

KALiNA POWER

WESTERN CANADIAN POWER PROJECTS
and **CHINA UPDATE**
October 2018

All amounts including '\$' are in reference to Canadian dollars unless stated otherwise

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Corporate Snapshot

Trading information (as at 1 October 2018)

Share price	A\$0.031
52 week low / high	A\$0.014 / A\$0.082
Shares outstanding ¹	443m
Market capitalisation	A\$14m
Cash (30 June 18)	A\$3.06m
Debt (30 June 2018)	-
Enterprise value	A\$10.6m
Options - 59.9m @\$0.056	A\$3.35m

Top shareholders (as at 1 October 2018)

Shareholder	%
Harrington Global Opportunities – <i>Global Fund Manager</i>	17.08%
Carpe Diem Asset Management – <i>HNW</i>	8.38%
Board and Management	12.35%
Top 20 shareholders	59.75%

Board of Directors

Name	Position
John Byrne	Executive Chairman
Ross MacLachlan	Managing Director and CEO
Tim Horgan	Executive Director
Dr. Malcolm Jacques	Director
Jeffry Myers	Director
Peter Littlewood	Director

ASX Small Cap that has Attracted Blue Chip Power Professional Directors

Ross MacLachlan
Managing Director and CEO

- Former Director and early investor with Pristine Power (Canada's largest Independent Power Producer prior to its sale in 2010)
- 35 years' experience in technology development, project funding and venture capital
- Raised over US\$100m in both the conventional and alternative energy sectors and engaged in over US\$400m worth of M&A and financing transactions

Jeffrey Myers
Director

- Currently a **senior operating partner at Stonepeak Infrastructure Partners (US\$15 bn infrastructure fund)**
- Co-founder and former Chairman, President and CEO of Pristine Power
- Over 30 years' experience in the development, financing, execution and operation of **over 3GW of independent power projects**

Peter Littlewood
Director

- Former main board Group Director of Operations at **China Light and Power Group (CLP) (market capitalisation: A\$34bn)** and one of the largest power companies in the Asia-Pacific region
- Responsible for the development and implementation of projects across Asia-Pacific using coal, natural gas, nuclear and several renewable energy technologies
- Advisory board for Bloomberg New Energy Finance

Key Advantages of the KALiNA Cycle® versus ORC*

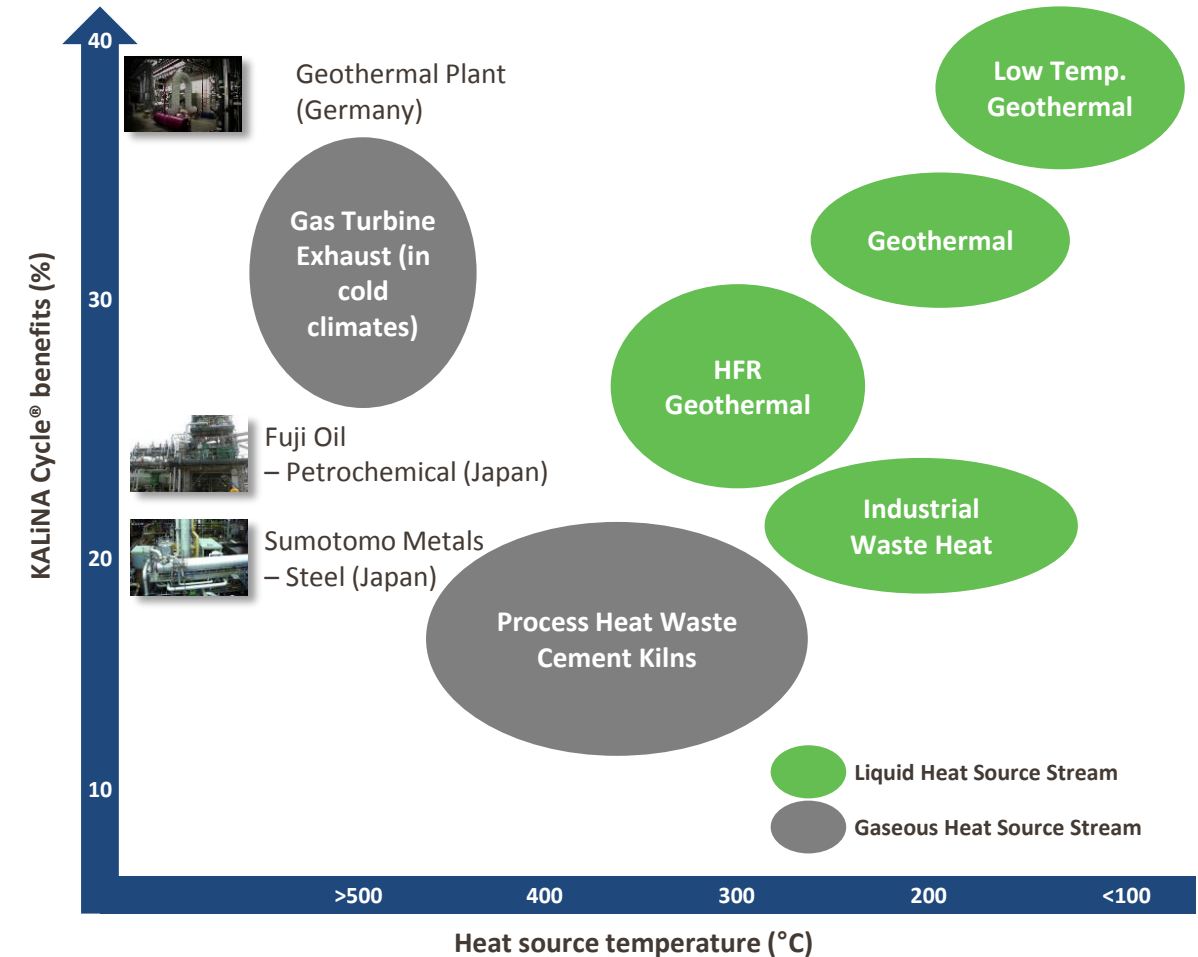
Leading ORC supplier, Ormat (NYSE:ORA), has grown from a market capitalisation of ~US\$0.8bn to ~US\$3bn in five years

