



**TSX:EMC**

## **THE SPECIALTY METALS COMPANY**

A Presentation to the  
**Critical Metals Symposium**  
Vancouver, BC Canada

January 21, 2011

# Disclaimer & Legal Statement

*This presentation contains certain statements that may be deemed "forward-looking statements". All statements in this release, other than statements of historical fact, that address future production, reserve potential, exploration drilling, exploitation activities and events or developments that the Company expects to occur, are forward-looking statements. Forward-looking statements are statements that are not historical facts and are generally, but not always, identified by the words "expects", "plans" "anticipates", "believes", "intends", "estimates", "projects", "potential" and similar expressions, or that events or conditions "will", "would", "may", "could" or "should" occur. Information inferred from the interpretation of drilling results and information concerning mineral resource estimates may also be deemed to be forward-looking statements, as it constitutes a prediction of what might be found to be present when and if a project is actually developed.*

*Although the Company believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance and actual results may differ materially from those in the forward-looking statements. Factors that could cause the actual results to differ materially from those in forward-looking statements include market prices, exploitation and exploration successes, and continued availability of capital and financing, and general economic, market or business conditions. Investors are cautioned that any such statements are not guarantees of future performance and actual results or developments may differ materially from those projected in the forward-looking statements. Forward-looking statements are based on the beliefs, estimates and opinions of the Company's management on the date the statements are made. The Company undertakes no obligation to update these forward-looking statements in the event that management's beliefs, estimates or opinions, or other factors, should change.*

*The contents of this presentation were reviewed by Gilles Dessureau, M.Sc., P.Geo., a Qualified Person as defined by National Instrument 43-101. Mr. Dessureau is a Professional Geologist employed by EMC Metals Corp.*

<b>Capital Structure</b>	
Issued and Outstanding	149,908,272
Options Outstanding	11,426,250
Warrants Outstanding	23,842,485
<b>Fully Diluted</b>	<b>185,177,007</b>

**Current Share Price – C\$0.39**  
**Current Market Capitalization – C\$58M (I/O)**  
**Cash on Hand - C\$3.8M**

All amounts as of January 12, 2011

- EMC Metals Corp (EMC) is a specialty metals mining group.
- We are focussed on developing high-value specialty metal and mineral projects , and
- We are different in how we intend to capture value for our shareholders:
  - We are not prospectors (virgin property explorers) ,
  - We intend to apply world-class extraction and recovery techniques to known deposits, where they can dramatically improve economics,
  - We will insist on meaningful project equity ownership,
  - We look to be the operator if it makes sense to us, and
  - We intend to build downstream value in our products where we can differentiate EMC in the marketplace.

## Nyngan Scandium Project (NSW)

A 50/50 JV with Australian junior miner. NI 43-101 Measured + Indicated Resource of 12 Mt, grading 261 ppm (100 ppm cut-off) (Rangott, 2010), further exploration potential, significant land position

## Springer Tungsten Mine (NV)

Idle, fully permitted mine & 1,200 tpd mill, production capacity - 146,000 MTU WO<sub>3</sub> p.a. Current NI 43-101 resource estimates. Additional historic resources

## Carlin Vanadium Property (NV)

100% owned property with NI 43-101 Inferred Resource of 25 Mt grading 0.51% V<sub>2</sub>O<sub>5</sub> (0.3% cut-off) (Stryhas, 2010)



