

## ASX: ADC

ACN 654 049 699

### CAPITAL STRUCTURE

Share Price: A\$0.07\*  
Cash: A\$4.0 M\*  
Debt: Nil  
Ordinary Shares: 72.3M  
Market Cap: A\$5.2M\*  
Enterprise Value: A\$1.2M\*  
Options: 47.7M  
\*as of 19 Apr 2024

### BOARD OF DIRECTORS & MANAGEMENT

Andrew Shearer  
Non-Executive Chair

Mark Saxon  
Executive Director

Tom Davidson  
Chief Executive Officer

Richard Boyce  
Non-Executive Director

Ivan Fairhall  
Non-Executive Director

COMPANY SECRETARY  
Andrew Draffin

### CONTACT

Level 6, 111 Collins St  
Melbourne VIC 3000

+61 03 8548 7880

info@acdcmetals.com.au  
www.acdcmetals.com.au

## Exceptional Scoping Study Results for Goschen Central Project.

- Study results highlight strong economics over a multi-decade operation at Goschen Central heavy mineral sand and rare earth element Project.
- Robust economics of integrated mining and downstream rare earth element (REE) processing validates the ACDC Metals Strategy, and demonstrates the unique value add of our proprietary processing technology.
- Significant upside opportunities exist by including finer heavy mineral fractions in the mineral resource, and resource expansion with recent extension drilling.
- Potential for further optimisation of the product suite from rare earth element processing plant.
- Testwork in progress for the next phase of development.

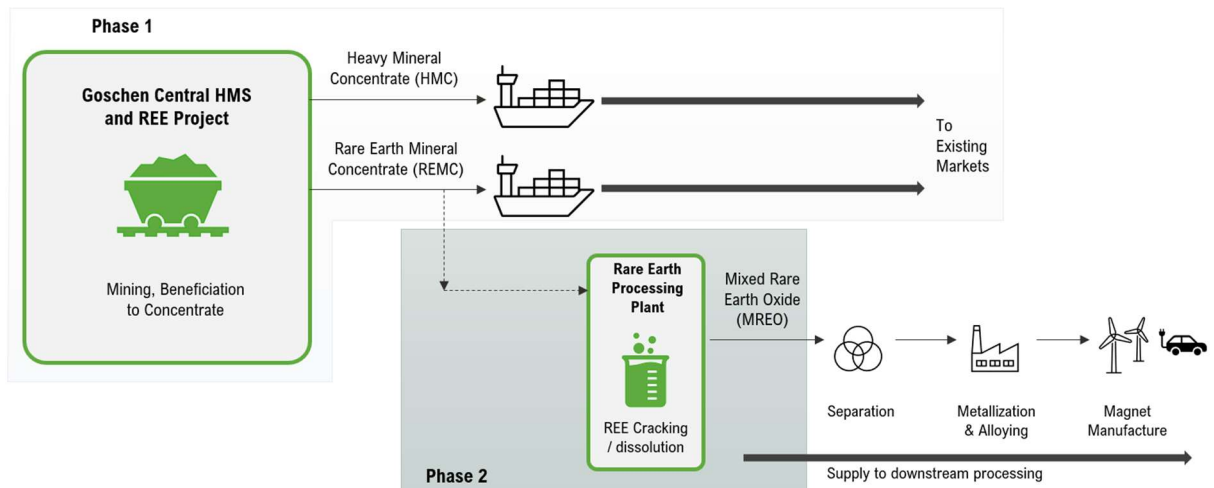


Figure 1 - ACDC Metals phased strategy. Phase 1 is a Traditional heavy mineral sand operation and Phase 2 is the production of Rare Earth Element product.

ACDC Metals Limited (**ASX: ADC**) (**ACDC Metals** or the **Company**) is pleased to announce the results of the “Goschen Central Scoping Study” (the “Study”) completed by independent engineering consulting firms Mineral Technologies Ltd and METS Engineering Group Ltd. The Goschen Central project provides compelling economics as a heavy mineral sand and rare earth producer as either a standalone heavy mineral sand plant (Phase 1) or when combined with the vertical integration with ACDC Metals’ proprietary Rare Earth Processing Plant Project (Phase 2). Phase 2 enables onshore downstream processing of REEs. The ADC board has unanimously recommended the project advance to the next phase of development.

### ACDC Metals CEO Tom Davidson commented:

*“The ACDC Metals team is very pleased with the results of the Scoping Study, a milestone that reflects a focused delivery in only 15 months from listing. Goschen Central is a generational-scale deposit that can deliver strong cashflows and still with plenty of upside remaining from further technical and exploration work.*

*The vertical integration using our proprietary technology to value-add the contained REEs is a first step in the downstream processing that delivers both attractive returns and a strategically important domestic source of critical metals.”*

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**Disclaimer and Cautionary Statement**

*The Scoping Study referred to in this announcement has been undertaken is a preliminary technical and economic study of the potential viability of the Goschen Central Project and vertical integration of the Rare earth processing plant. The Scoping Study outcomes, production target and forecast financial information referred to are based on low accuracy level technical and economic assessments that are insufficient to support the estimation of ore reserves. The Scoping Study has been completed to a level of accuracy of +/- 40% in line with a scoping study accuracy. While each of the modifying factors was considered and applied, there is no certainty of eventual conversion to Ore Reserves or that the production target itself will be realised. Further exploration and evaluation work and appropriate studies are required before ACDC Metals will be in a position to estimate any Ore reserves or to provide any assurance of an economic development case.*

*Of the Mineral Resources scheduled for extraction in the Scoping Study production plan, approximately 42% are classified as Indicated and 58% as Inferred during the 46-year evaluation period. 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 target itself will be realised.*

*The Mineral Resources underpinning the production target in the Scoping Study have been prepared by a competent person in accordance with the requirements of the JORC Code (2012). For full details of the Mineral Resource estimate, please refer the ASX announcement on 8 November 2023. The Scoping Study is based on the material assumptions outlined below. These include assumptions about the availability of funding. While ACDC Metals considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Scoping Study will be achieved.*

*To achieve the range of outcomes indicated in the Scoping Study, funding of in the order of A\$304M in phase 1 + A\$119M in phase 2 will likely be required. Investors should note that there is no certainty that ACDC Metals will be able to raise that amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of ACDC Metals shares. It is also possible that ACDC Metals could pursue other value realisation strategies such as a sale, partial sale or joint venture of the Goschen Central Project. This could materially reduce ACDC Metal's proportionate ownership of the Goschen Centrals Project. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study.*

*No Ore Reserve has been declared. This ASX release has been prepared in compliance with the current JORC Code (2012) and the ASX Listing Rules. All material assumptions, including sufficient progression of all JORC modifying factors, on which the production target and forecast financial information are based have been included in this ASX release.*

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A summary of the Study is provided below with additional details provided in this announcement. All financials are provided in Australian dollars unless stated otherwise.

## Study Highlights:

The Scoping Study is based on a two-phase strategy:

**Phase 1:** Traditional heavy mineral sand operation, including, mining, beneficiation and associated infrastructure, to produce a zircon-titania heavy mineral sand concentrate (HMC) and a monazite-xenotime rare earth mineral concentrate (REMC).

**Phase 2:** Hydrometallurgical operation at a separate location to extract rare earth elements from the REMC and produce a mixed rare earth oxide (MREO).

Key production and financial highlights are as follows:

- The Goschen Central processing plant is designed with a 6 million tonne per annum (Mtpa) nameplate capacity and a 46-year mine life:
- Average heavy mineral (HM) grade delivered to the beneficiation plant over the first 5 years is 2.4%, delivering an average production of:
  - 96,000 dry metric tonnes of HMC per annum
  - 5,900 dry metric tonnes of REMC per annum
  - The life of mine (LOM) mine plan utilizes 42% indicated resource (inferred 58%).
- Estimated capital cost for the Phase 1 heavy mineral sand operation, including associated infrastructure, totals \$304M, inclusive of 10% (\$29M) contingency.
- Estimated capital cost for Phase 2 rare earth processing plant including associated infrastructure totals \$103.5M, inclusive of 10% (\$12.6M) contingency, plus an additional \$15.5M of modifications to the Phase 1 plant. The Phase 2 plant has been designed with a nameplate capacity to treat 7,000 tonne per annum of monazite, and produce approximately 3,800 tonnes per annum of MREO.
- Payback for Phases 1 and 2 is 4.6 years from commencement of production.
- Phase 1 and 2 provides an Internal Rate of Return (IRR) of 26% (pre-tax).
- Phase 1 and 2 provides a NPV<sub>10</sub> of approximately A\$732M (pre-tax).
- Phase 2 results in an increase in EBITDA from \$74.2M in Phase 1 to \$125M per annum, and margin of 46%.

