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28 April 2008
Mr Richard Willis
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Department of the Legislative Council
Parliament House
East Melbourne
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**Submission to the Standing Committee on Finance and Public
Administration on Port Phillip Bay Channel Deepening**

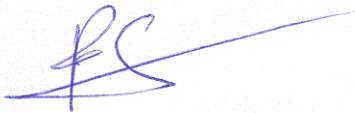
Dear Mr Willis,

Please find attached our submission to the Standing Committee on Finance and Public Administration's examination of the Port Phillip Bay Channel Deepening project.

Our submission addresses the business case for the Port Phillip Bay channel deepening as presented by the proponent the Port of Melbourne Corporation (PoMC).

Please find attached a written submission that we would be pleased to expand upon given the opportunity to address the committee.

Yours sincerely

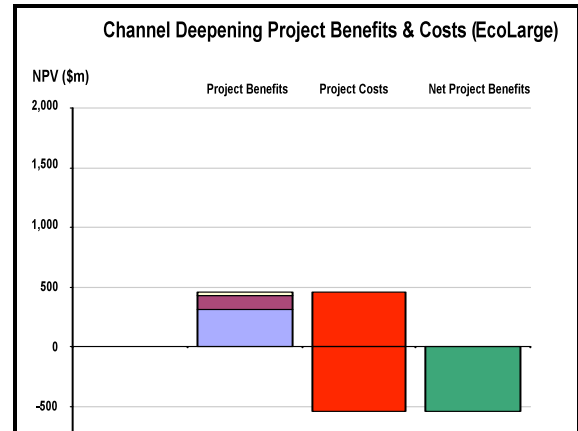
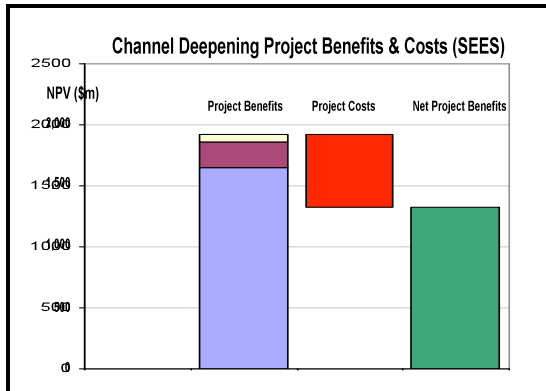


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Economists@Large & Associates

Executive Summary

Our examination of the SEES cost benefit analysis suggested that the business case for the CDP is weak. Questionable methodology was used, benefits seem overstated and costs underestimated – as we predicted in 2007, costs have since escalated to nearly \$1 billion. We have made various calculations of the net present value (NPV) of the CDP, based on modeling in the SEES. We found that the NPV of the project is certainly lower than presented in the SEES and is likely to be negative.



The project should not have been approved on economic grounds. As most of the benefits of the project accrue well into the future, approval should be withheld or at least been delayed by some years. The returns of the project do not reach commercial rates until the year 2017 under the SEES evaluation, 2026 with updated costs and conservative benefits forecast, and not at all if the NPV is negative.

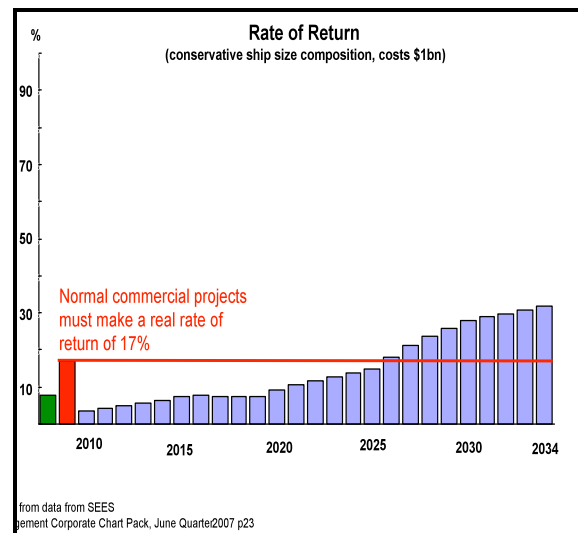
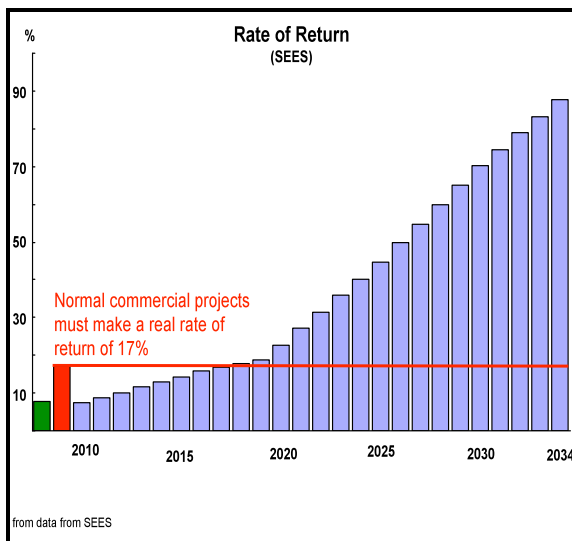


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Introduction

The Victorian Parliament's Legislative Assembly has agreed that the Standing Committee on Finance and Public Administration inquire into the business case for the Channel Deepening Project (CDP) in Port Phillip Bay.