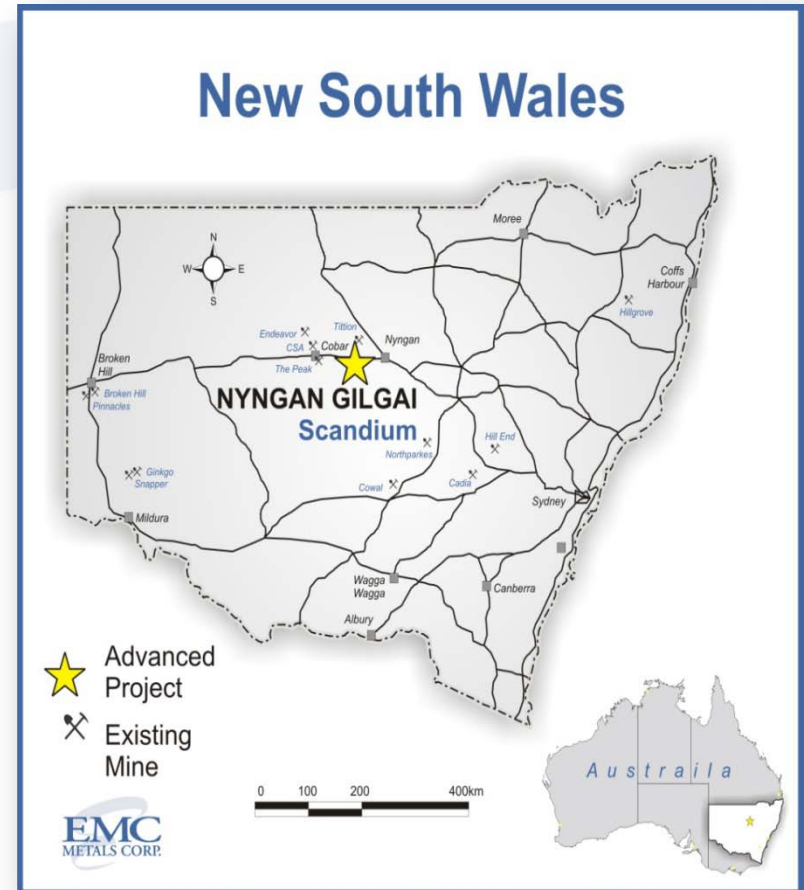
## Introduction

- EMC signed a JV Agreement with Jervois Mining Limited (JRV:AX) of Australia in February 2010
- Offered EMC a 50% earn-in subsequent to three conditions:
  - Spend A\$500k by Dec. 15th, 2010,
  - Deliver an economic feasibility study by Feb 2012, and
  - Make a A\$1.3M final cash payment
- EMC is the operator on the project, and is responsible for all development costs up to earn-in.



## Location

- The property is located 450 km northwest of Sydney, New South Wales, Australia
  - Tenements consist of three exploration licenses,
  - Surface rights are owned by Jervois, and
  - Neighbours are farmers and ranchers.
- 1.5% NSR payable on production, to prior exploration license holders.
- Excellent infrastructure to support project
  - Project is 25 km from the town of Nyngan,
  - Paved road within 4 km of property,
  - Electric power within 3 km of property,
  - Rail system runs through town of Nyngan, and
  - Workforce and mine support services are available locally.



## Scandium Resource

- The property was explored in the 1980's for PGM's by Laughlan Resources, and later for nickel by Anaconda in the 1990's.
- Jervois sampled the pulps for scandium in 2001, and drilled the property in 2005 and 2006. Approx. 3,000 metres and 78 holes.
- In March 2010, EMC filed a NI 43-101 Resource Report on SEDAR, outlining an M&I resource of 12MT at 261 ppm Sc, (100ppm c/o).

Nyngan Gilgai Scandium Project Resource Estimation (Rangott, 2010)				
Resource Category	Cut -off Sc (ppm)	Total Tonnes (kt)	Grade Sc (ppm)	Overburden Ratio
Measured	100	2,718	274	0.81:1
Indicated	100	9,294	258	1.40:1
<b>Total</b>	100	12,012	261	1.10:1

## Resource - Details

- Resource is a typical Tertiary laterite, composed of limonites and saprolites
  - Top 15 metres is alluvial material,
  - Next 50 metres is limonites/saprolites, which contain the high grade scandium,
  - Most Sc is above the 50 metre level,
  - Drill hole intercepts typically 5-35 metres, and
  - Best hole was 27 metres of 389 ppm Sc.
- In-situ Sc resource over 3,000 tonnes .
- Pockets of higher grade resource, 350 ppm Sc, nearer surface.
- In ground value of resource: potentially +\$6 billion (after recovery losses)
- Significant exploration potential on surrounding ground owned by JV.



