

# KIPAWA JV HEAVY RARE EARTHS MINE PROJECT

FEASIBILITY STUDY RESULTS

Conference Call

September 4, 2013

M A  A M E C



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# OVERVIEW






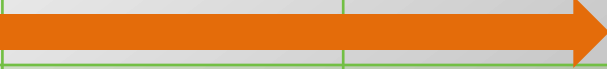

- FS Highlights
- Project Development
- Social Acceptability
- Environment and Permitting
- Geology, Mining and Processing
- CAPEX, OPEX, Pricing and Financial Models
- Upside Opportunities and Optimization
- Next Steps
- Q&A

# FS HIGHLIGHTS – POSITIVE RESULTS

## Kipawa HRE Project Financial Model for 15.2 years LOM in CDN\$

NPV <sub>10%</sub>	\$260 million (pre-tax)
IRR	21.6% (pre-tax)
Revenue	\$2.55 Billion
EBITDA	\$1.37 Billion
CAPEX (initial)	\$374 million - Contingency (15%)
OPEX (annual)	\$78.5 million
Payback Period	3.9 years (pre-tax)
Life of Mine	15.2 years
Concentrate Production	3,653 tonnes (annual avg.)

# PROJECT DEVELOPMENT – SOLID PLAN

Milestone	2013	2014	2015	2016
Second Pilot Plant				
Environmental and Social Impact Study				
Federal and Provincial Environmental Permits				
Financing CAPEX Process				
Detailed Engineering				
Construction of Mine				
Start-up of Mining Operation				

# SOCIAL ACCEPTABILITY - KEY PRIORITY



## Presence in the Community

Local Office  
2 employees



## Social Implication

A presence both  
in participation  
and sponsorships



## Member of the Chamber of Commerce

Témis-accord  
Temiscaming -  
Kipawa





# ENVIRONMENT & PERMITTING

# ENVIRONMENT – ENSURING REQUIRED STANDARDS FOR FUTURE GENERATIONS

- Environmental protection laws governing mining development in Quebec and Canada are among the most stringent in the world
- Regardless of its small size, Kipawa must comply with:
  - The guidelines of the Directive 019 (Mining project framework)
  - Canadian Environmental Assessment Act
- These laws ensure contaminants will not adversely affect the environment



# PROVINCIAL PROCESS

## (ENVIRONMENT QUALITY ACT - QUEBEC)

- Presentation of the project to the Ministère du Développement durable, de l'Environnement, de la Faune et des Parcs (« MDDEFP ») in April 2012

Next steps:

- Finish the Environmental and Social Impact Assessment
- Apply for the Certificate of Approval (CA) at winter 2014
- MDDEFP evaluation period, including a Q&A
- BAPE process might apply but subject to gov't decision
- The MDDEFP will issue its decision concerning the CA

# FEDERAL PROCESS

## CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA)

- Role of the CEAA:
  - Provide Canadians with the assurance that environmental and social impacts of the project will be evaluated
- January 31, 2013 - Project notice submitted to the CEAA
- March 28, 2013 – CEAA confirmed that an Environmental Impact Assessment (EIA) is required on Kipawa project
- In May 2013 guidelines for EIA were provided by the CEAA
- Agency requires one year to complete analysis of EIA
- Through the process Public Consultation consists of 4 stages:
  - 2 are completed
  - 2 of which are still to come





