

## **ASX Quarterly Report for the Period Ended 30 June 2009**

### **HIGHLIGHTS**

#### **India**

- **Site selected for first Indian Hythane® bus demonstration project**
- **Preliminary approval received for second Hythane® bus demonstration project in Mumbai**
- **Indian joint venture under negotiation for up-scaling new pyrolysis technology to separate methane into hydrogen and solid carbon**
- **First Indian demonstration of Eden's dual fuel kit for diesel engines expected within 2-3 months**
- **India targets 200 cities to have natural gas by 2015**
- **Indian production of natural gas from KG basin commences**

#### **United States**

- **San Francisco Airport Hythane® Project underway, with first hydrogen and Hythane stations on target to become operational by mid 2010**
- **First US Hythane calibrated engine receives Californian Air Resources Board certification allowing commercial sales to commence**
- **Initial US marketing attracts strong interest from dealers of a major engine manufacturer in Hythane Company's OptiBlend Dual Fuel Kit**

#### **UK & Australia**

- **Negotiations commence with potential joint venture partners for Eden's coal bed methane, natural gas and geothermal energy projects.**

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# **HYDROGEN, HYTHANE® AND DUAL FUEL PROJECTS**

## **Background - India**

Encouraging progress continued with Eden's various hydrogen and Hythane® projects in India during the June quarter. In 2006, India adopted a Hydrogen Roadmap that proposes to have 20% of all vehicles running on a hydrogen based fuel by 2020, and plans to use hydrogen enriched natural gas (Hythane®) as the transitional fuel. At present there are approximately 12 Indian cities that have established natural gas distribution networks, in which expanding numbers of natural gas fueled vehicles, particularly buses, are operating. During this quarter, the Indian Government announced a new target to expand such networks to 200 cities by 2015 – opening up a potentially huge Hythane® market across the country.

Additionally, commercial production of natural gas from the large offshore KG basin commenced during the quarter, which is expected to significantly increase the amount of available natural gas in the coming months. These factors together make India the primary target market for Eden's hydrogen and Hythane® technology.

## **Progress on Eden's Indian Projects**

### **1 Indian Hythane Bus Demonstration Projects**

There was progress on each of the two proposed Hythane® bus demonstration projects during the quarter. These projects will each involve the installation of a hydrogen reformer and Hythane® blending and dispensing facilities, and testing of Hythane® fuel on between 50-75 buses over a 6-12 month period.

During the quarter, a site for the proposed demonstration with Gujarat State Petroleum Corporation, with which Eden has entered into a preliminary memorandum of agreement, was selected and preliminary engineering drawings and designs completed. A full budget and a detailed proposal have been prepared and are awaiting final discussions, which are planned to be held within the next 4-6 weeks. Following completion of these discussions and subject to receipt of formal Board approvals, a formal agreement is proposed to be entered into and the project should commence within approximately three months of the signing of the agreement, and be completed within nine months after commencement.

Preliminary Board approval was also obtained from the first of the two parties involved in the second proposed Indian Hythane® bus demonstration project, which will be similar in size and scale to the Gujarat demonstration project, and which is planned to be conducted by Eden in Mumbai. Formal approval of the Board of Directors of the second party is still required and subject to this approval being obtained, it is hoped that all necessary formalities for this project will be completed within the following 3 months, shortly after which the project will commence.

Proposals for conversion of additional Indian natural gas bus engines to operate on Hythane® have been submitted to the major Indian bus manufacturers, and Eden is confident that suitable, high efficiency, ultra-low emission Hythane® fuelled buses will be available for these demonstrations when they begin. These demonstrations are planned to deliver both commercial and environmental results that will lead to the rollout over the next 5 years of a large scale, commercially viable, ultra-clean public bus system in India operating on Hythane® fuel.

## **2 Proposed Joint Venture for Up-scaling Pyrolysis Technology**

Discussions are progressing with a potential Indian partner to undertake a scale-up to pilot plant scale of a technology, jointly owned and developed by Eden with the University of Queensland over the past four years, and over which patent applications have been lodged in over 50 countries, through which natural gas (methane) is separated into its primary constituents of hydrogen (that can be used as a very clean fuel) and solid carbon.

