Expert Report – Rod Campbell

Prepared for T4 PAC Hearing

25 August 2014

Summary

1. The Terminal 4 (T4) project cannot be justified under the forecasts for coal throughput made by Port Waratah Coal Services (**PWCS**). Under PWCS' most recent annual capacity assessment, obtained under the Government Information Public Access (**GIPA**) act, there is no requirement for the project. Furthermore, current levels of throughput are well below earlier forecasts.

2. The economic assessments of the project commissioned by PWCS are based on assumptions of throughput at the terminal which are higher than PWCS' own internal estimates. No sources or justification is provided for these throughput assumptions, which are the key input for all economic assessments of the project.

3. The commissioned assessments and the Department of Planning's Preliminary Environmental Assessment Report (**PEAR**) all assume that world coal demand will continue to grow and that this growth will translate directly into greater throughput at the PWCS terminal.

4. Forecasts of long-term coal demand vary widely, between considerable growth and considerable reductions. More importantly, however, the commissioned assessments and the PEAR ignore potential increases in the global supply of coal. While world demand may increase, PWCS face many competitors on world markets which makes the expansion of demand through their terminal less certain – as shown by their own internal forecasts.

5. So, more important for the T4 project than world coal demand is the world price of coal. Price forecasts from the World Bank, IMF and Rio Tinto are predicting coal prices between US$71 and $US78 per tonne out to 2025. To what extent demand for coal through the PWCS terminals will grow will depend on how much coal can be supplied profitably at these world prices.

6. The average cost per tonne of Australian thermal coal mines is above US$80. This suggests that while some mines may be able to expand production there is limited potential for major expansion of coal exports through the PWCS terminal.

7. The economic assessments have given inadequate consideration to the direct impacts of the project on environmental issues such as air quality and ecological impacts on the project site.

8. The economic assessments and the main EIS gives no consideration to impacts of increased production. If the extra capacity required by T4 was to come from new mines, it would require almost seven new mines the size of the Mt Thorley Warkworth complex in the Hunter Valley. This would likely impose considerable pressure on communities, other industries and environmental assets.

9. The Department's PEAR makes inaccurate statements about the importance of the T4 project to the local, state and Australian economies, claiming it plays a "critical role". In fact, the coal industry employs less than 2 per cent of Newcastle's workforce, accounts for 3 per cent of NSW gross state product and contributes only 2 per cent of NSW state revenue. The Department overstates the importance of coal and the T4 project to the economy.

10. I make brief comments on the latest economic modelling provided by the proponents. It is also based on unrealistic throughput assumptions, but also makes the interesting conclusion that the project would benefit the trade, business services and construction sectors, but would reduce employment in Newcastle's biggest employing sectors of health care, education and manufacturing. Counterintuitively, the model suggests the project will reduce employment in coal mining.

Introduction

11. I have been asked by EDO NSW to advise the Planning and Assessment Commission (**PAC**) for the Terminal 4 project. I have been asked to:

    (1) Describe the economic justification, as presented by PWCS, for the T4 Project.
    (2) In your view, are the assumptions relied on in this justification appropriate?
    (3) Describe the methods used to estimate the economic benefits of the T4 Project.
    (4) In your view, are these methods appropriate for the assessment of the T4 Project and have they been appropriately applied?
    (5) In your view, what are the likely economic costs and benefits of the revised T4 Project, as described in the Preferred Project Report?

(6) Provide any further observations or opinions which you consider to be relevant from an economic perspective, having regard to the circumstances of this matter.

12. In the following report I will address all of these issues, although the many documents involved in the economic assessment of the project mean that I have not addressed them in this order. I provide brief direct answers to these questions in the conclusion.

13. The economic justification for the T4 project involves many different documents and reports. In this report I refer to:

- T4 Project Environmental Assessment – Appendix R Economics Assessment, by Gillespie Economics.
- T4 Project Preferred Project Report – Economic Appendix, by Gillespie Economics.
- Terminal 4 Project – Submission to the preferred project report, by The Australia Institute, of which I was a lead author.
- T4 Project Response to Submissions on Preferred Project – section 3.11 Economics, by EMM.
- T4 Project Response to Submissions on Preferred Project – Appendix B: Regional economic impact assessment by CGE modelling, by Glyn Wittwer.
- Major Project Assessment: Terminal 4 Project, Secretary's Preliminary Environmental Assessment Report, by Department of Planning and Environment.

14. Other references are provided in footnotes and bibliography.

Justification of the project

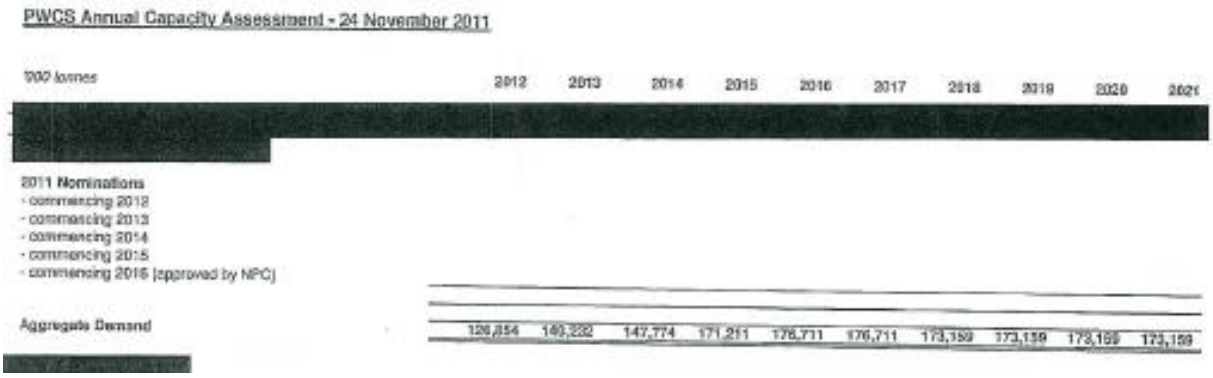
15. The justification of the project in the economic assessment is detailed as:

> *Port Waratah Coal Services Limited (PWCS) has identified capacity shortfalls at its Carrington Coal Terminal (CCT) and Kooragang Coal Terminal (KCT) in the Port of Newcastle by 2015. This has triggered a contractual obligation for PWCS under the Australian Competition and Consumer Commission endorsed Capacity Framework Arrangements for the*

construction and operation of a new coal export terminal, known as the Terminal 4 Project (T4 Project).[1]

16. The economic assessment does not discuss how great the shortfalls in capacity PWCS estimated. Documents obtained under the *Government Information Public Access Act 2009* (NSW) (**GIPA**) by Hunter Community Environment Centre show that the greatest shortfall forecast by PWCS was in 2011, when they forecast a peak throughput of 177 million tonnes per annum (Mtpa) in 2016-17 before a slight decline to 173 Mtpa. PWCS' approved capacity is 145 Mtpa, so the shortfall was forecast to be around 30 Mtpa. A snapshot of the relevant part of the PWCS Annual Capacity Assessment is shown in Figure 1 and graphed for clarity in Figure 2 below:

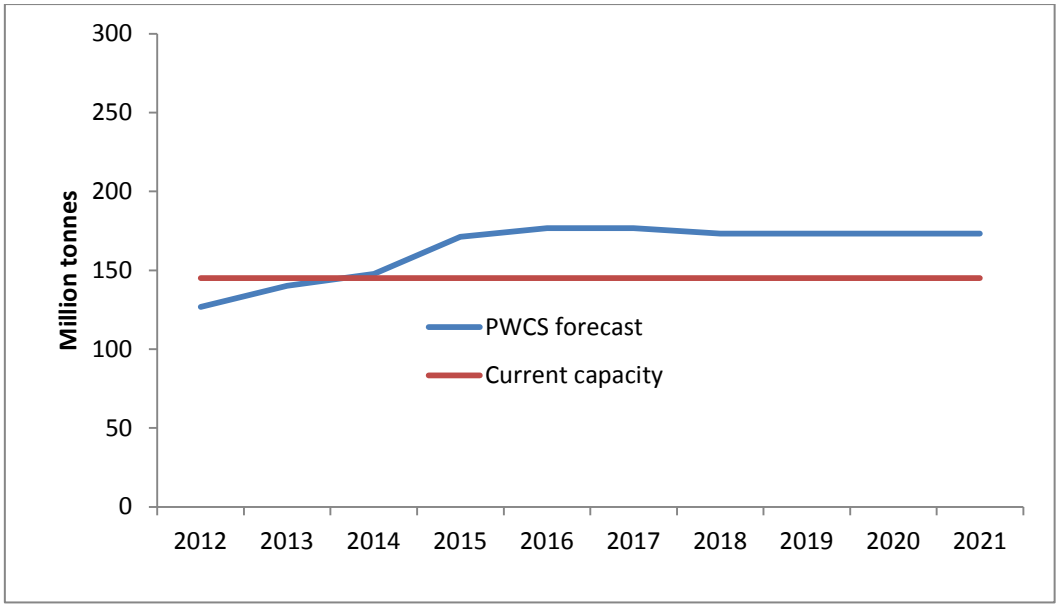
Figure 1: PWCS Annual Capacity Assessment November 2011



Source: Documents obtained by Hunter Community Environment Centre under The GIPA Act.

Figure 2: PWCS Annual Capacity Assessment November 2011 Graphed

[1] (Gillespie Economics, 2012) Note that this passage in the economic assessment provides more detail about the motivation for the project and the estimates it is based on than the main EIS volume, part 20.4 Need for the T4 project.



Source: Documents obtained by Hunter Community Environment Centre under The GIPA Act.

17. As the shortfall in forecast capacity was only 30 Mtpa, it is unclear why PWCS applied for an expansion of 120 Mtpa in the original EIS, later revised to 70 Mtpa in the preferred project report (PPR). At no stage in PWCS' Annual Capacity Assessments is there a forecast of a shortfall approaching 70 Mtpa. Claims in the EIS of imminent increases in demand for throughput are simply not supported by PWCS' Annual Capacity Assessments:

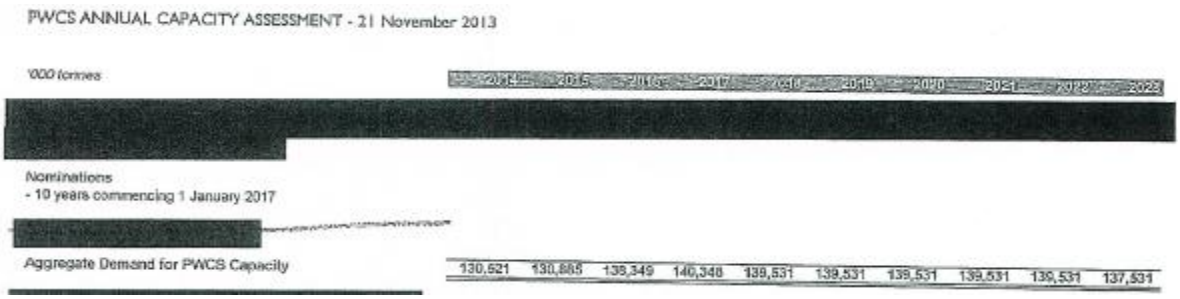
> *Further increases in coal production and associated demand for terminal capacity are also predicted in the coming years. While demand forecasts vary from year to year, demand is expected to increase to at least 200 Mtpa in the coming years.*[2]

18. At no stage in any of the annual capacity assessments obtained under the GIPA act do forecast throughput volumes approach, let alone exceed 200 Mtpa through the PWCS terminals.

19. In fact, in the latest Annual Capacity Assessment (November 2013), there is no shortfall forecast at all. These forecasts are for between 130 and 140 Million tonnes per annum (Mtpa) between 2014 and 2023, as shown in Figure 3 and graphed for clarity in Figure 4 below:

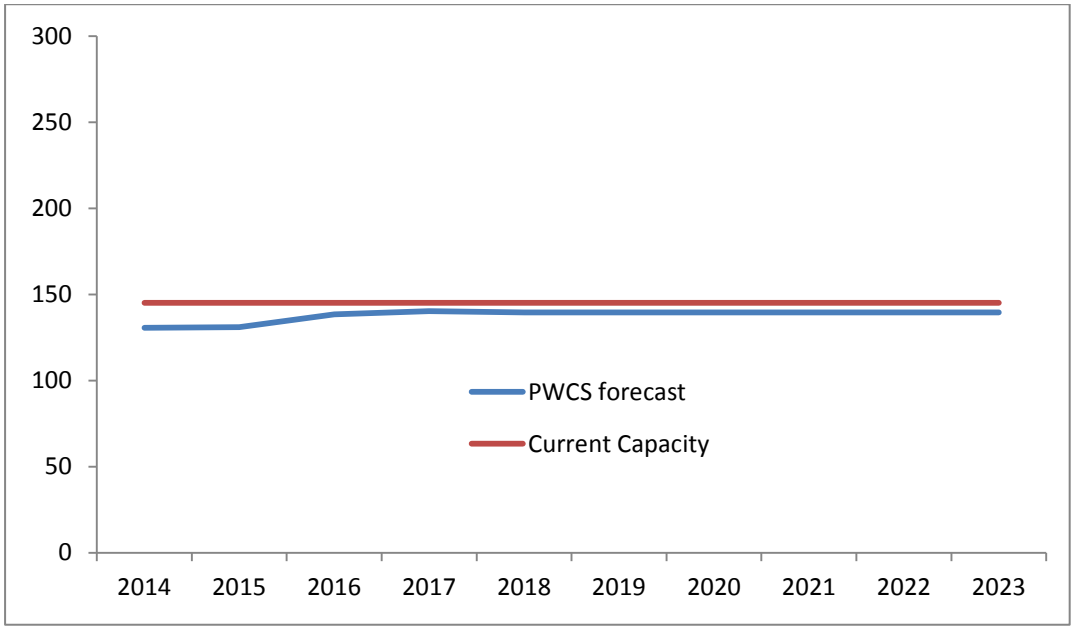
Figure 3: PWCS forecast for aggregate terminal capacity, November 2013

[2] EIS main volume, Introduction, Section 1.3 Need for the T4 project, p3



Source: Documents obtained by Hunter Community Environment Centre under The GIPA Act.

Figure 4: PWCS Annual Capacity Assessment, November 2013 Graphed



Source: Documents obtained by Hunter Community Environment Centre under The GIPA Act.

20. We see that based on the latest PWCS Annual Capacity Assessment, there is no justification for the project out until at least 2023. Furthermore, actual throughput is considerably lower than PWCS forecasts, as discussed in their latest annual report:

> *Throughput for 2013 was 109.2 Mtpa, against a budget of 136.9 mtpa and nameplate capacity of 145 mtpa. This result represented an increase of 3.1% on the 2012 year. Demand and Hunter Valley Coal Chain performance issues and constraints were the primary causes of the difference between actual throughput and budgeted capacity.*[3]

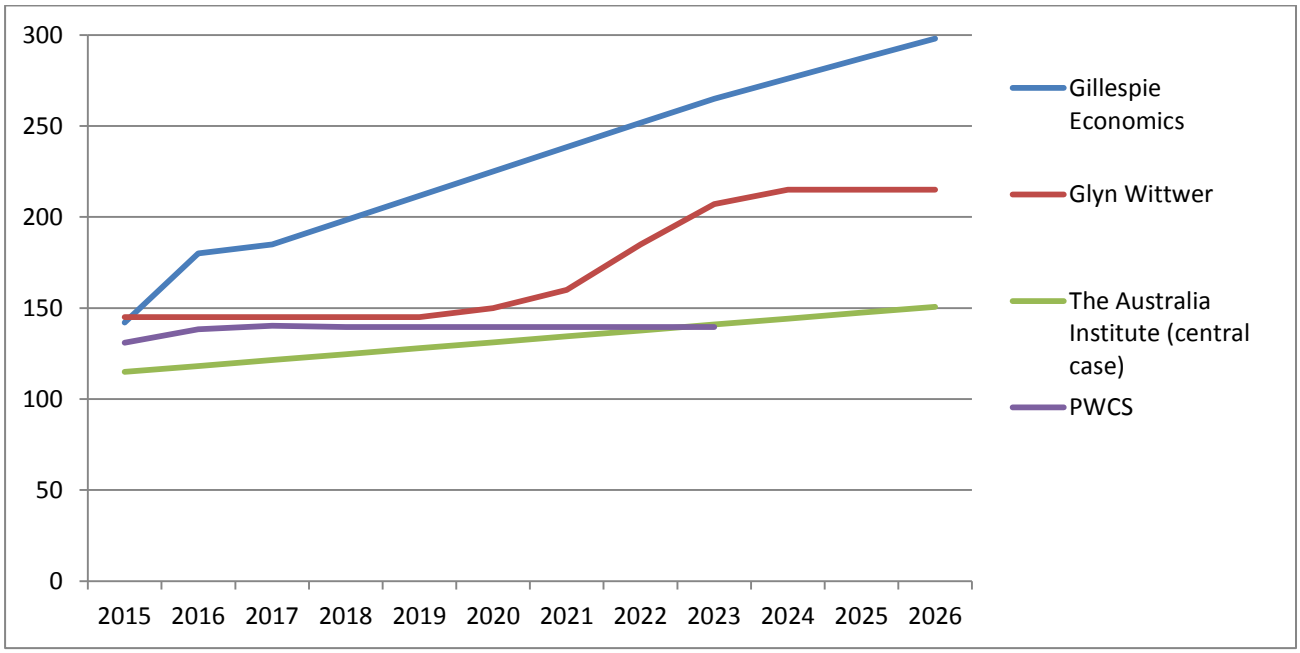
[3] (PWCS, 2013) p14

21. With actual throughput at less than 110 Mtpa, growing at only a few Mtpa per year, there is no justification for the project in the near term.

Throughput and capacity assumptions in economic assessments of T4 Project

22. Forecasts of how much coal will be shipped through the PWCS terminals are the central assumption of all economic assessments of the project and this assumption is the key difference between the different assessments. In Figure 5 below, we see the different throughput assumptions of each of the economic assessments and PWCS' latest Annual Capacity Assessment.

Figure 5: Assumed demand for T4 capacity in economic assessments



Sources: (EMM, 2014b; Gillespie Economics, 2012, 2013), The Australia Institute T4 submission and Documents obtained by HCEC under GIPA Act.

23. We see that the assumed throughput of the PWCS terminals in the economic assessments by Gillespie Economics are at levels vastly beyond the other assessments, as well as PWCS' own forecasts and current levels of throughput. One clear indication that Gillespie Economics' assumptions are inaccurate is the downsizing of the project. Under the original proposal the terminal was to expand capacity by 120 Mtpa. This became unnecessary and the project was downsized to 70 Mtpa, but despite this clear indication that demand for throughput was not what was originally forecast, Gillespie Economics have not changed their assumptions about demand for PWCS throughput.

24. The more recent assessment by Dr Glyn Wittwer assumes no growth in throughput until construction is completed after five years and then rapid growth. PWCS' forecasts are likely to be above actual levels in the initial years, before some growth and then steady. The Australia Institute's forecasts were based on the actual level of throughput and the growth rate of throughput through the decade of the mining boom.

25. Neither Gillespie Economics nor Dr Wittwer provide a source for their throughput demand assumptions. Gillespie Economics claim in the most recent response to submissions that:

> *The 70 Mtpa throughput scenario adopted for the BCA was based on the anticipated future demand and project timing and staging to meet that demand, estimated by PWCS at the time the [benefit cost analysis] was being prepared.*[4]

26. This is a surprising claim, as the PWCS Annual Capacity Assessments obtained under the GIPA Act show that PWCS forecast levels of throughput far below the levels assumed by Gillespie Economics. Gillespie Economics' analysis was dated February 2012. The PWCS Annual Capacity Assessment dated November 2011 predicted a peak in demand of 176 Mtpa in 2016-17 before declining to a steady 173 Mtpa, while Gillespie Economics' assessment assumes the rate of growth accelerates beyond this time.

27. Regardless of where Gillespie Economics' assumptions come from, the key point to note is that the economic assessments in the EIS, the PPR and the latest assessment in an Appendix to the Response to Submissions on the PPR are all based on throughput assumptions far above what PWCS is itself forecasting and what historic growth patterns suggest is reasonable.

Department of Planning's Preliminary Environmental Assessment Report (PEAR)

28. The Department's PEAR does not directly use the results of any of the economic modelling commissioned by the proponents or submitted by The Australia Institute. Despite the many studies provided, the Department seems to dismiss their results, noting in a short section:

> *[The] Department considers that while the magnitude of the economic costs and benefits may be argued, the Proposal would ultimately result in increased throughput of coal to global markets,*

[4] (EMM, 2014b) p84

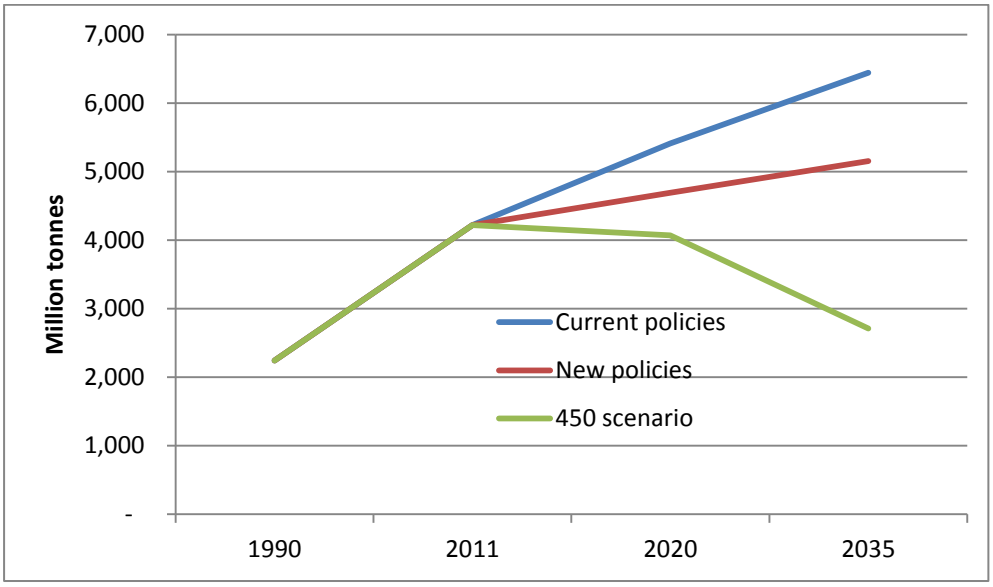
increased cost efficiencies through economies of scale, and therefore increased revenue for NSW in general.[5]

29. The Department bases its assumption of increased throughput on published forecasts of increased world coal demand:

> *The Department accepts the need for the Proposal is driven by demand of the global coal export markets (p12).*
>
> *The International Energy Agency estimates global electricity demand could double between 2009 and 2035. Unless there is a significant shift in global energy policy, coal will continue to play an important role in the global energy mix, although the share in energy supply may fluctuate(p9).*

30. The Department bases its assessment on selective reading of the International Energy Agency's (**IEA**) estimates. The IEA's latest World Energy Outlook has three scenarios for world energy growth. The central assumption is for modest growth in coal demand as the world makes some policy changes to address climate change. A business as usual scenario sees higher coal demand growth, while policies to minimise climate change would see rapid demand reduction, as shown in Figure 3 below:

Figure 6: World thermal coal demand under IEA scenarios



Source: (IEA, 2013) Table 4.1, p141

[5] P13

31. What the Department, and Gillespie Economics, fail to consider is that world demand for coal and demand for throughput of coal at the PWCS terminal are not directly related. Demand for coal shipped through the PWCS terminal will depend on the ability of mines which use it to operate profitably at world prices.

32. While demand for coal may grow, there are many coal producing areas that can supply the world's demand, with huge proposals in areas like Queensland's Galilee Basin, the Powder River Basin in the USA, Chinese domestic projects in Inner Mongolia. How much each area supplies to markets depends on how much coal can be supplied by each area at the prevailing price level.

33. At current coal prices, many Hunter Valley producers are losing money and looking to reduce production.[6] