

## Western Australia's new nickel-copper-PGE frontier

Bell Potter – Emerging Leaders Conference

**13 SEPTEMBER 2023** 



ASX:CHN



## Cautionary statements and competent person(s) disclosure

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This Presentation has been authorised for release by the Disclosure Committee.

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#### **Cautionary statement**

This Presentation includes information extracted from the Company's ASX announcement dated 29 August 2023, titled "Gonneville Nickel-Copper-PGE Project Scoping Study".

For the production targets and forecast financial information for the 15Mtpa Case scenario (modelled LOM - 19 years), Inferred Resources comprise 14% of the production schedule over the modelled Life of Mine (LOM). For the 30Mtpa Case scenario (modelled LOM – 18 years), Inferred Resources comprise 37% of the production schedule over the modelled Life of Mine (LOM). Significantly, in both the 15Mtpa Case and 30Mtpa Case scenarios, the Inferred Mineral Resources do not play a prominent role in the initial mine plan. Throughout the first 15 years of production schedules. Accordingly, Chalice has concluded that it is satisfied that the financial viability of both development cases modelled in the Scoping Study is not dependent on the inclusion of Inferred Resources early in the production schedule given an estimated payback period (from commencement of production) of ~2 years for the 15Mtpa Case and the 30Mtpa Case.

There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production targets themselves will be realised

#### Forward-Looking Statement

This Presentation contains forward-looking statements which are identified by words such as 'may', 'could', 'believes', 'estimates', 'targets', 'expects', or 'intends' and other similar words that involve risks and uncertainties. These statements are based on an assessment of present economic and operating conditions, and on a number of assumptions regarding future events and actions that as at the date of this Presentation, are considered reasonable. Such forwardlooking statements are not a guarantee of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of the Company the Directors and the management. The Directors cannot and do not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this Presentation will actually occur and investors are cautioned not to place undue reliance on these forward-looking statements. The Directors have no intention to update or revise forward-looking statements, or to publish prospective financial information in the future, regardless of whether new information, future events or any other factors affect the information contained in this Presentation, except where required by law or the ASX listing rules.

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#### Mineral Resources Reporting Requirements

As an Australian Company with securities quoted on the Australian Securities Exchange (ASX), Chalice is subject to Australian disclosure requirements and standards, including the requirements of the Corporations Act 2001 and the ASX. Investors should note that it is a requirement of the ASX listing rules that the reporting of mineral resources in Australia is in accordance with the JORC Code and that Chalice's mineral resource estimates comply with the JORC Code. The requirements of JORC Code differ in certain material respects from the disclosure requirements of other countries. The terms used in this announcement are as defined in the JORC Code. The definitions of these terms may differ from the definitions of such terms for purposes of the disclosure requirements in other countries.

#### **Competent Persons Statement**

The information in this Presentation that relates to previously reported exploration results is extracted from the following ASX announcements:

- "High-grade nickel-copper-palladium sulphide intersected at Julimar Project in WA", 23 March 2020
- "Significant High-Grade PGE-Cu-Au Extensions at Julimar", 18 November 2020
- "Major northern extension of Gonneville Intrusion confirmed", 19 October 2022
- "Outstanding wide high-grade intersections north of Gonneville", 23
   November 2022
- "Promising new sulphide mineralisation at the Hooley Prospect", 8 December 2022
- "Gonneville Resource increases by approx. 50% to 3Mt NiEq", 28 March 2023
- "Further early-stage exploration success north of Gonneville", 3 May 2023
- "New wide high-grade zones in ~900m step-out drill hole", 31 July 2023
- "Gonneville Nickel-Copper-PGE Project Scoping Study", 29 August 2023

The information in this Presentation that relates to Mineral Resources has been extracted from the ASX announcement titled:

• "Gonneville Resource increases by approx. 50% to 3Mt NiEq", 28 March 2023

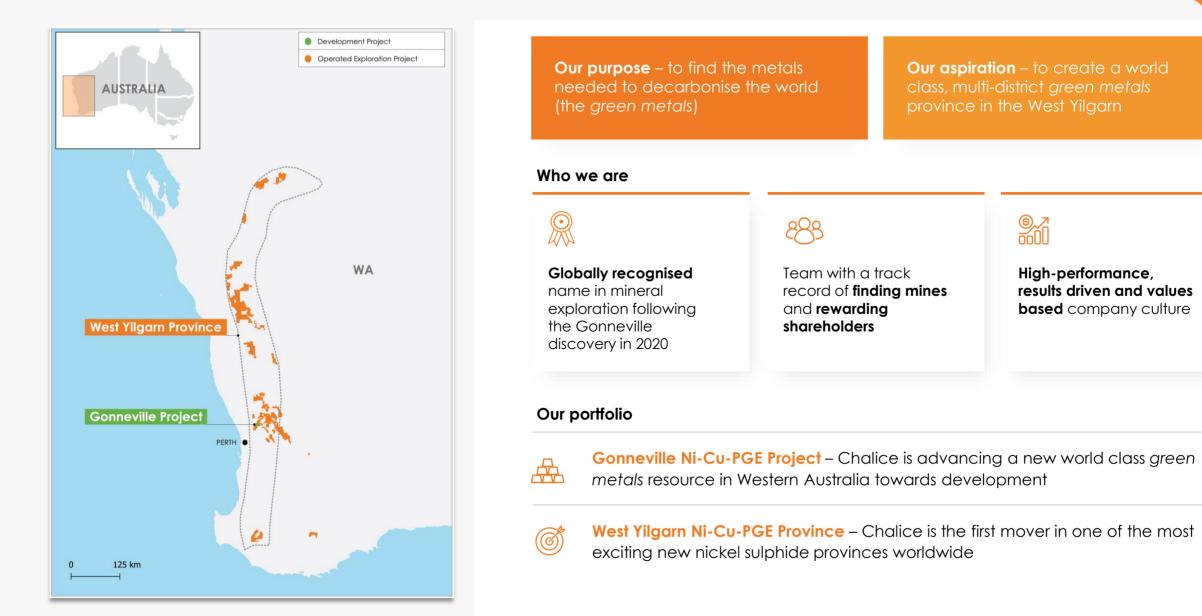
The above announcements are available to view on the Company's website at <a href="mailto:chalicemining.com">chalicemining.com</a>

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, in the case of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the original release continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the relevant original market announcements. Refer to the attached Appendices for further information on the Mineral Resource Estimate and metal equivalents.

The production targets and forecast financial information disclosed in this Presentation is extracted from the Company's ASX announcement "Gonneville Nickel-Copper-PGE Project Scoping Study", dated 29 August 2023.

All material assumptions underpinning the production targets and forecast financial information derived from the production targets in the previous announcement continue to apply and have not materially changed.

## Chalice is a leading **ASX200 green metals explorer-developer** with a track record of creating shareholder value

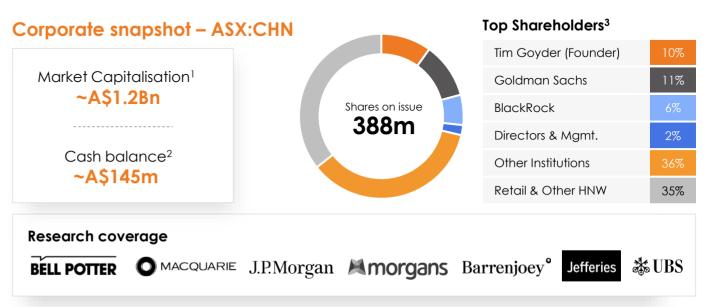


## **Company Overview**



#### **Our Achievements**

- World class Gonneville Ni-Cu-PGE discovery recognised with PDAC Thayer Lindsley Award (2023) and AMEC Prospector of the Year Award (2022)
- RIU Craig Oliver Award (2021), MNN Explorer of the Year (2021) and D&D Emerging Company of the Year (2021)



#### **Board of Directors**

Derek La Ferla	Non-Executive Chair
Alex Dorsch	Managing Director & Chief Executive Officer
Morgan Ball	Non-Executive Director
Garret Dixon	Non-Executive Director
Stephen McIntosh	Non-Executive Director
Linda Kenyon	Non-Executive Director
Jo Gaines	Non-Executive Director

#### Management

Alex Dorsch	Managing Director & Chief Executive Officer
Richard Hacker	General Manager – Strategy & Commercial
Dr Kevin Frost	General Manager – Discovery & Growth
Bruce Kendall	General Manager – Exploration
Dr Soolim Carney	General Manager – Environment & Community
Mike Nelson	General Manager – Project Development
Chris MacKinnon	Chief Financial Officer

1. As of 11 September 2023; 2. As of 30 June 2023; 3. As of 4 September 2023. Substantial shareholder information is as disclosed in the last substantial shareholder notice provided to the Company. Note: Arctis Global disclosed a long equity derivative position of 46,728,282 shares on 10 Nov 2022.

### **Gonneville Ni-Cu-PGE Project Overview**

Scoping Study outlines a new long-life, low-cost, low-carbon green metals project in Western Australia



**Strategic and rare green metals**<sup>1</sup> **project in a western jurisdiction** – strong potential for a western and green premium



Scoped to have world-class sustainability metrics – low carbon intensity, ~A\$18 billion contribution to WA economy and substantial regional benefits

**Executable, tier-1 scale development project in WA** – two open-pit cases to reflect development optionality:

Case	3E (Pd+Pt+Au)	Ni	Cu	Co	Modelled life
	kozpa	ktpa	ktpa	ktpa	yrs
15Mtpa	280	9	10	0.8	19
30Mtpa	470	16	16	1.4	18

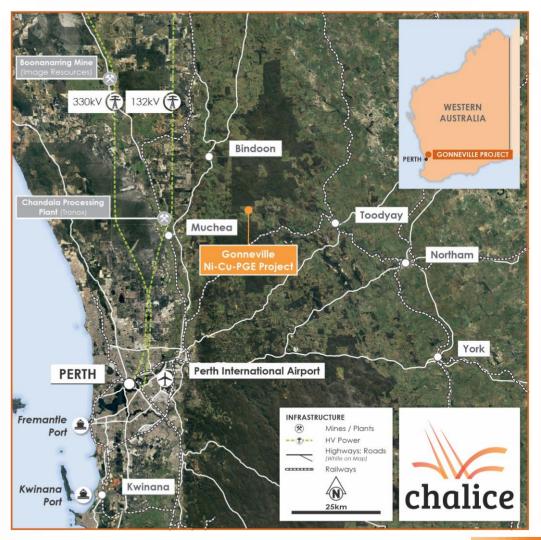


#### Compelling returns on investment and competitive cost profile

- ~US\$160-230/oz 3E cash costs (after Ni-Cu-Co by-product credits) 2<sup>nd</sup> quartile
- ~A\$6.6-9.9 billion total free cash after-tax generated with ~2yr payback



Strong upside and inherent development optionality – no underground mining options included as yet, plus the resource, optimal flowsheet and pathways to market continuing to be defined



1. Nickel, copper, cobalt, palladium and platinum are considered green metals, as they are essential for the production of decarbonisation technologies such as lithium-ion batteries, electric vehicles, hybrid vehicles, large-scale energy storage solutions, wind power, solar power and green hydrogen.