# GEOLOGY, MINING & PROCESSING



# MINERAL RESERVES

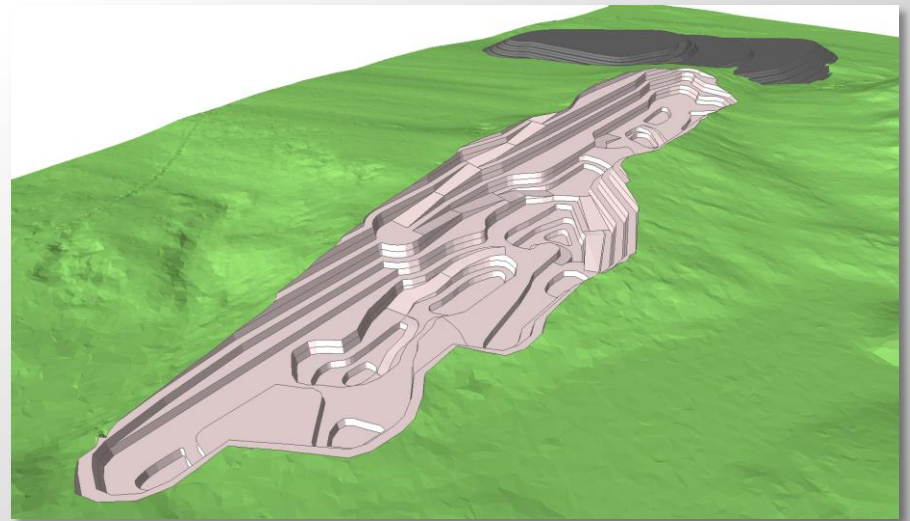
In-pit Mineral Reserves	Metric Tonnes (mt)
Proven (51.7% of the deposit)	10,221,000
Probable (48.3% of the deposit)	9,548,000
<b>Total</b>	<b>19,769,000</b>



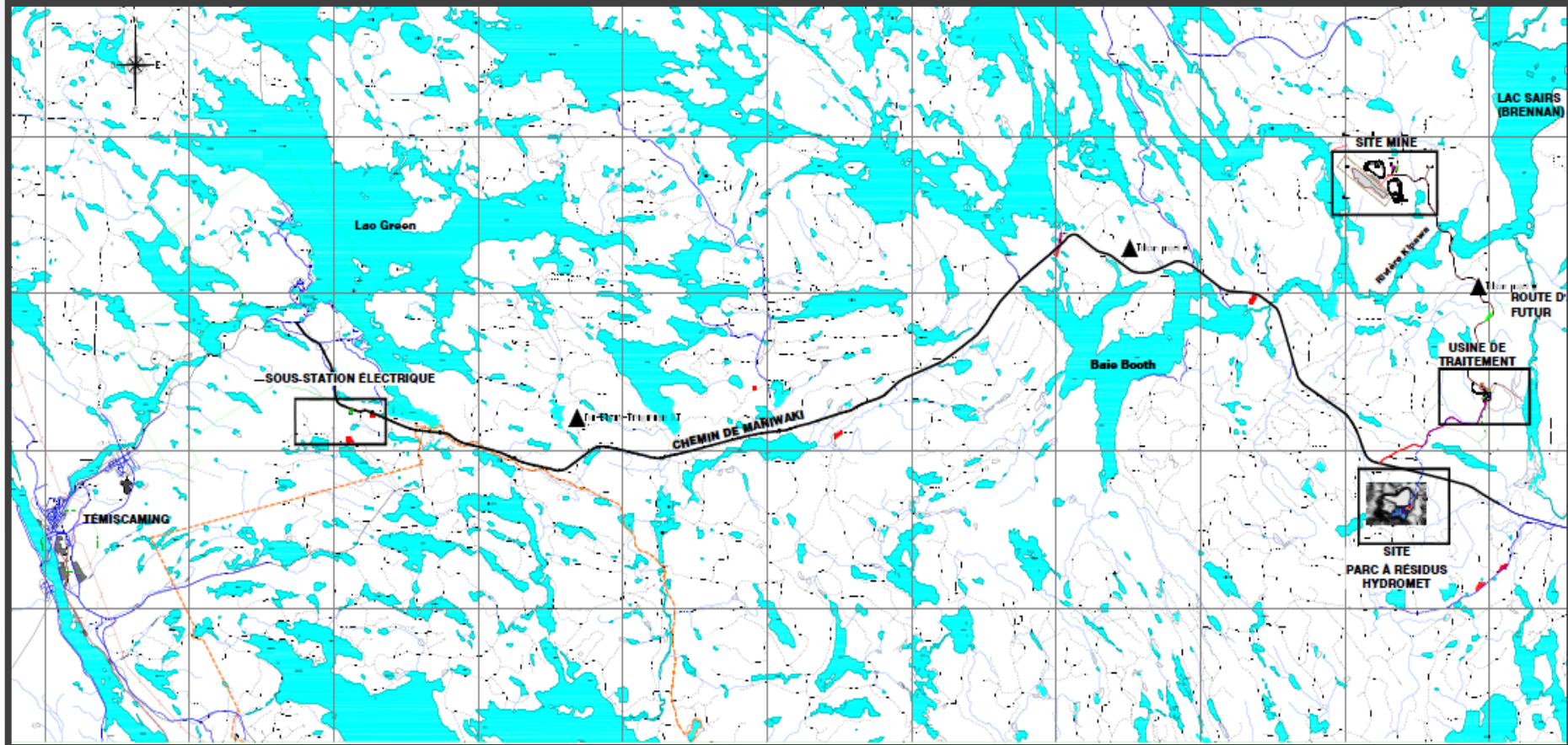
Total Grade	
La <sub>2</sub> O <sub>3</sub>	0.0588
Ce <sub>2</sub> O <sub>3</sub>	0.1195
Pr <sub>6</sub> O <sub>11</sub>	0.0146
Nd <sub>2</sub> O <sub>3</sub>	0.0550
Sm <sub>2</sub> O <sub>3</sub>	0.0123
Eu <sub>2</sub> O <sub>3</sub>	0.0015
Gd <sub>2</sub> O <sub>3</sub>	0.0119
Tb <sub>4</sub> O <sub>7</sub>	0.0022
Dy <sub>2</sub> O <sub>3</sub>	0.0147
Ho <sub>2</sub> O <sub>3</sub>	0.0032
Er <sub>2</sub> O <sub>3</sub>	0.0101
Tm <sub>2</sub> O <sub>3</sub>	0.0016
Yb <sub>2</sub> O <sub>3</sub>	0.0096
Lu <sub>2</sub> O <sub>3</sub>	0.0013
Y <sub>2</sub> O <sub>3</sub>	0.0943
<b>TREO</b>	<b>0.4105</b>