## Previous Mineral Testwork

- Jervois, in conjunction with TTS, began recovery testwork after the 2006 drill program
  - CSIRO of Australia did considerable work,
  - METCON (Sydney) contributed,
  - Jervois' Jansen guided most work, and
  - TTS' Duyvesteyn had input.
- Results of testwork showed production of scandium from Nyngan feasible
  - Recoveries around 70%, and
  - Sc<sub>2</sub>O<sub>3</sub> product grades of approx. 97%.
- Recoveries based on conventional nickel laterite processing techniques, including feed preparation, acid leaching, solvent extraction, filtration and precipitation.
- No economics were done.



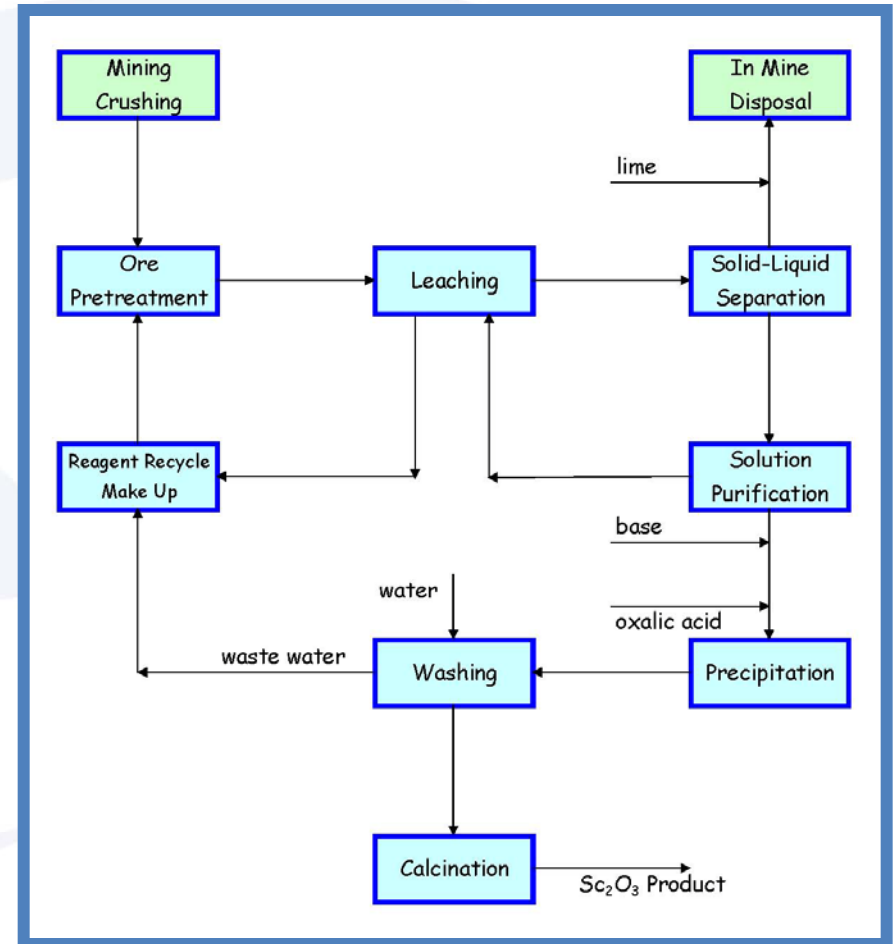
## Current Mineral Testwork

- EMC to do 3 phases of test work to optimize processing design for Nyngan:
  - First Phase: validate the CSIRO/Metcon results (Hazen (Co) -DONE),
  - Second Phase: apply a series of study and improvement steps, again with Hazen, to refine the processes and meet the following targets:
    - Recoveries over 80%,
    - $\text{Sc}_2\text{O}_3$  grades of 99.9%, and
    - Minimized acid consumption to minimize environmental footprint.
  - Third Phase: a continuous small pilot using Nyngan ore to produce  $\text{Sc}_2\text{O}_3$ .