Further upside in the resource is anticipated, with positive results from extension drilling completed in 2024, and the inclusion of the finer mineral sand fraction +20 µm to -38µm in line with peer projects.

### **Project Overview**

Goschen Central is a heavy mineral sand and rare earth element project located in the Murray Basin of northwestern Victoria. The Goschen Central Project is held within EL5278, located approximately 50 km south-southwest of Swan Hill. The Goschen Central Project includes fine-grained sheet-style HMS mineralisation, interpreted to have been deposited in an off-shore environment. Fine grained, off-shore HM deposits in the Murray Basin are often referred to as WIM-style deposits.

WIM-style deposits have been long recognised as rich potential sources of zircon and titania products (rutile, ilmenite, leucoxene), however more recently have been acknowledged for their significant rare earth element content, held in the minerals monazite and xenotime.

The Scoping Study was based on a Mineral Resource Estimate (MRE) of 628Mt @ 1.9% Total Heavy Mineral (THM), comprising of 130Mt @2.0% THM as Indicated category and 498Mt @ 1.9% THM as Inferred category<sup>1</sup> and characterisation testwork conducted in Q2 2023.

In addition to zircon and titania, Goschen Central provides the opportunity to vertically integrate a heavy mineral sand mining operation with a rare earth processing plant (REPP) project, to unlock a significant uplift in value through the potential production of a mixed rare earth oxide (or equivalent).

**Phase 1** of the project designed by ACDC Metals describes construction of a long lived mine at Goschen Central, paired with a nearby mineral sand processing plant, that will provide two (2) saleable products being a HMC rich in zircon and titania, and an REMC rich in monazite and xenotime, both suitable for international or domestic markets.

**Phase 2** describes the construction of a rare earth processing plant (REPP) to process (“crack”) a monazite concentrate via a proprietary caustic crack process to produce a MREO. Phase 2 will result in three (3) saleable products from the Goschen Central project. The monazite mineral concentrate be transported to the REPP located in South Australia for hydrometallurgical processing. Phase 2 is scheduled to come online for Year 3 of the combined operation.

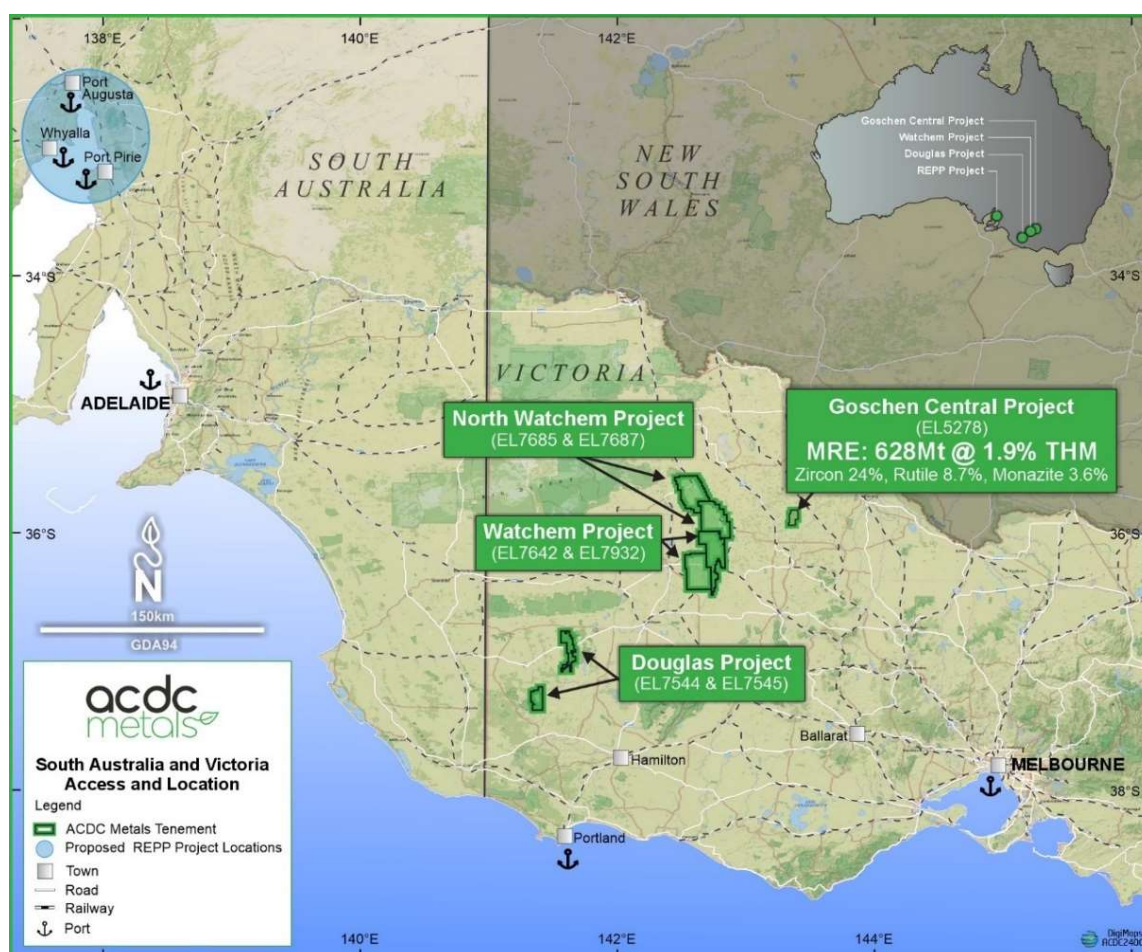


Figure 2 - ACDC Metals Project locations

<sup>1</sup> ACDC Metals – ASX Announcement 8 November 2023 – Goschen Central Project Maiden Mineral Resource.

### Geology and Mineralisation

Drilling conducted by CRA Exploration Pty Ltd (CRAE) in the 1980's first identified HM mineralisation at Goschen Central. Heavy mineral mineralisation at Goschen Central is of a fine-grained sheet geometry, interpreted to have been deposited in an off-shore environment. Fine grained, off-shore HM deposits in the Murray Basin are often referred to as WIM-style deposits.

Exploration at Goschen Central and elsewhere by CRAE in the late 1980s and early 1990s determined WIM-style deposits to be attractive exploration targets. Early drilling was widely spaced (1,000 m to 2,000 m), too wide to effectively identify high-grade, coarse-grained (>90 µm) strands but adequate to discover the broader and larger WIM-style deposits.