In 2007 Economists@Large conducted a 'pro bono' review of the Cost-Benefit Analysis of the Channel Deepening Project at the request of the Blue Wedges community group. In July 2007, we presented the results of our review to the state government inquiry into the Supplementary Environmental Effects Statement (SEES). The following submission to the Standing Committee is based on this previous work, responses to our presentation and new information on the CDP.

Recently we have worked with the Australian Conservation Foundation investigating the CDP.

This submission presents a brief outline of our findings and concerns about the business case for the Channel Deepening Project:

- Methodology
- Benefits calculations
- Costs calculations

We would welcome the opportunity to present more detail to the committee during its hearings.

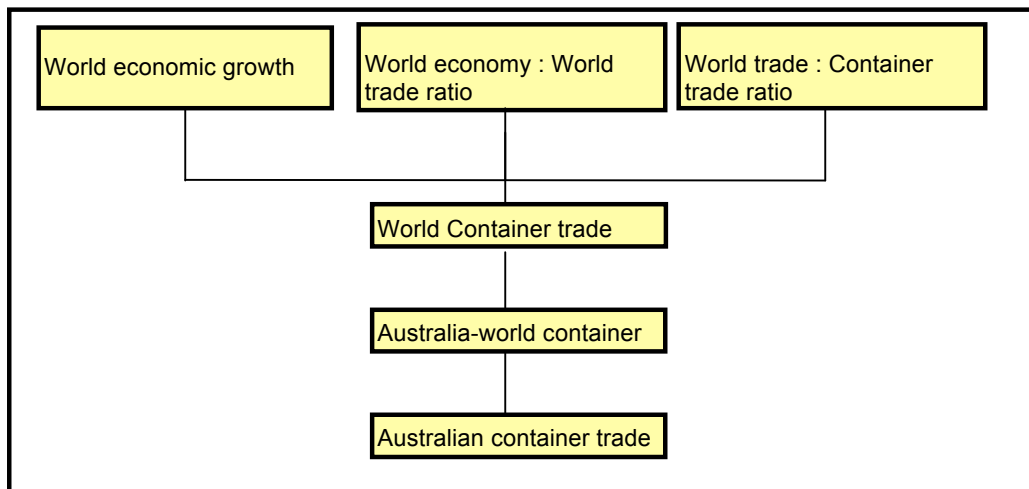
Independence

Economists@Large are concerned about the impartiality of the SEES Benefit-Cost Analysis and numerous other studies on the CDP. The aim of studies conducted by, or on behalf of government, should be to aim to maximizing the welfare of the public. Project assessments must be conducted by independent agents at arms length from private interest groups. These projects should be assessed by agents appointed by Treasury or other central government agencies with all industry associations and other material matters publicly disclosed

Cost Benefit Analysis Methodology

Forecasting Container Growth

Findings in the cost-benefit analysis are extrapolated from world economic growth forecasts without detailed analysis of changes in many assumptions.



Source: SEES Cost-Benefit Analysis, p4

In the SEES, growth in Australian container trade is estimated from three global forecasts: World economic growth, a ratio of the size of the world economy to the value of world trade and a ratio of the size of world trade to the size of global container trade. From these forecasts, the authors estimated the size of the world container trade, and using past ratios of world container trade to Australian container trade, estimated the volumes of Australian container trade out to the year 2035.

This analysis would have been valid and useful early in the proposal stages of the CDP. However, this framework is too simplistic for large investment decisions. No sensitivity analysis is provided for changes in these values, and no consideration of more Australia-specific measures are made. Furthermore, no sensitivity analysis is carried out on other important assumptions – ratio of trade growth to GDP growth, the ratio of container volume growth to trade growth, and the ratio of PoM container trade growth to world container growth.

In response to our criticism, the authors of the CBA, Meyricks and Associates, claimed:

“To avoid excessive complexity in reporting, the effect of changing the long-term growth assumptions is captured in our report in a single sensitivity analysis.”

Avoiding complex calculations may have been reasonable for Meyricks and Associates in early drafts of the CBA, but is not acceptable at the decision making stage of the CDP.

