

ASX ANNOUNCEMENT

8 April 2020


Economic Study shows Galalar Silica project to deliver big boost to region

- Independent economic study shows Diatreme's Galalar Silica Project to deliver sizeable economic injection into Hope Vale, Cooktown and surrounding region, including approx. \$23-24 million in construction phase and up to \$42m in operation
- Project to generate more than 110 equivalent jobs including flow-on effects, becoming Hope Vale's largest employer outside local government; significant boost to household incomes anticipated
- Estimated total revenue of \$80m per annum, with significant royalties and tax revenue generated.

Emerging silica and mineral sands miner Diatreme Resources Limited (ASX:DRX) announced today an independent economic study undertaken as part of the impacts of the Company's emerging Galalar Silica Project in North Queensland, with the study highlighting the project's potential to deliver significant investment and new jobs for the Hope Vale and Cooktown region.

Conducted by **Cummings Economics** (refer **Addendum** for excerpts), the economic study's key findings include:

- **Construction phase:** total expenditure of \$23-24m; majority of expenditure to be incurred in region/Queensland; direct employment of around 25-26 jobs, with total employment including flow-on effects of around 110 (equivalent full time positions)
- **Operational phase:** total expenditure (with contingencies) of \$42m for Cooktown loading option vs \$23.3m for Nob Point loading; majority of spending in local region; 53 jobs for Cooktown loading vs 41 for Nob Point, with total employment including flow-on effects of 130 vs 90
- **Revenue:** estimated \$80.25m annual revenue based on a production target of 750,000 tonnes per annum high-grade silica (refer to the Company's scoping study released on 9 September 2019) and sale of 750,000 tonnes per annum of high-grade silica at a commodity price of US\$75 (AS\$107) per tonne]; \$1.475m of annual



royalties and over \$10m in company tax, with estimated after-tax return of \$24.7m (Cooktown loading) or \$39.2m (Nob Point loading) per annum.

Note: The Company confirms that all the material assumptions underpinning the production target and the forecast financial information under the Company's scoping study released on 9 September 2019, continue to apply and have not materially changed.

The production target and forecast financial information is based in part (29% of total mineral resource estimate) on inferred resources. 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.


- **Hope Vale community to gain significant benefits**, including new high-paying jobs; income from supply of goods and other services; royalties to project partner, Hope Vale Congress Traditional Owner Group (12.5% project interest); total direct benefits estimated at \$6.2m (Cooktown loading) vs \$10.9m (Nob Point loading); households to enjoy 39% income gain from Cooktown loading and 68% for Nob Point
- **Government savings estimated at \$2m per annum** from reduction in welfare benefits and increased income tax; operation set to become area's largest employer outside Hope Vale Aboriginal Shire Council.

Note: The studies undertaken on the Galalar Silica Sand Project (Project) regarding regional economic and social benefits by Cummings Economics are based on relevant independent assessments and the Galalar Silica Sand Project scoping study (scoping study released to ASX – 9 September 2019 – “Galalar Scoping Study emphasises high return potential”) and have been undertaken as part of the voluntary environmental impact statement (EIS) process Diatreme has underway with the relevant Qld Government regulatory agencies and as such assumes the Project is implemented and has all relevant approvals to undertake the development and mining activity.

The full economic impact study along with all other relevant studies will be released for public examination through the public engagement process of the EIS over the coming months.

A preferred logistical solution for the project is also being advanced in consultation with the relevant regulatory agencies. Nob Point is considered the most environmentally and economically beneficial option compared to trucking product from the mine site for loading at Cooktown, as this latest study reinforces.

Located around 200km north of Cairns and 20km from the port of Cooktown, the Galalar project lies within the same sand dune system and in close proximity to the world's largest operating silica sand mine at Cape Flattery. Testwork has demonstrated the project's ability to produce a premium-grade product for solar (photovoltaic) panels and also ultra-thin electronics, attracting significant price premiums.



Diatreme recently announced a 26% expansion of the project's total resource to an estimated 38 million tonnes > 99% SiO₂ (silicon dioxide), consisting of an increase in inferred resources of 7.8 million tonnes (refer ASX announcement on 20 February 2020). The Company has lodged a Mining Lease Application and is progressing environmental studies with the aim of fast-tracking development, targeting Asia's fast-growing solar PV and other markets.

Welcoming the study's findings, Diatreme's CEO, Neil McIntyre said: *"This study demonstrates that the Galalar project will have a sizeable beneficial economic impact on the local region, particularly Hope Vale, and we are working closely with our project partner Hopevale Congress to ensure maximum local benefits."*

"The people of Hope Vale and Cooktown are looking for local economic opportunities to ensure a sustainable future and this certainly has the potential to deliver. We are also aiming to ensure the project is 'carbon neutral,' from mining through to end use, ensuring it is both economically and environmentally sustainable."

"While the COVID-19 outbreak has temporarily suspended access within the Hope Vale region, we look forward to resuming our engagement with the local community and regional stakeholders. The launch of a new silica sand mine will make a significant contribution to the economic recovery process and we aim to fast track the regional benefits that will flow from its development."

Authorised for release by:

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COMPETENT PERSON STATEMENT

The information in this report that relates to Mineral Resources at the Galalar Silica Project was announced to ASX on 20 February 2020. The Company is not aware of any new information that materially affects the information included in this announcement and that all material assumptions and technical parameters underpinning the estimates in this announcement continue to apply and have not materially changed.



Forward looking statements: This document may contain forward looking statements. Forward looking statements are often, but not always, identified by the use of words such as “seek”, “indicate”, “target”, “anticipate”, “forecast”, “believe”, “plan”, “estimate”, “expect” and “intend” and statements that an event or result “may”, “will”, “should”, “could” or “might” occur or be achieved and other similar expressions. Indications of, and interpretations on, future expected exploration results or technical outcomes, production, earnings, financial position and performance are also forward-looking statements. The forward-looking statements in this announcement are based on current interpretations, expectations, estimates, assumptions, forecasts and projections about Diatreme, Diatreme’s projects and assets and the industry in which it operates as well as other factors that management believes to be relevant and reasonable in the circumstances at the date that such statements are made. The forward-looking statements are subject to technical, business, economic, competitive, political and social uncertainties and contingencies and may involve known and unknown risks and uncertainties. The forward-looking statements may prove to be incorrect. Many known and unknown factors could cause actual events or results to differ materially from the estimated or anticipated events or results expressed or implied by any forward-looking statements. All forward-looking statements made in this announcement are qualified by the foregoing cautionary statements.

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ADDENDUM: EXCERPTS FROM CUMMINGS ECONOMICS IMPACT REPORT, MARCH 2020

DIRECT & MODELLED ECONOMIC IMPACT – GALALAR SILICA PROJECT

Construction Phase

Table 1: Summary of Expenditure Generated Construction Phase

	Cooktown Loading	Nob Point Loading
Mine	\$m	\$m
Mine site civil works	\$0.250	\$0.250
Laboratory	\$0.500	\$0.500
Generator & power supply system	\$0.750	\$0.750
Water supply	\$0.500	\$0.500
In pit plant feed system	\$0.500	\$0.500
Wet processing plant, offices, workshops & amenities	\$10.000	\$10.000
Freight	\$0.200	\$0.200
Sub Total	\$12.700	\$12.700
Road Transport		
Upgrade road to Cooktown	\$1.750	-
Upgrade road to Nob Point	-	\$1.000
Sub Total	\$1.750	\$1.000
Barge Transfer		
Barge loading facility	\$5.000	\$5.000
Endeavour River channel	\$0.100	-
Sub Total	\$5.100	\$5.000
Contingencies		
Contingencies 25%	\$4.888	\$4.675
Sub Total	\$4.888	\$4.675
Overall Total	\$24.438	\$23.375

Capital costs of the two alternatives [are] estimated to be about the same but with Nob Point slightly less due to less distance of road upgrading.

Table 2: Summary of Location of Expenditure Construction Phase

	Cooktown Loading		Nob Point Loading	
Location	\$m	%	\$m	%
Hope Vale	\$3.063	12.5%	\$3.188	13.6%
Cooktown	\$1.750	7.2%	\$0.688	2.9%
Cairns	\$2.186	8.9%	\$2.063	8.8%
Queensland	\$8.500	34.8%	\$8.500	36.4%
Australia	\$4.375	17.9%	\$4.375	18.7%
Imports	\$4.563	18.6%	\$4.563	19.5%
Total	\$24.438	100.0%	\$23.375	100.0%

Thus, in the construction phase, the following percentages of expenditure will accrue.

	Cooktown	Nob Point
Cooktown District	19.7%	16.5%
Cairns/ TNQ Region	28.6%	25.3%
Queensland	63.4%	61.7%

For Cooktown Loading, the \$2.4m of expenditure in Hope Vale (excluding contingencies) will be mainly on the road to Cooktown from the mine (\$1.5m) and about \$700,000 in provision of workforce for other works at the mine and at the barge ramp.

For Nob Point, the \$2.5m in expenditure in Hope Vale (excluding contingencies) is a lesser amount of \$1m on the road to Nob Point and a larger amount of \$0.8m in relation to the construction of the barge ramp at Nob Point along with workforce for aspects of the mine construction.

For the Cooktown barge ramp, the \$1.4m of expenditure in Cooktown is estimated to be mainly for the barge loading facility construction (\$0.8m) and upgrade of the Cooktown road (\$0.23m) with the balance in relation to various works at the mine.

For the Nob Point option, the \$0.5m expenditure in Cooktown is mainly for input into the mine development with about \$0.2m for the barge ramp at Nob Point.

The \$1.7m expenditure for Cooktown Loading and \$1.6m for the Nob Point expenditure in the Cairns area is mainly in relation to the wet processing plant, offices, workshop and amenities construction and the laboratories with some in relation to the water supply and the barge ramp.

Expenditure in the rest of Queensland (excluding contingencies) of \$6.8m for the Cooktown Loading and \$6.8m for the Nob Point Loading alternative, is mainly \$5m for the wet processing plant.

Direct employment generated

It is estimated that employment generated by either of the projects will be of the order of 40 with 25 at the mine site and 15 involved with road development and construction of barge loading facilities.

It is estimated that depending on offerings and requisite services, about 20 of these could be from Hope Vale.

OPERATIONAL PHASE

Direct expenditure generated

Table 3: Summary of Expenditure Generated Operational Phase

	Cooktown Loading \$m	Nob Point Loading \$m
Mining	\$2.028	\$2.028
Front end loader	\$1.140	\$1.140
Earth moving	\$0.288	\$0.288
Bulldozer	\$0.500	\$0.500
Other	\$0.100	\$0.100
Processing	\$6.920	\$6.920
Drilling assaying	\$0.300	\$0.300
Employees	\$3.120	\$3.120
Generator	\$1.500	\$1.500
Water supply	\$0.150	\$0.150
Freight	\$0.075	\$0.075
Other	\$0.600	\$0.600
Road Transport	\$12.000	\$2.500
Maintain roads	\$0.750	Nil
Truck loading	\$0.750	\$0.750
Trucking	\$10.500	\$1.500
Barging	\$16.750	\$9.250
Barge loading facility	\$0.250	Nil
Barge transshipment	\$15.000	\$7.500
Ship loading	\$1.500	\$1.500
Overheads	\$0.500	\$0.500
Management, marketing, planning, accounting	\$0.500	\$0.500
Total (excluding contingencies)	\$38.198	\$18.700
Total with contingencies	\$42.018	\$23.375

The table indicates that the Nob Point alternative involves expenditure of about half that with shipment via a Cooktown loading facility, ie. a saving of approximately \$20m per annum.

Expenditure is expected to take place in the following locations.

Table4: Summary of Location of Expenditure (including contingencies) Operational Phase

	Cooktown Loading		Nob Point Loading	
Location	\$m	%	\$m	%
Hope Vale	\$8.281		\$9.820	
Cooktown	\$8.745		\$2.805	
Other Cairns Region	\$14.130		\$3.404	
Other Queensland	\$2.970		\$1.595	
Other Australia	\$6.792		\$4.592	
Imports	\$1.100		\$1.100	
Total	\$42.018	100.0%	\$23.316	100.0%

The expenditure overseas relates to shipping. Expenditure relating to the rest of Australia relates to barging operation.

Hope Vale expenditure is expected to be higher under the Nob Point alternative. Main reduction in cost with the Nob Point alternative will be in Cooktown through the reduction of the trucking costs.

The strong reduction in expenditure in the rest of the Cairns region is mainly due to the reduction in the trucking costs and the reduced barging costs for Nob Point Loading.

Reduction in other Queensland is mainly due to lower barging costs with Nob Point Loading.

Cumulative expenditure is estimated as follows by location.

Table 5: Cumulative Expenditure Distribution by Area Operational Phase

	Cooktown Loading		Nob Point Loading	
Location	\$m	%	\$m	%
Hope Vale	\$8.281	19.7%	\$9.820	41.2%
Cooktown District including Hope Vale	\$17.031	40.5%	\$12.625	53.0%
Cairns Region including Cooktown District	\$31.060	73.9%	\$16.029	67.3%
Queensland	\$34.030	81.0%	\$17.624	74.0%
Total all areas	\$42.018	100.0%	\$23.318	100.0%



EMPLOYMENT

Diatreme estimates location split up of employment generated during the Operational Phase as follows.

Table 6: Estimated Employment by Location Operational Phase

Cooktown Loading				
Function	Local (Hope Vale & Cooktown)	Other Cairns Region	Other Queensland	Total
Mining	27	-	-	27
Maintenance	4	2	-	6
Road transport	9	-	-	9
Barge transport	13	4	2	19
Total	53	6	2	61
Nob Point Loading				
Function	Local (Hope Vale & Cooktown)	Other Cairns Region	Other Queensland	Total
Mining	27	-	-	27
Maintenance	4	1	-	5
Road transport	4	-	-	4
Barge transport	6	2	1	9
Total	41	3	1	45

Mine staff requirements are estimated to be:

Mine manager

Office administrator

Logistics administrator

Production superintendent

12 x laboratory technicians

4 x shift supervisors

4 x machine operators

12 x process operators

1 x night watchman



ASSESSMENT OF OVERALL LOCAL IMPACTS

Hope Vale

General

There are five different ways that the Hope Vale community will receive economic benefits from the project.

Direct expenditure by the company

- 1) Income from employment of Hope Vale residents.*
- 2) Income from supplying other goods and services to the operation.*
- 3) Royalties received.*
- 4) A share of profits.*

Indirect

- 5) "Flow-on" and developmental benefits as revenue streams are applied to purchase of goods and services in the community.*

The following seeks to quantify the likely level of those benefits.

Direct expenditure by the company

The Company estimates that it will make expenditure in Hope Vale of \$3m during the construction period and during the operating period, Cooktown Loading \$8.3m and Nob Point Loading \$9.8m.

This will be through direct employment by the Company and purchase of goods and services from Hope Vale businesses.

Income from employment

During the Construction Phase, much of the workforce will be contractors and workers with special skills. However, depending on offering and skills, there is likely to be scope for employment from Hope Vale of about 20, of a total of 40, over a 6 – 8 month period.

Major impact on employment will come from the operational period. The indications are that potential local employment (Hope Vale and Cooktown) will be in the range of 50 (Cooktown Loading), 40 (Nob Point Loading). It can be expected that some of those jobs with special skills will be supplied out of Cooktown and especially for Cooktown Loading.



Employment from the Hope Vale community could be expected to be of the order of 35. Given that the 2016 Census indicated unemployment in the community standing at 164, there is more than adequate potential supply.

Potentially, wages will be relatively high. Of significance for the local economy will be pay net of tax, ie. "take home" pay. At a rate of say \$110,000 a year and \$80,000 a year take home pay (assumes an average across all positions), this would total \$2.2m construction phase and \$3.85m operational phase and disposable income entering the community would be of the order of \$1.6m pa during the construction phase and \$2.8m pa operational phase.

Income from supply of goods and other services

Employment in Hope Vale is primarily in government services. Current business sector in Hope Vale is very limited and consists of:

Supermarket

Service station

Takeaway

Cafe

Post Office

Bait & tackle shop

Art & culture centre

Elim Camp Ground

There has been an investment in a concrete batching plant and Council would be available to supply some services.

The main businesses in Hope Vale that could be expected to provide services for construction & operations are likely to be:

- *The Council (road construction, upgrades and ongoing maintenance, airstrip)*
- *Nambal (quarry materials, earthmoving and road transport)*
- *The shopping centre (general supplies for personnel and facilities)*
- *The concrete plant (concrete for construction including barge facility & roads)*

New services that could be established that the company might be able to buy from include:

- *Native plant nursery to provide seed and seedlings for land rehabilitation*
- *Vehicle maintenance workshop*
- *Structural fitting and welding*
- *Diesel mechanic*

- *Electrical installation & maintenance*
- *Cleaning offices, amenities and facilities*

Prospects of businesses developing to supply to the mine in the future is discussed in later Section.

Estimated expenditure based on total indirect employee expenditure works out at an estimated:

Construction Period \$0.8m

Operational Period:

Cooktown Loading \$4.4m

Nob Point Loading \$5.9m

Much of this expenditure would in turn be on inputs imported into Hope Vale. Assuming “value added” Hope Vale, ie. wages and salaries and gross operating surplus of 40% would give for operating period an estimated Cooktown Loading \$1.8m and Nob Point Loading \$2.4m accruing directly to Hope Vale.

Royalties

**Royalties accruing to Congress are estimated at 1% of sales of \$80m per annum, ie. \$0.8m per annum.*

****Note:*** *Industry standard royalty terms have been assumed for the purposes of this study. Actual royalty rate and final compensatory terms are still subject to negotiation and finalisation between the relevant parties.*

Share of profits

Analysis in Section 4.3 indicates that Congress 12.5% share of profits will be of the order of:

Cooktown Loading \$3.1m

Nob Point Loading \$4.9m

Summary of direct impact

Estimated direct amounts accruing to Hope Vale during operational period are as follows.

	<i>Cooktown Loading</i>	<i>Nob Point Loading</i>
<i>Est direct employment</i>	<i>\$2.8m</i>	<i>\$2.8m</i>
<i>Company purchases in Hope Vale</i>	<i>\$1.5m</i>	<i>\$2.4m</i>



Royalties	\$0.8m	\$0.8m
Est share of after tax profits	\$3.1m	\$3.1m
Total	\$6.2m	\$10.9m

Census 2016 data indicates that there were approximately 295 households in Hope Vale with a median household income given of \$796 per week, ie. a total of \$12.2m.

If median income is based on average and allowing for inflation since 2016, total is probably more like \$16m.

Thus, the indications are that the project will potentially add to household incomes in the community of the order of:

Cooktown Loading	+\$6.2m	+39%
Nob Point Loading	+\$10.9m	+68%

Some of this income would simply replace “welfare” income and the above would overstate the net impact.

On the other hand, the increased expenditure will set up “flow-on” effects in the community. However, the community is small and most of the employment in Hope Vale is government funded and responsive to population rather than incomes and “flow-on” impacts can be expected to be relatively small in the local economy

While, on balance, it is difficult to put a precise figure on it, the indications are that the project has the potential to provide a substantial boost to the Hope Vale economy that would seem to be somewhere of the order of Cooktown Loading, say 25 – 30% and Nob Point Loading, say 45-50%.

Government savings

Hope Vale has a large number of persons receiving unemployment welfare payments from government. Census 2016 unemployed count was 164.

If 35 could be shifted from welfare to employment at the mine, there would be substantial savings in welfare payments, probably of the order of \$1m per annum (35 x \$30,000), but also in this case, there would be a substantial gain in revenue from income tax that would potentially double this amount.

Comparison with other entities

The project will introduce into Hope Vale Local Government Area, a new substantial economic entity. At present, the largest current single entity and employer is likely to be the Council.



The Hope Vale Aboriginal Shire Council has an annual turnover of about \$20m a year and a workforce of permanent 67, casual 20.

Galalar construction phase at about \$24m will be about the same but workforce lower.

During the operational phase, the operating expenditure will be Cooktown Loading approximately \$42m and Nob Point Loading about \$23m and workforce Cooktown Loading 61 and Nob Point Loading 45.

Excerpts End