Gonneville has the potential to become a long life asset with a tier-1 scale production profile and highly competitive financial metrics



Scoping Study modelled outputs and metrics (15-30Mtpa cases) – indicative metrics with limited engineering/optimisation to date



Annual production (avg)

280-470kozpa 3E 9-16ktpa Ni 10-16ktpa Cu 0.8-1.4ktpa Co over 19 / 18yrs



**Strip ratio (avg)** 1.8x



**Pre-production CapEx** A\$1.6-2.3Bn



Cash costs (avg) US\$160-230/oz 3E (2<sup>nd</sup> Q)



**EBITDA (avg)** A\$670-1,100M



Free cashflow (post-tax) A\$630-840Mpa (1<sup>st</sup> 4yrs) A\$440-690Mpa (LOM ava)



**Total free cash (post-tax)** A\$6.6-9.9Bn



**NPV<sub>6.5%</sub> (post-tax)** ~A\$2.8-4.2Bn<sup>1</sup>



IRR (post-tax) ~26% (both cases)



Payback period ~2 years (both cases)

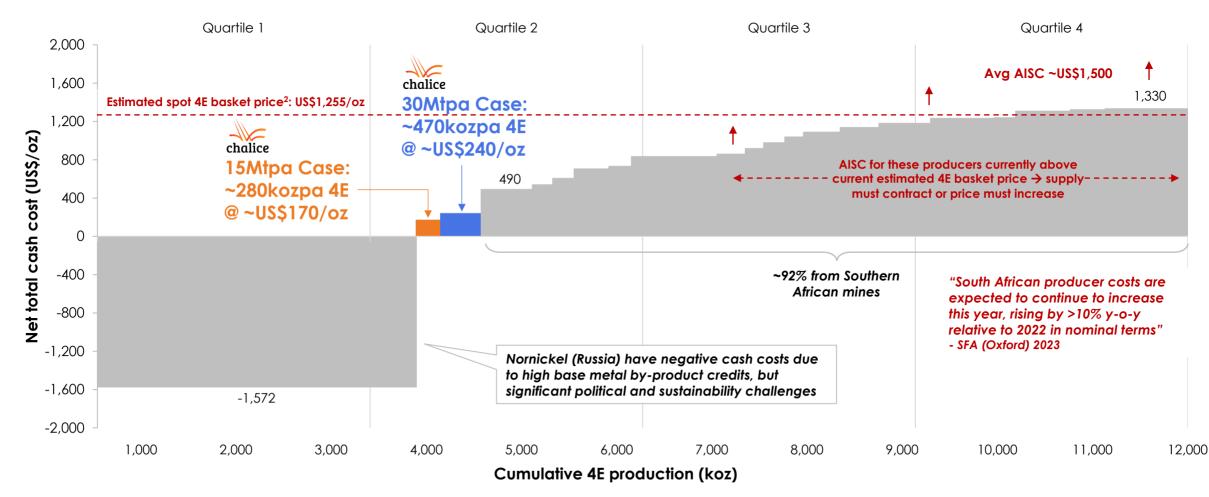
VIR (NPV/Pre-Prod CapEx) 1.8 (both cases)

Note: ranges reflect 15 and 30Mtpa cases, rounded to 2 significant figures.<sup>1</sup> Indicative NPV ignores residual value beyond modelled life (~540-1,100kt NiEq contained in Resource unmodelled) or any exploration upside and hence is not considered to reflect the full potential value of the asset

Both Gonneville cases are modelled in the 2<sup>nd</sup> quartile of the PGE industry cost curve (after base metal by-product credits)



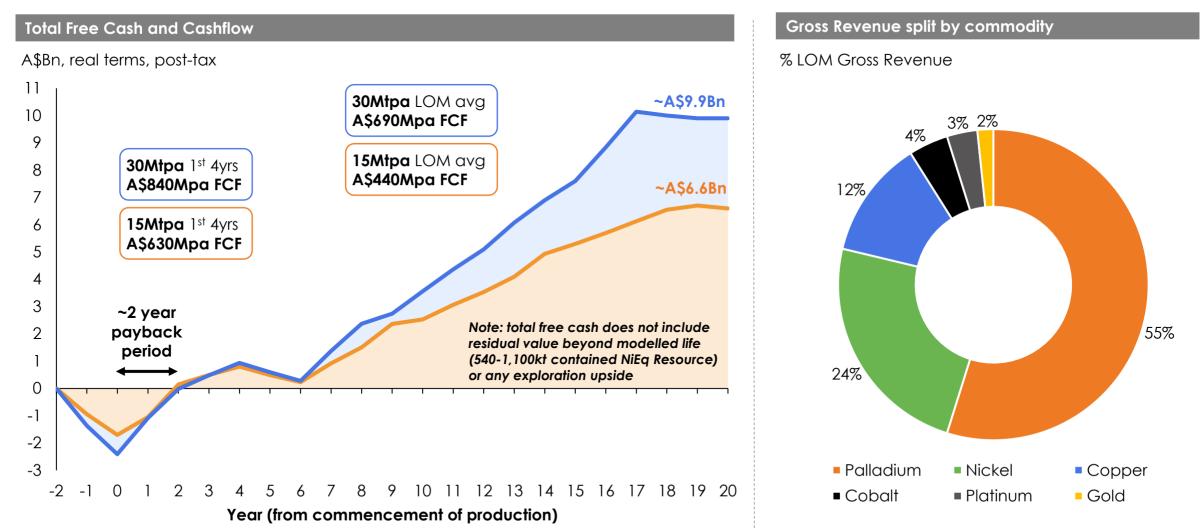
#### PGE Industry Cost Curve – Net total cash costs per 4E oz (after by-product credits), CY2022, US\$/oz<sup>2</sup>



Source: 2022 SFA (Oxford) Ltd collated costs and revenues used for 4E cost curve data. Note: 1. 4E cost curve positioning assumes average 2022 by-product commodity prices of: Copper US\$10,105/t, Nickel US\$25,000/t, Iridium US\$4,400/oz, Ruthenium US\$550/oz, Chrome 42% CIF US\$300/t. AME forecast Cobalt price of US\$46,407/t has been assumed given not disclosed in SFA data. Above cash costs will differ to that presented elsewhere given the difference in commodity prices assumed for by-products calculation. 2. Current estimated average 4E Basket price calculated using spot prices as at 8 September 2023.

The scale, quality and location of the Resource underlie the study's robust financial metrics, generating ~A\$6.6-9.9 billion in free cash



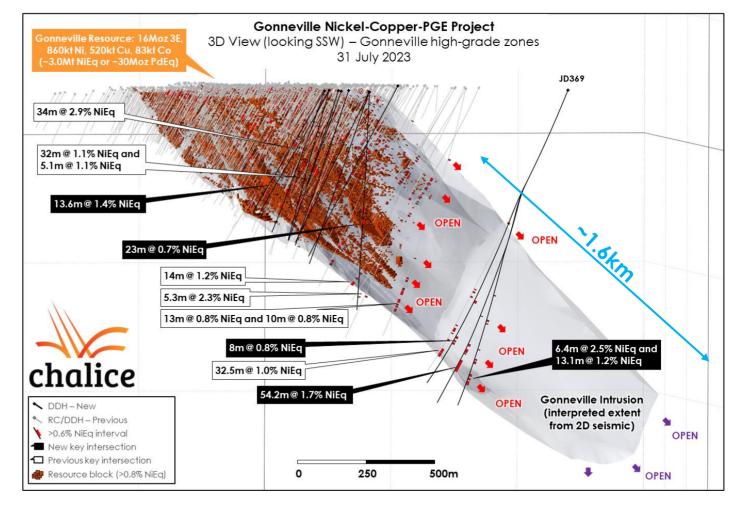


# The Resource remains open down-dip, with ongoing drilling demonstrating potential for **material growth of the deposit**



- Residual Resource unmined beyond Study modelled life of 90-200Mt for 540-1,100kt contained NiEq (at >0.40% NiEq cut-off grade)
   – eventual underground transition likely
- The 500-600m thick Gonneville Intrusion is interpreted to extend a further ~1.6km downdip to the WNW beyond the Resource
- Recent step-out drilling has hit new highgrade Cu-PGE zones at depth:
  - 34m @ 7.0g/t 3E, 0.16% Ni, 0.63% Cu, 0.02%
     Co (2.9% NiEq) from 432m
  - 54.2m @ 3.6g/t 3E , 0.21% Ni, 0.39% Cu, 0.02% Co (1.7% NiEq) from 1132.8m
  - 6.4m @ 3.6g/t 3E, 0.36% Ni, 1.2% Cu, 0.02%
     Co (2.5% NiEq) from 1188.6m.
- Early underground mining options targeting high-grade zones from ~400m to 1,100m+, in parallel with open-pit mining being investigated – provides a material opportunity to improve project economics
- Testwork also shows that flotation recoveries are significantly higher on high grade vs average modelled feed grades

#### 3D view (looking SSW) of Gonneville Intrusion, >0.8% NiEq Resource blocks and drilling



In addition, there are **inherent options and upside** that need further evaluation in mining, processing and commercial areas



Assessed upside potential



Mining

Early high-grade underground mining in parallel to open-pit phase and block/sub-level caving options