The relationship between Melbourne and world container growth is important and worth examining in detail before undertaking a billion dollar investment. For example, the impact of a recession would be considerable and current economic conditions would call for caution. A range of potential values comparing Melbourne container growth to world trade would be more appropriate, including lower and upper boundaries. It should also address the likely impacts of a significant economic slow down. Should a slowdown arrive in the early years of the CDP operation, when its financial operations are most vulnerable to a loss of custom, the projects net benefits would be severely undermined. This adds to the concern that this is a high risk project.

Choosing a discount rate

It is necessary to discount values in the future to express them in today's terms - most people would rather be given a dollar today rather than in a year's time, so the future dollar is worth less than a dollar today. A discount rate is the rate at which future benefits or costs are discounted to calculate their value today.

Discount rates make a large difference to the net present value of any project as we see in the following graph of the CDP. This graph shows the net present value of the CDP as calculated in Meyricks and Associates at original cost estimates in the SEES, discounted at different rates.

Use of an inappropriately low discount rate, 6%, overstates the net present value of the project.



Notes

1. Source: Extrapolated from data from SEES

2. Source: Belli, et al, 1997. *Handbook on economic analysis of investment operations* World Bank

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The World Bank discounts projects at between real rates of 10-12% (Belli et al. 1997, p127) and most commercial projects use rates of around 17%. Even using the initial valuations, at these rates, the CDP's value is close to zero.

In response to our concerns, the proponents claimed that:

“The use of a real discount rate of 6% per annum was not an independent judgment made by Meyrick and Associates, but was mandated by Department of Treasury and Finance. It is our understanding that this is (or at least was at the time the analysis was performed) the discount rate required to be used in the cost benefit evaluation of all projects subject to the Treasury approval process. Clearly, the use of a common discount rate is desirable to avoid distortions in project selection.”

This is a disturbing statement. An impartial analysis of the CDP should have independently decided on a discount rate, or range of rates, and explained how they were calculated and why they were the appropriate rates to use. In the SEES, there was no mention of where the 6% rate had come from.

The Victorian Department of Treasury and Finance have not set a mandatory discount rate in their public documents. Instead guidance is given as to how discount rates should

be calculated under various scenarios. On the subject of whether government should use a single discount rate, the Department is quite plain:

“It follows that government should apply different discount rates to projects with different levels of risk. If government applied an average discount rate across all projects, it would advantage risky projects (by demanding a return lower than their risk warranted) and disadvantage low risk projects, by demanding excessive returns from them. The result would be that government would tend to over-invest in risky projects, and under-invest in low risk projects.” (Department of Treasury and Finance, Partnerships Victoria 2003, p28)

The same document also makes clear:

“there are times when a more precise-project specific approach may be justified. To justify a project-specific discount rate, the project should meet at least one of the following conditions:

- (i) the size of project is in excess of NPV/NPC of \$500 million*
- (ii) the project has unique or unusual systematic risks that are not similar to any of the project types in the risk bands”* (p19)

Clearly the CDP fits both of these criteria. Serious analysis would have included a discount rate that made consideration of what type of project it was, what risks were involved and how the project would be financed. The CDP is not a low risk project – it involves large capital investments and relies on returns forecast 30 years in the future. Its necessity has been widely questioned and it presents serious environmental risks.

Projects listed as examples of where a 6% discount rate is appropriate are water supply, and hospital infrastructure and non-toll road projects. These projects contribute a direct public good, with minimal risk, to the people of Victoria. In contrast, benefits of the CDP accrue initially to shipping companies, that may pass some savings on to the public. The CDP is more like a toll road, where users pay a private operator to gain a private benefit in the form of time saving. Due to the private nature of these benefits, toll roads are expressly excluded from this category.

For example lets compare non-toll roads and toll roads. Local suburban streets are not tolled because, they bring public benefits by providing free public access between all private property. These roads are best organised by government, paid for by taxes and funded at government long term borrowing rates.

We toll certain roads like Citylink because car travel creates significant costs that are imposed on others (cost of infrastructure, congestion, air pollution, health costs, etc) that

whilst the driver receives significant private benefits in terms travel efficiency. The tolling process reduces the negative impacts preventing the need for greater public outlays in healthcare, more road infrastructure and congestion management. Projects such as toll roads and the CDP are characterised by significant private benefits relative to the public benefits. Public goods have the reverse characteristics of large public benefits and relatively small private benefits, for example, commuter rail, schools, hospitals and suburban streets.

The CDP resembles a toll road with minimal direct public benefits and considerable public costs. Some savings maybe passed on to consumers from the CDP and the states trade position maybe enhanced. However this can also be said of almost any private businesses. These effects cannot be claimed as justification for public involvement (ie a low discount rate). Similarly claims of a multiplier effect are not relevant otherwise the government would subsidise every private business.