Solid carbon is produced by this technology in various forms, including carbon fibres and carbon nanotubes, which have a tensile strength of up to 300 times that of steel while weighing less than 20% of the weight of steel. Super-strong, ultra light weight carbon fibre based composite materials are already used in many high technology applications, including replacing steel and aluminium in Formula 1 racing cars and other high end performance cars and by both Boeing and Airbus in their new very strong, light weight fuel-efficient aircraft, but its current production method is relatively energy intensive, and the material is presently very expensive.

Similarly, at present, the normal method of producing hydrogen from natural gas has the unwanted effect of producing carbon dioxide as a by-product.

Eden's new technology, however, is anticipated to be more energy efficient and has the potential to not only produce hydrogen from natural gas at a relatively low cost, but to have extremely valuable solid carbon instead of carbon dioxide as its only by-product. This opens up exciting possibilities for future low cost widespread commercial use of ultra-strong and ultra-light material using carbon fibre and carbon nanotubes, particularly in the motor vehicle and aircraft industries. With automobiles for instance, it has been estimated that the total weight of of the average car could be reduced by more than 50% by using carbon composite materials for both the chassis and body panels, offering a great reduction in fuel consumption resulting from the reduction in weight and also potentially huge reductions in the greenhouse gas emissions over the life of the vehicle, due to both the use of the carbon as a structural material to displace steel and aluminium, and also to the reduced fuel consumption.

Additionally, the value of the carbon which will be produced is projected to result in the effective cost of hydrogen being greatly reduced, thereby increasing the competitive benefits of both Hythane® and hydrogen as ultra-low emission, ultra-low greenhouse gas producing fuels.

## **3 Dual Fuel Technology**

Eden has completed the development of a very efficient dual fuel kit that is capable of operating on diesel engines and displacing up to 70% of the diesel fuel with natural gas. If Hythane® is used in place of natural gas, the displacement could be as high as 80-85%. The use of the natural gas will greatly reduce greenhouse gas emissions and, in places where natural gas is cheaper than diesel, will also reduce fuel costs. In various parts of India, natural gas is already significantly cheaper than diesel, and accordingly Eden has been targeting a diversified market for this technology, starting with stationary power generators and then locomotives.

It is anticipated that Eden will secure its maiden Indian dual fuel test sites during the next 2-3 months, and this project is budgeted to start generating revenue from early in 2010. Apart from greatly reducing local air pollution resulting from NOx, carbon monoxide and particulate matter emissions, the new dual fuel kits are projected to have a pay-back period of between 6-24 months, depending upon the size of the engine and the amount of usage.

## Progress on Eden's US Projects

### 1 San Francisco International Airport (SFO)

For the past quarter, progress on the Hythane® station at San Francisco International Airport has been on schedule. For this project, Hythane Company has received funding for station infrastructure as well as the conversion of 27 Ford E-450 airport shuttles to run on Hythane®. A project using this significant number of vehicles will demonstrate the practicality of Hythane® vehicles for large-scale projects across the US.

Funding is being supplied by the Bay Area Air Quality Management District (BAAQMD) and the San Mateo County Government, with additional funding anticipated through two separate grants from the Department of Energy (DOE). Recently, the major merchant gas company with which Hythane Company is working on this project, received grant funding for its hydrogen fueling station adjacent to the Hythane® station. This award is a significant boost to the Hythane® project as it makes low-cost hydrogen readily available at the site

The SFO Hythane project is currently in the design and permitting stage, with construction planned for later this year. Both the hydrogen and Hythane® stations are expected to be completed and operational by the middle of 2010.

### 2 BAF Hythane® Engine Calibration

Hythane Company, in conjunction with BAF Technologies, has developed a Hythane® calibration for Ford 6.8L V10 engines used in E-450 vehicles. This calibration, which demonstrates the dramatic emissions reductions that can be achieved through the use of Hythane®, was granted certification during July 2009 by the California Air Resources Board (CARB). CARB certification allows commercial sale and use of this engine, no longer limiting it to use in demonstration projects.

The Hythane® calibration provides dramatic emissions reductions over the natural gas version of the engine, which already provides substantial emissions benefits as compared to the gasoline version of the engine. Specifically, the Hythane® calibration achieves a 10.5% reduction in CO<sub>2</sub>, a 40% reduction in non-methane hydrocarbons, a 49% reduction in CH<sub>4</sub> emissions, and a 70% reduction in particulate matter over the natural gas version of this engine.

Non-methane hydrocarbon emissions contribute to the formation of photochemical smog, a significant problem in many urban areas. In addition to causing local air pollution, these emissions are also powerful greenhouse gases.

In addition to emissions reductions, the use of Hythane® fuel provides a 3.9% efficiency gain over the natural gas version of the particular engine. When spread over a large fleet, efficiency gains provide considerable economic benefit. With other types of engines, even greater efficiency gains of up to 15% are anticipated in the future.

The Hythane® engine calibration was designed for the Hythane project in progress at San Francisco International Airport (SFO) referred to above, and Hythane Co will receive a royalty for the sale of each Hythane engine sold by BAF.

### **3 City of Hempstead**

As part of the Hythane engine calibration project, BAF Technologies has established a Hythane® version of the Ford E-450 as a standard offering. The City of Hempstead has placed an order for one of these Hythane® vehicles to showcase at their blended fuel station. With the vehicles at SFO, this will place Hythane® vehicles in operation on both coasts of the US, and it is planned to use these to open up further Hythane® vehicle projects around the country.

### **4 Dual Fuel Kits**

Dealers throughout the US for a major engine manufacturer have shown a strong interest in the OptiBlend Dual Fuel Kit developed by Hythane Company. The OptiBlend Kit, which is the same as that currently being introduced into India, allows the conversion of a diesel generator to run on up to 70% natural gas. In addition to being a less expensive fuel, natural gas provides dramatic emission reductions over diesel fuel.

Noting the advantages of the OptiBlend over other commercially available kits, many US dealers are now actively marketing the kit, specifically in the Gulf Coast area. This region is heavily dependent upon backup diesel generators for power during natural disasters such as hurricanes. The OptiBlend allows a doubling of available power for a given amount of diesel, which adds to the appeal of the kit for these regions of the US.

### **5 Hythane® in Stationary Power**

Hythane® fuel in natural gas generators can provide significant emissions reductions over ordinary natural gas. Hythane is exploring the applicability of this technology to smaller stationary generators in Southern California.

If it is proven that Hythane can provide sufficiently low emissions to comply with state and local regulations, the technology will offer a low-cost alternative to pure hydrogen generators, which is one of the only approved methods for generating power on a small scale. Given the high price of power in Southern California, small-scale power holds tremendous market potential for Hythane®.

## **ENERGY PROJECTS**

### **UK Coal bed Methane, Conventional Natural Gas and Shale Gas Project**

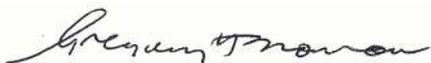
During the quarter, the major gas company that acquired 90% of Eden's interest in the coal bed methane in four of its 18 licences and which is meeting all the costs of the next £500,000 of expenses, commenced a review of all past work in the area.

Additionally, a review was undertaken of previous seismic surveys over the licence areas in South Wales and plans are being formulated for a further detailed seismic review of the promising conventional gas and shale gas targets.

Discussions have also commenced with our joint venture partner and a third party with a view to possibly establishing a single highly resourced UK-based gas producer. Further discussions are planned during the September quarter to evaluate market conditions and assess terms for the establishment of such a joint entity.

### **Australian Natural Gas and Geothermal Projects**

No further work occurred on these projects during the quarter. A suspension of the geothermal obligations until the end of 2009 has been secured to enable suitable funding to be secured. To this end, discussions have commenced with an interested party on alternative ways of structuring a joint operation, and it is hoped to further these discussions during the September quarter.



**Gregory H Solomon**

*Executive Chairman*

### ***About Eden Energy Limited***

Eden Energy Ltd is a diversified clean energy company that listed on the Australian Securities Exchange in June 2006. Eden has interests in hydrogen production, storage & transport fuel systems, including the low emission Hythane hydrogen-methane blend, coal seam & abandoned mine methane in the UK, conventional gas in SA, low temperature pyrolysis research into hydrogen production and geothermal energy production.

All these aspects of Eden's business are part of an integrated strategy to become a major global participant in the alternate energy market, particularly focussing on the clean energy transport market, producing hydrogen without any carbon emissions, transporting the hydrogen to markets & providing the engines to power hydrogen-based transport & energy solutions.

For further information please contact Greg Solomon (+61 8 9282 5889) or visit our website ([www.edenenergy.com.au](http://www.edenenergy.com.au)).

# Appendix 5B

## Mining exploration entity quarterly report

Introduced 1/7/96. Origin: Appendix 8. Amended 1/7/97, 1/7/98, 30/9/2001.

Name of entity

EDEN ENERGY LIMITED

ABN

58 109 200 900

Quarter ended ("current quarter")

30 JUNE 2009

### Consolidated statement of cash flows

Cash flows related to operating activities		Current quarter \$A'000	Year to June (12 Months) \$A'000
1.1	Receipts from product sales and related debtors	351	4,493
1.2	Payments for (a) exploration and evaluation (b) development (c) production (d) administration (e) other (see note below)	(15)     (340) (827)	(1,266)     (1,215) (10,470)
1.3	Dividends received		
1.4	Interest and other items of a similar nature received	23	63
1.5	Interest and other costs of finance paid		
1.6	Income taxes paid		
1.7	Other (provide details if material)		
<b>Net Operating Cash Flows</b>		<b>(808)</b>	<b>(8,395)</b>
<b>Cash flows related to investing activities</b>			
1.8	Payment for purchases of: (a)prospects (b)equity investments (c)other fixed assets	(1)	(142)
1.9	Proceeds from sale of: (a) prospects (b)equity investments (c) other fixed assets	(2) 300	5,731 736 28
1.10	Loans to other entities		
1.11	Loans repaid by other entities		
1.12	Other (provide details if material)		(662)
<b>Net investing cash flows</b>		<b>297</b>	<b>5,691</b>
1.13	Total operating and investing cash flows (carried forward)	(511)	(2,704)

#### Notes

1.2e Other - relates to payments to suppliers and employees by Eden's wholly owned subsidiaries; Eden Energy India Pvt Ltd and Hythane Co LLC (up to 31 December 2008 this also included HyRadix and Eden Cryogenics) which are trading companies and these payments mainly consist of payments for cost of goods sold, inventory and overheads.

1.13	Total operating and investing cash flows (brought forward)	(511)	(2,704)
	<b>Cash flows related to financing activities</b>		
1.14	Proceeds from issues of shares, options, etc.		(157)
1.15	Proceeds from sale of forfeited shares		
1.16	Proceeds from borrowings		1,452
1.17	Repayment of borrowings		(27)
1.18	Dividends paid		
1.19	Other (provide details if material)		
	<b>Net financing cash flows</b>	-	1,268
	<b>Net increase (decrease) in cash held</b>	(511)	(1,436)
1.20	Cash at beginning of quarter/year to date	3,648	4,323
1.21	Exchange rate adjustments to item 1.20	(79)	171
1.22	<b>Cash at end of quarter</b>	3,058	3,058

**Payments to directors of the entity and associates of the directors**  
**Payments to related entities of the entity and associates of the related entities**

		Current quarter \$A'000
1.23	Aggregate amount of payments to the parties included in item 1.2	119
1.24	Aggregate amount of loans to the parties included in item 1.10	-

1.25 Explanation necessary for an understanding of the transactions

Management Fees, as per agreement, were paid during the quarter to a company of which Mr GH Solomon and Mr DH Solomon are directors.  
Directors Fees paid during the period.  
Legal Fees were paid during the quarter to a firm of which Mr GH Solomon and Mr DH Solomon are partners.

**Non-cash financing and investing activities**

2.1 Details of financing and investing transactions which have had a material effect on consolidated assets and liabilities but did not involve cash flows

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2.2 Details of outlays made by other entities to establish or increase their share in projects in which the reporting entity has an interest.

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**Financing facilities available**

Add notes as necessary for an understanding of the position.

		Amount available \$A'000	Amount used \$A'000
3.1	Loan facilities	Nil	Nil
3.2	Credit standby arrangements	Nil	Nil

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### Estimated cash outflows for next quarter

	\$A'000
4.1 Exploration and evaluation	50
4.2 Development	
<b>Total</b>	<b>50</b>

### Reconciliation of cash

Reconciliation of cash at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts is as follows.	Current quarter \$A'000	Previous quarter \$A'000
5.1 Cash on hand and at bank	3,058	3,648
5.2 Deposits at call	-	-
5.3 Bank overdraft	-	-
5.4 Other (provide details)	-	-
<b>Total: cash at end of quarter (item 1.22)</b>	<b>3,058</b>	<b>3,648</b>

### Changes in interests in mining tenements

	Tenement reference	Nature of interest (note (2))	Interest at beginning of quarter	Interest at end of quarter
6.1	Interests in mining tenements relinquished, reduced or lapsed			
6.2	Interests in mining tenements acquired or increased			

## Issued and quoted securities at end of current quarter

Description includes rate of interest and any redemption or conversion rights together with prices and dates.

		Total number	Number quoted	Issue price per security (see note 3) (cents)	Amount paid up per security (see note 3) (cents)
7.1	Preference +securities (description)	NOT APPLICABLE			
7.2	Changes during quarter (a) Increases through issues (b) Decreases through returns of capital, buy-backs, redemptions				
7.3	<b>+Ordinary securities</b>	181,458,422	181,458,422		
7.4	Changes during quarter (a) Increases through issues (b) Decreases through returns of capital, buy-backs	1,017,083	1,017,083		
7.5	<b>+Convertible debt securities</b> (description)	NOT APPLICABLE			
7.6	Changes during quarter (a) Increases through issues (b) Decreases through securities matured, converted				
7.7	<b>Options</b>	88,064,348	88,064,348	<i>Exercise price</i> 20 cents	<i>Expiry date</i> 30 Sep 2009
		450,000	NIL	25 cents	30 Aug 2009
		500,000	NIL	58.5 cents	5 April 2012
		1,500,000	NIL	70 cents	7 May 2010
		1,000,000	NIL	68.5 cents	13 May 2010
		650,000	NIL	68.5 cents	15 May 2010
		1,475,000	NIL	68.5 cents	15 May 2011
		50,000	NIL	31 cents	25 March 2011
		1,227,000	NIL	45 cents	30 June 2011
		335,000	NIL	20 cents	14 May 2012
		500,000	NIL	38.5 cents	26 May 2013
7.8	Issued during quarter	886,763	886,763	20 cents	30 Sep 2009
		335,000	NIL	20 cents	14 May 2012
7.9	Exercised during quarter				
7.10	Expired during quarter	4,000,000	NIL	20 cents	5 Jun 2009
7.11	<b>Debentures</b> (totals only)	NOT APPLICABLE			
7.12	<b>Unsecured notes</b> (totals only)	NOT APPLICABLE			

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## Compliance statement

- 1 This statement has been prepared under accounting policies which comply with accounting standards as defined in the Corporations Act or other standards acceptable to ASX (see note 4).
- 2 This statement does give a true and fair view of the matters disclosed.

AARON PHILIP GATES  
CHIEF FINANCIAL OFFICER / COMPANY SECRETARY  
Date: 31 July 2009

## Notes

- 1 The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity wanting to disclose additional information is encouraged to do so, in a note or notes attached to this report.
- 2 The "Nature of interest" (items 6.1 and 6.2) includes options in respect of interests in mining tenements acquired, exercised or lapsed during the reporting period. If the entity is involved in a joint venture agreement and there are conditions precedent which will change its percentage interest in a mining tenement, it should disclose the change of percentage interest and conditions precedent in the list required for items 6.1 and 6.2.
- 3 **Issued and quoted securities.** The issue price and amount paid up is not required in items 7.1 and 7.3 for fully paid securities.
- 4 The definitions in, and provisions of, *AASB 1022: Accounting for Extractive Industries* and *AASB 1026: Statement of Cash Flows* apply to this report.
- 5 **Accounting Standards** ASX will accept, for example, the use of International Accounting Standards for foreign entities. If the standards used do not address a topic, the Australian standard on that topic (if any) must be complied with.

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