## Conceptual Mineral Flowsheet

- While the Nyngan deposit is geologically speaking a typical nickel laterite deposit, it does not contain much nickel.
- The process flow sheet for Nyngan consists of off the shelf unit operations that have been employed for processing other metals and minerals.
- Our main focus is on product quality and environmental control.



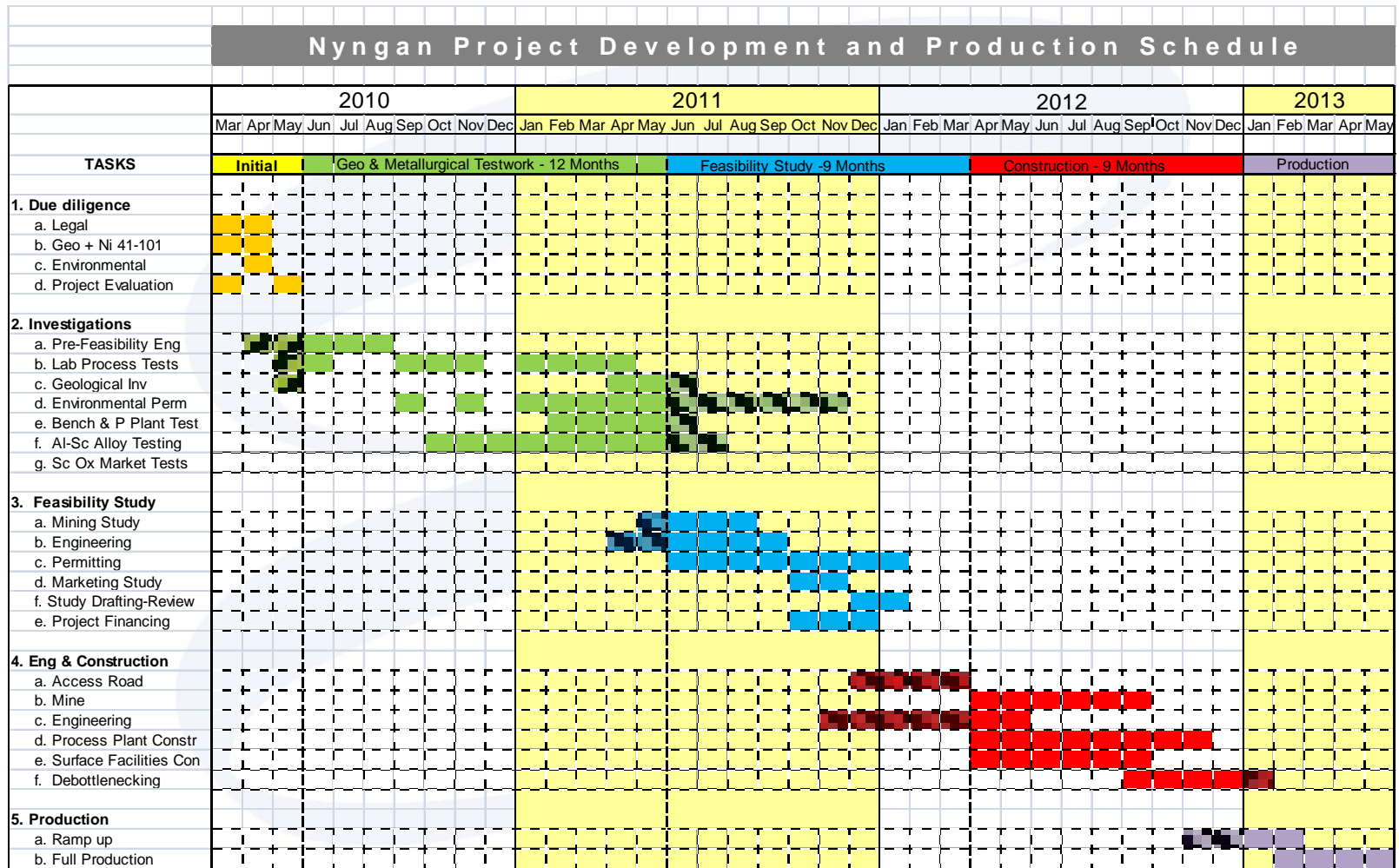
## Engineering Study Results

- In July 2010, EMC received results from an engineering study, independently prepared by Roberts & Schaefer (now a part of KBR), on capital and operating costs for the Nyngan project.
- Key Assumptions
  - 250 tpd gross throughput rate, 85% availability,
  - 80% scandium recoveries,
  - Production of 28,000 kg of  $\text{Sc}_2\text{O}_3$  per annum,
  - Bulk of process design compiled from previous CSIRO/Metcon test work, and
  - On site sulfuric acid plant part, as part of EMC's CapEx assumptions.
- Key Results
  - Processing facility CapEx estimated at US\$ 56M,
  - Processing cost estimated at <\$300/kg  $\text{Sc}_2\text{O}_3$ , and
  - CapEx included contingency of US\$8.3M.
- No PEA, no overall project economics disclosed at this time.



# Nyngan Scandium Project

## Gantt Chart – Overall Schedule



# Main Scandium Market Applications

- Solid Oxide Fuel Cells (SOFC's)
  - Solid electrolyte (primary), plus cathode and anode applications, and
  - Reduces overall costs and extends life of cell.
- Scandium Aluminum (Sc-Al) alloys
  - Aircraft Construction (weight reduction and strength),
  - Automotive/Transport (heat resistance and strength),
  - Naval/Marine (corrosion resistance in salt water, strength), and
  - Many new scandium containing alloys have been patented recently.