In our presentation to the SEES hearings, Economists@Large suggested a nominal discount rate of 12% based on calculations presented to the hearing panel. Our calculations were based on the Weighted Average Cost of Capital.

In their response to these calculations, CDP proponents display a lack of understanding of discount rate calculation. They claim:

In our view, it confuses financial evaluation (in which the enterprise's cost of capital is the relevant discount rate) with economic evaluation (in which the social time preference rate is the relevant discount). (Meyrick 2007)

In evaluating projects with minimal risk, generating direct public good, with minimal opportunity cost and minimal private benefits, a social time preference rate is relevant. However, a project with risk, opportunity cost and without guaranteed access to government financing should be considering the enterprise's costs of capital. Using a social time preference rate (very low) is in complete contradiction of the Partnerships Victoria guidelines, which state "The principles for determining discount rates...are based on the theory used to calculate the cost of capital represented by the capital asset pricing model"(Department of Treasury and Finance, Partnerships Victoria 2003, p10)

On page 2 of the SEES CBA, the proponents claim that the analysis "has been modelled in a manner consistent with the Handbook of Cost Benefit Analysis", by the Commonwealth Department of Finance and Administration. This handbook states:

“For most evaluations of public projects, programmes or policies, this Handbook recommends the use of a cost of capital or producer rate of discount. The use of a producer rate of discount ensures that the true opportunity cost of capital is reflected in the project evaluation and that resources are used efficiently”
(Department of Finance and Administration 2006, p66)

Project proponents were also confused on the appropriate use of real and nominal values. Again, the Victorian Department of Treasury is clear on this issue “the discount rate should be estimated in nominal terms, that is, including inflation. Therefore, cash flows should also include the effect of inflation” (p20).

However, in their response to our SEES hearing submission, the proponents state:

*“The benefits from the project are all calculated in **real** terms. This means that, in a financial evaluation, the appropriate WACC to apply would be a **real** WACC. Although economists@large (disappointingly) does not make it is [sic] clear whether the WACC calculations is intended to be a real or a nominal WACC, it is clear from the cost of debt used in the calculation (6.34%) that what is being calculated is a **nominal** WACC.”*

Given the proponents insistence on this point (the bold effect is theirs), it is strange that nowhere in their analysis do they state they are presenting values in real terms. The word “real” only appears once in the document, on page 21, in a quote. The term “nominal” only appears once, on page 49, where it is claimed “the nominal level of dollar benefits flowing from the CDP are higher than contained in the October 2004 EES.” It is unclear why this section refers to nominal benefits, while the rest of the document supposedly refers to real benefits. Readers of the SEES were left to second guess the proponents use of real or nominal rates. We accept the criticism of our own work that we should have specified real versus nominal rates. We used 12% nominal rates since they had also been applied to Qantas to indicate the likely private sector cost of capital for a ‘risky’ transport business. This does not alter the thrust of our critique that the use of a six per cent real rate is too low and the actual rate should be reflective of private sector equivalent capital costs.

The Federal Handbook on CBA does allow for use of real values, perhaps accounting for the confusion in the SEES documents. However, it says “this assumes that future inflation will affect all costs and benefits equally. Where this assumption is inappropriate, cash flows should be adjusted for inflation separately and assumptions regarding relative price changes made explicit” (p62). Using forecasts over 30 years would suggest that this is an issue that should have been discussed but no assumptions or calculations are mentioned. The word “inflation” is not used at all in the document.

Discount rates are a crucial part of calculating Net Present Value. The inadequacy of calculations and explanations around discount rates in the SEES CBA suggest that this was a document intended for preliminary discussion, rather than serious public decision making.

Time Period Used

Economists at Large also believe the NPV of the CDP should have been calculated over a ten year period, and included at terminal value to estimate the ongoing benefits. Doing so results in some reduction of NPV. A weakness in this project is that most of the benefits are in the distant future, and early cash flows are very weak. This makes the project vulnerable as distribution of benefits over time is a crucial element in the viability or otherwise of the CDP.

Specification of alternative projects

Cost-benefit analysis requires that each project should have an alternative credible project that represents the foregone opportunity should the main project proceed. In the case of the SEES study the only alternative project was the 'no CDP' option. There was however a credible alternative project that could have been specified in addition to the 'no-CDP' option. This option required the use of the Port of Hastings. This option would have provided a credible test of the need for the CDP.

The Australian Peak Shippers Association is a supporter of the CDP. In their submission to this inquiry they noted that

“For some fifteen years, APSA has campaigned to have Westernport Bay developed as a port for deep draft vessels, but State Governments have refused to consider what would be a common sense alternative to Port Phillip depth problems.

