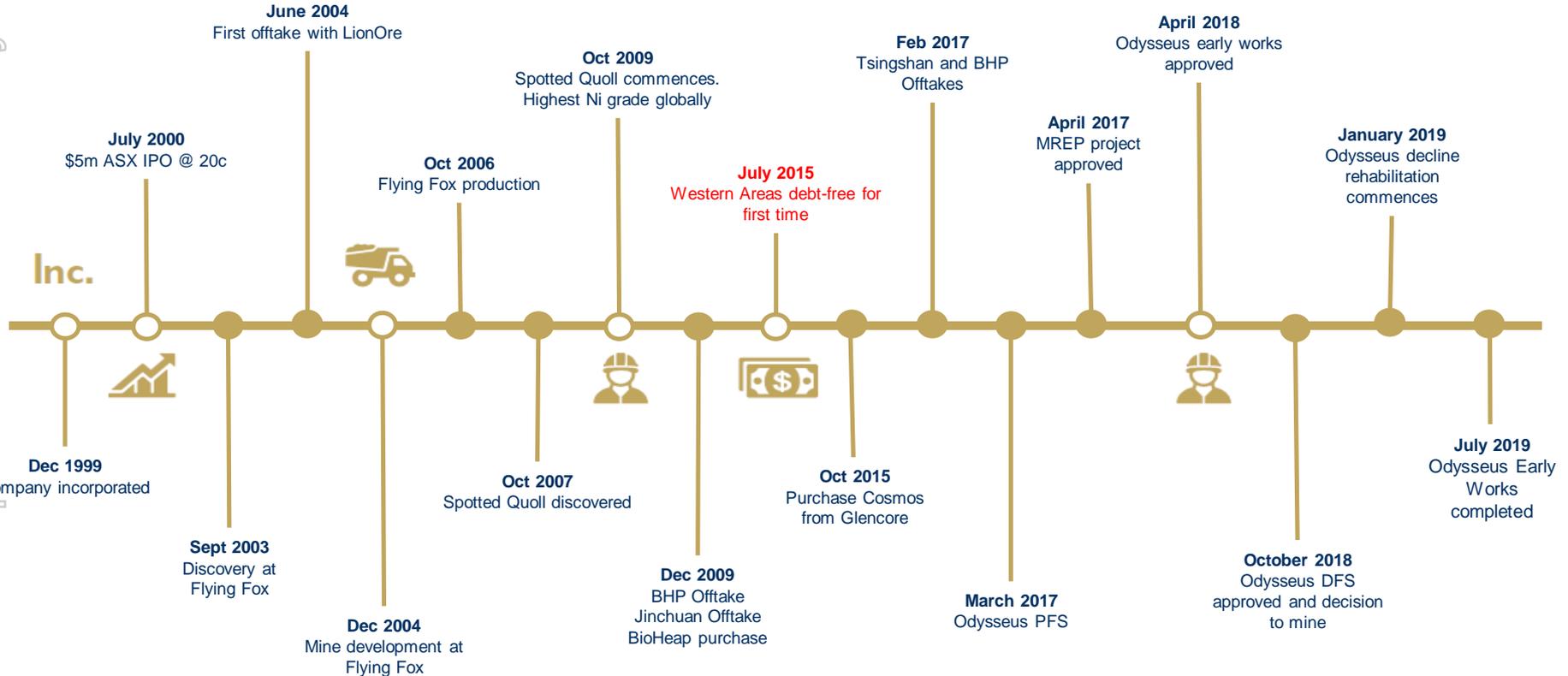
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Western Areas success timeline

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Western Areas are safe areas

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Days LTI free

Spotted Quoll	3,093	Aug-11
Cosmos	1,460	Oct-15 (no injuries)
Cosmic Boy Concentrator	388	May-18
Exploration	374	Sep-18
Flying Fox	192	Mar-19

12 month LTIFR moving average



Corporate overview

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ASX code	WSA
Share price	3.13
Shares outstanding (m)	273.5
Market Cap (A\$m) ¹	856
Cash (A\$m)²	144.3