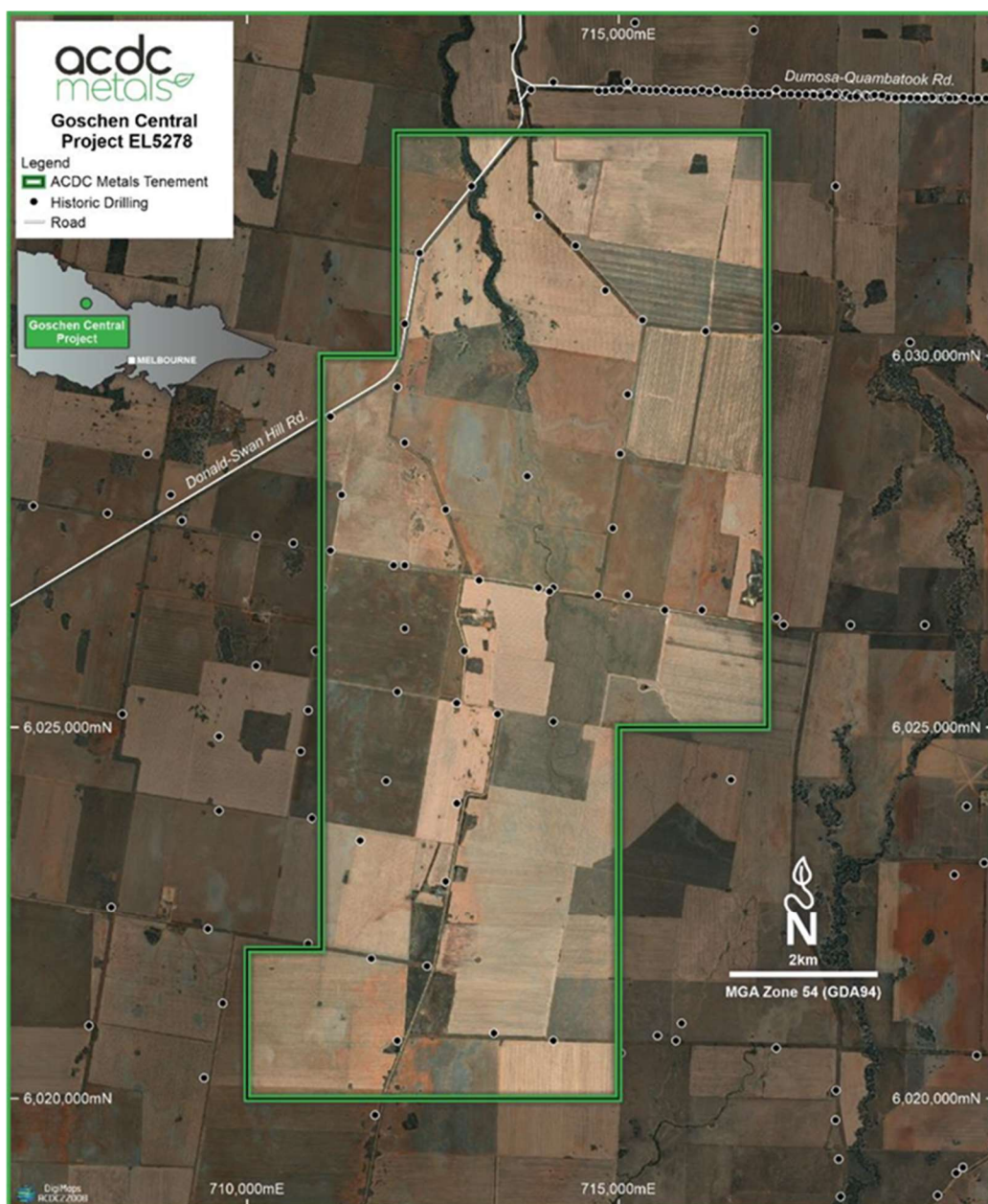


Figure 3 - EL5278 Tenement

CRAE carried out extensive exploration for HM in the Goschen Central Project area in 1998 when the company defined a large area of lobate WIM-style HM mineralisation within the south-west quadrant of the then EL4056. CRAE described the mineralogy of mineral sand concentrates using optical microscopy and grain counting.

No previous studies have been conducted to evaluate the economic viability of the project. Recently, ACDC Metals completed drilling campaigns in December 2022, February and March of 2023, for a total of 140 holes and over 6,500 metres.

### ***Mineral Resource Estimate***

Snowden Optiro has provided assistance to ACDC Metals for the calculation of a maiden Mineral Resource estimate for the Goschen Central heavy mineral sand deposit.

The 2023 Mineral Resource estimate used data from 190 holes (for a total of 8,774 m) drilled by CRA Exploration Pty Ltd (CRA), Providence and Gold Minerals Pty Ltd and ACDC Metals from 1984 to 2023. Data from holes drilled prior to 2022 were used solely for geological interpretation while data from the ACDC Metals' holes were used for both geological interpretation and estimation. The geological interpretation was based on 190 holes and the estimation was based on 140 holes (for a total of 6,911 m) drilled by ACDC Metals in 2022 and 2023. A total of 3,969 samples, taken over 8,774 m, have been analysed for total HM, slimes and oversize material. Mineral assemblage data includes the results of eight composite samples (from 20 drillholes totalling 335m) from ACDC Metals 2022 and 2023 drillholes that were analysed using QEMSCAN.

The historic drillholes and the 2022 ACDC Metals' drillholes are generally located along roads and are spaced at approximately 400 m (ACDC Metals) to 1,000 m (historic), with some infill sections at 300-400 m. The 2023 ACDC Metals' infill drillholes have generally been drilled on sections that are around 250 m apart and drillholes are generally spaced at approximately 250 m.

Sectional and three-dimensional (3D) wireframed interpretations of the mineralisation were completed using Datamine software. The mineralised wireframes were interpreted using a nominal cut-off grade of 1% total HM and higher-grade zones were interpreted using a nominal cut-off grade of 3% total HM.

The interpreted mineralised wireframes have a strike length of between 6.3 km (for the 3% wireframe) to 12.3 km (for the 1% wireframe) and range in width from 2.4 km (for the 3% wireframe) to 4.6 km (for the 1% wireframe). The mineralisation has a minimum thickness of 1.5 m, a maximum thickness of 27.4 m and an average thickness of 4.7 m for the 3% wireframe and 7.8 m for the 1% wireframe.

The mineral assemblage data has been estimated from QEMSCAN Mineral Abundance and XRF data provided by Bureau Veritas. This data included zircon, monazite, xenotime, rare earth oxides and titania minerals. The following definitions were used for the titania minerals:

- Rutile: >98% TiO<sub>2</sub>
- Leucoxene: 70 to 98% TiO<sub>2</sub>
- Ilmenite: 45 to 70% TiO<sub>2</sub>.

The resource model was constructed using a parent block size of 100 mE by 100 mN on 1 m benches; the parent blocks were allowed to sub-cell down to 25 mE by 25 mN by 0.25 mRL to more accurately represent the geometry and volumes of the mineralisation domains. Block grades for total HM, slimes and oversize were estimated into the parent blocks using ordinary kriging (OK) techniques. Block grades were estimated for the mineral assemblage components (ilmenite, leucoxene, rutile, zircon, xenotime, monazite) and rare earth oxides using an inverse distance squared (ID<sup>2</sup>) technique.

Bulk density has not been measured at Goschen Central. Bulk density was estimated using a formula (Density = 1.698 + 0.009 x total HM). The estimated density is in line with average density data that has been used for early-stage Mineral Resource estimation of WIM-style deposits elsewhere in the Murray Basin.

The Mineral Resource has been classified according to the guidelines of the JORC Code (2012) into Indicated and Inferred Mineral Resources, taking into account data quality, data density, geological continuity, grade continuity and confidence in the estimation of heavy mineral content and mineral assemblage.

The nominal drill spacing for the 2022 and 2023 drilling is approximately 250 mE by 250 mN in the central portion of the tenement which has been classified as Indicated. In general, the historical drillhole spacing ranges are restricted to roadsides and on a spacing ranging from 400 m to 1,000 m which has been classified as Inferred.

The 2023 Mineral Resource has been reported above a 2% total HM cut-off grade in Table 1. This cut-off grade, which was selected by ACDC Metals in consultation with Snowden Optiro based on current experience and is commensurate with cut-off grades applied for the reporting of heavy mineral sand Mineral Resources elsewhere in Australia. It is considered that the entire Goschen Central deposit has reasonable prospects for eventual economic extraction by open pit mining.

The total Indicated and Inferred Mineral Resource, reported above a cut-off grade of 2% total HM Table 1, is 120 Mt with an average grade of 3.4% total HM. The total HM is estimated to contain 9% rutile, 12% leucoxene, 23% ilmenite, 24% zircon, 3.7% monazite, 0.43% xenotime and 3.0% total rare earth oxides (TREO).

The area within the licence is flat lying and receives average annual rainfall of 370 mm and experiences high summer temperatures. The land has been almost totally cleared of native vegetation to allow for broad acre farming of cereal crops.

