



Comment on Preliminary Documentation for the proposed Terminal 3 (T3)
Development at Abbot Point Port

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Executive summary

Economists at Large are concerned that the Terminal 3 (T3) project has not been subject to adequate economic assessment. According to the Key Questions and Answers document on the Hancock Coal website¹, the purpose of the Preliminary Documentation is to identify “adverse impacts and enhance benefits”. The assumption behind the project is that the project’s benefits will outweigh its “adverse impacts”, including those on matters of national environmental significance, such as the Great Barrier Reef (GBR), climate stability and migratory populations of wildlife. It is therefore disappointing that neither the T3 project, nor any of its related parts, the Alpha Coal project, Kevin’s Corner Coal project or the Alpha Coal railway projects have been subject to cost benefit analysis or an appropriate form of economic impact assessment. While the associated projects’ supposed benefits are referred to in the T3 Fact Sheet², nowhere are these benefits systematically compared with the projects’ costs, some of which relate to matters of national environmental significance.

In this paper we discuss that:

There has been no cost benefit analysis of the T3 project or any of its related projects. Only Input-Output modelling has been used, which is an inappropriate approach.

Impacts on matters of national environmental significance should be incorporated into full cost-benefit analysis of the project, including:

- Climate change impacts at a global level
- Impacts of the T3 project on the GBR at a national or state level

We urge the commonwealth to commission a thorough review of the economic assessment of the component parts of these projects and incorporate their impacts on matters of environmental significance into the economic assessment. The nature of these existing assessments recalls the “piecemeal” economic assessment of the Traveston Crossing Dam project. That project’s economic assessment was found to be inadequate and misleading by the Commonwealth commissioned review.

¹ <http://hancockcoal.com.au/download.cfm?DownloadFile=FE5599AC-1372-5CE6-24FE5F9C1E3E0817>

² <http://hancockcoal.com.au/download.cfm?DownloadFile=50563AB8-1372-5CE6-2466A4C68644AD78>

Introduction

Background

The proposed Terminal 3 development at the Port of Abbott Point (T3 project) is for onshore and offshore port infrastructure to enable the export of 60 megatonnes per annum of mainly thermal coal. The coal will be mined from two mainly open-cut coal projects in the Gallilee Basin, the Alpha Coal Project and the Kevin's Corner Coal Project. The coal will be shipped through the Great Barrier Reef Marine Protected Area (GBRMPA) and the projects will impact on a number of species listed on the Environmental Protection and Biodiversity Conservation (EPBC) Act.

Due to these impacts on EPBC-listed species and the GBRMPA comment is currently being sought on preliminary documentation relating to the projects' impacts. Some of the objectives of the Preliminary Documentation are to:

- Provide information on the project proposal and development process to the community and decision makers
- To identify potential impacts affecting [Matters of National Environmental Significance (MNES)] including environmental, social, cultural, transport and land uses, and recommend required design and operational measures to minimise, or compensate for adverse impacts and enhance benefits.³

Unfortunately, neither the preliminary documentation, nor any of the project assessment documents relating to the component projects, attempt to assess if their benefits actually outweigh their costs. To understand this important question cost-benefit analysis needs to be undertaken, and needs to include estimation of economic values of impacts on matters of national environmental significance.

³ <http://hancockcoal.com.au/download.cfm?DownloadFile=FE5599AC-1372-5CE6-24FE5F9C1E3E0817>

Lack of Cost-Benefit Analysis

No economic assessment of the T3 project or its related projects, Kevin's Corner or Alpha Coal has used cost benefit analysis to compare the project's costs, including those related to matters of national environmental significance (MNES), to their economic benefits. While cost-benefit analysis is not explicitly required of the assessment, section 5.2 of the Terms of Reference for the Kevin's Corner project require the environmental impact statement (EIS) to:

provide a comparative analysis of how the project conforms to the objectives for 'sustainable development'—see the National Strategy for Ecologically Sustainable Development (1992)...This analysis should consider the cumulative impacts (both beneficial and adverse) of the project from a life-of-project perspective, taking into consideration the scale, intensity, duration and frequency of the impacts to demonstrate a balance between environmental integrity, social development and economic development.

In other words the EIS should assess all the positives and negatives of the whole project, including those that relate to MNES, in a way that shows whether the project will provide a net benefit to the community.

However, the projects have been subject to no analysis that can assist with this decision as it is based on input-output modelling not cost-benefit analysis. This is clearly against the recommendations of the Queensland Department of Infrastructure and Planning's Project Assurance Framework, which states:

The primary method of economic evaluation of public sector policies and projects is cost-benefit analysis. Input-output methodology (or the use of multipliers) is not a preferred methodology for economic evaluations. (Qld DIP 2011, p18)

It is important to understand the difference between these two forms of analysis. As the Department of Infrastructure and Planning explains:

[Cost-benefit analysis should] comprehensively identify and estimate as many costs and benefits of a project as can reasonably be measured, including those which can be thought of as social and environmental, [in order] to rank project options according to their net economic benefit. (p18)

Whereas economic impact assessment, such as Input-Output modelling:

typically measures the impact of a project on the volume of economic activity in a region (e.g. on gross domestic product or employment), (Qld DIP 2011, p23)

I-O models estimate impacts such as gross regional product. Economic activity (gross regional product (GRP) in Section 23) is not a good measure of welfare, for three reasons identified by Abelson (2011) p49:

1. [GRP and other measures] include output produced by, and income accruing to:

- non-resident owners of capital employed in the state;

- non-resident labour including short-term casual labour arriving for a major event;
 - the Australian government via income and indirect taxes.
2. [GRP and other measures] make no allowance for the real cost of labour, i.e. the loss of household production or leisure which is embodied in labour's reservation price. Therefore, it does not measure the net benefit to labour.
 3. [GRP and other measures] do not account for any other non-market goods including consumer surpluses, health status, travel in non-work time or environmental impacts.

To understand if the T3 and related projects are in the interests of the Australian, Queensland or local communities it is essential that thorough cost-benefit analysis, including consideration of social and environmental, in accordance with the Department of Infrastructure and Planning guidelines before further consideration is given to this project.

Undertaking Cost-Benefit Analysis of T3 and its associated projects

Any cost benefit analysis of the T3 project and associated mines would need to consider at what scale its analysis was being conducted. An important consideration of cost-benefit analysis is to establish the scale at which the analysis is conducted. As Eggert (2001) makes clear:

Let us now turn to ... issues that challenge and bedevil practitioners of social benefit-cost analysis. The first challenge is deciding "whose benefits and costs count" It sometimes is called the issue of standing--that is, who has standing in the analysis of benefits and costs? This is an issue of scope. Should the analysis include only those costs and benefits affecting residents of the local community? The state or province? The nation? The world? Whether the net benefits of a project are positive or negative often depends on how narrow or broad the scope of the study is. (p27)

Below we discuss some of the likely outcomes of cost-benefit analysis of the T3 and associated projects at different scales. Matters of National Environmental Significance are important in all these considerations.

CBA at a global level

In today's global economy, attempting to isolate costs and benefits in a particular jurisdiction can be difficult. The global nature of environmental challenges such as climate change also make a global approach desirable. The global nature of resource companies, such as GVK, the main owner of the T3 projects, also suggests a global approach.

From a global perspective the main benefits flowing from the T3 projects are the revenues from the coal from the two mines. Assuming a \$90/tonne coal price, the two mines will generate approximately \$2.7 billion dollars in revenue each per year. The two mines will incur average annual

operating costs of around \$1.0 and \$0.85 billion per year and the associated railway will cost approximately \$200 million per year (Economic Associates 2011; Economic Associates 2010a; Economic Associates 2010b). The main cost of the projects from a global perspective, however, arise due to the carbon emissions and health impacts from burning the coal, as well as the operating costs of the projects. At a global level these costs must all be considered, as the benefits of the revenue are based on the coal price which incorporates the benefits of burning the coal. This cost of coal combustion must, therefore, also be included. An estimate of this cost can be made by considering the tonnes of carbon dioxide resulting from the combustion of this coal and the social cost of carbon emissions.

Burning one tonne of coal produces approximately 3 tonnes of carbon dioxide. This estimate reflects that thermal coal is around 75% carbon⁴ that burning a tonne of carbon with an atomic weight of 12, generates about 3.7 tonnes of CO₂, with its atomic weight of 44. The 60 million tonnes per annum produced by the T3 projects will therefore produce around 180 million tonnes of CO₂.

The social cost of CO₂ emissions is a topic of debate within economics, with plausible estimates ranging from \$15 to \$85 per tonne, but it would seem most appropriate to use the Australian carbon price of AUD\$23 per tonne. At this price, we see that the T3 projects' social damage cost is \$4.1 billion. The net annual benefits under these assumptions are -\$790m.

	Unit	Alpha Coal mine	Kevins Corner	Alpha railway	Total
Coal production capacity	Tonnes per year	30,000,000	30,000,000	NA	
Revenue	dollars (\$90/tonne)	2,700,000,000	2,700,000,000	NA	5,400,000,000
Operating costs	dollars (average)	1,000,000,000	850,000,000	200,000,000	2,050,000,000
Resulting CO2 emissions	Tonnes per year	90,000,000	90,000,000	Unknown	
Social damage cost	Dollars (\$23/tonne)	2,070,000,000	2,070,000,000	Unknown	4,140,000,000
Net benefits					-790,000,000

This finding that the net social value of the expansion of coal production is negative is consistent with recent economic literature. Muller, Mendelsohn, and Nordhaus (2011) found that coal mining and power generation produced damages ranging from 0.8 to 5.6 times value added. Hendryx and Ahern (2009) found that the social costs of coal mining outweighed financial benefits in their study region. In Australia analysis has echoed these findings:

The existence of [a large climate change] externality that is not internalised by either the coal producing or consuming country means that the world bears this loss; neither the mine nor the power plant is likely to be economically efficient in light of this cost. Keeping this cost external is the unfortunate truth on which the profitability of coal mining and coal-fired power generation industries is largely based. (Campbell, Turnbull, and Paas 2012)

⁴ <http://en.wikipedia.org/wiki/Coal>

CBA at a national or state level

Economists such as Bennett (2011) prefer to analyse coal projects from a national perspective, making the dubious argument that public policy decisions relate to the national interest and should therefore ignore external costs that are borne internationally. A national focus has the advantage of not needing differentiate interstate distributions in the economy, difficult in an interconnected economy like Australia.

At a national or state level many of the production benefits of the project should not be considered. As Eggert (2001) points out: *“an analyst must be careful to ... eliminate any net benefits that accrue to nonresidents of the community”* (p28). Eggert makes clear that in the case of a national-level assessment: *“a national government would consider profits sent abroad as a cost.”* (p27) A majority of these projects is held by Indian energy company GVK and most profits will accrue to them and their overseas shareholders.

The main benefits that would be included in a CBA of the T3 projects at a national or state level would, therefore, be state royalties and federal taxes, none of which are identified in any of the economic assessment documents for the relevant projects. Some estimate of the royalty value is easily obtained by applying the Queensland export coal royalty rate at current coal prices to the estimated volume of exports:

Coal capacity	60,000,000
royalty rate	0.07
coal price	90
royalty rev	\$ 378,000,000

The costs of the project that are important to consider at a national or state level are those that affect matters of national environmental significance, most obviously the Great Barrier Reef (GBR). Valuation of the GBR involves consideration various use and non-use values. Economists attempt this difficult task within the framework of total economic value (TEV).

TEV includes all values that relate to the asset, with the main components of TEV being direct use values, indirect use values, and non-use values. Direct use values relate to the economic benefit derived directly from use of the asset. In the case of the GBR, direct use values accrue either from consumptive uses of wildlife such as fishing, or non-consumptive uses such as tourism. Indirect use values generally relate to the human use of an asset that has been contributed to by another natural asset. The GBR provides many indirect use values such as a nursery and breeding ground for fishing, protection for the Queensland coast and contribution to sea water quality. Non-use values refer to the value humans place on knowing that a natural asset exists, even if they never plan to see or use it.

There are many studies which attempt to value aspects of the GBR. The only recent study to estimate the TEV of the entire reef is (Oxford Economics 2009), who estimated the use values associated with tourism and industrial use values, indirect values such as coastal protection and national and international non-use values. They estimate the total economic value of the GBR to be in the order of \$51.4 billion.

Incorporating these values into a cost benefit analysis is difficult. Marginal values for changes in reef conditions need to be estimated and the likelihood of damages from the T3 projects – climate change, ship strike, fuel spills, damage from bilge water, etc – need to be incorporated. Some useful estimates are found in (Oxford Economics 2009) and the other studies they cite:

Annual damage cost over 100 years if climate change causes coral bleaching of 80% of the GBR	\$1,080 million
Annual non-use value of GBR, derived as a mid-point from two studies	\$436 million

Another study that could be of use to analysts is (Rolfe and Windle 2010), who through a choice modelling exercise estimate that an improvement of 1% in the health of the GBR was worth \$433.6 million to \$811.3 million at a national level.

Given the potential of the T3 projects to damage the GBR through contribution to climate change, or direct impact on the reef, it is uncertain whether the overall net present value of the project would be positive even at a national or state level.

Conclusion

As no systematic economic assessment of the T3 project and its related projects has been attempted, it is impossible to assess if these projects are in the public interest. Matters of National Environmental Significance, especially the projects' impacts on the Great Barrier Reef, have not been included in any economic assessment. Instead economic assessment has been conducted through inappropriate input-output modelling with no consideration of external costs.

If cost benefit analysis were carried out on the T3 projects at a global scale, they would likely be found to reduce public welfare due to the high costs associated with their final carbon emissions. This finding reflects recent economic opinion.

If cost benefit analysis were carried out on the T3 projects from a national or state perspective, the damages to the Great Barrier Reef through climate change, ship strike and other impacts could outweigh the benefits provided by royalties and taxes. No attempt to assess these costs and benefits has been made in the economic assessments of any project.

The nature of economic assessment of the T3 projects is reminiscent of the assessment of the Traveston Crossing Dam project. A commonwealth review of that project found the assessment had been "piecemeal" and failed to systematically compare the project's costs and benefits (Centre for International Economics 2009). That project was ultimately overturned by the commonwealth under the Environmental Protection and Biodiversity Conservation Act. We urge decision makers to conduct a similar review to ensure an outcome that is in the public interest.

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