# KIPAWA PROJECT

- A deposit with a simple mineralogy
- Enriched in heavy rare earths
- 10-12 tonnes per day of concentrate produced at the process plant
- Mine will operate for 15.2 years

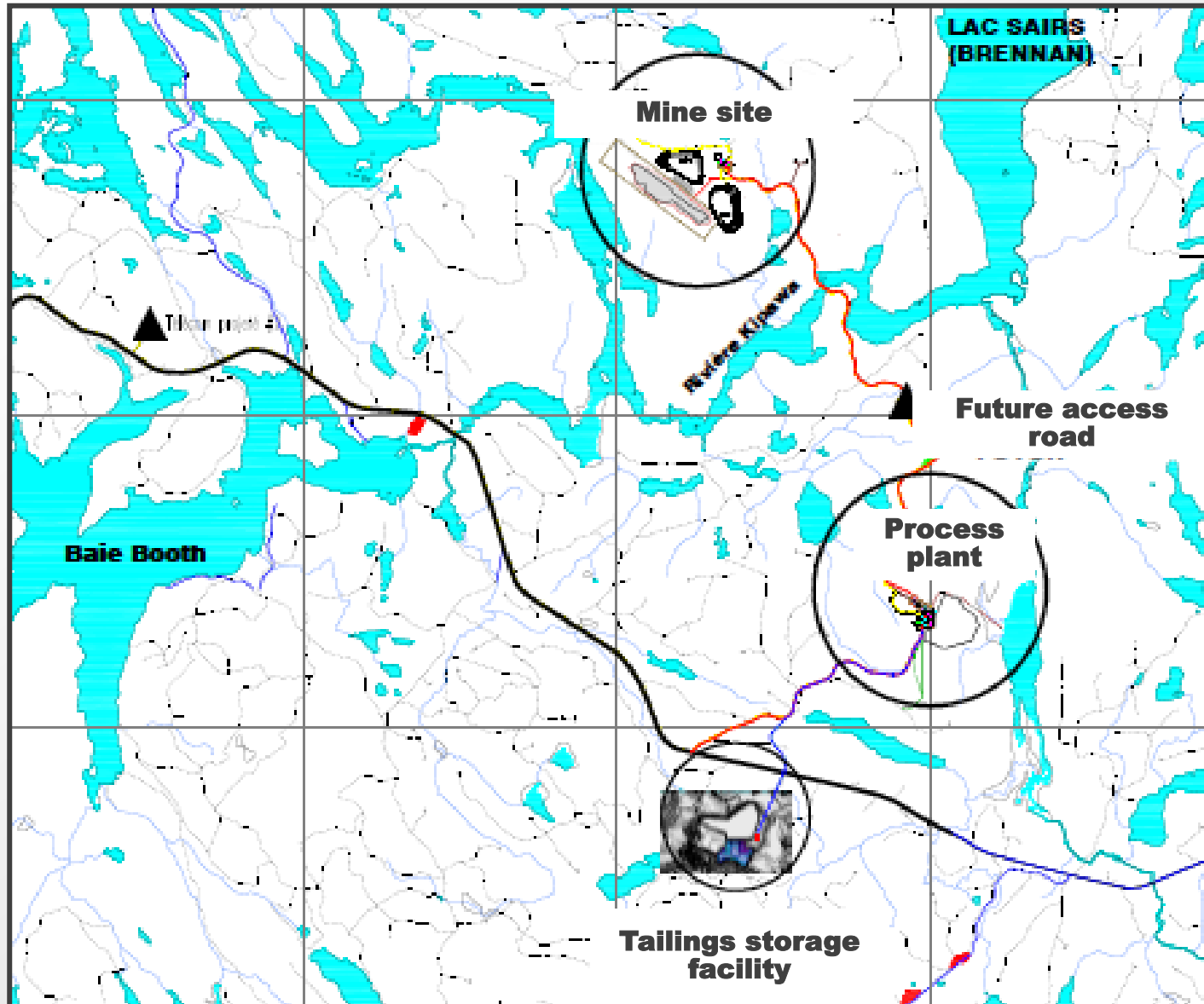


# KIPAWA MINE PROJECT – LOCATION

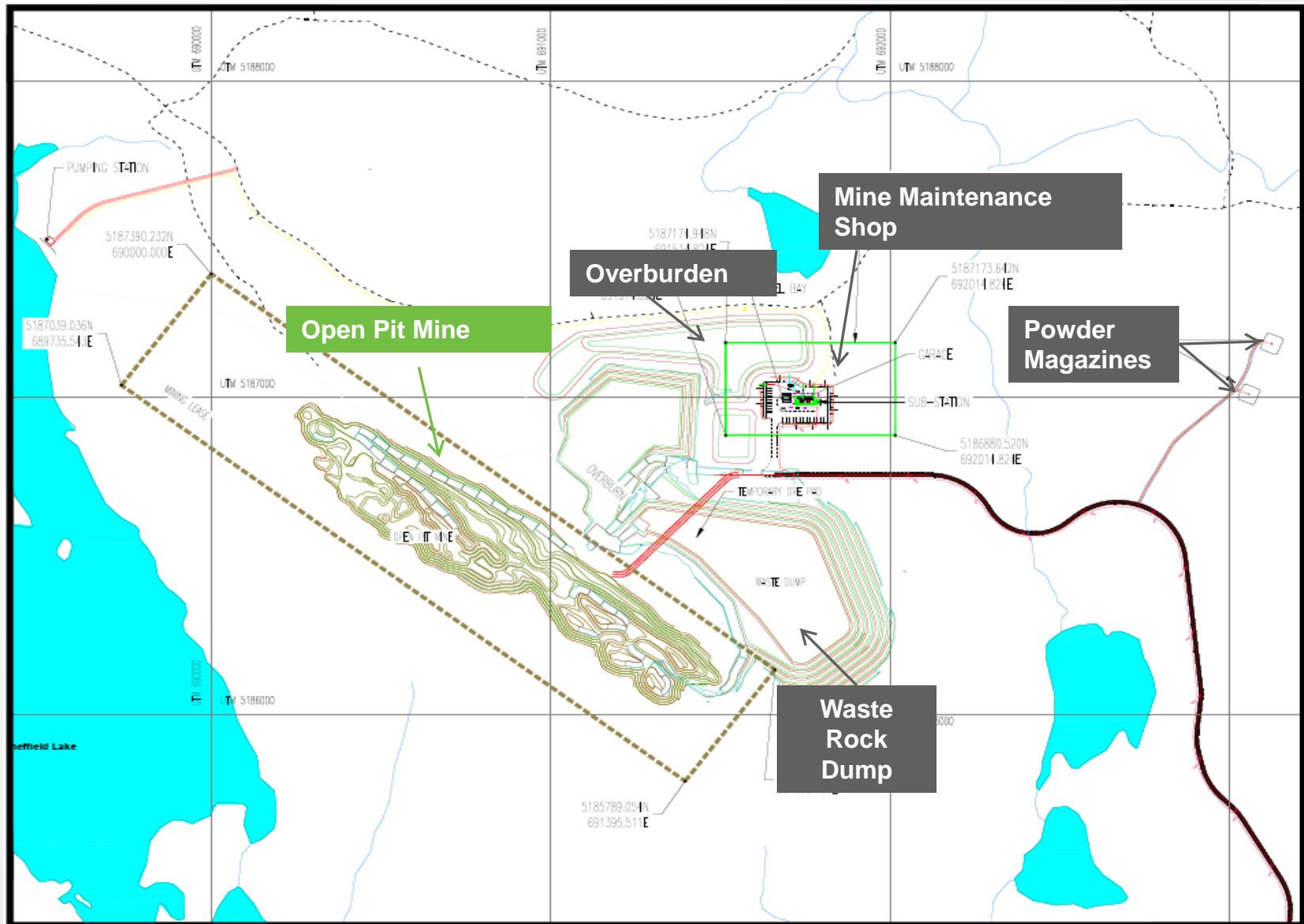




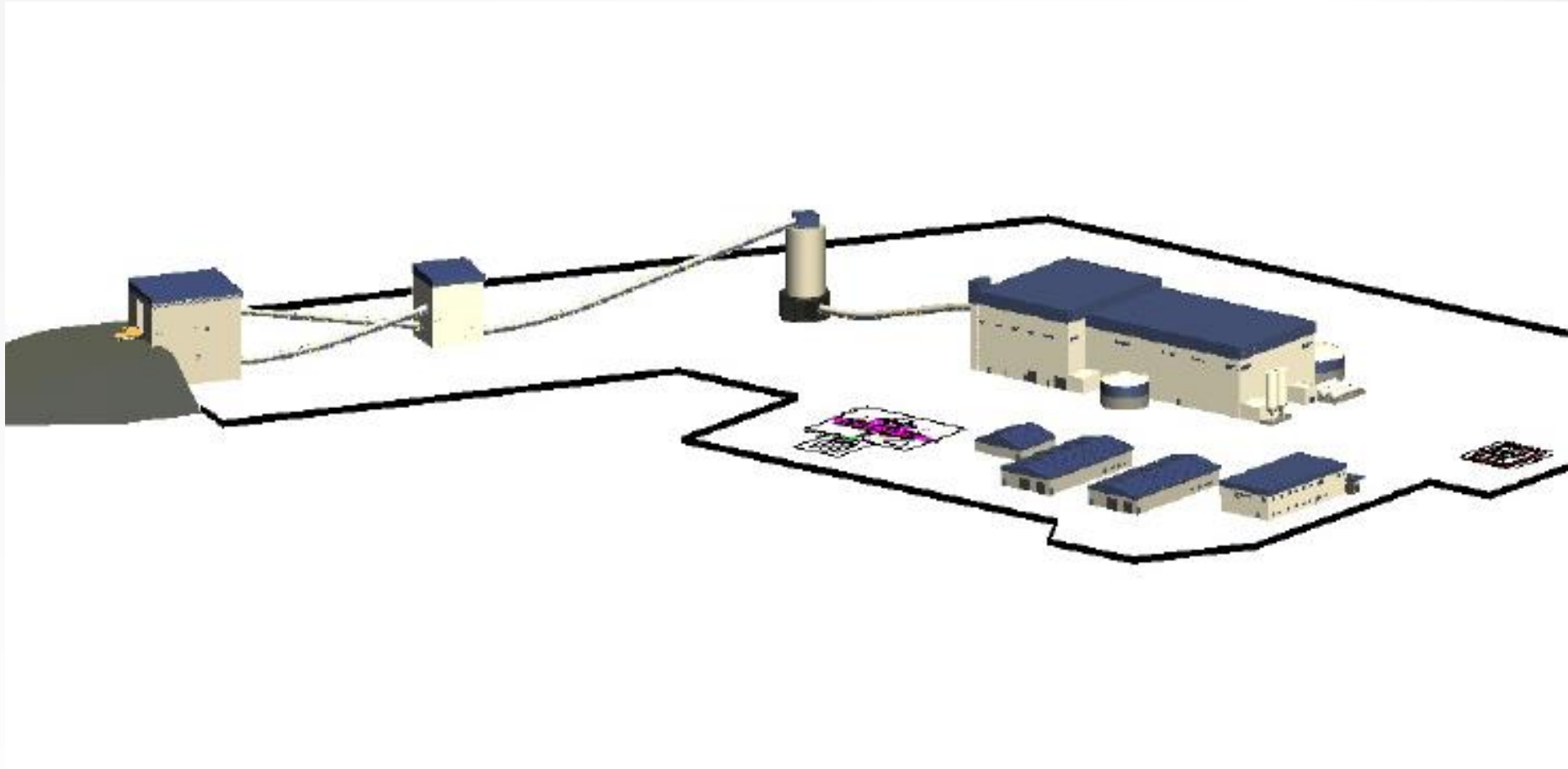
# INFRASTRUCTURE – LOCATIONS



# INFRASTRUCTURE – MINE SITE



# INFRASTRUCTURE – PROCESS PLANT SITE







# CAPEX, OPEX, PRICING AND FINANCIAL MODELS

# MODERATE CAPEX

Capital Cost Items	Cost (Million \$ CAD)
<b>Off-Site Installation near Temiscaming town</b>	