*Table 1 Goschen Central deposit – 2023 Mineral Resource reported above a cut-off grade of 2% total HM*

	Tonnes (Mt)	Total HM %	Slimes %	Oversize %	% of total HM -							
					Rutile	Leucoxene	Ilmenite	Zircon	Monazite	Xenotime	TREO	TREO – CeO <sub>2</sub>
<b>Indicated</b>	28	4.0	21	5.0	9.3	10	22	25	3.8	0.42	3.1	2.0
<b>Inferred</b>	94	3.1	20	4.2	8.8	12	24	24	3.6	0.43	3.0	2.0
<b>Total</b>	<b>120</b>	<b>3.4</b>	<b>20</b>	<b>4.3</b>	<b>9.0</b>	<b>12</b>	<b>23</b>	<b>24</b>	<b>3.7</b>	<b>0.43</b>	<b>3.0</b>	<b>2.0</b>

	% of total HM														
	Y <sub>2</sub> O <sub>3</sub>	La <sub>2</sub> O <sub>3</sub>	CeO <sub>2</sub>	Pr <sub>2</sub> O <sub>3</sub>	Nd <sub>2</sub> O <sub>3</sub>	Sm <sub>2</sub> O <sub>3</sub>	Eu <sub>2</sub> O <sub>3</sub>	Gd <sub>2</sub> O <sub>3</sub>	Tb <sub>2</sub> O <sub>3</sub>	Dy <sub>2</sub> O <sub>3</sub>	Ho <sub>2</sub> O <sub>3</sub>	Er <sub>2</sub> O <sub>3</sub>	Tm <sub>2</sub> O <sub>3</sub>	Yb <sub>2</sub> O <sub>3</sub>	Lu <sub>2</sub> O <sub>3</sub>
<b>Indicated</b>	0.53	0.50	1.1	0.13	0.45	0.083	0.0044	0.082	0.012	0.078	0.017	0.053	0.008	0.055	0.009
<b>Inferred</b>	0.51	0.49	1.0	0.12	0.44	0.081	0.0041	0.080	0.011	0.075	0.016	0.051	0.008	0.054	0.008
<b>Total</b>	<b>0.52</b>	<b>0.50</b>	<b>1.1</b>	<b>0.12</b>	<b>0.44</b>	<b>0.082</b>	<b>0.0042</b>	<b>0.081</b>	<b>0.011</b>	<b>0.076</b>	<b>0.016</b>	<b>0.051</b>	<b>0.008</b>	<b>0.054</b>	<b>0.008</b>

**Notes:**

- Mineralisation reported above a cut-off grade of 2.0% total HM.
- The Goschen Central deposit Mineral Resource has been classified and reported in accordance with the guidelines of the JORC Code (2012).
- Total HM is from within the +38 µm to 1 mm size fraction and is reported as a percentage of the total material. Slimes is the -38 µm fraction and oversize is the +1 mm fraction.
- Estimates of the mineral assemblage (rutile, leucoxene, ilmenite, zircon, monazite and xenotime) and are presented as percentages of the total HM component, as determined from XRF and QEMSCAN analysis. QEMSCAN data used the following breakpoints are used for definition of the titania minerals: rutile >98% TiO<sub>2</sub>, leucoxene: 70 to 98% TiO<sub>2</sub> and ilmenite: 45 to 70% TiO<sub>2</sub>.
- Rare earth oxides are from XRF data and are presented as percentages of the total HM component.
- All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate.

**PROJECT GEOLOGY AND HISTORY**

Regional geology

The Goschen Central project is located in the Murray Basin of south-eastern Australia. The Murray Basin is a low-lying, saucer-shaped intra-cratonic depression containing thin, flat-lying Cainozoic sediments. It extends approximately 850 km from east to west and 750 km from north to south, covering an area of 300,000 km<sup>2</sup> of south-western New South Wales, north-western Victoria and south-eastern South Australia.

A Tertiary succession of freshwater, marine, coastal, and continental sediments including HM were deposited in the basin. Much of the sedimentary sequence is the result of repeated marine incursions from the south-west, with the latest transgression-regression event resulting in deposition of the Late Miocene to Late Pliocene Loxton Sand (previously named the Loxton-Parilla Sand).

The Loxton Sand was deposited in shallow-marine, littoral, and fluvial conditions and comprises fine to coarse-grained, commonly moderately well-sorted sand with minor clay, silt, mica, and gravel and is the host sequence to all the known heavy mineral sand deposits in the Murray Basin. These deposits are of



two principal types: the coarser-grained smaller “strand-style” occurrences and the finer-grained large WIM-style (e.g. Goschen Central).

The WIM-style deposits, named after the Wimmera area of the Murray Basin, consist of a solitary or composite broad, lobate sheet-like body of considerable aerial extent, highly sorted and associated with fine micaceous sand. These deposits are thought to represent accumulations formed below the active wave base in a near-shore environment, possibly representing the submarine equivalent of the strand-style deposits. The WIM-style deposits are considerably larger in tonnage and lower in grade than strand-style deposits.

## DATA USED FOR MINERAL RESOURCE ESTIMATE

### Data sources

The 2023 Mineral Resource estimate has used all available data from holes drilled by CRA, Providence Gold and Minerals (PGM) and ACDC Metals from 1984 to 2023. CRA explored the Goschen Central project area from 1984 to 1997 and data was reported under the ELs 3258, 3259 and 3260. The data from the CRA drillholes was compiled from the GeoVic (Energy and Earth Resources, State Government Victoria) website, <http://geology.data.vic.gov.au/>. PGM drilled eight holes in 2011 and Iluka Resources Ltd (Iluka) analysed 71 samples from these drillholes. A further four holes were drilled by PGM in 2018 and assayed in 2020.

### *Survey and topographical data*

The historic drillhole coordinate data was compiled from the GeoVic (Energy and Earth Resources, State Government Victoria) website, <http://geology.data.vic.gov.au/>. The historic drillhole coordinates and the ACDC Metals drillhole coordinates are recorded as MGA94, Zone 54 coordinates.

A topographical surface was generated by ACDC Metals from Shuttle Radar Topography Mission (SRTM) data. All drillholes are vertical and the historic drillhole collar elevations were determined from this topographical surface. Drillhole collar data was surveyed for northing and easting by ACDC Metals using a Garmin handheld GPS with an accuracy of +/-3 m. The collar elevations were determined using the topographical surface.

Snowden Optiro recommends that detailed topographical data from a light detection and ranging (LiDAR) survey is obtained. This more detailed and accurate data should be used for resource estimation and to adjust the drillhole collar elevation data.

### *Drillhole data*

The 2023 Mineral Resource estimate used data from 190 holes (for a total of 8,774 m) drilled by CRA, PGM and ACDC Metals from 1984 to 2023 (Table 2). Data from holes drilled prior to 2022 were used solely for geological and mineralisation interpretation and the ACDC Metals’ holes were used for both interpretation and estimation. The geological and mineralisation interpretation was based on data from 190 drillholes and the estimation was based on data from 140 holes (for a total of 6,911 m) drilled by ACDC Metals in 2022 and 2023. A total of 3,969 samples, taken over 8,774 m, have been analysed for total HM. The historic drillholes and the 2022 ACDC Metal drillholes are generally located along roads and are spaced at 400 m

(ACDC Metals) to 1,000 m (historic), with some infill sections at 300-400 m. The 2023 ACDC Metals drillholes have generally been drilled on sections that are around 250 m apart and drillholes are generally spaced at approximately 250 m.

Table 2 Drillholes used for 2023 Mineral Resource estimate.