COSMOS

Odysseus

165kt Ni Ore Reserves
199kt Ni Mineral Resource
Early works complete

FORRESTANIA

Flying Fox

9.8kt Ni mined FY19
21.1kt Ni Ore Reserves
79.3kt Ni Mineral Resource

Spotted Quoll

13.3kt Ni mined FY19
64.2kt Ni Ore Reserves
78.9kt Ni Mineral Resource

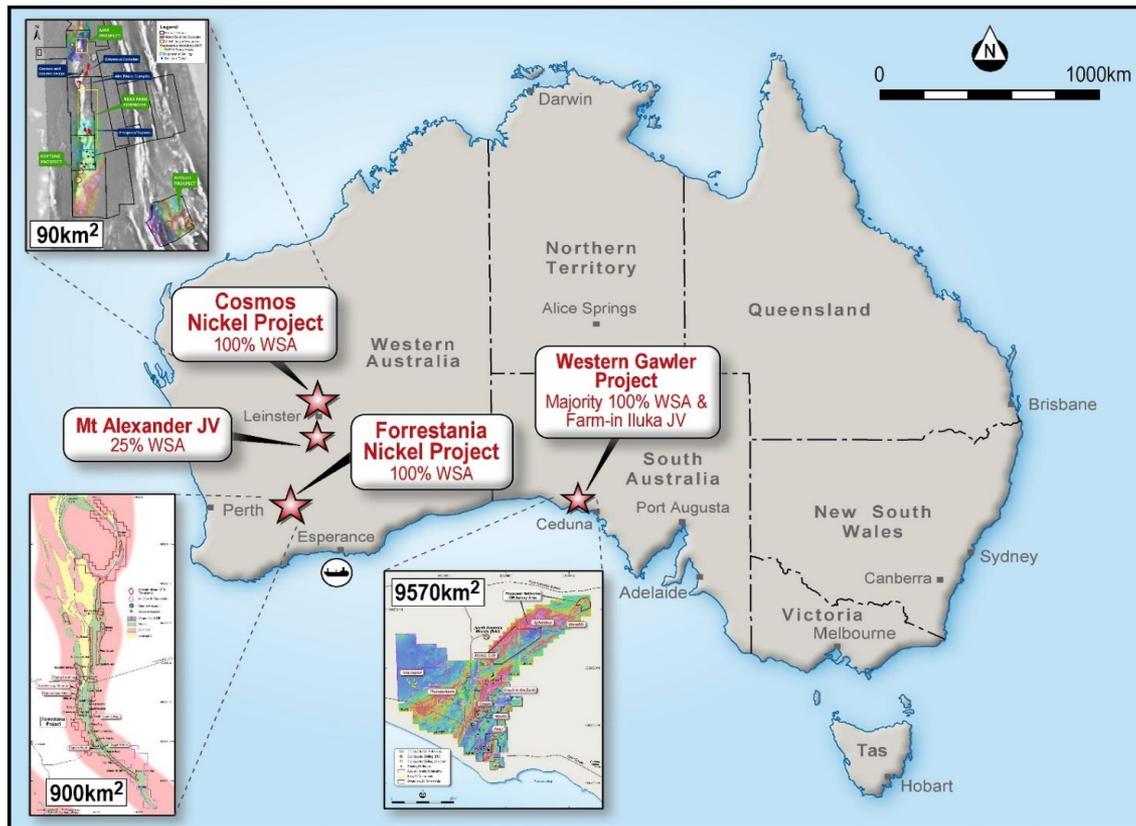


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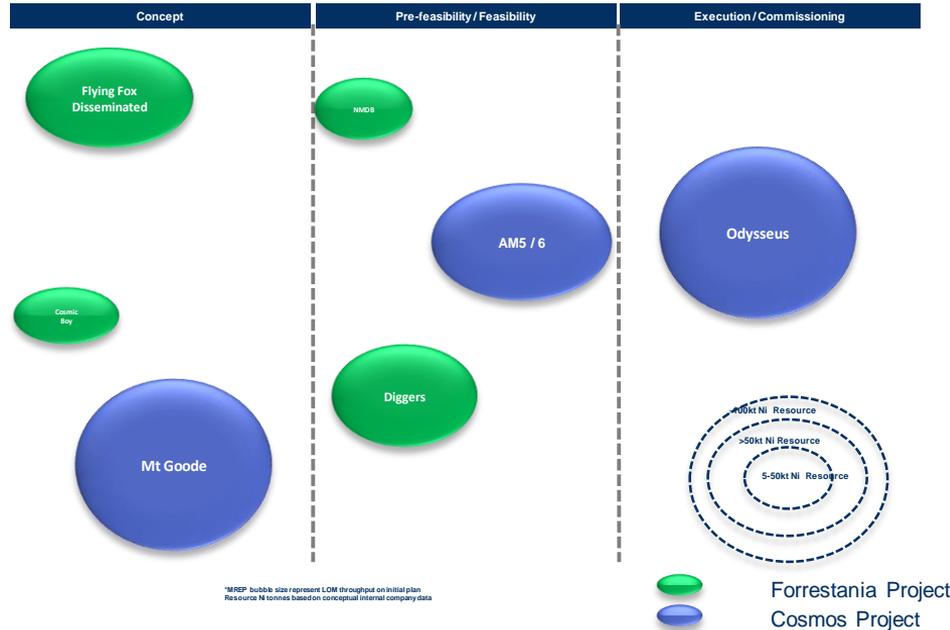
Key tenement holdings