# Thoughts on Market Size

- SOFC market size
  - 5 tonnes is the current annual estimate, going to 15 tpa.
  - Represents 100,000KW capacity (20k US homes)
  - More producers-more markets- more tonnage need
- Sc-Al market size
  - 15 tonnes ( $\text{Sc}_2\text{O}_3$  equiv) absorbed by 50 Boeing 747's
    - (assuming 20 t/plane – 10%)
  - Global aluminum production= 40Mtpa,
    - Substitution on 0.01% of that=4,000 tonnes
    - As alloy, would require 30 tonnes ( $\text{Sc}_2\text{O}_3$  equiv) in a 0.5% alloy mix
  - Ship-building applications? Lots of alloy needed.



**AIRBUS  
A30X**



## Schedule Specifics

- Spend \$500k on metallurgical test work to meet first JV earn-in threshold by Q1 2011,
- Complete metallurgical test work and finalize process design by Q2 2011,
- Continue with environmental baseline studies that are under way,
- Initiate feasibility study (NI 43-101) in Q3 2011,
- Carry out specific test program for direct production of scandium aluminum master alloy from oxide feed stock,
- Complete feasibility study in Q1 2012,
- Commence facility construction (based on permit status) in Q2 2012,
- Initial scandium oxide production in Q1 2013, and
- Full production in Q2 2013.



# Management & Directors

## EMC Executives

George F. Putnam – CEO & President

Willem P. Duyvesteyn – CTO

Michael O'Brien – CFO

Clifford Nelson - COO

## Directors

William B. Harris – Chairman (Partner, Solo Mgmt. Group)

Barry T. Davies (Rudgear Holdings Ltd.)

Willem P. Duyvesteyn (CTO - EMC Metals Corp, founder TTS)

George F. Putnam (CEO – EMC Metals Corp.)

Daniel Wolfus (Chairman, Midway Gold Corp.)

*“Everybody wants to build things with Scandium, but nobody has any....”*

**EMC Metals Corp.**

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