Company	Year	# of drillholes	Total metres	# of samples	Comment
CRA	1984-1997	38	1,356	268	Used for geological and mineralisation interpretation only
PGM/Iluka	2011	8	336	71	
PGM	2018-2020	4	171	60	
ACDC Metals	2022	21	884	700	All geological, assay and mineral assemblage data used for resource model.
	2023	119	6,027	2,870	
<b>Total</b>		<b>190</b>	<b>8,774</b>	<b>3,969</b>	

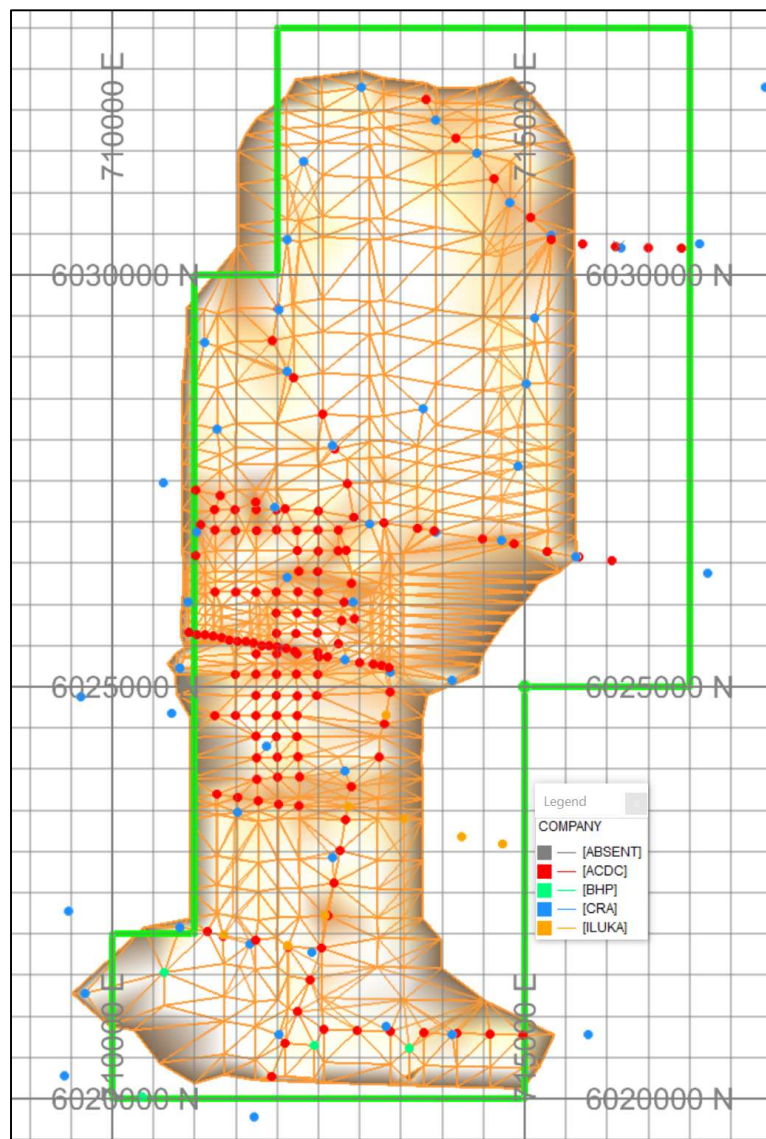


Figure 4 - Location of drillholes used for 2023 Mineral Resource estimate (coloured by company), interpreted 1% total HM wireframe (orange) and tenements (green outline)

### **Mining**

The following mining method assumptions were made based on analogous WIM-style projects in the Murray Basin:

- Topsoil and subsoil stripping via tractor pulled scoops
- Conventional truck and excavator load and haul for overburden and ore
- Ore hauled expit to a run of mine (ROM) stockpile
- Ore rehandled from the ROM stockpile to an expit mining unit
- Overburden either hauled to stockpile or direct returned to the pit void
- Tailings deposition via modified co-disposal (ModCoD)
- Majority of land returned to pre-mining land use (dryland agriculture)

Typical mining operations will proceed in a continuous cycle of site clearance, topsoil, subsoil, and overburden removal, ore extraction, tailing deposition, replacement of topsoil, subsoil, and overburden, and revegetation. It has been assumed that blasting will not be required, and any preliminary breakage of ore can be handled via dozer ripping. A mining method options assessment was not completed for the purposes of this study.

To align with the proposed mining method, the chosen Whittle shells were consolidated into mining blocks of 500m x 500m for scheduling purposes. The mining blocks and sequence were used as the basis of the mine production schedule developed on an annual basis to provide a continuous MUP feed rate of 806tph. This resulted in a total production target of 273 Mt @ 2.1% THM In-Situ with a mine life of 46 years.

### **Production Schedule (years 1-5)**

Table 3: Production Schedule (years 1-5)

Year	Units	1	2	3	4	5
Waste stripping	mt	12.0	12.1	12.0	12.0	12.0
Waste rehandle	mt	1.6	1.6	1.6	1.6	1.6
Ore Mining	mt	4.4	6.0	6.0	6.0	6.0
MUP Feed	mt	4.4	6.0	6.0	6.0	6.0
Strip	mt	2.75	2.01	2.01	2.01	2.01
HM Grade	%	2.2	2.6	2.3	2.3	2.6
<b>HM Assemblage</b>						
Zircon	%	24.6	24.6	24.7	24.9	24.9
Rutile	%	9.6	9.6	9.5	8.9	8.8
Leucoxene	%	9.9	9.9	9.9	9.4	9.2
Ilmenite	%	24.2	24.2	24.3	24.3	24.3
Monazite	%	3.5	3.5	3.5	3.7	3.7
Xenotime	%	0.4	0.4	0.4	0.3	0.3
Slimes	%	19.4	19.1	18.7	18.8	20.0
Oversize	%	3.8	4.6	5.2	5.4	5.0

### **Metallurgy and Testwork**

Detailed characterisation test work was completed on a sample from Goschen Central at Mineral Technologies' Carrara Metallurgical Services Laboratory. The objective of the test work was to assess the

amenability of the material to conventional mineral sand separation techniques and quantitatively evaluate the products and concentrates generated.