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Nickel growth pipeline

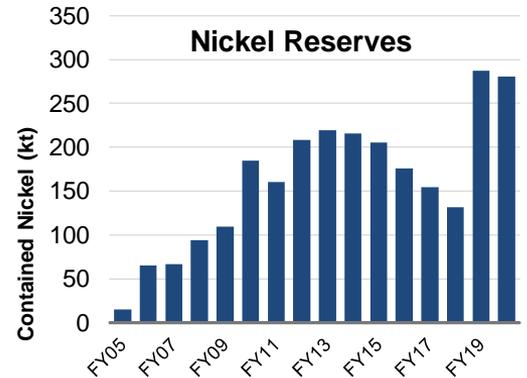
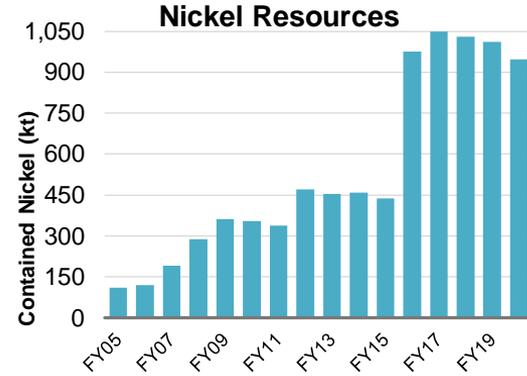
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*MREP bubble size represent LOM throughput on initial plan
Resource Ni tonnes based on conceptual internal company data

- Many projects in the pipeline to drive nickel production well into the future
- Ore Reserves have substantially increased in FY19 with Odysseus

Ore Reserves & Mineral Resources



Mill recovery enhancement project (MREP)

Produces additional new higher-grade product (45%-50% Ni)

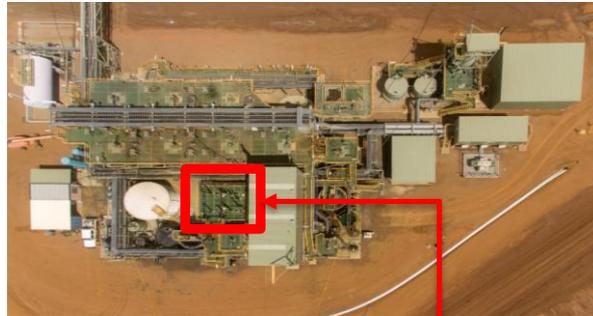
Generating value from As rich waste tailings

New customers - EV battery market

- Product specification achieved
- Filtration and bagging facilities to sell a new high grade nickel sulphide product complete
- Premium payables versus flotation concentrate
- Back-end of plant capable of up to 4,000t of nickel pa – Mill Scats, New Morning, Flying Fox LG to provide future feed options

Front End – BioHeap Leach

- 1400 tpa capacity
- Tailings stream from Cosmic Boy - applies BioHeap Leach, then passes to precipitation