Main Sub-Station / Hydro-Quebec Power / Parking	9.76
<b>Inter-Site Services</b>	
Power line 44kV / Communications / Part of Access road	13.35
<b>Mine Site</b>	
Mining Equip / Pre-Prod./ Roads / Shop / ...and other	41.92
<b>Processing Plant Site</b>	
Support Infrastructures	23.27
Process Plant	137.21
Fresh Water Supply	4.79
Tailing Storage Facilities / Pipelines / Effluent treatment	27.69
<b>Sub Total</b>	<b>192.96</b>
<b>Total Direct Costs</b>	
	<b>257.99</b>
<b>Total Indirect and Owner's Costs</b>	
	<b>67.56</b>
<b>Overall Contingency (15%)</b>	
	<b>48.83</b>
<b>Total Costs</b>	
	<b>374.4</b>

# COMPETITIVE OPEX

OPEX is \$78.5 million per year or \$21.53/kg mixed TREO concentrate

	Average
Net Metal Return (NMR)*	\$46.97 /kg TREO
Mining	\$4.97 /kg TREO
Processing**	\$13.35 /kg TREO
G&A	\$3.18 /kg TREO
Cash Costs	\$21.53 /kg TREO
Production of mixed contained TREO concentrate	3,653 tpa
*NMR = Grade x Recovery x Revenue	
**Processing includes tailings management costs	

## OPEX Estimates Based on Following Parameters:

- Tonnes of mineralized rock and waste mined per year: 2.5 million
- Tonnes of mineralized rock milled per year: 1.3 million
- Tonnes of mixed HRE concentrate: 1,516 tpa
- Tonnes of mixed LRE concentrate: 2,137 tpa
- Total manpower required for operation: 229 employees

# A LOOK AT THE REO PRICING 2016

Rare Earth Oxides	PEA Price Forecast for 2016 (FOB China, \$US/kg REO)	FS Price Forecast For 2016 (Ex-Works Mine-Site, \$US/kg REO)	Metal Pages FOB China, \$USD/kg REO August 27 <sup>th</sup> , 2013	Asian Metal 2011 Peak Price (FOB China, \$US/kg REO)
Cerium (Ce <sub>2</sub> O <sub>3</sub> )	\$5.00	<b>\$5.90</b>	\$7.00	\$151.00
Lanthanum (La <sub>2</sub> O <sub>3</sub> )	\$10.00	<b>\$5.95</b>	\$6.50	\$140.00
Neodymium (Nd <sub>2</sub> O <sub>3</sub> )	\$75.00	<b>\$75.00</b>	\$82.00	\$370.00
Praseodymium (Pr <sub>6</sub> O <sub>11</sub> )	\$75.00	<b>\$75.40</b>	\$110.00	\$251.00
Samarium (Sm <sub>2</sub> O <sub>3</sub> )	\$9.00	<b>\$6.85</b>	\$11.00	\$136.00
Europium (Eu <sub>2</sub> O <sub>3</sub> )	\$500.00	<b>\$1,100.00</b>	\$1,060.00	\$5,600.00
Gadolinium (Gd <sub>2</sub> O <sub>3</sub> )	\$30.00	<b>\$59.40</b>	\$49.00	\$186.00
Terbium (Tb <sub>4</sub> O <sub>7</sub> )	\$1,500.00	<b>\$1,076.00</b>	\$950.00	\$4,200.00
Dysprosium (Dy <sub>2</sub> O <sub>3</sub> )	\$750.00	<b>\$713.00</b>	\$540.00	\$2,500.00
Yttrium (Y <sub>2</sub> O <sub>3</sub> )	\$20.00	<b>\$29.40</b>	\$23.00	\$200.00
Holmium (Ho <sub>2</sub> O <sub>3</sub> )	\$65.00	<b>\$53.60</b>	**\$77.88	***\$711.00
Erbium (Er <sub>2</sub> O <sub>3</sub> )	\$40.00	<b>\$63.60</b>	**\$57.60	\$300.00
Thulium (Tm <sub>2</sub> O <sub>3</sub> )*	-	<b>\$1,200.00</b>	n/a	n/a
Ytterbium (Yb <sub>2</sub> O <sub>3</sub> )*	-	<b>\$56.70</b>	**\$54.35	***\$142.00
Lutetium (Lu <sub>2</sub> O <sub>3</sub> )	\$320.00	<b>\$1,400.00</b>	**\$1,136.00	***\$1,357.00

\*At PEA, no values were attributed to Tm and Yb due to prices were available at date of publication. \*\* From Asian Metal August 28, 2013. Prices shown represent Chinese Domestic RE Prices. \*\*\*Chinese Domestic price listed – rounded to the nearest dollar.



# UPSIDE OPPORTUNITIES & OPTIMIZATION

## ■ Additional Upside Opportunities:

- **Mining:** Room for pit design improvement at detailed engineering
- **Metallurgy:**
  - Optimization testwork and 2<sup>nd</sup> pilot plant to improve recoveries and reduce reagent consumption which leads to lower processing costs
  - Investigate testwork to separate to the individual REO's
  - Possible addition of a separation plant
- **Production Scale:** Potential optimization concerning production rate scenarios in order to maximize the IRR on the project

## ■ Expansion:

- **Resources:** Verification of lateral and down dip extension by drilling
- **By-Products:** Testwork to recover zirconium and other by-products (minor metals) in the REE mineralized zones and in the syenite body

# POSITIONED FOR LONG-TERM GROWTH

- Secure financing to take us into the development stage before the construction phase begins
- 2<sup>ND</sup> pilot plant this fall at SGS Lakefield with the goal to further optimize the metallurgy
- Complete off-take agreement with TTC.
- Acceptance of social license to operate through standard environmental and social evaluation process
- Start of construction subsequent to receipt of permits in 2015
- Project commissioning starting Q4 2016

QUESTIONS?

M A T A M E C