**Processing**

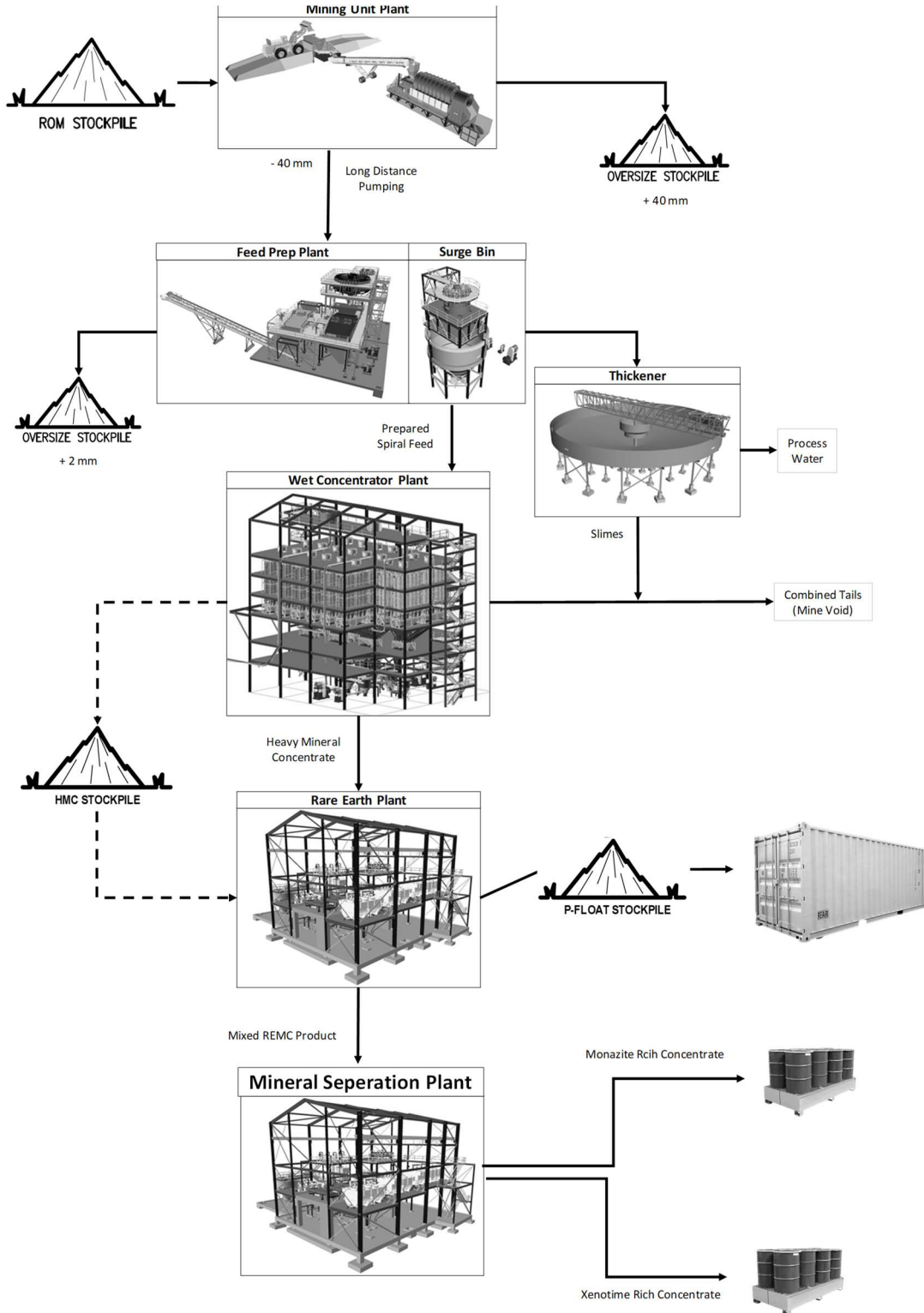


Figure 5 - Simplified block flow diagram of Goschen Central processing plant

### **Mineral Sand Processing – Phase 1**

The design and execution of this project will feature modular construction and off-site pre-assembly. Advantages of a modular design are realised during the construction stage, particularly in labour productivity and ability to control quality, reducing site construction time, exposure to safety hazards, industrial relations sensitivity, weather, and improves the availability of work fronts and providing ability to spread work packages across a number of suppliers to be completed concurrently.

### **Mining Unit Plant and Feed Preparation Plant**

The dump hopper at the Mining Unit Plant (MUP) will be fed using front end loaders to blend mined stockpiles. There is a 500 mm grizzly screen on the dump hopper to protect equipment from any grossly oversized material. A belt feeder and conveyor will transfer the material at a controlled tonnage to the scrubber where it will be slurried and pumped to the Feed Preparation Plant (FPP).

The characterisation testwork for the ore body reported 2.6% of the material + 1 mm and 18.4% <20 um. The slurried ore is pumped from the scrubber at the MUP to the feedbox of a 1 mm sizing screen with the oversize sent to tailings and the undersize pumped to a cluster of deslime cyclones. The cyclone overflow, containing slimes, is sent to the tailings thickener and the undersize reports to the ROM Surge Bin to feed the spirals.

### **Wet Concentrator Plant**

The Wet Concentrator Plant (WCP) receives the prepared feed slurry from the surge bin and consists of a 4 stage spiral circuit to produce a HMC concentrate. Mineral Technologies' (MT) MG12 spirals have been selected for the first three stages, and HG10i spirals selected for the final recleaner stage. The MG12 spiral model is a high performing gravity separator that combines a rougher and scavenger stage on the same column. The high concentrate grades and recoveries achievable on an MG12, in a single pass, lead to concentrator plants that are greatly simplified and capable of higher overall metallurgical performance. The HG10i spiral model is a widely used gravity separator specifically designed to complete final upgrade separation in gravity concentrator plants.

*Table 4 WCP mineral recovery assumptions*

<b>Item</b>	<b>Rate</b>	<b>Unit</b>
Ilmenite	76	%
Leucoxene	76	%
Rutile	76	%
Zircon	80	%
Monazite	86	%
Xenotime	86	%
HMC grade	95	%

The HMC concentrate from the WCP is pumped to a small Surge Bin in the REP building for further processing and the tailings are pumped to the tailings sump.

### **Rare Earth Flotation Plant and Rare Earth Dry Plant**

The rare earth flotation, dry plant and product loadout is housed in a fully enclosed building with an internal partition separating the wet and dry processing areas. This building is independent from the other process areas, with its own change rooms and control room.

The first stage of processing in the REP building is attritioning of the material to prepare the surface of the particles for flotation. The attritioned and deslimed HMC passes through a series of conditioning tanks, where the flotation reagents are added at the required rates and thoroughly mixed. The rare earth particles then adhere to the air bubbles and are carried to the surface where they are collected in the froth.

The washed float concentrate is then passed over a series of wet shaking tables to reduce gangue entrained in the froth. The concentrate from the tables is combined to produce the final rare earth mineral concentrate product. This product is then pumped to a small vacuum belt filter where the material is evenly distributed across on the filter belt cloth in preparation for the dry circuit.

The dry REMC passes through 4 stages of induced roll magnetic separators set at different magnetic intensities. The xenotime concentrate is produced in the lower magnetic intensities (3.0-3.5A mag) while the monazite is concentrated in the higher magnetic intensities (4 – 8.0A mag).

The monazite and xenotime rich concentrates are classified as class 7 material for transport and will be packaged by an automated drum loader before being loaded into a container.

The sinks from the floatation circuit, a Zr-Ti concentrate (the HMC), is pumped to a large vacuum belt filter and loaded to containers via a retractable conveyor.

### **Rare Earth Processing Plant – Phase 2**

The REPP Project is based on the caustic crack method that has incorporated over 5 years of development to refine existing technology to maximise reagent and energy efficiencies and minimise waste generation. The process will produce a mixed rare earth oxide with the option to exclude cerium and a phosphate product suite.

As part of the Scoping Study ACDC Metals has completed a localisation study with an environmental consultant to assess the flowsheet from a permitting perspective. Preliminary locations have been nominated that meet infrastructure and transport requirements. Opportunities have also been highlighted with the nominated waste stream for further characterisation and market development.

A key advantage of the REPP caustic crack process is its low waste ratio of less than 1:1. The base case for the Scoping Study is to combine and package all waste streams for off site storage, however a variety of optimisation opportunities will be evaluated in future work.

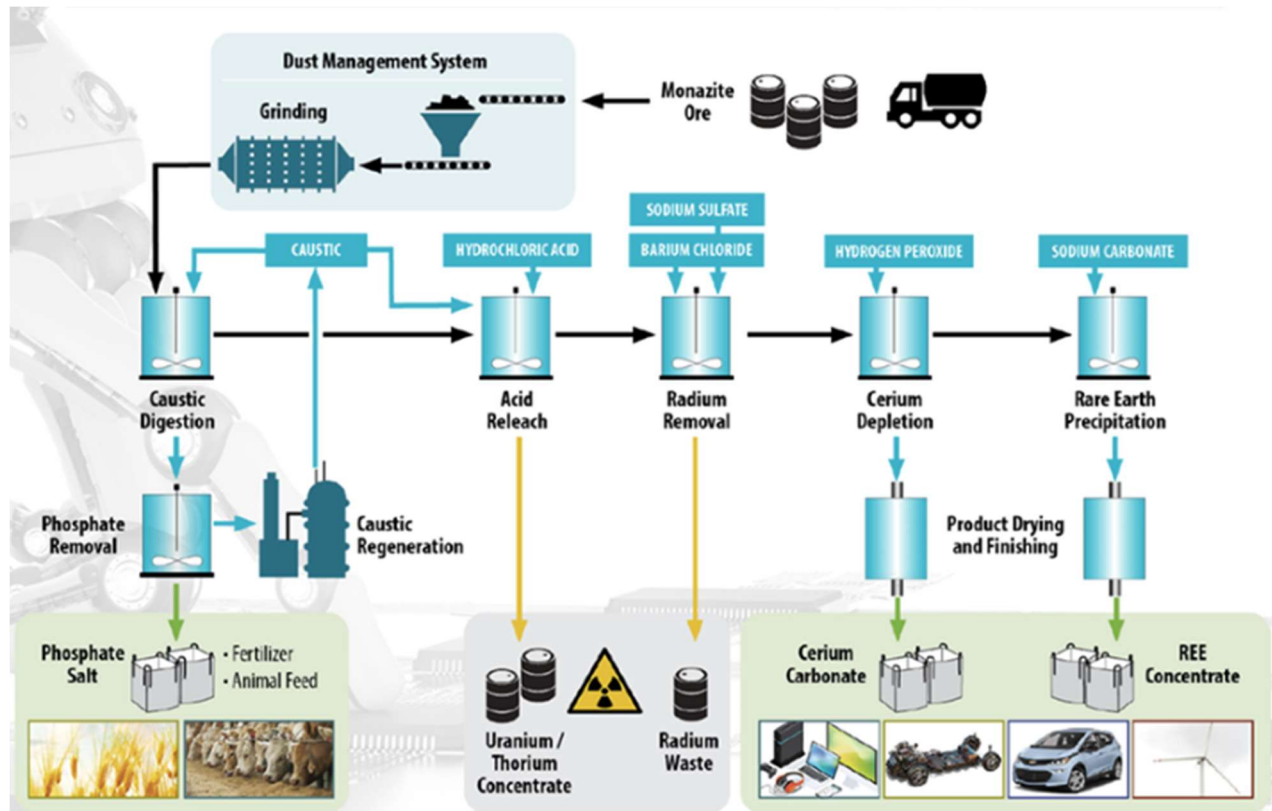


Figure 6 - Rare earth processing plant flow diagram

## Product pricing

### Rare Earths

The market analysis data has been collated from various sources, including peer projects, market analyst research and engagement with expert analysts, such as Adamas Intelligence (Adamas).