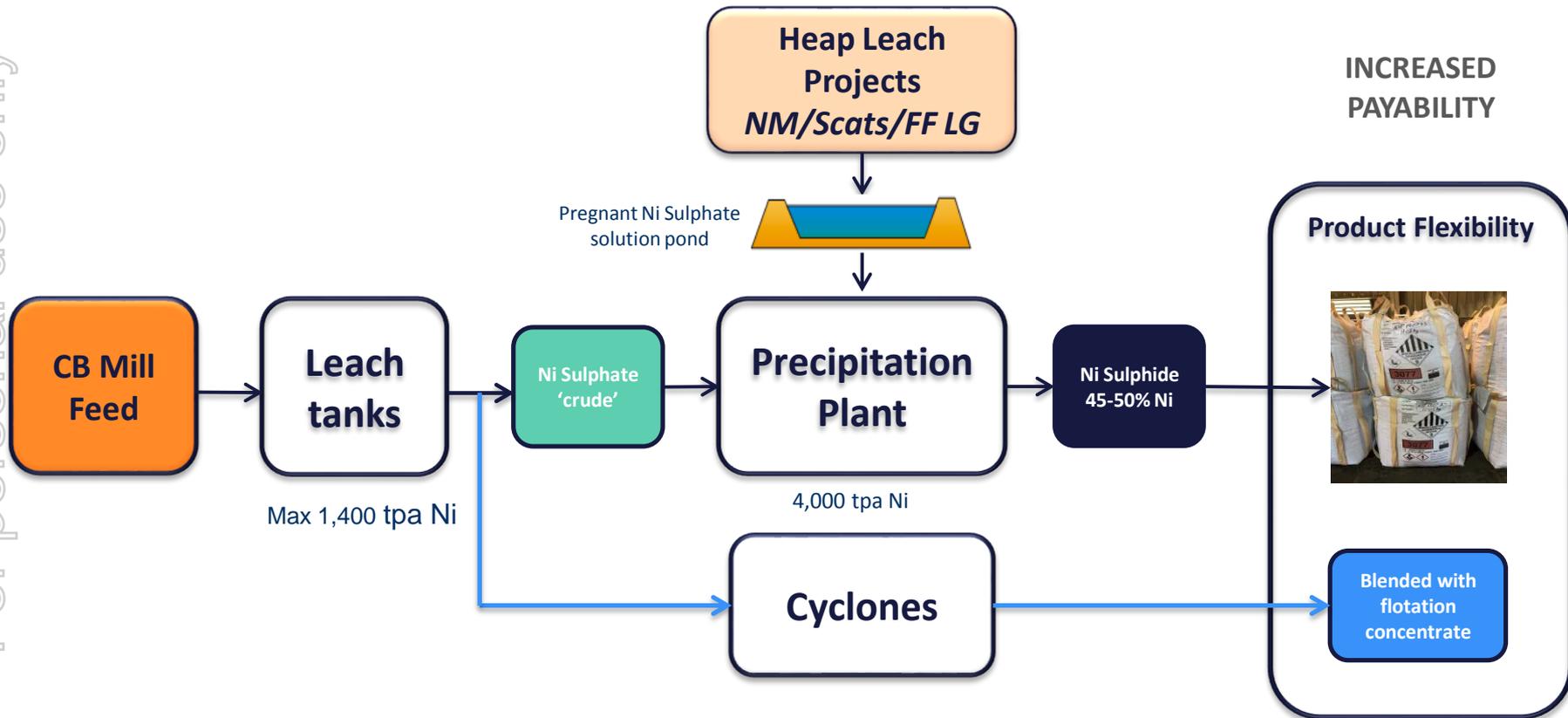
Back End – Precipitation

- 4000 tpa capacity
- 1400 tpa - leached material from BioHeap front end
- 2600tpa - other sources of nickel in solution eg. heap leach elsewhere in Forrestania, or scats treatment



MREP Flowsheet

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Cosmos – the new hub!

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WESTERN AREAS' SECOND OPERATIONAL HUB

Outstanding Nickel Address:

- Within prolific Leinster – Wiluna Nickel camp
- Jubilee Mines sold in 2007 to Xstrata for A\$3.1B!
- WSA purchase from Glencore, Oct 2015 for \$24M
- WSA DFS completed in Oct 2018; and
- Mining commenced in January 2019.



Odysseus – early works complete

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Early Works Activities:

- Decline rehabilitation to 500m below surface and Underground pump station construction commenced
- Water Management Ponds all constructed and operational
- Camp commissioned with over 250 rooms available out of 520



Odysseus – now a long life mine > 10yrs

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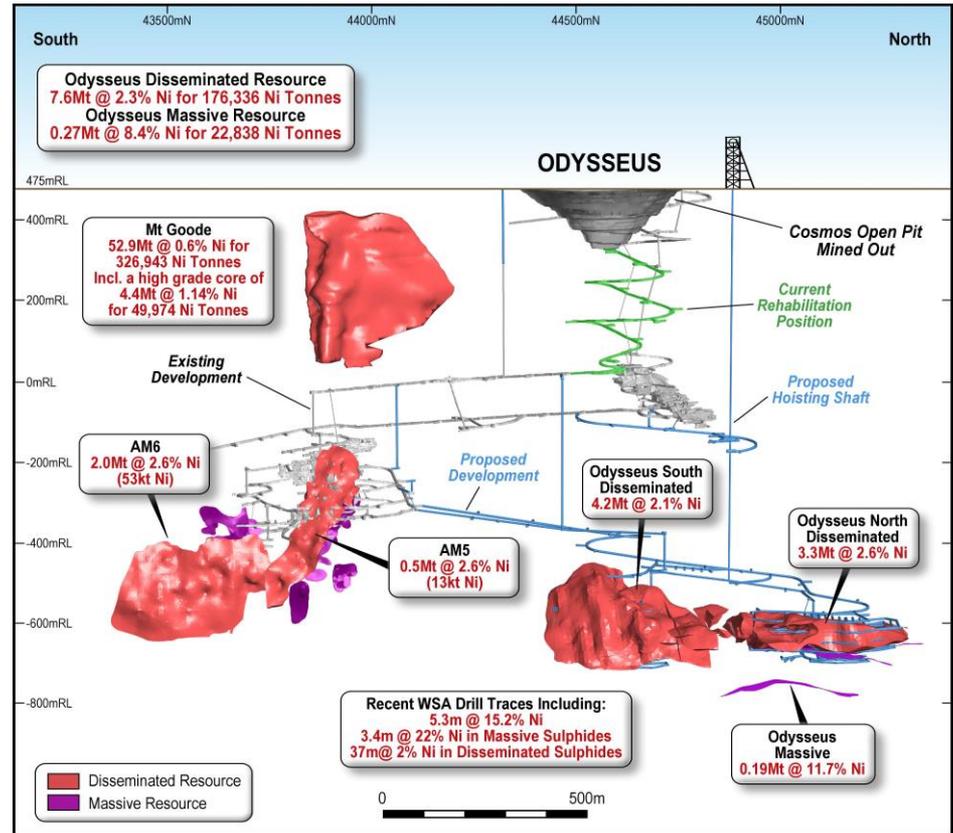
Western Areas' Second Operation:

Long life, low cost project:

- ✓ Ore Reserve 8.1mt @ 2.0% for 164kt nickel
- ✓ Mine life > 10 years
- ✓ AISC A\$3.50/lb
- ✓ Average nickel in concentrate production >13.0ktpa (14.6ktpa from FY24-FY31)

Significant upside:

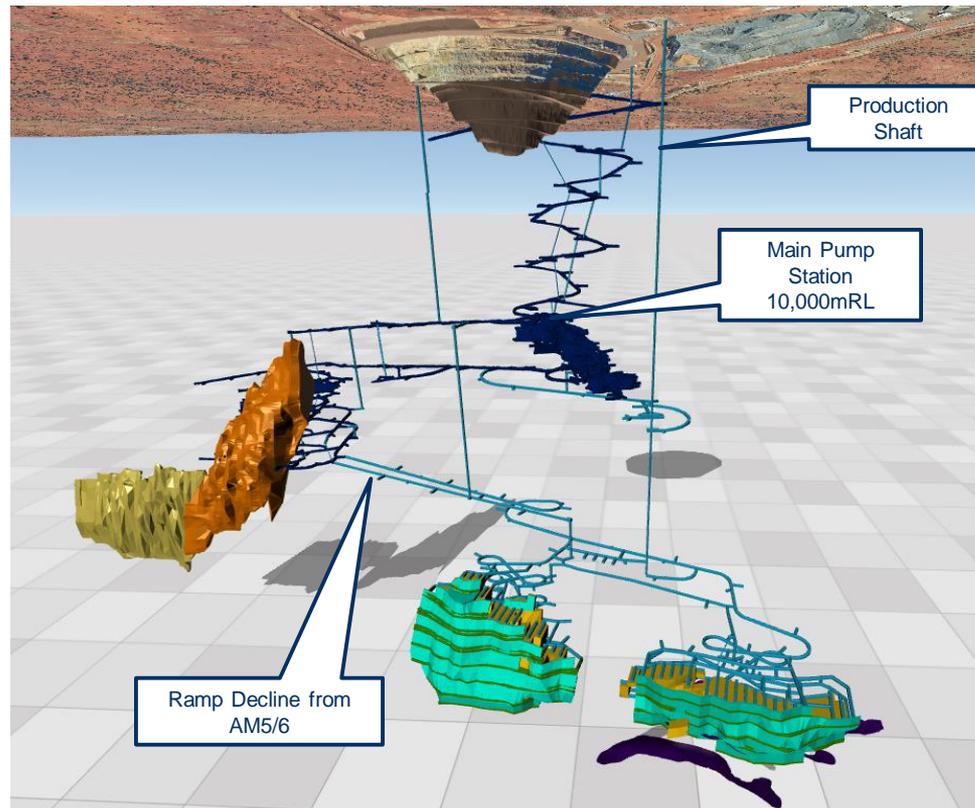
- ✓ AM5 & AM6 deposits contain an Indicated Mineral Resource of 57.6kt of nickel (not included in DFS) – currently completing reserve estimation
- ✓ Record massive sulphide intersections