Even though the current deepening programme will increase the depth to 14 metres. All other major ports of the world are already at 16 metres. This means of course, that in the next 10 – 15 years, deepening of the Heads and channels will have to be considered again as container vessels get larger and larger.

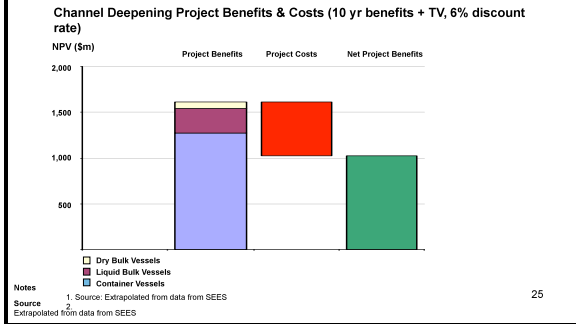
If Westernport, which has a 'soft' bottom of mud where the depth can be increased at any time by the use of a trailer suction dredger had been considered 10-15 years ago, one would not have the current situation with pricing and environmental considerations.

An additional benefit of using Westernport is that it is only 30 minutes from pilot to Berth whereas in Port Phillip Bay, it can be four hours.

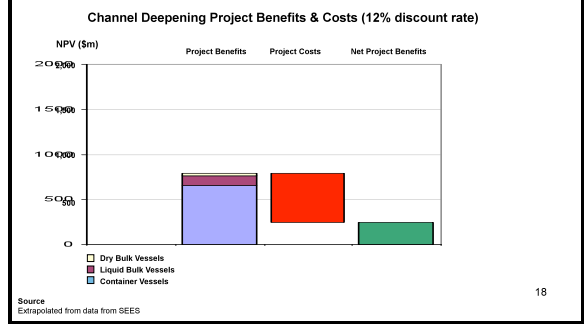
APSA believes there has been an agreement over the years between State Governments and the Port of Melbourne to keep Port Phillip Bay as the main Victorian Port. Reason being that the Port of Melbourne Corporation has no control over Westernport and would rapidly lose business to the Port of Hastings”.

By not providing an alternative project in the CBA, the proponents have breached the accepted protocols for cost benefit analysis. The Westernport alternative should have been reviewed but was ignored.

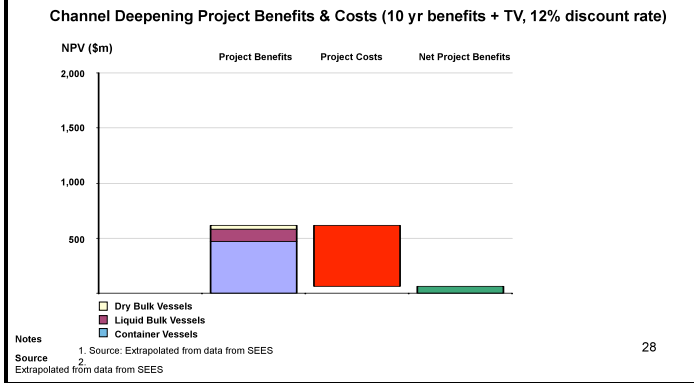
If benefits are forecast for 10 years and a terminal value is used, the NPV reduces to \$1.02bn



If we use a 12% discount rate, NPV reduces to \$0.25bn



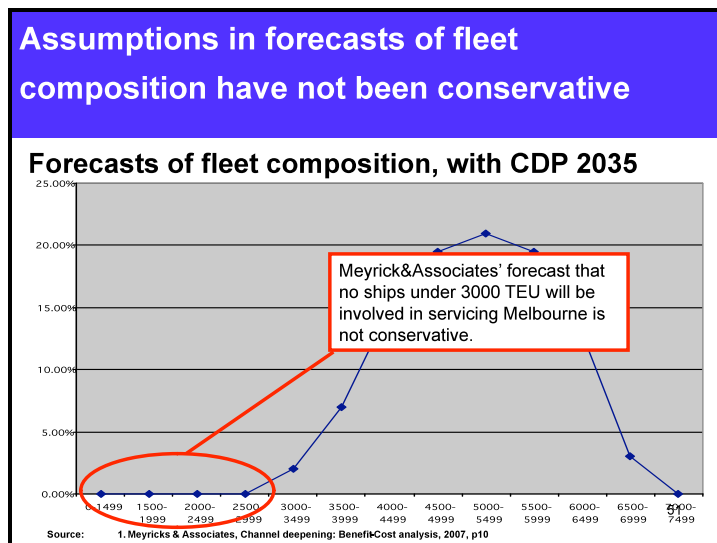
Applying a 12% discount rate to a 10 year forecast with a terminal value, the NPV reduces to \$0.07bn



Benefit Calculations

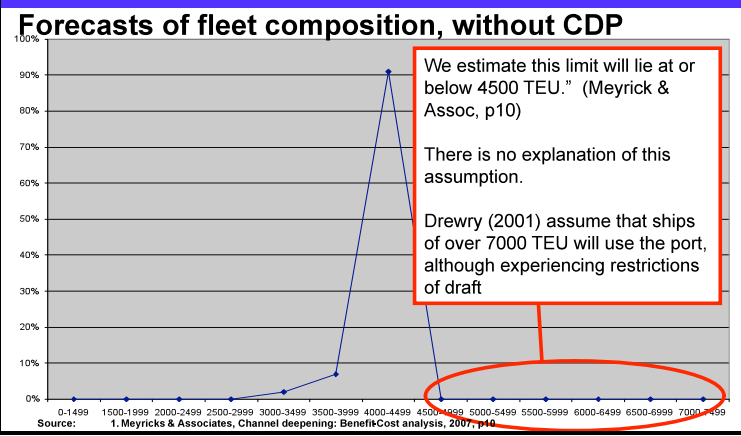
All benefits of the CDP come from savings to shipping companies through deploying larger ships. All benefit calculations are derived from forecasts of how ship size will change over the next 30 years. The database from which all these calculations are derived is sourced only as “Meyricks in-house database”(p8). We contacted Meyricks and Associates in 2007, but were not given access to this database. While calculations in the CBA may have been sufficient for preliminary discussion, investment decisions cannot be made with this degree of transparency and with no sensitivity analysis.

Forecasts of mix of small and larger vessels (fleet mix) in the CBA also contain implausible assumptions. The following graph shows the proponents forecast of fleet mix in 2035. It suggests that zero ships under 3000TEU will service Melbourne in 2035, despite comments such as Drewry Shipping consultants (2001) who detail 11 container vessels servicing Melbourne were launched in 2000, with an average capacity of 1760 TEU. Deloitte (2005) also note that “The market for smaller vessels remains buoyant” and offer detail on orders for vessels as small as 850TEU.



In a fleet mix forecast assuming CDP did not proceed, the proponents assume that no ships over 4500TEU will call on Melbourne and also that no ships under 3000TEU will be used. Other studies, such as Drewry Shipping consultants (2001) do not share these assumptions. No methodology or explanation is given for this estimate.

Assumptions in forecasts of fleet composition have not been conservative



In response to this criticism, the proponents claim:

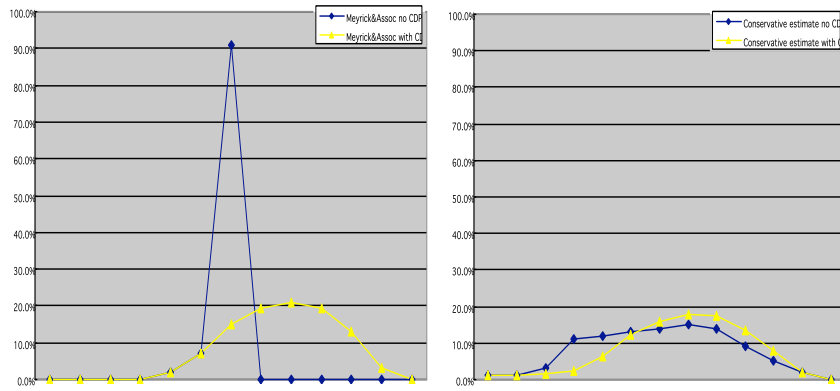
“Meyrick does not claim that no smaller vessels will visit Melbourne in 2035. The vessel population portrayed in the graph is limited to vessels deployed in the major trade lanes, where we expect the CDP to have some effect on vessel choice. Smaller vessels will continue to be deployed...”

Proponent’s graphs on page10 are headed “increase in size of container vessels over time”. Not clarifying which container vessels they were referring to may have just been an oversight. However, why they have chosen to present results for some poorly defined section of Melbourne’s shipping is unclear and concerning. Fears that Melbourne will become a “backwater” may stem from this simplification and omission to state that smaller shipping will still operate.

No sensitivity analysis of fleet size mix is presented – regardless of which part of the fleet is being discussed. Economists@Large presented a hypothetical fleet mix comparison to the SEES estimate, assuming that some smaller ships would still be used and that some larger ships would call on Melbourne less than fully loaded. The effect of using a different fleet mix distribution has a large effect on the Net Present Value of the CDP. The impact of different assumptions about fleet mix should have been explored. While the SEES presents analysis that may have been useful in the early proposal stages of the CDP, no investment decisions should be made using this data. We would be happy to expand on our explanation of these points before the committee.

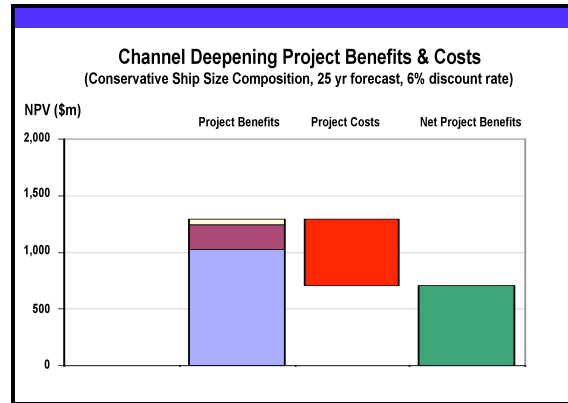
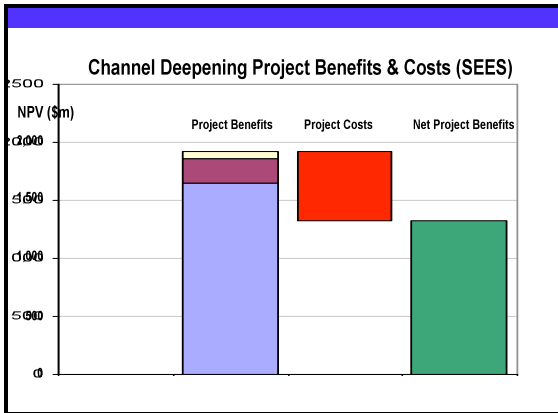
Comparison with conservative estimate of fleet composition

- These estimates are of great importance to the cost-benefit analysis of the CDP, as nearly all calculated benefits are derived from the forecast use of larger ships.



Source: 1. Meyricks & Associates, Channel deepening: Benefit-Cost analysis, 2007, p10

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Costs Calculations

The costs of the CDP have not been presented in a transparent way and have not been analysed appropriately. As a result we have seen costs escalate before the project even began. Properly prepared costs estimates, subject to independent review and public scrutiny would have provided accurate estimates to Parliament and Government.

Publicly available details of the CDP's direct capital or operating costs are insufficient. Project cost projections have increased from \$400m (Port of Melbourne Corporation 2004) through \$763m (Port of Melbourne Corporation 2007a) to nearly \$1 billion, (Port of Melbourne Corporation 2008). In contrast, the Victorian Freight and Logistics Council, a supporter of the CDP, in its submission to this inquiry, claims that it forecast that the project would cost \$800m in 2005. Given this the proponent needs to explain how the cost projections have been so consistently wrong and understated, when project supporters seem to have much better grasp of the data. This track record of poor cost estimation leads to questions about other aspects of the project (eg revenue, cost savings, ship types and numbers) that have not been fully examined. Government and Parliament must have reliable information for project decisions and the cost escalation in this case would seem unreasonable.

No costs of financing, sunk costs (already incurred costs) and maintenance costs were included in the SEES. Meyricks & Associates replied: "The implication that financing (and sunk) costs should have been included in the analysis is puzzling, as this is an economic not a financial analysis". Semantics aside, before making a decision on the CDP, the financing of it should have been publicly considered.

The financing arrangements of the project are uncertain, other than the state government pay a grant of \$150m (Port of Melbourne Corporation 2007b) and that a "user-pays" levy will be imposed on shipping. By financing the project through a user pays charge, the project's financing has the potential to change the economic incentives facing users and non-users of the project. A CDP that is 'free' to shipping users is going to have different economic effects than one which has user charges. This point is underlined in another submission to this inquiry from the Australian Peak Shippers Association, a supporter of the CDP. They point out that

"The current pricing policy is wrong in that all shippers are being made to pay but only the deep draft [sic] vessels that make up about one third of the total number of vessels servicing the Port will contribute. Vessels of less than 12.1 metres draft [sic] will not contribute to the cost of the project but shippers who ship on these vessels will pay. Where is the justification for this arrangement?"

The financing of the CDP is presumably to be undertaken by the Victorian Government on the behalf of the PoMC. This financing should be conducted at commercial rates. Having already provided a subsidy of \$150m to elements of the shipping industry it

would be poor economic management for this commercial project to receive subsidised government borrowing rates.

As the benefits of the CDP will supposedly be passed on from shipping companies to ordinary Victorians, presumably some of these costs from the user-pays levy will also be passed on. An increase in price for the use of the CDP should, all other things being equal, lower demand by shippers for access in deep draught vessels and reduce the economic benefits to Victorians. No modeling of this system is publicly available.

Revised benefit projections should be made available to account for these significant impacts, including the diversion of \$150m in government funds from other projects to fund the CDP. The value of the projects foregone in this funding switch will need to be offset against the apparently declining net benefits of the CDP.

The SEES economic analysis assumed that the proponents would have an efficient pricing and financing structure to underpin the CDP, which would not have an economic impact on the project. Such an assumption of administrative excellence would appear unwarranted and a thorough analysis should have included the possibility of an inefficient pricing and finance structure.

Environmental costs are not factored into the cost-benefit analysis. The environmental impacts are inadequately considered, even though the proponents identify 15 costs that “will not be completely eliminated by mitigation measures”. They claim “There are no reliable tools for estimating the economic costs”. This claim is wrong. The Commonwealth Department of Finance Handbook on Cost-benefit analysis, 2006, noted in the Executive Summary:

“Traditionally, cost-benefit analysis was used to evaluate ‘projects’ or individual activities rather than ‘programmes’ or larger groupings of such activities or indeed of policies. Moreover, it was used mainly in evaluations of a particular project type - economic infrastructure investments such as dams, roads and power stations. However, cost-benefit analysis is now applied much more widely. It is often applied to programmes as well as to projects, to activities outside the economic infrastructure sector, and to public policies. The labour market, education, the environment and scientific research are examples of areas where the method has been usefully applied.” (our underline) (p12)

The field of environmental economics is a well established discipline that provides many methods for evaluating such costs. Dismissing environmental costs is wrong in a project where there has been so much comment over potential environmental impacts. This is a

flaw in the cost-benefit analysis. It ensures that the value placed by Melbournians on their marine environment has not been considered in the analysis, in opposition to the advice of experts, and the hence on this basis alone the project has been overvalued.

The recently announced \$150m government subsidy is de facto recognition that the CDP is commercially unviable. This subsidy, and any further assistance through non-commercial financing arrangements discriminate against other Ports such as Hastings, transport modes such as shallow draft shipping, rail and air transport and industries who don't need/use deep draught container vessels.

Conclusions and Comments

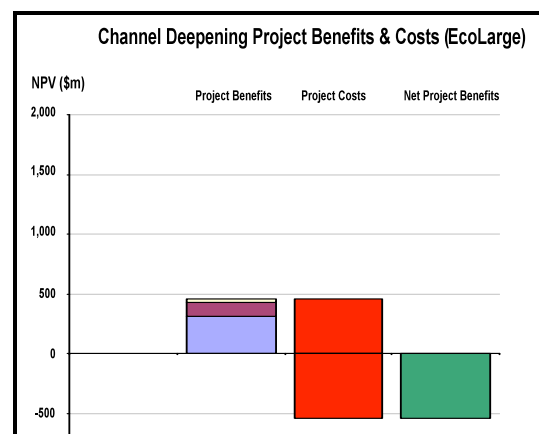
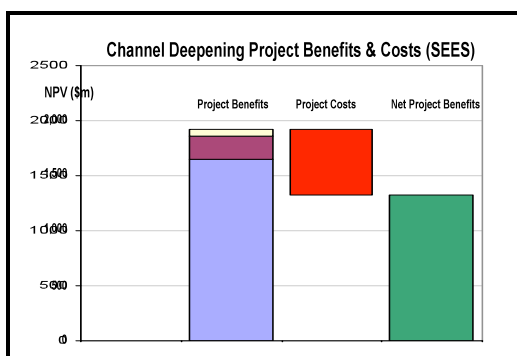
What is evident throughout the proponents cost benefit analysis is “optimism bias”. The Federal Department of Finance’s Handbook on Cost Benefit Analysis, upon which the proponents claim to base their methodology, discusses this problem:

Optimism bias occurs when favourable estimates of net benefits are presented as the most likely or mean estimates. It is an endemic problem in cost-benefit analysis and may reflect overestimation of future benefits or underestimation of future costs. Overestimation of benefits is often linked to an unrealistically high estimate of the annual rate of growth of benefits. Conversely, underestimation of costs often involves excluding some relevant costs. (p78)

All of these problems are evident in the SEES CBA. The Handbook goes on to suggest three remedies for optimism bias:

- Sensitivity analysis of *each parameter*, rather than the minimal approach at the end of the CBA
- Higher discount rates, and;
- “Provide a clear statement of the assumptions in the analysis, particularly forecasting assumptions, and the reasons for those assumptions.” (p78)

Before making a decision on the Channel Deepening Project, stakeholders should have insisted that these tools were used to turn an interesting, optimistic CBA into a serious decision making document. We maintain that the Net Present Value of this project is likely to be negative or very close. Allowing for natural variability in revenues, costs and other items could easily see this project return a negative value and diminish the economic well being of Victorians. On these grounds, the project should not have been approved.



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