The demand for rare earth elements to support the energy transition and decarbonisation is well documented, as is the strategic imperative by governments to shore up supply chains of critical minerals. Forecasts indicate the demand for magnetic REEs will double from current levels by 2030.

The key metals to support the magnet manufacturing are Neodymium (Nd), Praseodymium (Pr), Dysprosium (Dy) and Terbium (Tb) which together account for 94% of the REE basket value. The pricing deck has been based on long term forecasts that reflect the current and demand growth conditions.

Given that the project will deliver REE products at various stages of processing/extraction, the nominated payables are a key financial metric. Payables are based on the contained value within the concentrate and at the level of refinement.

Payable ranges as nominated by Adamas:

- Rare earth mineral concentrate (REMC) – 28% - 35%.
- Monazite mineral concentrate (MMC) – 28% - 35%.
- Xenotime mineral concentrate (XMC) – 28% - 35%.
- Mixed Rare Earth Oxide (MREO) – 65% - 75%.

## Rare Earths - Phase 1

The base case of 35% payable for the rare earth mineral concentrate product has been selected for Phase 1. A review of various peer projects, including recent mineral sands project studies in the Murray Basin and in Africa validate this assumption.

Table 5 - REMC project pricing (USD/kg)

Payable	2029	2030	2031	2032	2033	2034	2035+
28%	9,136	9,575	10,548	11,124	11,523	11,744	12,322
30%	9,789	10,259	11,301	11,918	12,346	12,583	13,202
35%	11,421	11,969	13,185	13,905	14,403	14,680	15,402

## Rare Earths - Phase 2

In Phase 2, separate monazite and xenotime concentrates will be produced at the Goschen Central processing plant. The xenotime concentrate pricing structure is the same basis as the REMC in Phase 1, where a 35% payable is applied on the contained value.

The monazite will be transported to the REPP Project in South Australia for upgrading to produce MREO, a 75% payable is applied on the contained value.

Table 6 - Xenotime (XMC) project pricing (USD/kg)

Payable	2029	2030	2031	2032	2033	2034	2035+
28%	16,395	16,731	17,091	17,277	17,459	17,637	17,828
30%	17,566	17,927	18,312	18,511	18,706	18,897	19,101
35%	20,494	20,914	21,364	21,596	21,824	22,046	22,285

Table 7 - MREO project pricing (USD/kg)

Payable	2029	2030	2031	2032	2033	2034	2035+
65%	29,003	30,745	34,909	37,396	39,077	39,951	42,440
70%	31,234	33,110	37,594	40,272	42,082	43,025	45,705
75%	33,465	35,474	40,280	43,149	45,088	46,098	48,969

## Mineral Sands

The project will produce on average 88kt per annum of heavy mineral concentrate, that will consist of a zircon-titania HMC.

The market for this product is mature and well established. The Scoping Study has used a long-term price of US\$575 per tonne free on board (FOB).



### Capital Estimate

Capital cost (CAPEX) has been produced in line with AACE Class 5 estimates and based on a combination of market pricing, typical industry factors and benchmarking, with an accuracy +/-40%, which is appropriate for Scoping level analysis. The breakdown per phase has been provided in Table 8.

Table 8 - Itemised CAPEX per phase

Item	Phase 1	Phase 2
Goschen Central Plant	169	15.6
REPP Process	-	59.1
Infrastructure	72	19.1
General Site wide	5.2	
Mining	4	-
Tailings	15	-
Working Capital	10	12.6
Contingency	28.5	12.6
<b>TOTAL</b>	<b>304</b>	<b>119.4</b>

### Operating Estimate

The operating costs (OPEX) have been produced in line with AACE Class 5 estimates as part of the Scoping Study and based on a combination of bottom-up estimates and industry benchmarks as provided from the minerals sands and hydrometallurgical consultants.

The costs have been estimated to an accuracy of +/-40%. The breakdown per phase has been provide in Table 9.

Table 9 - Itemised OPEX per phase

Item	Phase 1 (\$/t ore)	Phase 2 (\$/t ore)
Mining	10.5	10.5
Processing – Goschen Central	6.1	6.3
Processing - REPP	-	5.9
General Administration	0.8	0.8
<b>TOTAL</b>	<b>17.4</b>	<b>23.5</b>

### Financial analysis

A discounted cash flow model has been prepared by ACDC Metals and has been based on the 46-year mine plan for the feed of mineral sands material to produce saleable heavy mineral concentrate and rare earth concentrate in Phase 1, and to vertically integrate the REPP project in Phase 2. Included was all capital and operating processing plant costs and associated infrastructure as determined by the Project.

Table 10 - Key input parameters

Metric	Unit(s)
Heavy Mineral Concentrate price	Refer to product pricing
Rare earth pricing and payable	Refer to product pricing

REMC freight	150 \$/t
XMC freight	150 \$/t
MREO freight	150 \$/t
Currency	Australian Dollar (AUD)
Australia Income tax	25%
Royalty & levies	2.75% Victorian State Government 1.75 % Private
Discount rate	10%
Valuation Date and Period	28 March 2024
Escalation	Excluded

The evaluation commences CY2026 and accounts for all capital to execute the Goschen Central Project and sustaining capital that has been identified to maintain nominated process areas of the plant.

The installation of the REPP project delivers a pre-tax net present value (NPV<sub>10</sub>) of A\$732 million, an internal rate of return (IRR) of 26%, a payback of 4.6 years and requires A\$309 million of establishment capital.

Key Project financial metrics, including payback periods are presented in Table 11.

Table 11 Key Financial Metrics

Metric	Unit(s)	Phase 1	Phase 1 and 2
Pre-tax NPV10	A\$m	393	732
Pre-tax IRR	%	21%	26%
Payback from commencement of production	years	4.8	4.6
Capital Investment	A\$m	304	423
Life of Mine	years	46	46
Processing Capacity	Ore Mtpa	6	6
Average ore grade (THM)	%	2.1%	2.1%
Average strip ratio (waste:ore)		1.94	1.94
Rare earth mineral concentrate	Ave tpa	5,913	5,926
Mixed rare earth oxide	Ave tpa	-	2,775
Xenotime mineral concentrate	Ave tpa	-	438
Zircon-titania HMC	Ave tpa	88,138	88,138
Mixed rare earth oxide payable	%	-	75%
Rare earth mineral concentrate payable	%	35%	-
Xenotime mineral concentrate payable	%	-	35%
Average revenue per annum	A\$m	186	272
Average opex per annum	A\$m	103	140
Average EBITDA per annum	A\$m	74.2	125
Average revenue	A\$/t ore	31.1	45.3
Average operating cost	A\$/t ore	17.4	23.5
Zircon-titania HMC contained minerals composite price	A\$/t	1,249	1,249

The Phase 1 results represent a scenario where Phase 2 is not implemented. To implement phase 2 additional funding is required to meet the nominated staged installation.