Odysseus

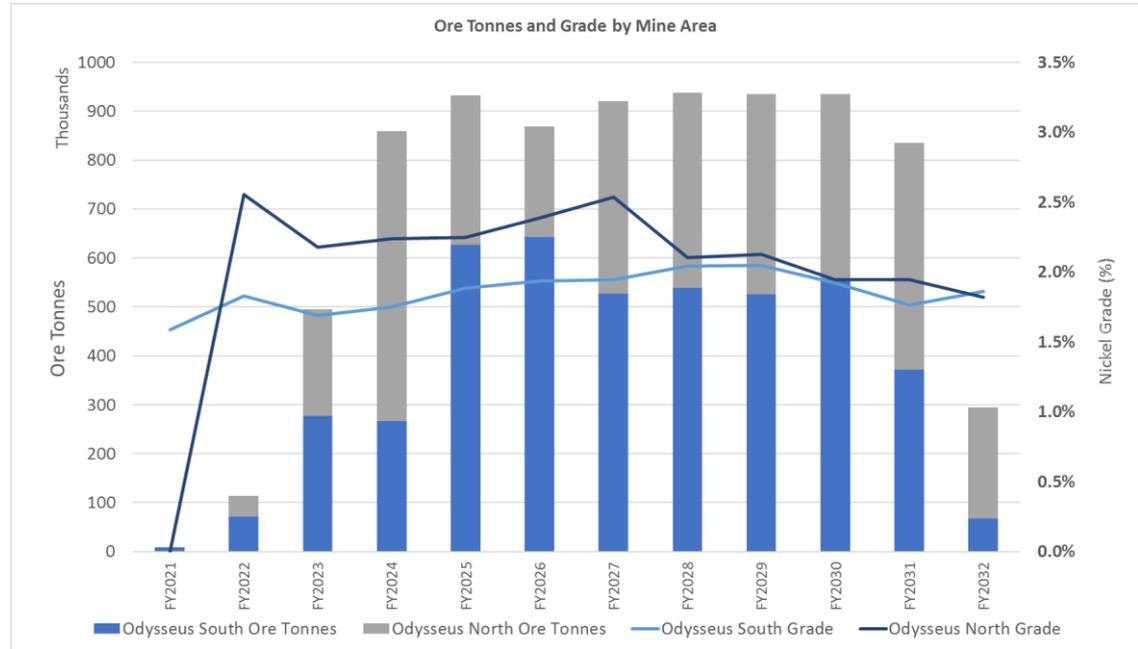
- **Pre-production capex A\$299m includes:**

- ✓ Shaft hoisting
- ✓ Larger mill (900ktpa immediately)
- ✓ WSA is well funded with cash and no debt
- ✓ Updated development expenditure profile is now FY20 – A\$80m, FY21 – A\$66m, FY22/23 – A\$143m
- ✓ Already receiving funding interest from offtake providers and third parties, including banks



Production ~900K tpa ore

- Minimum 10 year mine life on reserves
- Annual ore production of 900kt
- First Ni concentrate late CY 2022
- Consistent annual nickel production



Shaft infrastructure

- WSA has purchased a high quality, second hand head gear and winder
- Shaft infrastructure dismantling completed for refurbishment in South Africa prior to shipment to Perth in March/April 2020
- Significant economical benefit versus trucking.

Key Metrics:

- ✓ *5.5m diam. raise bore;*
- ✓ *4 guide ropes per conveyance;*
- ✓ *1.27Mtpa (ore and waste);*
- ✓ *12 t skips;*
- ✓ *1 truck required to feed shaft;*
- ✓ *4.5 MW peak power.*



Winder

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Head frame-going going gone!

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Why shaft hoisting?

Electrical power vs diesel

- Future proofing the operation
- Combined with renewable power = energy efficient site, 85% reduction in CO₂
- Low consistent opex and proven technology
- Fully automated winder and materials handling system direct to mill
- Cycle time: ~3 mins

Equivalent truck fleet ~ 8 trucks

- Save 1.5 ML diesel burnt pa (DPM)
- Remove 5 MW of heat generated from diesel engines
- Remove minimum 200m³/s of additional ventilation requirement (another vent shaft)
- Removes issue of decline constraints



NICKEL MARKET

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Offtake contracts best in class

Existing offtake agreement 4 months to expiry.

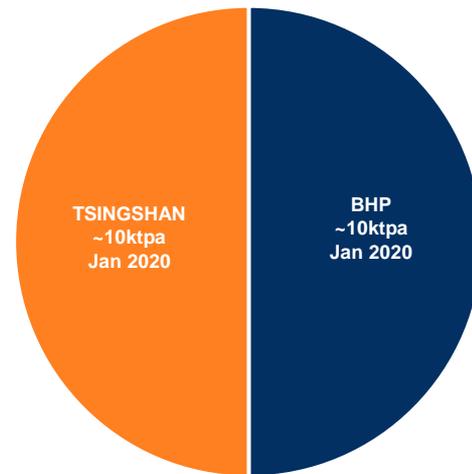
Currently in market with tenders – strong response

Premium blending concentrate - superior commercial terms

Significant increase in inbound off-take enquiries for Nickel Sulphide concentrate post current contract period, primarily linked to the Electric Vehicle battery pre-cursor sector

Our Partners:

- **BHP:** 50%
 - **Tsingshan:** 50%
- ✓ China's largest stainless steel producer
 - ✓ Consumes ~25% of China's nickel demand



Roasting

- Creates a high grade nickel oxide that can be blended with laterite ore
- By-product of sulphuric acid for 'pickling' stainless steel
- Most concentrates do not suit roasting
- Proven process - opening up opportunities with Tsingshan



What we are seeing

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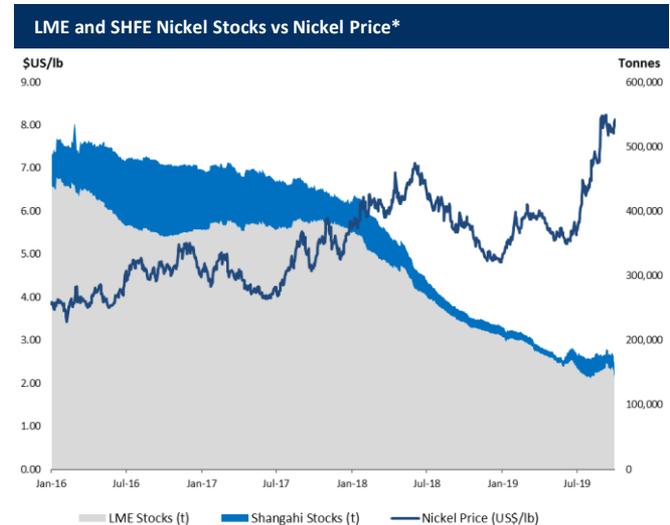
▪ Recently visited:

- ✓ Tsingshan (largest stainless steel producer in the world) - has strong growth plans, and buying refined nickel on the LME
 - ✓ Jinchuan (largest nickel cathode producer in China)
 - ✓ CATL (One of China's largest EV pre-cursor producer)
- **Recent Indonesian decision** to bring forward ore export ban to 1st Jan 2020 from Jan 2022 – currently accounts for ~10% of supply
- **LME and other stockpiles shrinking** on the back of current stainless demand and EV growth



Estimated electrification impact per vehicle (avg NMC battery)

40-50kg Ni	50-75kg Cu
5-15kg Co	+ Cu for charging point + Cu for grid access

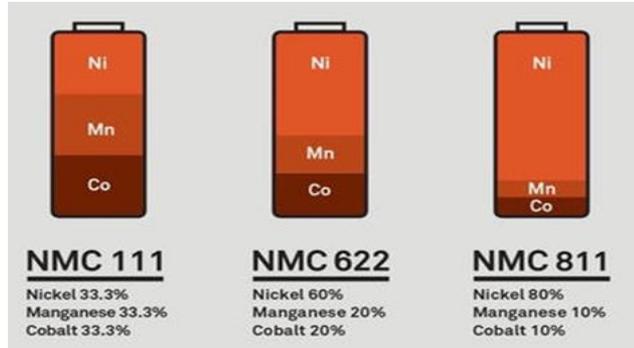


Source: Global Mining Research, Bloomberg



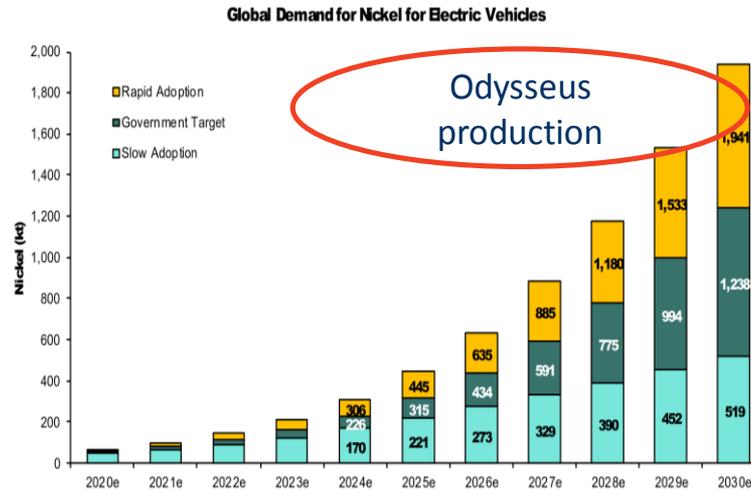
The present – driven by stainless steel

- **Technology change to NCM 811** which requires even more nickel
- **Current nickel price too low** to incentivise new project development. New mine development can take 3 years – the nickel “pie” is not expanding
- **May see divergent market in nickel supply** emerging between stainless steel and EV

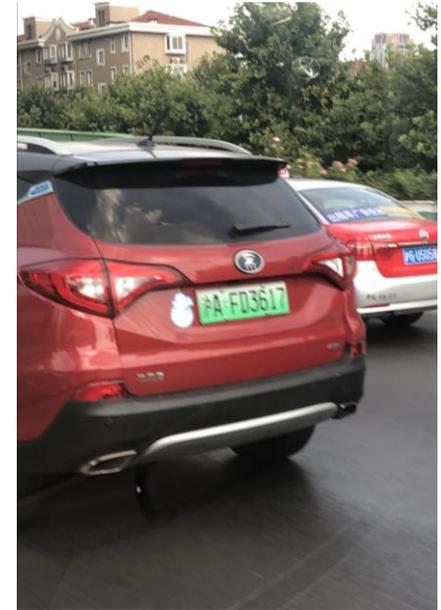


The future - EV demand for nickel

- Potentially very significant incremental demand versus a current nickel market size of c.2,200kt
- Research indicates NCM 811 will be the fastest growing battery combination by 2025!



Source: Bernstein - June 2018



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Nickel deficits NOW a reality!

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Long term trends supporting Ni consumption growth:



Vehicle Electrification



Increasing mobility



Growth in Renewables



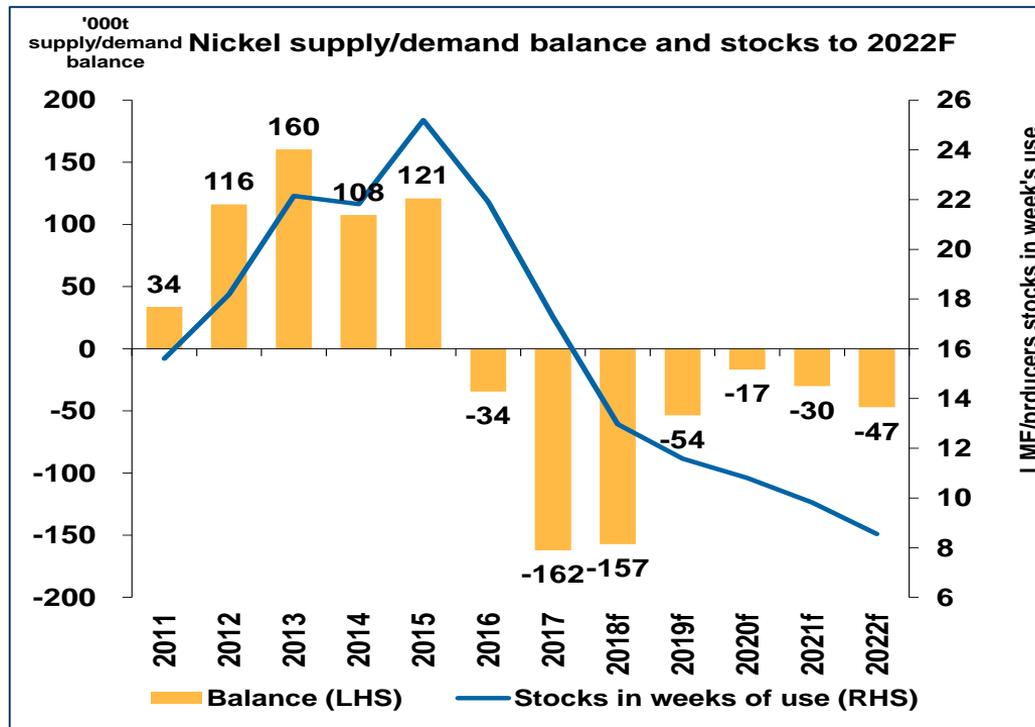
Population growth



Growing disposable incomes



Urbanization



Source: INSG, CRU, LME, Macquarie Strategy, Feb 2019

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