



A review of the report '*Impact on North Stradbroke Island from Ceasing Sand Mining*'

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Prepared for

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Executive Summary

Economists at Large have undertaken a review of the report, *Impact on North Stradbroke Island from ceasing sand mining (the Unimin Report)*. *The Unimin Report* was conducted by Synergies Economic Consulting (the Consultants) for Unimin Australia (now Sibelco) and released in June 2010. Friends of Stradbroke Island (FOSI) and Stradbroke Island Management Organisation (SIMO) asked Economists at Large to review the findings of the report. We found three main flaws in the Unimin Report:

- **Failure to consider planned mine closures:** The planned closure of the Yarraman mine in 2015 will reduce the volume of mineral sands mined on the island by 34%. This reduction was not included in the Unimin Report. This omission results in the value of sand mining on the North Stradbroke Island (NSI) being overstated by as much as 37% for gross output value and 57% for government revenues. A thorough economic impact assessment should ascertain what level of impact is likely to occur against a business as usual scenario, in this case, where mining is phased out at the end of the life of the mines. This approach was not taken for the Unimin Report.
- **Confused scope for impacts:** Impacts that will be felt at a state or national level are often considered to be impacts on the NSI economy. For example, it is correct to include the reduction in gross regional product in wider regional analysis, but it needs to be made clear this does not translate to a welfare loss of this magnitude for the NSI community.
- **Modelled impacts on NSI economy are overstated:** The combination of the points above results in the modelled impacts being highly overstated (section 4.4). While we have not attempted to calculate more accurate impacts, they are likely to be much less than estimated in the Unimin Report. Furthermore, the method of modelling used may not be appropriate for this type of analysis and more details of the results should have been presented.

In addition to the points above, Economists at Large believe that the Unimin Report is narrow in its analysis and fails to consider externalities and opportunity costs of mining and the broader economic structure of the NSI economy. This is not a fault of the report itself, but rather a caution to decision makers and the community reviewing the findings.

Economists at Large recommend that decision makers and the local community conduct more thorough analysis of the net benefits and costs to the NSI economy as a result of sand mining.

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Failure to consider planned mine closures

According to Unimin Australia (2011), the Yarraman mine will close by the end of 2015. This information may not have been available to the consultants, however the possibility of closure should have been known and included in analysis. This omission implies that Yarraman has a life of 25 years, and therefore economic impacts are overstated.

Furthermore, figures provided in the Unimin Report are based on a mineral sands life of 25 years. CRL (2010) states that the mineral sands only have a life of 15 years. This is misleading as mineral sands account for the bulk of revenue. This further overstates the total value of sand mining to the island.

The Unimin Report presents the benefits of mining, revenue, value added, etc, as annual values (e.g. revenue of \$125m per year). Standard practice is to present streams of benefits as a present value figure, discounting future values to reflect uncertainty and the time cost of money. Why this is not done in the Unimin Report is unclear, particularly since royalties are presented as a present value (Synergies, 2010, p.18). This also has the effect of not including known or suspected changes in revenue in the present value figure. Including the closure of Yarraman and differing estimates of the mineral sands mine life affects that would reduce the net present value of mining on NSI.

The table below presents the original estimates of annual values, the present value of the reported annual values, and revised estimates of present values that more accurately reflect the known situation on NSI. The results show that omission of key information significantly distorts the long-term value of mining, inflating output values by 37% and government revenues by as much as 57%.

	Original estimates (\$m/year)	Original estimates – present value (\$m)	Present value including closure of Yarraman mine and 15 years of mineral sands (\$m)
Revenue or output value	\$125m	\$1,147m	\$840m
Value added	\$77.5m	\$711m	\$521m
Government revenues	\$15.2m	\$196m	\$125m

Source: EcoLarge analysis and Synergies (2010).

Note: For present value calculations, a 10% discount rate was used. To estimate this more accurately we would need to calculate the weighted average cost of capital (WACC) for Sibelco. With current information this is not possible. Models can be provided upon request, or at our website (www.ecolarge.com/reports)

Confused scope for impacts

The purpose of the Unimin Report is “to assess the importance of mining activity on NSI to the local economy” (p4). However it is difficult to isolate economic effects on a small sub-regional economy. The values included in the analysis accrue from sand mining that occurs on NSI, but to what extent they are important for the local economy deserves further discussion, particularly value of production, value added, employment and public finances.

Value of production

As an established mining project, revenue is high as exploration and development has already been done, infrastructure and connections to markets are in place. In an economic sense it is correct to attribute the value of production to the NSI economy, however this is not a reflection of its importance to the local economy. Any reduction in the value of production from sand mining does not represent a loss in welfare to NSI residents of this amount. This is because much of this value will be distributed beyond the island to various suppliers, as state government royalties and as private profit. An example of this is the roughly \$12m per year spent on electricity (p.25), little of which is likely to directly benefit the NSI economy. What would matter to the NSI economy is how much the mine spends through local suppliers. These figures have not been provided.

Value added

Similarly to value of production, it is difficult to assess how important value added is to the local economy. Of the components of value added discussed in the Unimin report, labour (wages) is probably the most important, although it is unclear how much of the workforce are long-term NSI residents, as opposed to shorter-term contract-based employees.

Part of value added is the gross operating surplus (profit) accruing to the miners, a privately owned foreign company. That component is likely to be repatriated out of Australia, with no impact on the NSI economy. A better analysis of mining’s impact on the local economy might focus on foregone investment or technology and skills transfer resulting from ceasing of mining.

Employment

Few details are provided to assess the impact on the local economy from mine-based employment. Although it is reported that sand mining employs 145 people on the island, it is unclear how many are long-term residents as opposed to people who have moved to the island purely for work in sand mining.

Figures suggesting a 14% reduction in employment on NSI ignore that some employees will find work in other industries on the island, or on mainland Australia. Table 2 of the Unimin Report shows that NSI has an unemployment rate of 2.6%. With such a low unemployment rate it is likely that jobs exist in other industries on the island.

Without proper analysis of employment on NSI and within the mining industry of the island it is misleading to suggest a reduction of employment of 14%.

Public finances

The Unimin Report presents a figure of \$195m present value for contribution to government finances, mainly via royalties. As noted above it is the only section where value streams have been presented as present values. This inconsistency is not explained, but it does serve to make this figure seem larger than value of production and value added. It should also be noted that these figures do not include the closure of Yarraman or lower estimates of mineral sands mine life.

Use of the term “net present value” is also misleading. This is a present value of government revenues, and is not *net* of costs, neither financial costs used to collect it – the costs of running the bureaucracy and revenue collection, or the cost of subsidies if they exist – nor economic costs such as environmental costs and opportunity costs.

As with value of production, value added and employment, it is unlikely that all this government revenue has an impact on the local economy. The only part that may impact NSI itself, as opposed to state and federal treasuries is rates and license fees, estimated as present value of \$17.1m and an annual value of \$1.3m. Even this value is unlikely to accrue entirely to the NSI economy, as it is possible that it accrues to the Redland City Council. If this indeed the case, then it would amount to only 0.7% of council revenue for 2010, (Redland City Council, 2010, table 7).

Modelled impacts on NSI economy are overstated

The Unimin Report uses Input-Output (IO) modelling as the basis for their analysis of flow on impact of ceasing sand mining on NSI. IO models have fallen out of favour in economic analysis, as the Victorian Treasury recently noted “the use of so-called input-output ‘multipliers’, [are] based on a ... restrictive set of assumptions. It is long established that such multipliers typically overstate the extent of the net economic response to an expenditure stimulus”, (Department of Treasury and Finance 2009, p1). Or in the case of the modelling on the NSI economy, this modelling will overstate the extent of the net economic response to a withdrawal of mining activity. Furthermore, little detail is provided about the models used and variables included with data provided to the Consultants by then Unimin.

The modelled flow-on impacts in the Unimin Report assume that 100% of the gross output, value added and factor income will have flow on effects directly into the NSI economy. This is an unrealistic assumption due to the nature of mining as an industry and the likelihood that many supplies are procured outside the NSI economy. The total economic impacts as modelled should be more accurately described as impacts at a state level, with uncertainty regarding distribution of the impacts over particular regions.

Narrow scope of analysis

In addition to issues discussed above with the Unimin Report, from a policy perspective, Economists at Large believe that a wider analysis of the impact of mining on NSI is needed. Such analysis would include discussions about external costs and benefits as well as opportunity costs of mining, as well as looking at future options for North Stradbroke Island.

Some issues that might be considered as part of a wider economic analysis might include the significance of other industries such as tourism, and wider values such as ecosystem service values. Some preliminary considerations for such analysis is provided below.

Tourism

- 20% of the island will be in a degraded state if mining is allowed to continue until 2027¹. This may diminish the future tourism potential of the island.
- Tourism to North Stradbroke Island is significant. Whitmore and De Lacy (n.d.) estimate that there were 370,000 thousands visitors to NSI in 1998. Tourism spend on NSI is difficult to estimate, but a rough and conservative estimate based on 1998 figures is \$44 million. Although with many campers visiting NSI, some of this spending may occur off the island².
- Studies have indicated that although infrastructure to support tourism is relatively undeveloped, (Brisbane Marketing, 2008), current visitors “would like to see tourism and development limited so that NSI does not change from its current state”, (Whitmore and De Lacy, n.d.).

Ecosystem services

- The impact of mining on non-use value of the island’s ecology due to land clearing, is important, particularly as parts of NSI are RAMSAR listed.
- Impact of mining on ecosystem services provided by the Island. An example of which includes the aquifers of NSI.
- Ecosystems services and other indirect economic values can be significant. See for example Kleinhart FGI (2002), who estimated the indirect and non-use values of Fraser Island at values from \$27m-\$81m and \$5m-\$11m.

¹ Figure provided by the Friends of Stradbroke Island (FOSI) and Stradbroke Island Management Organisation (SIMO) - based on visual analysis of maps.

² 370,000 visitors with an average spend of \$111 per trip, based on average overnight rates for visitors to Queensland, (Whitmore and De Lacy, year unknown, p.33)

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