### Sensitivity analysis

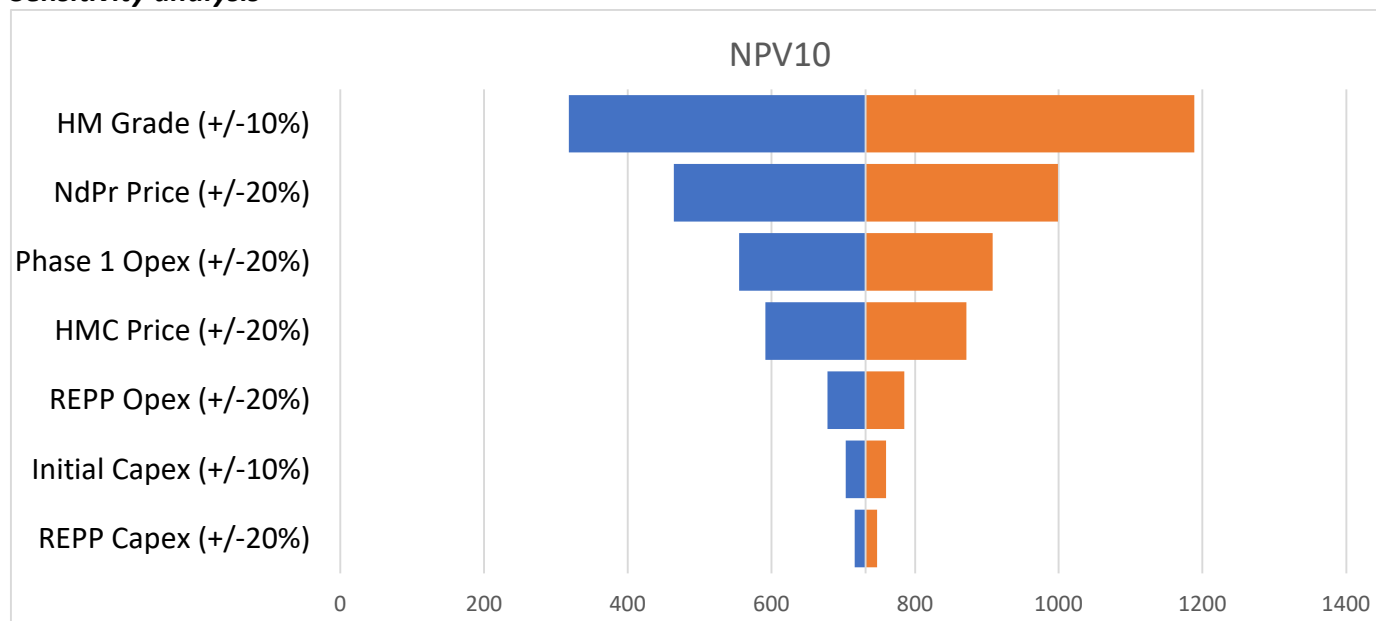


Figure 7 - Pre-tax NPV sensitivities to a nominated fluctuations across select parameters.

### Potential upside

**Mineral resource** – The JORC compliant mineral resource estimate is based on the total heavy mineral p - 1mm and +38 $\mu$ m fraction. The process plant has been designed to accommodate the finer fraction +20 $\mu$ m to -38 $\mu$ m. Further exploration and mineralogy will be conducted to enable the inclusion of the finer fraction similar to the project design of WIM-style deposits being developed by peer companies. As per Figure 7 this incremental increase to the heavy mineral grade is forecast to have significant positive impacts to the project.

**Mine Design** – The current mine design has taken a conservative approach to dewatering needs of the project and the loading of material from the pit to the MUP. In the next phase of development hydrogeological studies will be undertaken to understand dewatering requirements and geotechnical stability.

**Waste management** – The base case for the REPP project is to combine all waste streams into one and package for transport to low level radioactive storage facility. The management of waste is greater than 25% of total operating costs for the REPP plant. Further stages of development will look at waste storage optimisation, and market studies for potential additional revenue for the project.

### Environmental

The Scoping study has completed initial environmental assessments to understand the permitting pathway for the project and to plan for baseline data collection over the coming development stages. Initial reviews have not identified areas of concern that would delay or impact the project from proceeding through the normal approval pathway. The Murray Basin is an active area of mine development with numerous peer projects progressing through permitting.

### Rehabilitation and closure

As the area affected by the mine is progressively rehabilitated during mining operations, the final closure costs for rehabilitation of the final mine pit, tailings, processing facilities and associated infrastructure are expected to be minimal.

### **Project Ownership**

ACDC has a 80% beneficial interest in the Goschen Central Project (EL5278), with the 20% held by Providence Gold and Minerals Pty Ltd (ACN 004 881 789) (PGM). At completion of a Definitive Feasibility Study (DFS) a Joint Venture will be established. Where if PGM elects not to contribute its 20% share of cost after completion of the DFS, then PGM will be diluted using an industry standard formula. Once PGM's participating interest has diluted to 5%, its interest will automatically convert to a 1.75% gross royalty (Ex Mine Gate).

### **Conclusion and Next Steps**

The Scoping Study provides justification that the Goschen Central heavy mineral sand project when vertically integrated with the rare earth element processing project is commercially viable, and accordingly the Board of ACDC Metals has approved further de-risking of the project. Currently the 2tonnes of mineralised sample is being processed through the Mineral Technologies pilot plant, with the objective of producing monazite for further development, and obtaining key engineering metrics for the next phase of engineering.

The immediate next steps are to proceed with the sourcing of additional monazite and commencement of the pre-piloting program for the REPP plant. In parallel continuation of exploration at Goschen Central and resource updates is proposed.

### **Funding**

The successful completion of the Scoping Study has revealed the significant potential of the Goschen Central Project. The primary aim of the Scoping Study was to demonstrate that the scoped development of Goschen Central had positive economics and strong potential to be a long-life producing mine. The technical and economic outcomes of the Scoping Study provide the Company with a strong platform, and ACDC Metals believes it could secure funding solution through one or a combination of sources, including:

- Debt and / or equity markets
- Co-ownership / join venture partners
- Government agencies (funding/ grants)

There is, however, at a scoping study level, no certainty that ACDC Metals will be able to secure the funding solution as and when required.

### **Nomenclature**

REE	Rare Earth Element
MREO	Mixed Rare Earth Oxide
ACDC	ACDC Metals Ltd
REMC	Rare Earth Mineral Concentrate
HM	Heavy Mineral
THM	Total Heavy Mineral

LOM	Life of Mine
NPV	Net Present Value
IRR	Internal Rate of Return
EBITDA	Earnings before interest, tax, depreciation and amortisation
MMC	Monazite mineral concentrate
XMC	Xenotime mineral concentrate
REPP	Rare earth Processing Plant
CRAE	CRA Exploration Pty Ltd
Probo	Probo Mining Ltd
ROM	Run of Mine
MUP	Mining Unit Plant
WCP	Wet Concentrator Plant
REP	Rare earth Plant
Nd	Neodymium
Pr	Praseodymium
Dy	Dyprosium
Tb	Terbium
Adamas	Adamas Intelligence Ltd
WIM	Wimera Style deposits

*Announcement has been authorised for release by the Board.*

### **About ACDC Metals**

***ACDC Metals is a heavy mineral sand and rare earth element explorer and developer focussed on projects in the Murray Basin of western Victoria, Australia. ACDC Metals is also developing its licenced downstream processing technology for its Rare Earth Processing plant (REPP) Project. The process extracts rare earth elements from monazite. Goschen Central is the ACDC Metals' flagship project.***

***We refer shareholders and interested parties to the website [www.acdcmetals.com.au](http://www.acdcmetals.com.au) where they can access the most recent corporate presentation, video interviews and other information.***

### **For Further Information:**

**Tom Davidson**  
**Chief Executive Officer**  
[Tom.davidson@acdcmetals.com.au](mailto:Tom.davidson@acdcmetals.com.au)  
**+61 (0) 499 256 645**

**Peter Taylor**  
**Media & Investor Relations**  
[peter@nwrcommunications.com.au](mailto:peter@nwrcommunications.com.au)  
**+61 (0) 412 036 231**

## **Competent Persons Statement**

### **Mineral Resources**

There is information in this report relating to Mineral Resources as previously announced:

1. The Mineral Resource Estimate for the Goschen Central Project, ASX Announcement 8 November 2023.

Other than as disclosed in those announcements, 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 the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

### **Scoping Study**

The information related to the Scoping Study reported here has been compiled from source reports as completed by independent consultants and other information and has been reviewed by Mark Saxon who is a Member of the Australian Institute of Mining and Metallurgy. Mr Saxon 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'. Mr Saxon is the ACDC Metals executive director.