KALiNA Cycle® is competitive with ORC at all temperatures and up to 40% more efficient at lower and variable heat temperatures

	ORC	KALiNA Cycle®	KALiNA Cycle® advantages
Working fluid	Pentane, butane, refrigerant chemicals	Variable mixture of water and ammonia	
Adjustable working fluid	✗	✓	Boiling temp. of the working fluid adjusted for variations in source temperature providing performance advantages
Non-Explosive	✗	✓	Working fluid is non explosive and can be installed on sensitive industrial sites. ORC requires an oil loop (adding capital costs and lowering efficiency)
Working fluid is not ozone depleting	✗	✓	ORC working fluids are ozone depleting. Ammonia used in the KALiNA Cycle® is not a greenhouse gas
Low cost, reliable, green energy	✓	✓	Sustainable process with zero emissions with similar low capital and operating costs

*Organic Rankine Cycle

KALiNA Cycle® efficiency benefits (vs. ORC) in various industries



Valuable Intellectual Property Portfolio

KALiNA are actively focused on growing their IP portfolio throughout key global markets

Current IP portfolio

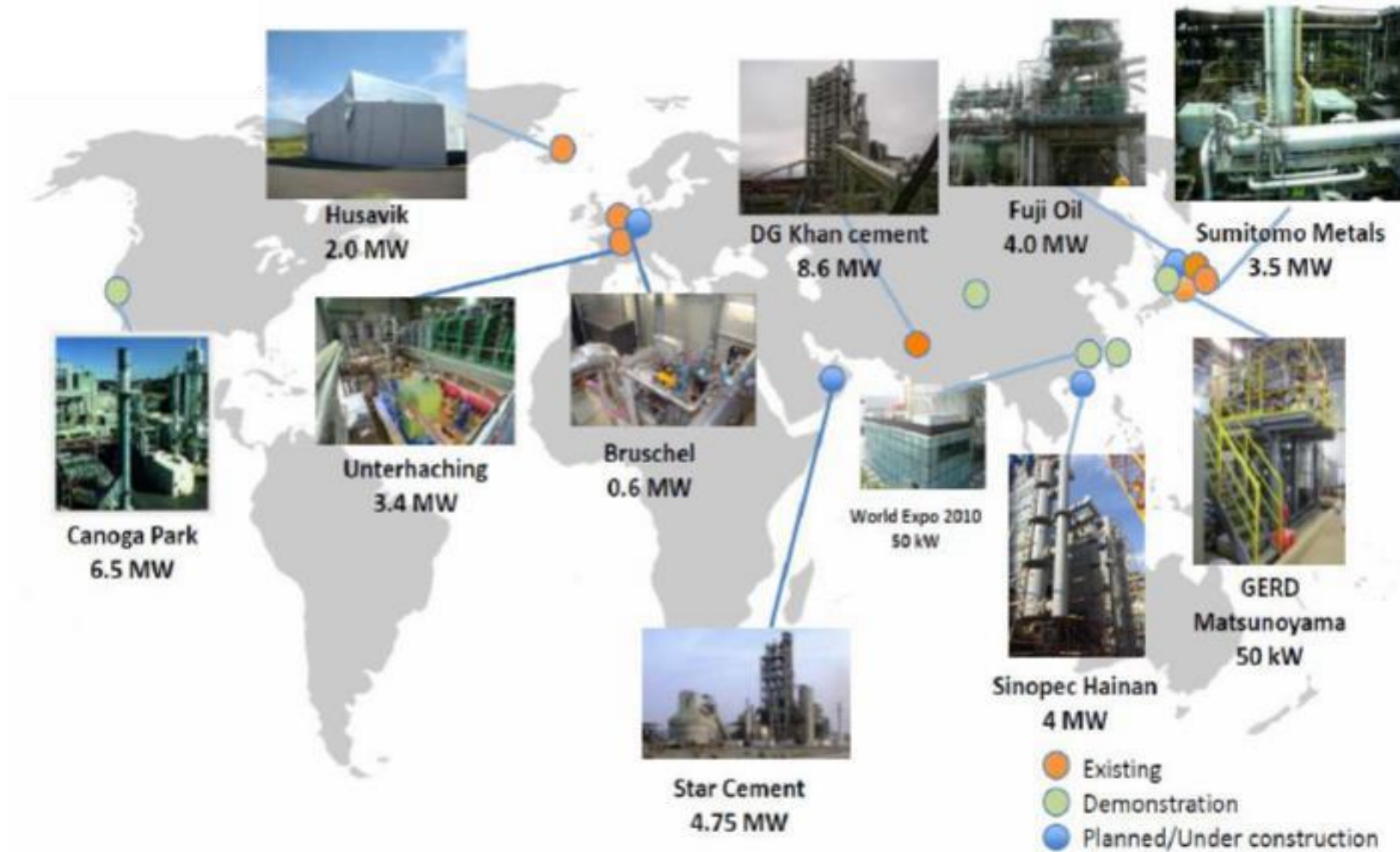
- ✓ Holds **320 patents worldwide with 11 pending applications across North America, Europe and Asia**
- ✓ Valuable IP portfolio that positions KALiNA as the **leading player in the sector and provides a substantial barrier to entry** for prospective competitors
- ✓ IP portfolio consists of patents on process, method and equipment, as well as **technical know-how, trade secrets and proprietary process knowledge**
- ✓ Patent protection **targeted at key geographic regions with large energy efficiency and geothermal markets**

Actively protecting first-mover advantage

- ✓ IP Portfolio includes acquired thermodynamic IP portfolio from Siemens which contained **208 active patents and 8 pending applications complimentary to the KALiNA Cycle®**
 - Strong development given Siemens are the most significant player in ammonia globally, it also provides a powerful partner for any patent infringement actions
- ✓ KALiNA licenses include **global royalty free rights to any improvements and IP developed by licensees**
- ✓ KALiNA undertakes **ongoing work to identify, develop and acquire additional IP opportunities** that are complementary to the KALiNA Cycle®

KALiNA Projects

Commercially Deployed In A Range Of Industries -15 Plants \$126 Million Spent To Date



China – A New Beginning

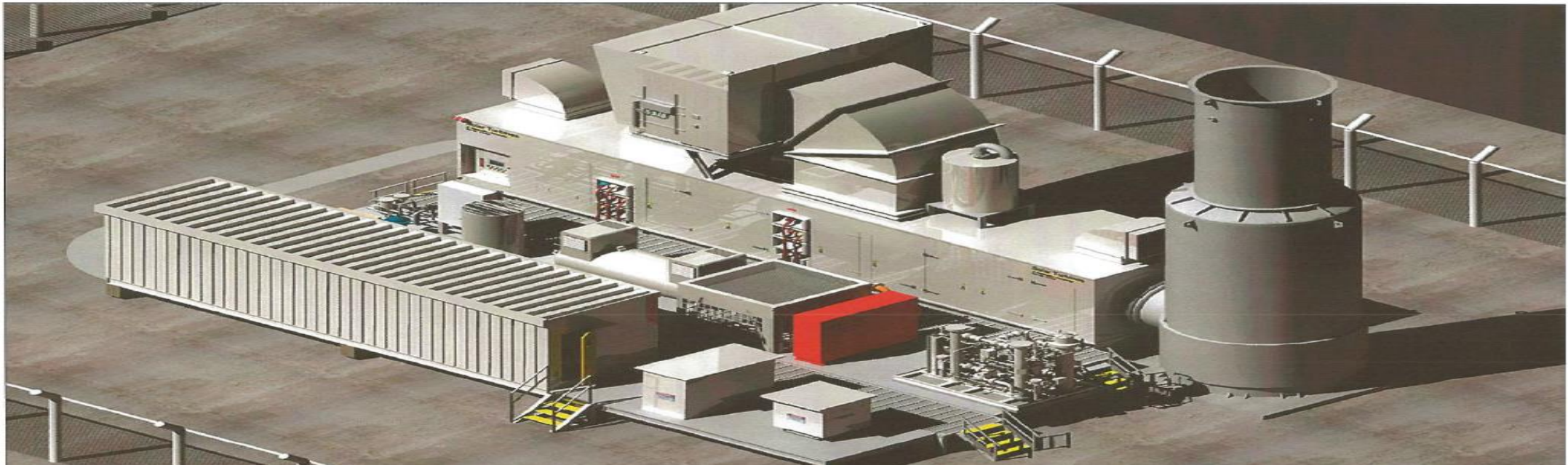
KALiNA Cycle license has reverted back to KALiNA for China

- KALiNA Cycle license reverted back to KALiNA through termination of the license held previously by SSNE since 2008
- KALiNA has indicated its willingness to assist with the next phase of the required work at Hainan in an effort to resolve outstanding issues and professionally guide them to understand how best to deploy the KALiNA Cycle Technology in future projects
- China business led by Hong Kong based Nigel Chea, highly experienced senior power executive from Meiyer Power (17GW of power projects) and supported by former senior power industry professionals from Meiyer
- KALiNA's senior Hong Kong based board member, Mr. Peter Littlewood, former Group Director of Operations at Hong Kong listed China Light and Power, to provide additional support to the China operations
- The Hong Kong team will implement its new business plan to access capital at KALiNA's China subsidiary level. Investment will be targeted from strategic partners and regional investors familiar with technologies such as the KALiNA Cycle Technology that are being adopted in the region at a prolific pace
- Discussions with Sinopec and other major industrial companies in China has broadened the scope and the scale of opportunities now being pursued by the Hong Kong team as the new China business plan is being implemented

Multiple Projects Underway in Western Canada

21MW Combined Cycle power plant

- KALiNA's team in Western Canada are former core members of Pristine Power
- 15MW Gas turbine combined with a 6MW KALiNA Cycle to generate 21MW of power
- Significant performance advantages from KALiNA Cycle generates 40% additional power using the gas turbine waste heat
- Capital Cost of \$50 million to be provided by project equity funders
- Anticipated IRR's exceeds known investment hurdles for project equity funders and provide for a carried interest for KALiNA
- Anticipated **payback within 4.9 years** assuming conservative estimates and mid-range electricity forecasting
- Package design and modularisation will facilitate cost effective multiple repeatable deployments



Addressable Market Represents an Opportunity for ≥ 25 Projects

We have identified a market for ≥ 500 MW of gas fired production that could utilize up to 165 MW of KALiNA Cycle capacity

Key market drivers

- Strong regional industrial demand for electricity
- Large volumes of natural gas is available at attractive prices
- Closure of 5,000MW of coal fired power generation
- Credits and subsidies encourage distributed small and local electricity generation (below 25 MW) that does not burden transmission lines
- Attractive power price, credits and subsidies provide overall revenue of **9.2c to 11.2c** per kWh

EPC Delivery Partner 'Phoenix'

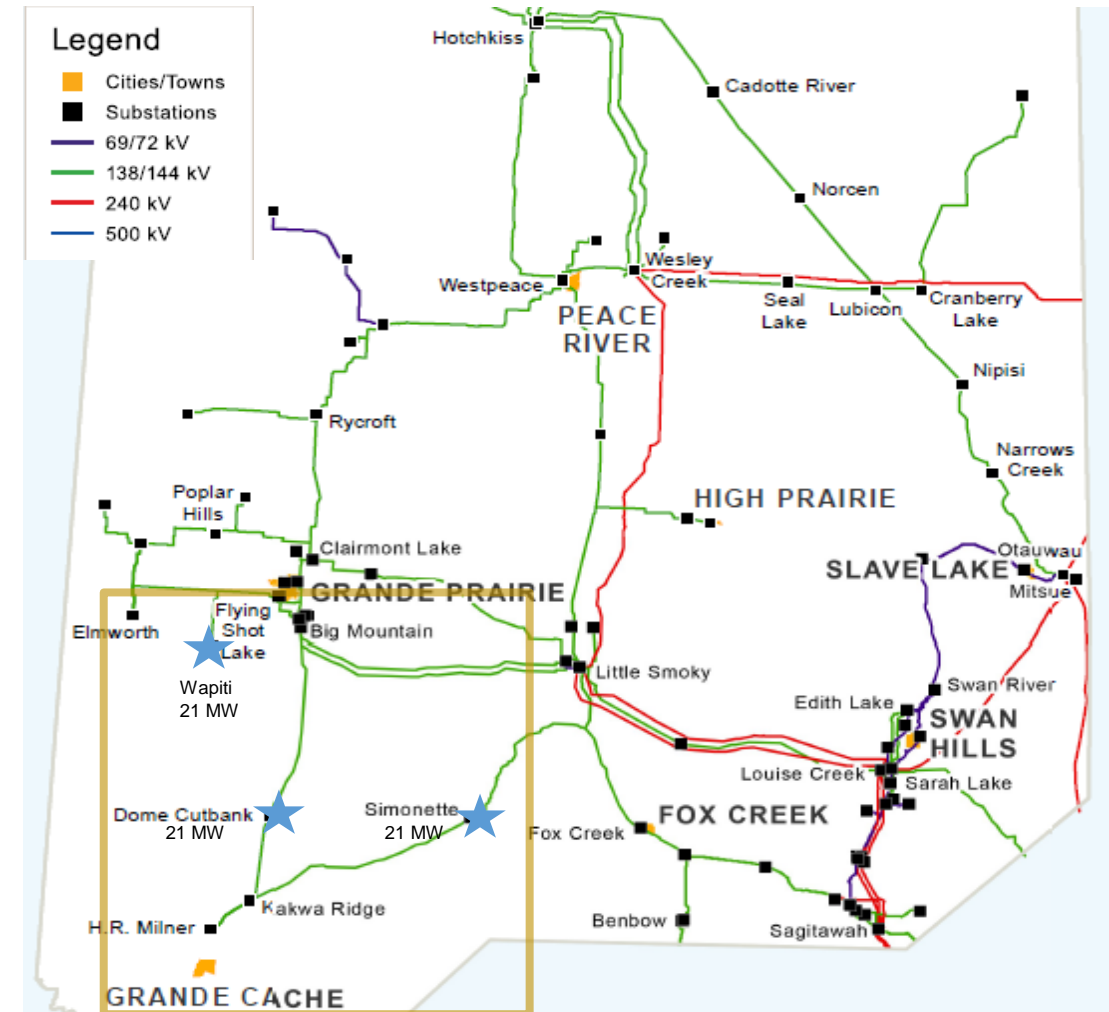
- Exclusive development agreement **for 6 power projects** with Phoenix, a major North American EPC group, a subsidiary of Quanta Services
- Phoenix is contributing engineering, design, schedule, permitting and pricing work on their account
- Phoenix provide high Quality EPC services in the energy sector throughout North America and manage projects throughout the life cycle including:
 - construction management & equipment procurement,
 - installation of equipment foundations & building structures,
 - installing and testing the equipment and systems, and training plant operators.

Three Sites are Prioritised for Immediate Development

Connecting to existing power substations with 25MW interconnect to the grid

Initial Six Sites Identified

- ✓ Initial six sites within the Grand Prairie region of Alberta
- ✓ Key focus on land availability, interconnect costs and gas supply and connections
- ✓ Land availability for new plants – primarily crown land with nominal rent
- ✓ Three sites now progressing for first installations of the 21 MW CCGT power plant



Projects Expected to Deliver Attractive Financial Returns

- Fast time to market for repeatable projects: Less than 2 years
- Total cost of each project: \$50million
- Unlevered Rate of Return on Equity: 13%
- Payback: 4.9 years
- Levered Rate of Return on Equity with 60% debt: 19.3%

First plant 100% equity funded and later refinanced with debt. Assume all other projects will be funded with 60% debt

These examples are based on a variety of factors including estimates of a 10% equity carried interest that may be negotiated and the royalty rate payable per MW. Project revenues are based on third party forecasts for energy and gas pricing. There is no certainty that the revenues for a project and therefore the revenues payable to KALiNA from a project will be achieved in the amounts set out above.

Anticipated Value to KALiNA From Each 21MW Project

Near term revenue combined with long term annual cash flow from each project

- KALiNA's specialised **Engineering Services** to be earned during development and construction:
(Years 1 and 2): **\$300,000**
- KALiNA Cycle **royalty IP license** @ \$250,000 per MW of KALiNA Cycle due upon completion:
(end of Year 2): **\$1,500,000[#]**
- KALiNA's development subsidiary to **earn a Free Carried Interest in the annual cash flow**:
 - Minimum **carried interest** of each project's IRR of 0.5% (from Year 3 to Year 20): **\$975,000 to \$1,400,000***
 - Negotiating to **share upside in the value of IRR's** that exceed threshold rates of project equity funders

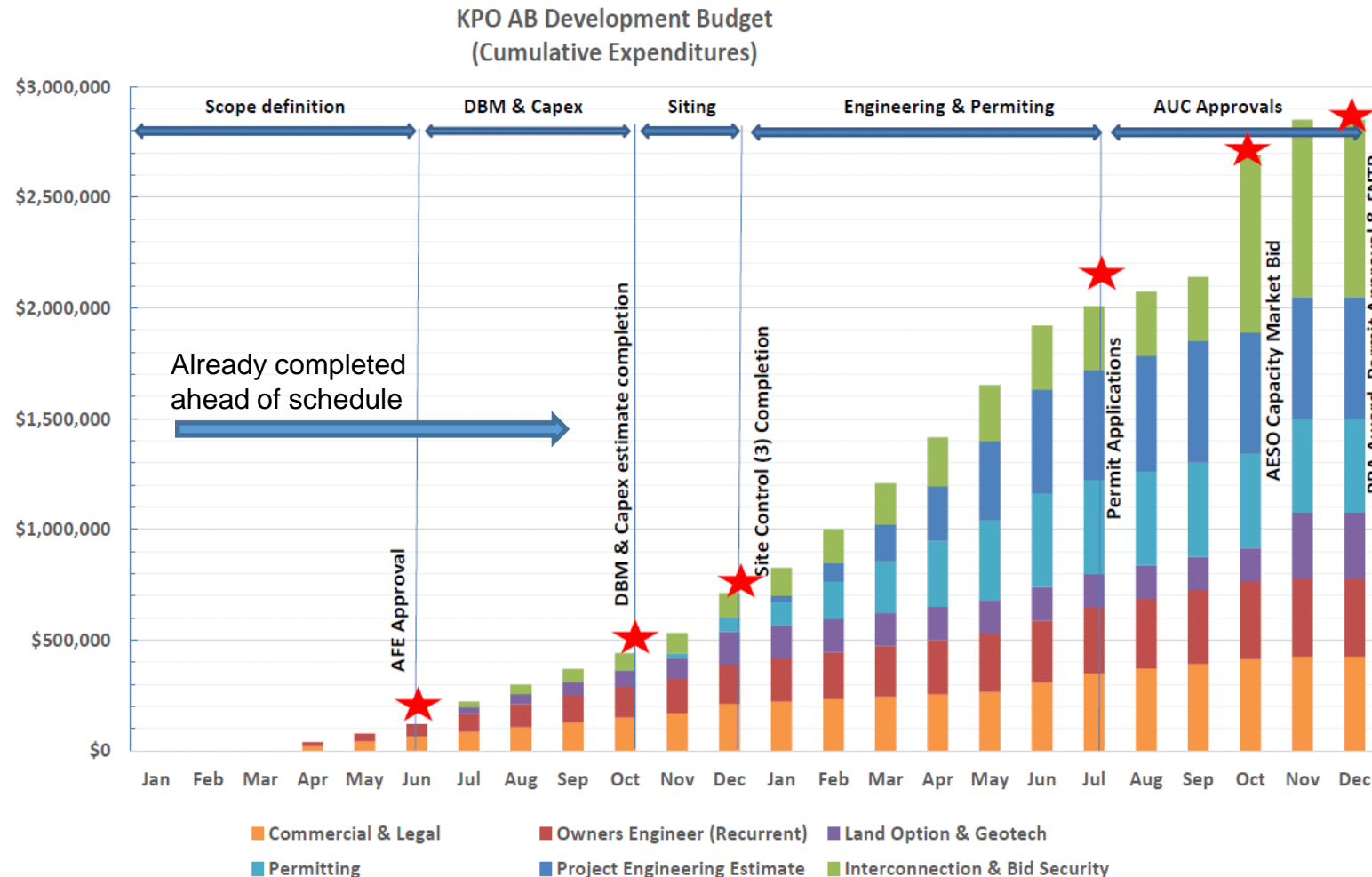
[#] The upfront royalty of \$250,000 per MW is equivalent to the NPV¹⁰ of \$35,000 per MW per annum royalty which is an alternative the Company may negotiate on a project

^{*} The range represents the increase in annual revenue commencing in year 3 through to year 20 due to factors such as forecast rise in power prices

These examples are based on a variety of factors including estimates of a carried interest in a project's IRR of 0.5% (equal to a 10% equity carried interest in a project) that may be negotiated and the royalty rate payable per MW. Project revenues are based on third party forecasts for energy and gas pricing. There is no certainty that the revenues for a project and therefore the revenues payable to KALiNA from a project will be achieved in the amounts set out above.

Three Initial Sites – Development Timetable and Costs

Construction commences 2019. Projects Generating Power Q1 2021



Development Funding

c. \$2.75million for initial three sites

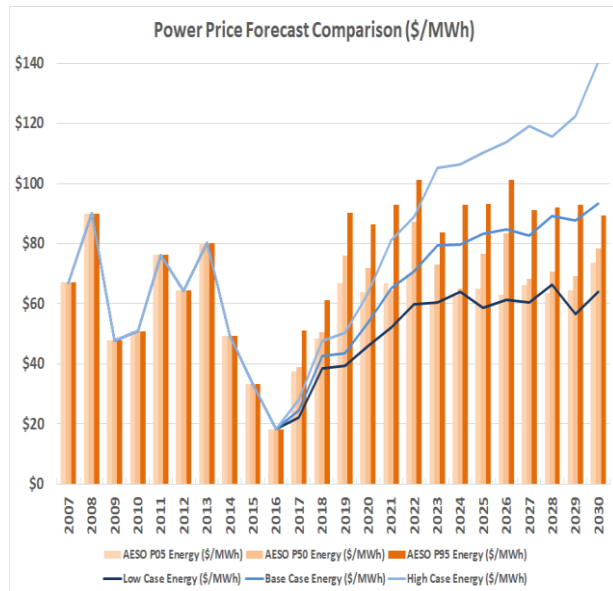
Contributions from Phoenix EPC and any strategic partner funding reduces KALiNA share

KALiNA's share of development funding costs are estimated to be under \$1million

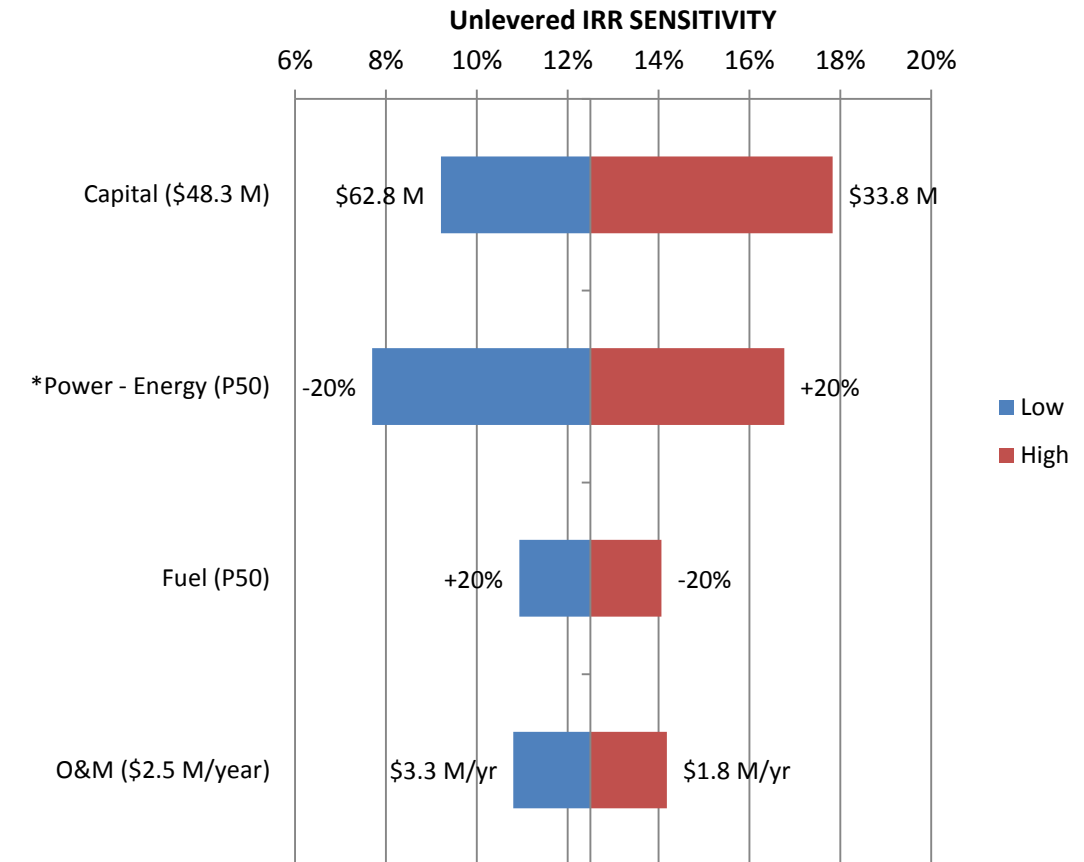
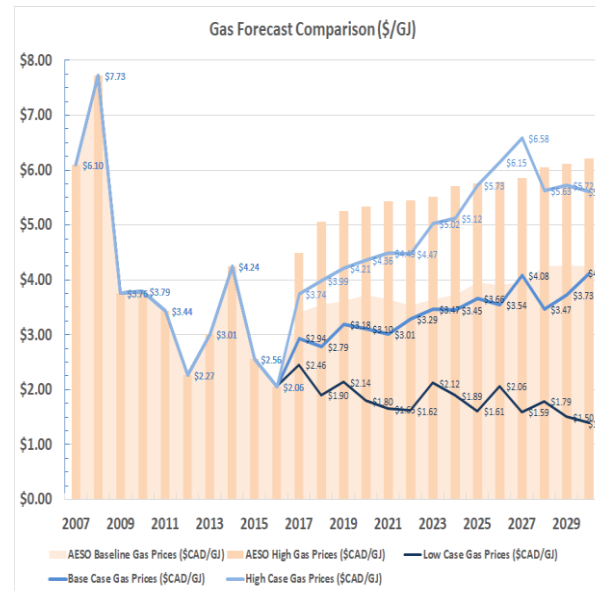
Sensitivity Analysis

Various risks to the upside and downside of the projects include

Power Price



Gas Price



* Power and Fuel (gas) prices not linked in this sensitivity but normally a move in one would offset in the other to a large degree



Future Sites

- **Three 21 MW sites** currently under development **represent 63 MW**
- We are starting to 'Land Bank' to secure ten additional sites
- Future sites will have similar permitting, gas interconnect and electricity demand to facilitate deployment of modularised plants

Appendix - KALiNA is Building on the Success of Key Projects

Sumitomo Metals and Fuji Oil in Japan, and Unterhaching in Germany, are showcase examples of successful KALiNA Cycle® projects

Attributes of successful projects

- ✓ Compliance with KALiNA's engineering design and equipment specifications
- ✓ Projects that utilised KALiNA's engineering team and world class EPC firms

Key focus for future projects

- ✓ Strict compliance with KALiNA's engineering design and equipment specifications
- ✓ Project delivery through world class EPC firms
- ✓ Select major equipment vendors to provide high quality, standardised equipment for high performance, shorter lead times and better inventory management

Sumitomo Metals (Steel)



- Location: Japan
- EPC partner: Ebara Corporation
- Commissioned: 1999
- Capacity: **3.5 MWe**
- Steel mill: 98°C water
- Operated trouble-free with an **availability above 96%**
- Performance tests conducted by Japan's MITI¹ confirm that the **performance exceeds the design specifications**

Fuji Oil (Petrochemical)



- Location: Japan
- EPC partner: Chiyoda Engineering
- Commissioned: 2005
- Capacity: **4.0 MWe**
- Petrochemical plant: 116°C condensing overhead vapours
- Annual **availability of 97%**
- Able to **perform continuously, safely and reliably, despite fluctuating conditions**

Unterhaching (Geothermal)



- Location: Germany
- EPC partner: Siemens
- Commissioned: 2009
- Capacity: **3.4 MWe**
- Geothermal power plant: 120°C thermal water
- Dynamic system that responds to changing heating requirements and environmental conditions
- System allows for **100% constant use** of thermal water
- **Exceptional solution for utilising low temperature geothermal resource** to deliver heating and power

1. MITI: Ministry of International Trade & Industry