[Orange] = Near term priorities

- Selectivity, equipment sizing, cut-off grade, dilution, pit phasing, stockpiling and blending mining optimisations
- Ore-sorting (as yet unmodelled)
- Real-time mining/cut-off strategies to adapt to prevailing macro environment
- Automation and electrification of mining and haulage

- Processing

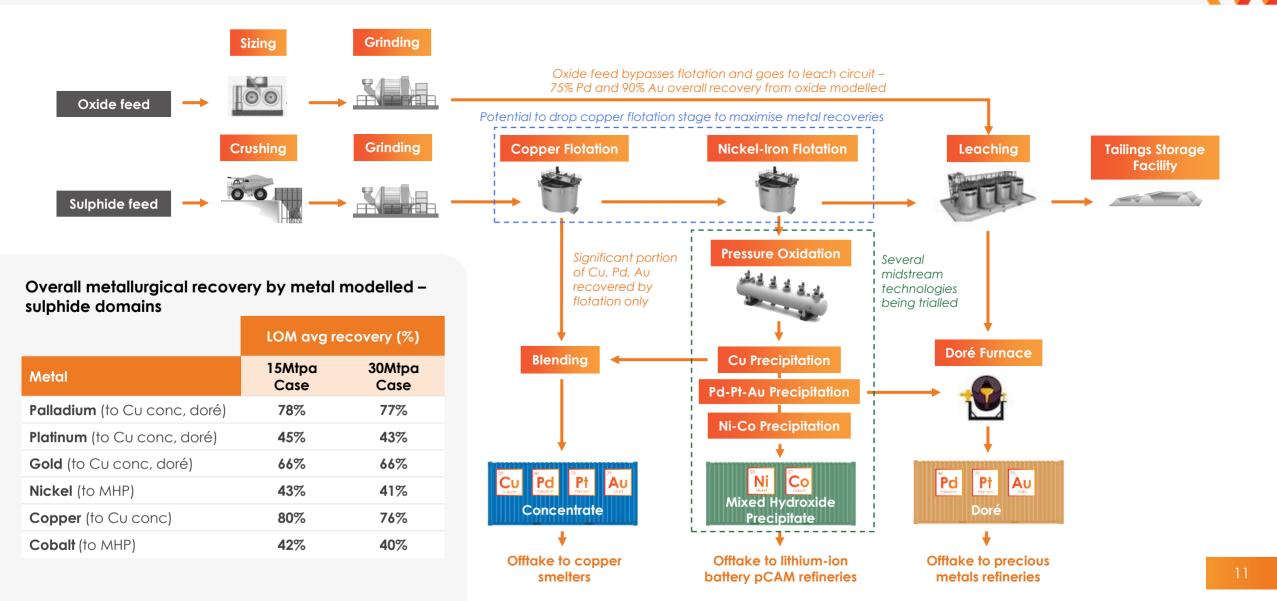
- Geo-met domaining of the deposit
- Bulk flotation testwork and trade-off studies (vs sequential Cu/Ni flotation)
- Grind size, staged grinding, Leaching and flotation processing / recovery optimisations
- Further downstream processing as resource base grows and operation matures
- Phasing of flowsheet configuration (concentrates to midstream to downstream) to de-risk execution and ramp-up
- New processing and tailings storage technologies
- Advanced analytics and machine learning / artificial intelligence in process optimisation



- Strategic partnering to bring technical and financial capabilities
- Government grants, debt, tax incentives or targeted project support (including infrastructure, permitting etc)
- Higher long term prices due to scarcity, lack of new discoveries or geo-political events
- Potential for green/western premiums on products
- Recovery and payability of additional metals (i.e. Rh, Ir, Os, Ag, Te)
- Strategic power purchase agreement or improvements in SWIS grid
- Local offtake to potential new downstream processing hub

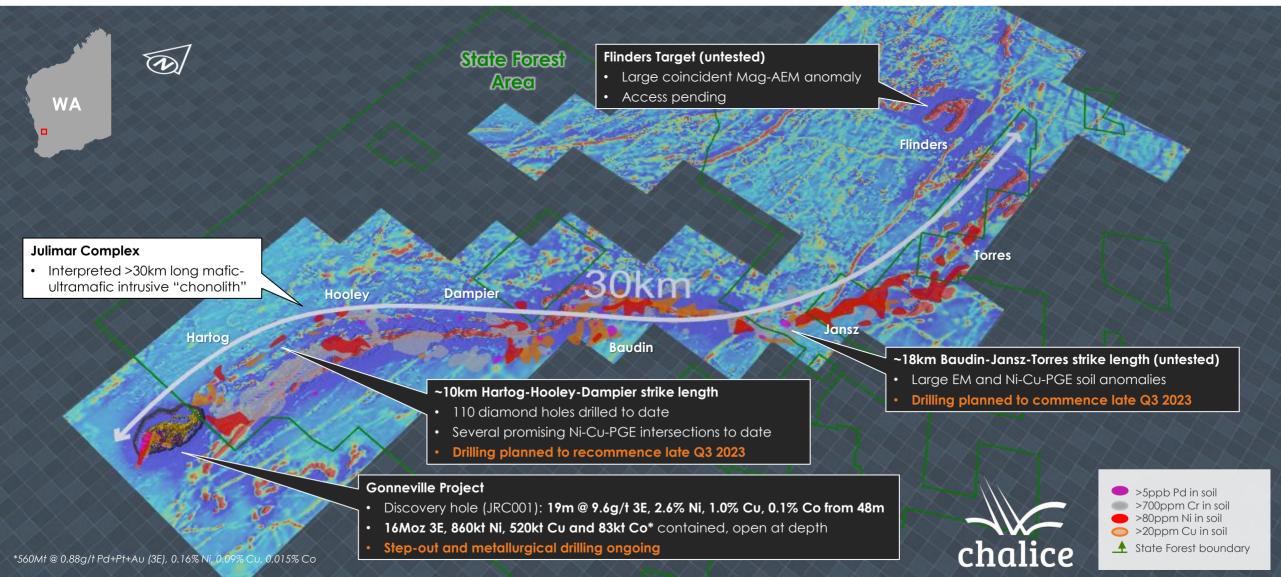
#### PROCESSING

The processing flowsheet envisaged is targeting production of a Cu-PGE-Au concentrate, **a battery-grade Ni-Co MHP** and a PGE-Au doré



## The Gonneville Resource occupies just ~2km of the >30km long Julimar Complex – its development could be a province opening play

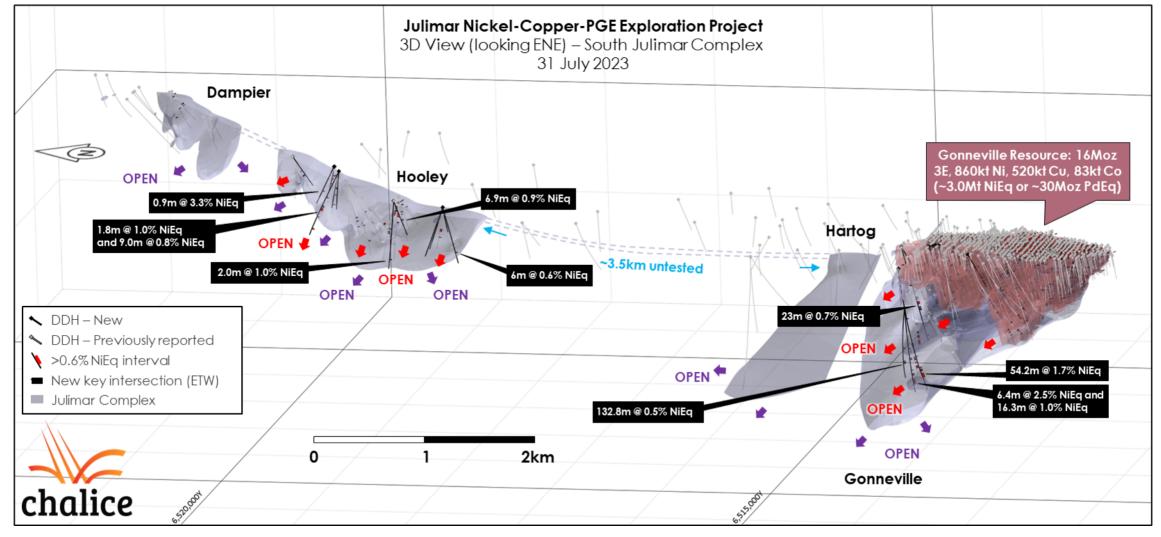
3D view (looking NW) of the Julimar Complex, Gonneville Deposit, regional targets, soil geochemistry over magnetics



Recent deeper drilling at Hooley (~5km from Gonneville) indicates a **thickening of the Complex at depth** – drilling to restart in late Q3 2023

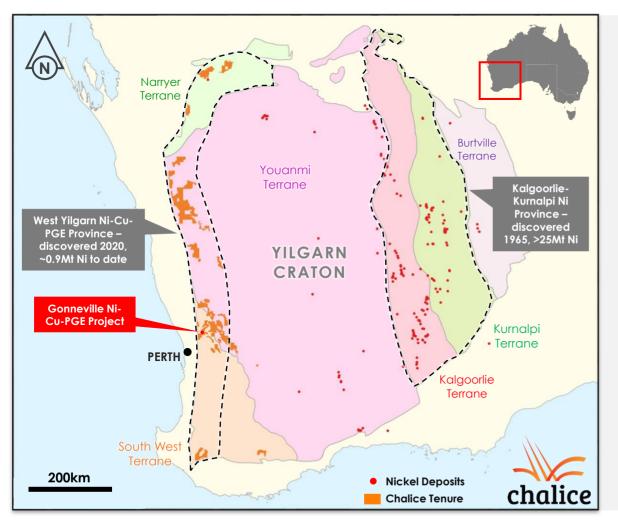


#### South Julimar Complex 3D View (looking ENE) – drill holes and Julimar Complex intrusive geology



The Gonneville discovery has kick-started the new West Yilgarn Ni-Cu-PGE Province, which could **deliver more major mineral discoveries** 





- The **'giant' ortho-magmatic nickel-copper-PGE sulphide** deposits such as Norilsk, Jinchuan, Thompson and Voisey's Bay are located proximal to the margin of cratons
- In WA, the eastern Yilgarn craton hosts several world-class nickel sulphide deposits with over **25Mt of Ni** discovered since 1965
- ~1,200km long western margin of the Yilgarn presents a similar geological setting, but is almost entirely unexplored
- Chalice made the first major ortho-magmatic Ni-Cu-PGE discovery in the region (Gonneville), subsequently staking >8,000km<sup>2</sup> and expanding the holding through earn-in joint ventures to >9,600km<sup>2</sup>
- >10 new greenfield Ni-Cu-PGE targets to be drilled in FY24 subject to cropping access and timing of approvals – drilling planned to commence in late 2023
- The prize is significant i.e. shallow Gonneville G1 zone style massive sulphides with grades c. 3.2% Ni, 1.2% Cu, 10g/t PGE

## Regional exploration drilling and the ongoing strategic partnering process represent **key upcoming catalysts**



Chalice's multi-track value creation strategy at the **Gonneville Project** is to advance development studies and progress regulatory approvals for a potential mine at Gonneville (located entirely on Chalice-owned farmland), **continue exploration in the surrounding region** to determine the full scale of the mineral system, and attract a **strategic partner** who adds technical, financial and marketing capabilities...



... in addition, province scale exploration is ramping up across the new West Yilgarn Ni-Cu-PGE Province

### Highlights





Chalice owns 100% of a new long-life, low-cost, lowcarbon green metals project in WA



Chalice's team has a track record of discovery and value creation



There is significant exploration upside across the exciting new West Yilgarn Ni-Cu-PGE Province

# Appendix

## Chalice is actively growing its organisational capability



#### **Board of Directors**

#### Derek La Ferla, Non-Exec Chair

- Highly regarded ASX200 chair and company director with 30+ years experience as a corporate lawyer
- Chair of Poseidon Nickel and formerly Chair of Sandfire Resources



#### Alex Dorsch, Managing Director and Chief Executive Office

- Diverse experience in consulting, engineering and corporate advisory in the energy and resources sectors
- Previously a Specialist consultant with McKinsey & Company



#### Morgan Ball, Non-Exec Director

- Chartered Accountant with 25+ years experience in the resources, logistics and finance industries
- CFO of Genesis Minerals and Formerly CFO of Northern Star Resources and Saracen
  Mineral Holdings

#### Garret Dixon, Non-Exec Director

- 30+ years experience in resources and mining contracting sectors
- Formerly Executive VP Alcoa & President Bauxite



#### Stephen McIntosh, Non-Exec Director

- Highly regarded mining executive with 30+ years experience in exploration, major project studies and execution
- Formerly Group Executive and Head of Exploration & Development Projects at Rio Tinto

#### Linda Kenyon, Non-Exec Director

- Corporate lawyer and senior executive with 30+ years experience
- Formerly Company Secretary and member of Executive Leadership Team at Wesfarmers



#### Jo Gaines, Non-Exec Director

- Extensive experience in intergovernmental negotiations and stakeholder engagement
- Chair of the Government Employees Superannuation Board (GESB) and a Director of
  Development WA and Technology Metals Australia Limited

#### Management



#### Richard Hacker, GM Strategy and Commercial

- Chartered Accountant with 20+ years experience in resource company financing, corporate
   and commercial management
- Previously Company CFO since 2006

#### Dr Kevin Frost, GM Discovery and Growth

 Co-recipient of PDAC 2023 Thayer Lindsley Award and AMEC's 2022 Prospector of the Year Award for the Gonneville discovery, and previously in 2009 for the discovery of the Spotted Quoll nickel sulphide deposit in WA (Western Areas)

#### Bruce Kendall, GM Exploration

• Co-recipient of AMEC's Prospector of the Year Award in 2012 for the discovery of the worldclass Tropicana gold deposit in WA (AngloGold Ashanti)



#### Dr Soolim Carney, GM Environment and Community

- Environment, health and safety, indigenous affairs, govt relations and community specialist with 20+ years experience
- Former Regional Environment Manager for Alcoa Australia

#### Mike Nelson, GM Project Development

- 30+ years experience in operational and technical leadership roles
- Instrumental in leading several mega-projects for mining internationals including Barrick Gold
  and Teck Resources

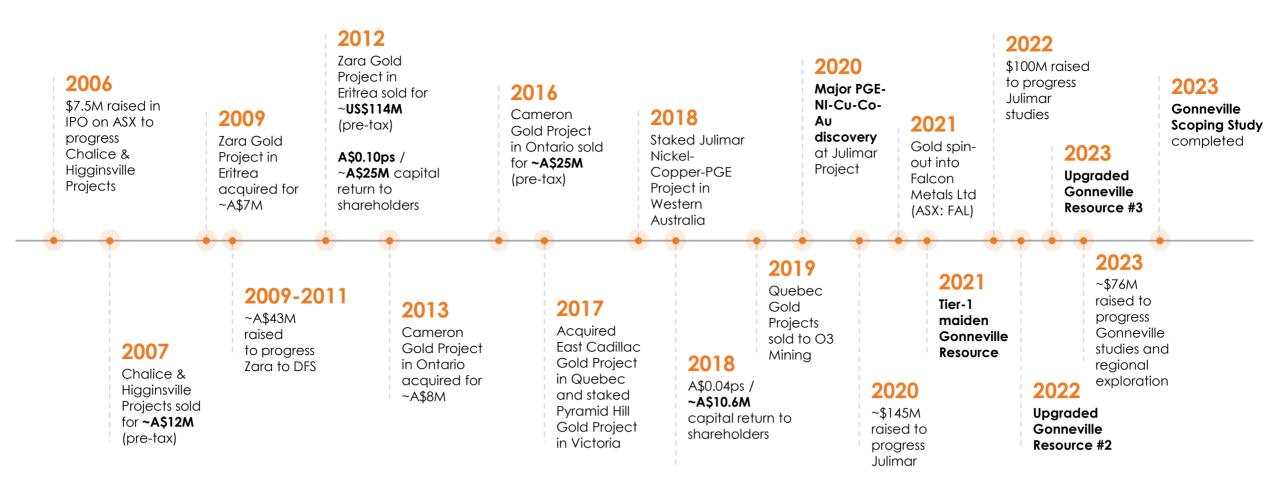
#### Chris MacKinnon, CFO

Qualified accountant and lawyer with 15+ years experience of professional and corporate
 experience in the energy and resources industry



Since our 2006 IPO, we have acquired quality assets, advanced projects quickly and generated exceptional returns





Gonneville is positioned to become a **strategic asset** for Australia and the western world, given its rare palladium-nickel-cobalt content



Gonneville is the **first major PGE discovery in Australia** and one of the few recent large-scale magmatic Ni-Cu-PGE discoveries in the western world

Pd, Pt, Ni and Co are classified as 'critical minerals' by most western governments; case is also growing for Cu

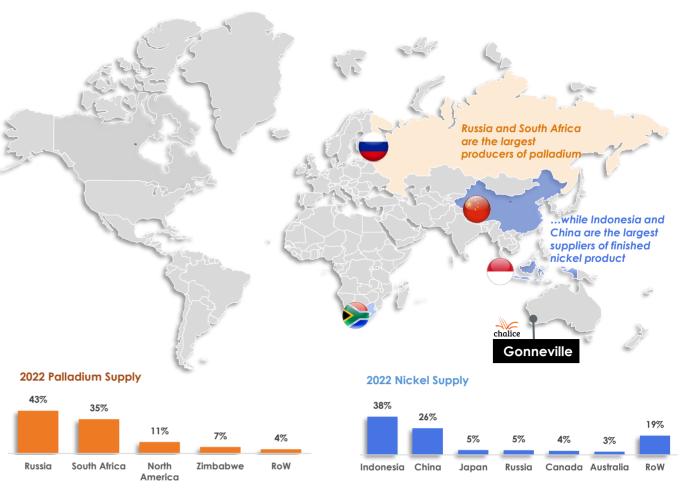
The western world is **extremely reliant** on **Russian Palladium supply** (~43% of global supply)

Gonneville is located in one of the **world's most stable and friendly mining jurisdictions** with a commitment to sustainable development

The Australian Government has committed >\$1 billion to accelerate strategically significant projects and strengthen internal critical mineral security and supply chains<sup>1</sup>

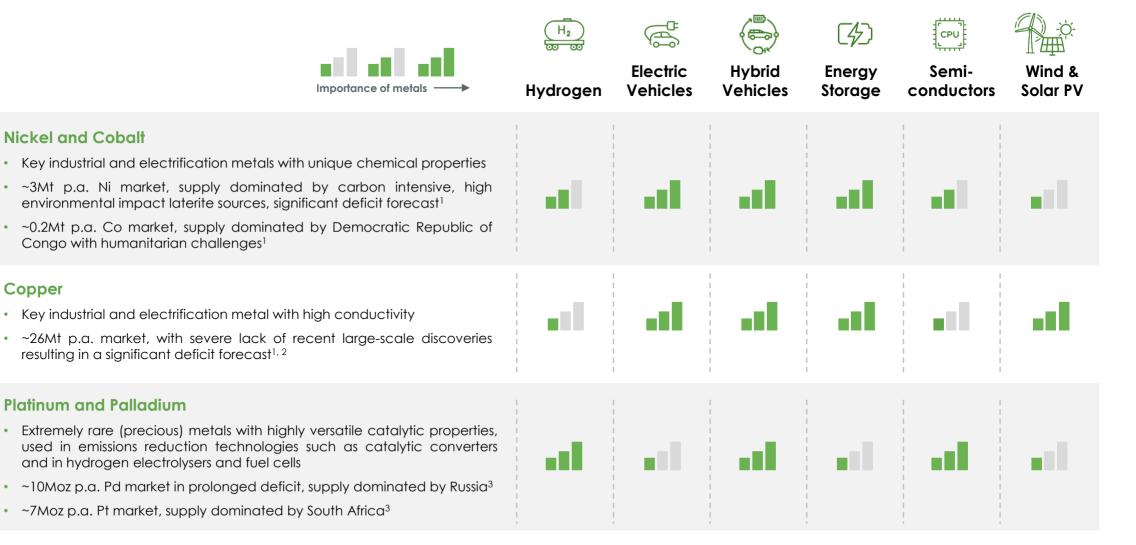
Strategic partnering process for Gonneville underway<sup>2</sup>, buoyed by the US Inflation Reduction Act (IRA)

#### Global Palladium and Nickel Primary Supply Market Share (2022)<sup>3</sup>



Source: 1. '2023-2030 Critical Minerals Strategy' Department of Industry, Science, Energy and Resources, Australian Government, June 2023 2. Discussions with potential partners are preliminary in nature, a formal partnering process is underway 3. AME as at 10 May 2023, Market research.

# The need to **decarbonise the global economy** will underpin long-term demand for the green metals at Gonneville



Source: 1. IEA "The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions" March 2022;

2. S&P Global, CBS Reports, Jan 2023;

Ν

Pt

Pd

3. Johnson Matthey, 'PGM market report', May 2023

## Over the last 20 years, well before decarbonisation demand levers have emerged, nickel, copper and palladium have escalated in real terms

Nickel, copper and palladium prices have increased at an avg of 3-9% CAGR\* in real terms over the last 20 years, reflecting the scarcity of economic deposits, decreasing discovery rates and operational challenges in mining deeper





LBMA Platinum Price (US\$/oz, real 2023 terms)<sup>1</sup>



\*Compound Annual Growth Rate calculated in real terms from 2003 to 2023

Source: Bloomberg, Note: 1. Monthly average prices adjusted to 2023 real terms using US Core Inflation.

Chalice is committed to strong environmental stewardship and has a unique opportunity at Gonneville to demonstrate this





#### Strong environmental stewardship

- The Gonneville Project is located on Chalice-owned farmland, which has been subject to extensive aaricultural activities
- The Project Area does not extend into the Julimar State Forest, located to the north of Gonneville



#### Greenhouse aas emissions and climate change

- Gonneville is positioned to be one of the lowest carbon sources of nickel for the lithium-ion batterv industry
- A low carbon intensity production of MHP forecast  $(\sim 10-12 \text{ tCO}_2 \text{ Eg} / \text{tNiEg})$  compared to nickel laterite mines (~30-60  $tCO_2$  Eq / tNiEq) making a strong case for a green premium on Gonneville products



#### Leadina environmental management

- Comprehensive baseline environmental surveys across 6,000ha; covering flora, fauna, dieback
- Baseline water studies underway; Chalice recognises water is a shared resource
- Low impact exploration methods used and no mechanised clearing in vegetated areas

**Gonneville Project Biodiversity Goal** 

To ensure science-based **no net loss** of species or habitat diversity as a result of our operations

#### Delivering the Biodiversity Strategy and offsets

On-the-around restoration work has begun to support fauna habitats and connect remnant areas of vegetation regionally



### Connectivity

Establish ecological corridors

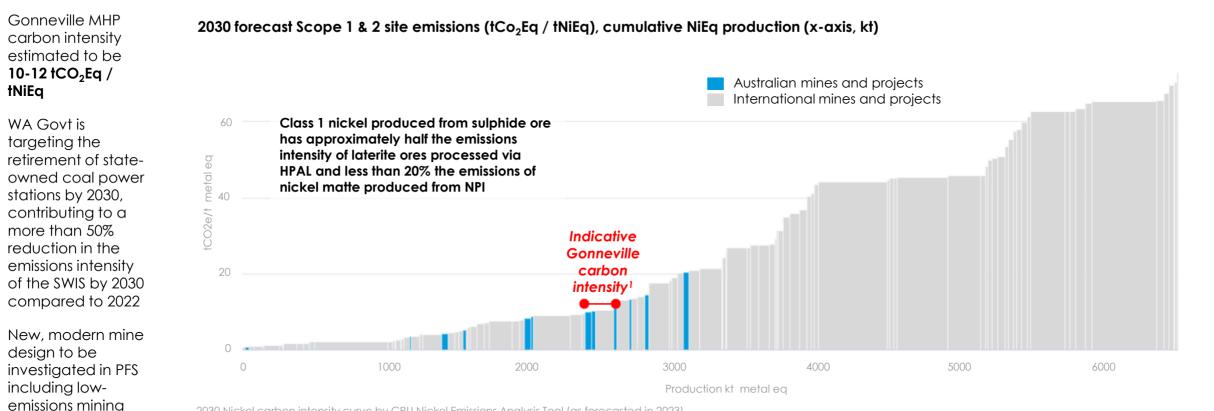
#### Restoration

Implement restoration initiatives that address habitat fragmentation

#### Regeneration

Improve carbon sequestration

Gonneville is positioned to be one of the **lowest carbon intensity nickel projects globally**, due to its location, scale and sulphide mineralogy



2030 Nickel carbon intensity curve by CRU Nickel Emissions Analysis Tool (as forecasted in 2023). 2030 Gonneville carbon intensity indication by Perspektiv (as forecasted in 2023). <sup>1</sup>Does not indicate Gonneville's expected nickel production.

Gonneville's scope 1 & 2 emission categories

fleet and tailings

carbon capture



Beneficiation







Refinement



## The Gonneville Project has the potential to deliver **significant benefits for the local community and wider region**



Chalice has **engaged early**, **actively and transparently** to build respectful and collaborative relationships with stakeholders



**Distribution of information to our host communities** – Regular Community Newsletter, local advertising, information sheets and meetings





Chalice and our service providers have contributed ~**\$8.2 million** to the local communities surrounding Gonneville since the discovery (FY21-23)

**Dedicated Chalice Office –** A community hub for questions and information and an opportunity to engage direct with our team



Prioritised local employment with up to ~22% of our workforce locally based since the Gonneville discovery



**Establishment of Chalice Mining Community Fund** – agreement signed with Shire of Toodyay in August 2023 to deliver significant long-term benefits

Local Voices Community Survey, a series of independent surveys to understand the priorities of the community. Results from the first survey received, providing an important input for future decision making and engagement Gonneville could deliver significant **jobs**, **skills and economic diversification** to the Wheatbelt region of WA<sup>1</sup>



Major, long-term economic contribution to WA – ~\$18 billion forecast contribution to gross state product, including royalties and direct economic contributions to the region



Potential to create hundreds of new jobs for the Wheatbelt and outer Perth region – 1,200 jobs during peak construction and 500 jobs in operations forecast (15Mtpa case)



Attractive semi-rural setting lifestyle or Drive-in-Drive-Out commute, with increased real wages contributing directly to the regional economy

Chalice is building **collaborative relationships of mutual benefit** with Whadjuk and Yued Traditional Owners

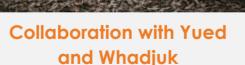


#### Actively engaging and working together to protect cultural heritage and environmental values



## Our Commitment to Whadjuk and Yued Traditional Owners

Traditional Owners have unique rights and interests to those of other stakeholders. Chalice recognises their rights and respects their obligation to maintain culture, tradition and customs



Whadjuk and Yued have started a program of cultural heritage surveys and monitoring for the Gonneville Project. Over **70 Traditional Owners have participated in this work** since 2021





### Heritage Agreements

Whadjuk, Yued and Chalice established heritage agreements in 2018 that set out how we work together to protect and manage cultural heritage

#### South-West Settlement Agreement

The Whadjuk and Yued people are the Traditional Owners of the lands of the Julimar region, which is subject to two Indigenous land use agreements with the State of Western Australia

#### RESOURCE

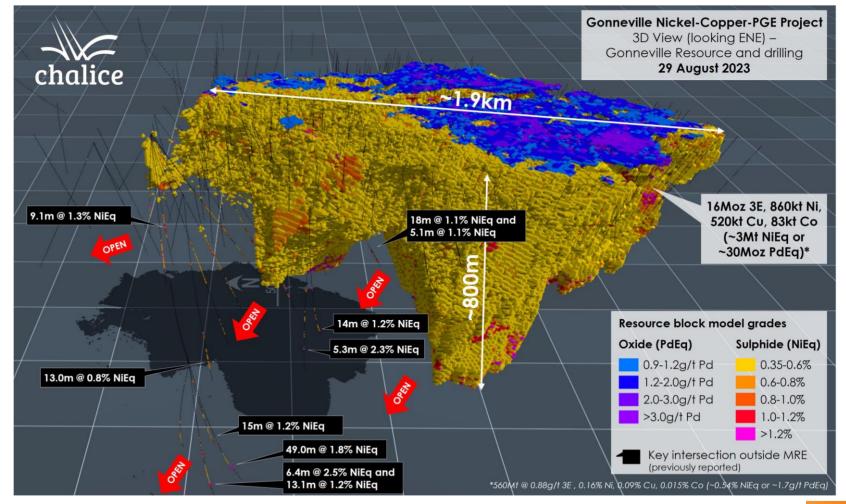
## The rare, tier-1 scale Gonneville Resource has high-grade optionality and compelling growth potential



### Mineral Resource Estimate<sup>1</sup>:

- 560Mt @ 0.88g/t 3E, 0.16% Ni, 0.09% Cu, 0.015% Co (~0.54% NiEq or ~1.7g/t PdEq)
- 16Moz 3E, 860kt Ni, 520kt Cu and 83kt Co (~3.0Mt NiEq or ~30Moz PdEq) contained
- Located on Chaliceowned farmland
- Resource is defined to depth of ~800m, remains
   open at depth
- Wide-spaced step-out drilling continuing





#### MINING

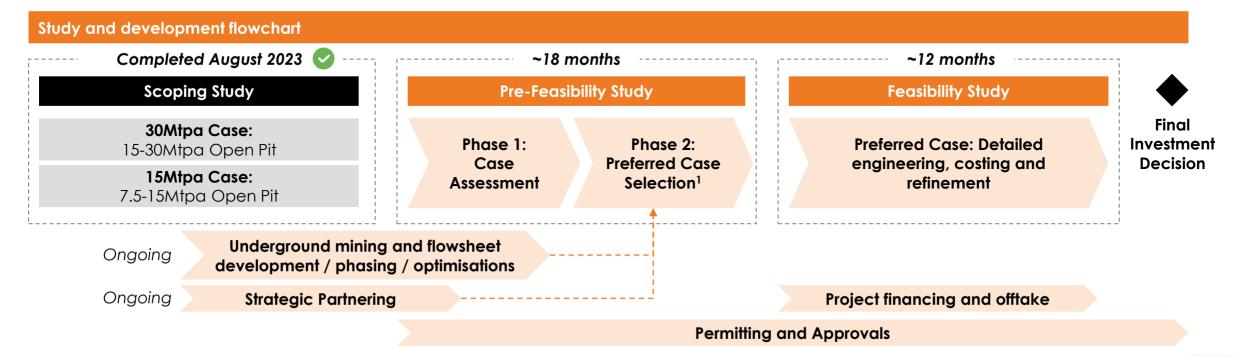
## Given the **significant development optionality** of the Resource and price uncertainty, two open-pit development cases are scoped



#### Two open-pit development concepts will be progressed into the next study phase (the Pre-Feasibility Study):

- 15Mtpa Case: Open-pit mining, with 2Mtpa oxide processing throughput for 4 years in parallel to a first stage sulphide development with 7.5Mtpa throughput for 6 years, followed by second stage sulphide expansion to 15Mtpa throughput for a further 13 years
- **30Mtpa Case:** Open-pit mining, with 2Mtpa oxide processing throughput for 4 years in parallel to a first stage sulphide development with 15Mtpa throughput for 6 years, followed by second stage sulphide expansion to 30Mtpa throughput for a further 12 years

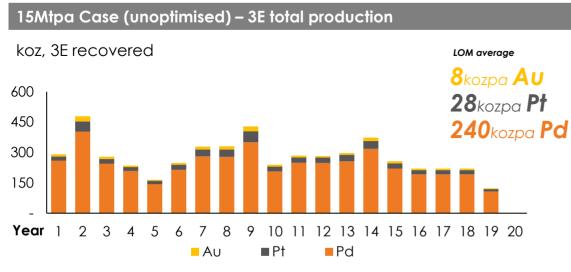
In addition, given known high-grade mineralised zones well beyond the pit limits, Chalice is continuing step-out drilling and scoping level study work on **potential early underground mining options and flowsheet optimisations** 



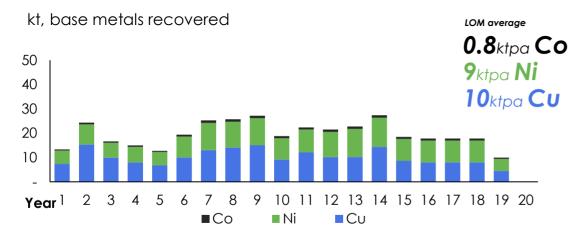
#### PROCESSING

# Study models a tier-1 production profile over 18-19 years: ~280-470kozpa 3E PGE, 9-16ktpa Ni, 10-16ktpa Cu and 0.8-1.4ktpa Co

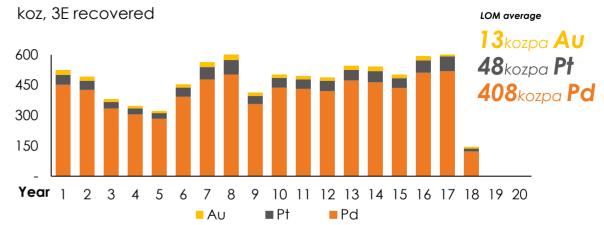




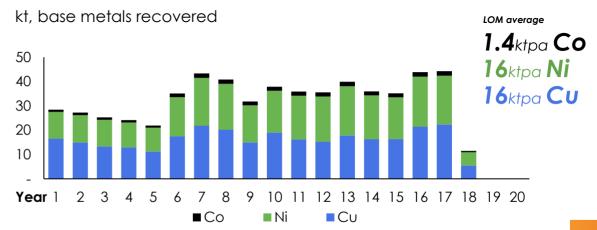
### 15Mtpa Case (unoptimised) – Base metals total production



### 30Mtpa Case (unoptimised) – 3E total production



#### 30Mtpa Case (unoptimised) – Base metals total production



Note: LOM average production per commodity taken as the weighted average over the years of operations, excluding partial years.

#### MARKETING

### Offtake terms are expected to be excellent given high-grade of products, low impurities and IRA-compliant source

### **Copper-PGE-Au** Concentrate

- Hiah value concentrate with nealigible impurities ~21% Cu, 100-150a/t 3E
- >6 international copper smelter customers
- Excellent payabilities and low TC-RCs:
  - TC: U\$\$80/t conc
  - Cu: 96% of LME RC: US\$176/t
  - Pd: 96% of LME RC: US\$25/oz
  - Pt: 92% of LME RC: US\$25/oz
  - Au: 97% of LME RC: US\$5/oz

### **Nickel-Cobalt Mixed** Hydroxide Precipitate (MHP)

- High quality lithium-ion battery pre-cursor (PCAM) product -45% Ni, ~4% Co significantly higher grade than typical MHP product from laterite operations
- Verv low Zn and **Mn** impurities
- Direct pathway to lithium-ion value chain and low CO<sub>2</sub> footprint (no smelting)

Ni

Co

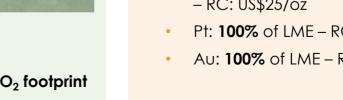
Excellent payabilities expected due to high grade, scarcity and highly desirable IRAcompliant product – 90% of LME (Ni and Co)

#### PGE-Au doré



- Industry standard precious metals product
  - Excellent payabilities and low TC-RCs:
    - Pd: 100% of IMF - RC: US\$25/oz
    - Pt: 100% of LME RC: US\$25/oz
    - Au: 100% of LME RC: US\$5/oz





#### There is a strong case for a future effective western or green premium on products (through either longer-term offtake, higher realised pricing or lower treatment/refining charges) relative to other sources

Note: Early-stage discussions with potential customers and indicative terms provided have formed the basis of the offtake assumptions for the concentrate. The indicative payability terms quoted by parties were uniformly high and given the low deleterious elements within the concentrate specification, no penalties are envisaged. No western or green premium has been assumed in the Study, however given the Project's location and forecast sustainability metrics, Chalice believes there to be reasonable grounds to consider there to be the potential for effective price premiums from offtakers in the future.



#### **INFRASTRUCTURE**

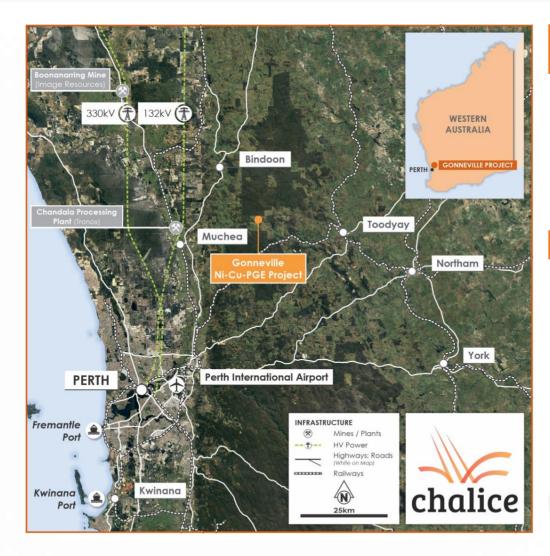
The proximity to Perth allows direct access to **major highways, rail, power and port infrastructure** and a highly skilled local workforce



Western Australia consistently ranked as the premier mining jurisdiction in the world

The proximity to Perth provides access to a **large, highly skilled local workforce** with the potential to operate a **local and drive-in-driveout** workforce, attract top tier talent and achieve a highly competitive cost profile

Proximal to **excellent infrastructure** – sealed roads / highway, rail, deep water port, highvoltage power and telecommunications



## Ranking of jurisdiction attractiveness for mining investment (Fraser Institute, 2022)



#### **Recent commentary**

#### WA Mines and Petroleum Minister Hon Bill Johnston – 24 April 2023

"Creating and supporting jobs is one of the Government's top priorities, so it's great to see there is now more employment in the resources sector than ever before. Investment in the sector and project construction will continue to deliver benefits to local communities and underpin economic growth in regional WA for years to come."

#### Federal Minister for Resources and Northern Australia Hon Madeleine King – 6 March 2023

"[Australia's] Platinum group element resources – used in hybrid cars- increased 131 per cent with the release of Chalice Mining's maiden resource for the Julimar project in Western Australia, **the most significant palladium-platinum discovery of the last 20 years anywhere in the world**."

#### **INFRASTRUCTURE**

The Project will **benefit from existing infrastructure**, and new potential **common use water / power infrastructure** is being investigated





- ~132kV connection to South West Interconnected System grid (Western Power) ~25km from Project
- Project to benefit from gradual decarbonisation of SWIS electricity grid
- Power supply options to be co-designed with Western Power during the next study phase



- Several potential saline water sources within ~70km identified
- No degradation in process performance in preliminary testwork from use of saline water
- Seawater or treated wastewater supply options to be co-designed with Water Corporation
- Potential for common use and significant regional benefits



- ~110km to Port of Fremantle, by road or rail (both under consideration)
- Minor upgrades only of local roads envisaged
- Products containerised and shipped to customers in Asia potential for local customers in future



- Construction workforce of ~1,200 FTE, assumed to be largely drive-in, drive-out (DIDO)
- Majority of operations workforce of ~500 FTE to be based locally no permanent camp/village
- No fly-in, fly-out (FIFO) requirements, a significant advantage relative to other operations

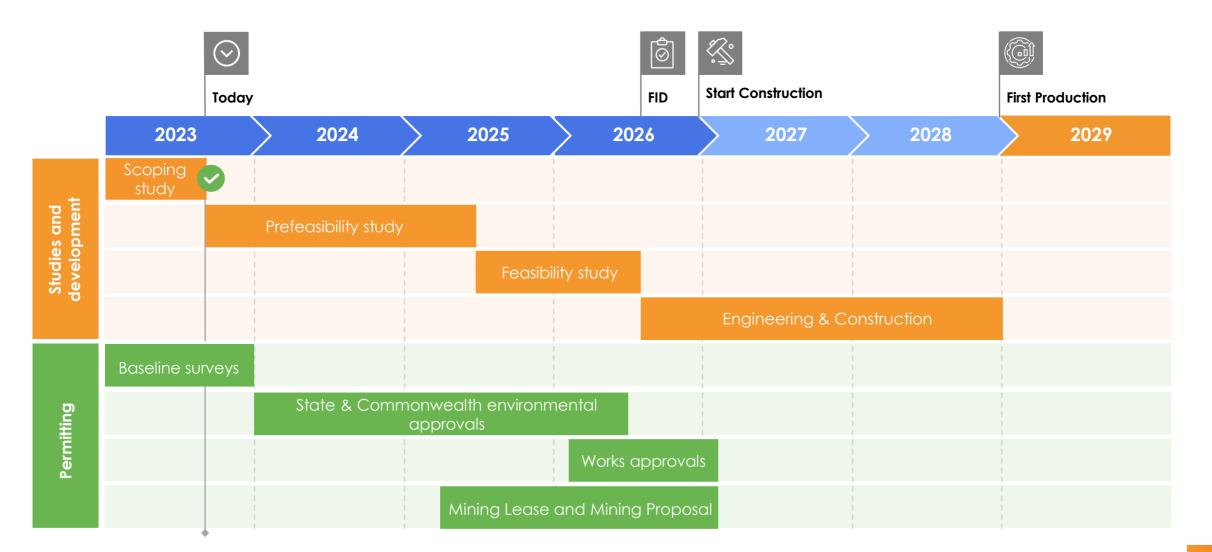


- Downstream valley-fill tailings storage, with potential for dry-stacking to be investigated
- Design to be compliant with Global Industry Standard on Tailings Management (GISTM)
- Standard facilities with large amount of services to be utilised in region or from Perth

#### **SCHEDULE**

Targeted project development schedule outlines a Final Investment Decision in 2026 and **first production in 2029** 





#### PERMITTING

The Gonneville Mine proposal will require State and Commonwealth assessment, with opportunities for community and stakeholder input



#### Environmental factors and studies Permitting process Baseline surveys including targeted surveys for threatened Flora and and priority flora species and ecological communities veaetation commenced in 2020 Baseline surveys of fauna habitat and species, including **Terrestrial** taraeted surveys for threatened and priority species such fauna as Black Cockatoo and Chuditch - commenced in 2020 chalice Terrestrial Characterisation and assessment of potential impacts to 5 environmental the quality of soil in the development area Stakeholder quality engagement and community Surface and groundwater monitoring to understand the consultation led hydrological regime in the development area. Surface Inland waters by Chalice and aroundwater monitoring sites established, monitoring commenced in 2022 Monitoring of ambient air quality and assessment of Air quality potential impact of emissions on air auglity Assessment of emissions from mining operations along with Greenhouse abatement and offset opportunities to reach net zero by gases 2050 Includes amenity (e.g. visual and noise), heritage and Social surroundinas recreation.



DCCEEW: Department of Climate Change, Energy, the Environment, and Water 2.

EPA: WA Environmental Protection Authority

#### PERMITTING

The ~40Mtpa Boddington open-pit mine is located in a **similar topography and is within a comparable distance from Perth** 





A large operating mine in an environmentally sensitive area **K € €** 

Successful expansion approvals and environmental mgmt

The Boddington Gold Mine is a large scale open-pit gold and copper mine operated by Newmont (NYSE: NEM)

16km from Boddington town, adjoining and within the Dwellingup State Forest

1983-2001: Operated as a bauxite mine

**2001**: The bauxite mine closed. Permission granted to permit open-pit gold mining

## Newmont.

**1985 – 2012**: A series of amendments were approved by the Environmental Protection Authority (EPA) to expand the existing operations to ~40Mtpa processing throughput rate

**2012**: ~618ha of vegetation clearing was approved in Dwellingup State Forest for pit expansion, waste rock dump expansion, supporting stockpiles and infrastructure

As part of the vegetation clearing approval, an **offset package** was developed to ensure no net loss of environmental value of the state forest (**an example for Gonneville**)

The carbon forestry carbon offset project launched in 2009 is expected to capture about **300,000 tones of carbon over a 30-50 year period** 



Significant social and economic contributions

Estimated that Boddington supported ~**5,311** jobs in 2019

Includes ~1,221 people directly employed by the mine



Highly competitive cost profile with LOM avg cash costs of US\$160-230/oz 3E after base metal by-product credits and short ~2yr payback



	15Mtpa Case	30Mtpa Case
Pre-production CapEx estimate	A\$	M
Sulphide Flotation Plant	450	750
Mining	40	40
Non-Process Infrastructure	370	410
Subtotal	860	1,200
Leach Plant	150	200
Hydrometallurgical Plant	190	280
Direct Total	1,200	1,680
Construction indirect costs	200	310
Contingency	180	290
Total FID to Production CapEx	1,600	2,300

		15Mtpa Case	30Mtpa Case				
OpEx estimate		LOM avg					
Open pit mining	A\$/t mined	4.3	3.8				
Processing	A\$/t proc	27.8	27.5				
G&A	A\$/t proc	1.6	1.2				
Mine site cash costs	A\$/t proc	41.4	39.3				
Transport & Selling	A\$/t proc	0.8	0.7				
Royalties	A\$/t proc	2.7	2.4				
Total OpEx & Royalties <sup>1</sup>	A\$/t proc	44.9	42.4				

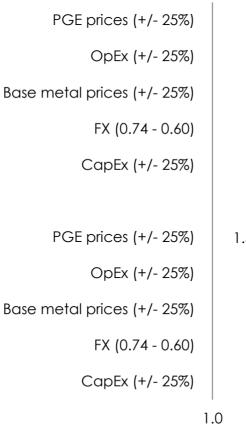
	15Mtpa Case	30Mtpa Case
Modelled costs	LOM avg	US\$/oz 3E
Mine site cash costs	1,300	1,400
Transport & Selling costs	63	61
By-product credits (Ni, Cu, Co)	(1,200)	(1,300)
Total Cash Costs	160	230
All-in Sustaining Costs (AISC)	370	460

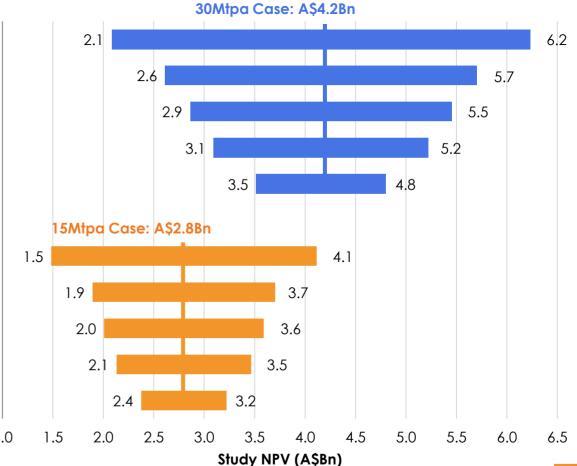
## Gonneville's modelled **cash flows are robust** under a range of macroeconomic scenarios



Commodity Price Assumptions (AME forecast, avg LOM, 2023 real terms)								
Nickel	US\$/t	24,000						
Copper	US\$/t	11,000						
Cobalt	US\$/t	46,000						
Palladium	US\$/oz	2,000						
Platinum	US\$/oz	1,000						
Gold	US\$/oz	1,900						
Financial Assumptions								
Exchange rate	A\$/US\$	0.67						
WACC	%	6.5						

#### Study NPV Sensitivity Analysis (A\$Bn, post-tax, 6.5% WACC)







Domain	Cut-off Grade	Category	Mass	Grade								Contained Metal							
			(Mł)	Pd (g/t)	Pt (g/t)	Au (g/t)	Ni (%)	Cu (%)	Co (%)	NiEq (%)	PdEq (g/t)	Pd (Moz)	Pt (Moz)	Au (Moz)	Ni (kt)	Cu (kt)	Co (kt)	NiEq (kt)	PdEq (Moz)
		Measured	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oxide		Indicated	7.3	1.9	-	0.06	-	-	-	-	2.0	0.45	-	0.01	-	-	-	-	0.47
Oxide	0.9g/t Pd	Inferred	0.2	1.9	-	0.07	-	-	-	-	2.0	0.01	-	0.00	-	-	-	-	0.02
		Subtotal	7.5	1.9	-	0.06	-	-	-	-	2.0	0.47	-	0.01	-	-	-	-	0.49
		Measured	0.38	0.82	0.17	0.03	0.19	0.17	0.020	0.70	2.2	0.01	-	-	0.72	0.63	0.07	2.7	0.03
Sulphide	0.35% NiEq	Indicated	14	0.66	0.15	0.03	0.16	0.10	0.018	0.54	1.7	0.30	0.07	0.01	22	14	2.5	77	0.77
(Transitional)	0.00/014129	Inferred	0.27	0.60	0.16	0.03	0.15	0.12	0.015	0.54	1.7	0.01	-	-	0.42	0.32	0.04	1.5	0.01
		Subtotal	15	0.66	0.15	0.03	0.16	0.10	0.018	0.55	1.7	0.31	0.07	0.01	23	15	2.6	81	0.81
		Measured	2.3	1.1	0.26	0.03	0.24	0.18	0.019	0.87	2.7	0.08	0.02	-	5.4	4.2	0.43	20	0.20
Sulphide (Fresh)	0.35% NiEq	Indicated	280	0.67	0.15	0.03	0.16	0.09	0.015	0.53	1.7	6.0	1.3	0.23	440	260	43	1500	15
Sublide (Hesh)	0.0076 NILY	Inferred	200	0.67	0.15	0.03	0.15	0.09	0.015	0.53	1.6	4.4	0.96	0.16	310	180	29	1100	11
		Subtotal	480	0.67	0.15	0.03	0.16	0.09	0.015	0.53	1.7	10	2.3	0.39	750	440	72	2600	26
		Measured	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underground	0.40% NiEq	Indicated	1.7	0.75	0.21	0.06	0.14	0.08	0.013	0.55	1.7	0.04	0.01	-	2.4	1.4	0.23	9.5	0.10
ondergroond	0.40% NILQ	Inferred	52	0.78	0.17	0.03	0.16	0.11	0.015	0.59	1.8	1.3	0.28	0.05	83	56	7.7	310	3.1
		Subtotal	54	0.78	0.17	0.03	0.16	0.11	0.015	0.59	1.8	1.3	0.29	0.06	86	57	7.9	320	3.2
		Measured	2.7	1.1	0.24	0.03	0.23	0.18	0.019	0.85	2.6	0.09	0.02	-	6.2	4.9	0.51	23	0.23
All		Indicated	300	0.70	0.15	0.03	0.16	0.09	0.015	0.54	1.7	6.8	1.4	0.26	460	280	45	1600	16
		Inferred	250	0.70	0.15	0.03	0.15	0.09	0.015	0.54	1.7	5.7	1.2	0.22	390	230	37	1400	14
		Total	560	0.70	0.15	0.03	0.16	0.09	0.015	0.54	1.7	13	2.7	0.48	860	520	83	3000	30

Note some numerical differences may occur due to rounding to 2 significant figures.

PdEq oxide (Palladium Equivalent g/t) = Pd (g/t) + 1.27x Au (g/t)

NiEq sulphide (Nickel Equivalent %) = Ni (%) + 0.32x Pd(g/t) + 0.21x Pt(g/t) + 0.38x Au(g/t) + 0.83x Cu(%) + 3.00x Co(%)

PdEq sulphide (Palladium Equivalent g/t) = Pd (g/t) + 0.67x Pt(g/t) + 1.17 x Au(g/t) + 3.11x Ni(%) + 2.57x Cu(%) + 9.33x Co(%)

Underground resources are outside the pit above a 0.40% NiEq cut off grade based on sub-level caving mining method

Includes drill holes drilled up to and including 11 December 2022.

# Higher-grade sulphide component of Gonneville Resource (in pit and underground), 28 March 2023



Domain	Cut-off Grade	Category	tegory Mass Grade Contained Metal																
			(Mt)	Pd (g/t)	Pt (g/t)	Au (g/t)	Ni (%)	Cu (%)	Co (%)	NiEq (%)	PdEq (g/t)	Pd (Moz)	Pt (Moz)	Au (Moz)	Ni (kt)	Cu (kt)	Co (kt)	NiEq (kt)	PdEq (Moz)
		Measured	0.17	1.2	0.24	0.05	0.24	0.25	0.023	0.97	3.0	0.01	-	-	0.41	0.43	0.04	1.7	0.02
High-grade Sulphide	0.6% NiEq	Indicated	3.4	1.1	0.21	0.04	0.20	0.16	0.020	0.79	2.5	0.12	0.02	-	6.6	5.3	0.69	27	0.27
(Transitional)	0.0% NIEQ	Inferred	0.07	0.84	0.18	0.03	0.22	0.26	0.019	0.81	2.5	-	-	-	0.16	0.18	0.01	0.57	0.01
		Subtotal	3.6	1.1	0.21	0.04	0.20	0.16	0.021	0.80	2.5	0.12	0.02	-	7.2	5.9	0.74	29	0.29
	0.6% NiEq	Measured	0.88	2.2	0.47	0.05	0.39	0.35	0.027	1.6	4.9	0.06	0.01	-	3.4	3.1	0.24	14	0.14
High-grade Sulphide		Indicated	58	1.2	0.26	0.06	0.20	0.18	0.018	0.87	2.7	2.3	0.48	0.11	120	100	10	500	5.1
(Fresh)		Inferred	40	1.3	0.26	0.06	0.19	0.18	0.017	0.87	2.7	1.6	0.33	0.08	75	73	6.6	340	3.5
		Subtotal	98	1.2	0.26	0.06	0.20	0.18	0.017	0.88	2.7	3.9	0.82	0.19	200	180	17	860	8.7
		Measured	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Underground	>0.6% NiEq	Indicated	0.4	1.2	0.36	0.12	0.14	0.11	0.014	0.78	2.5	0.02	-	-	0.61	0.46	0.06	3.3	0.03
underground	20.0% INIEQ	Inferred	13	1.4	0.27	0.06	0.20	0.20	0.017	0.93	2.9	0.58	0.12	0.03	26	26	2.2	120	1.2
		Subtotal	14	1.4	0.28	0.06	0.20	0.19	0.017	0.93	2.9	0.60	0.12	0.03	27	26	2.3	130	1.3
		Measured	1.1	2.0	0.43	0.05	0.37	0.33	0.026	1.5	4.6	0.07	0.01	-	3.8	3.5	0.28	15	0.15
All		Indicated	62	1.2	0.25	0.06	0.20	0.18	0.018	0.87	2.7	2.4	0.50	0.11	130	110	11	530	5.4
All		Inferred	53	1.3	0.26	0.06	0.19	0.19	0.017	0.89	2.8	2.2	0.45	0.11	100	99	8.8	470	4.7
		Total	120	1.3	0.26	0.06	0.20	0.18	0.017	0.88	2.7	4.7	0.97	0.22	230	210	20	1000	10

Note some numerical differences may occur due to rounding to 2 significant figures.

This higher-grade component is contained within the reported global Mineral Resource.

PdEq oxide (Palladium Equivalent g/t) = Pd (g/t) + 1.27x Au (g/t)

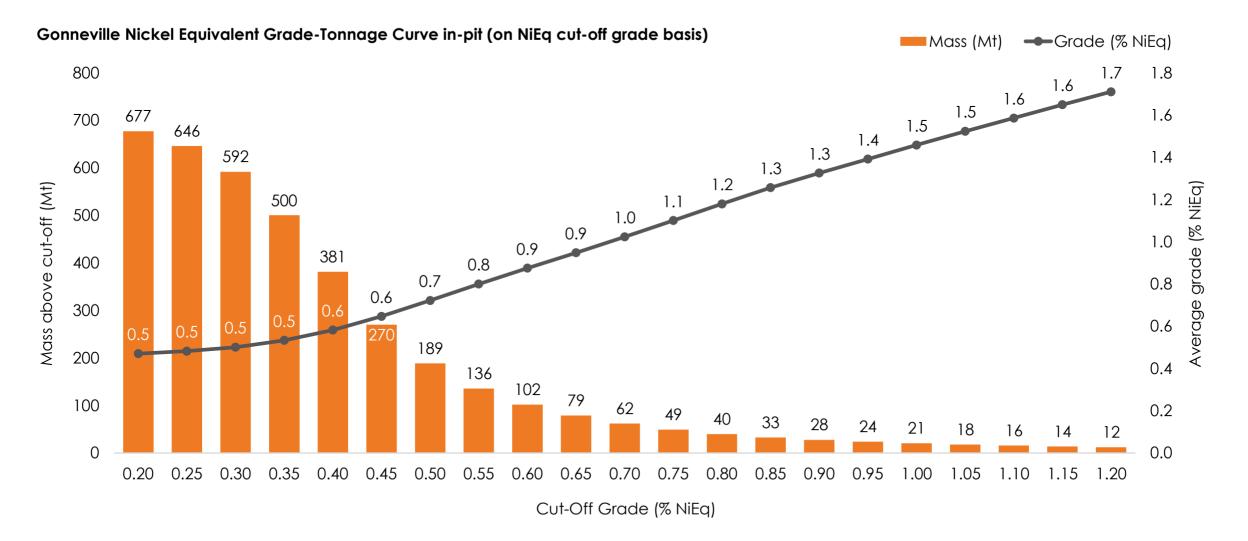
NiEq sulphide (Nickel Equivalent %) = Ni (%) + 0.32x Pd(g/t) + 0.21x Pt(g/t) + 0.38x Au(g/t) + 0.83x Cu(%) + 3.00x Co(%)

PdEq sulphide (Palladium Equivalent g/t) = Pd (g/t) + 0.67x Pt(g/t) + 1.17 x Au(g/t) + 3.11x Ni(%) + 2.57x Cu(%) + 9.33x Co(%)

Underground resources are outside the pit above a 0.40% NiEq cut off grade based on sub-level caving mining method

Includes drill holes drilled up to and including 11 December 2022.

Flat grade-tonnage curve highlights the significant higher-grade component – providing the project with **development optionality** 





## Metal equivalent assumptions of Gonneville Resource, 28 March 2023



Based on metallurgical testwork completed to date for the sulphide domain, it is the Company's opinion that all the quoted elements included in metal equivalent calculations (palladium, platinum, gold, nickel, copper and cobalt) have a reasonable potential of being recovered and sold.

Only limited samples have been collected from the transitional zone due to its relatively small volume. Therefore, the metallurgical recovery of all metals in this domain are unknown. However, given the relatively small proportion of the transition zone in the Mineral Resource, the impact on the metal equivalent calculation is not considered to be material.

Metal equivalents for the transitional and sulphide domains are calculated according to the formula below:

- NiEq%= Ni (%) + 0.32x Pd(g/t) + 0.21x Pt(g/t) + 0.38x Au(g/t) + 0.83x Cu(%) + 3.00x Co(%);
- PdEq(g/t) = Pd (g/t) + 0.67x Pt(g/t) + 1.17x Au(g/t) + 3.11x Ni(%) + 2.57x Cu(%) + 9.33x Co(%)

Metal recoveries used in the metal equivalent calculations are based on rounded average Resource grades for the sulphide domain (>0.35% NiEq cut-off):

• Pd – 60%, Pt – 60%, Au – 70%, Ni – 45%, Cu – 85%, Co – 45%.

Metal prices used are consistent with those used in the Whittle pit optimisation (based on long term consensus analyst estimates):

• US\$1,800/oz Pd, US\$1,200/oz Pt, US\$1,800/oz Au, US\$24,000/t Ni, US\$10,500/t Cu and US\$72,000/t Co.

Initial metallurgical testwork indicates that only palladium and gold are likely to be recovered in the oxide domain, therefore no NiEq grade has been quoted for the oxide. The PdEq grade for the oxide has been calculated using the formula:

PdEq oxide (g/t) = Pd (g/t) + 1.27 x Au (g/t).

• Metal recoveries based on limited metallurgical test work completed to date:

– Pd – 75%, A∪ – 90%.

- Metal prices used are consistent with those used in the pit optimisation:
  - US\$1,800/oz Pd, US\$1,800/oz Au

For additional information on the assumptions used in the calculation of metal equivalents, refer to the ASX announcement titled "Gonneville Resource increases by approx. 50% to 3Mt NiEq", dated 28 March 2023.





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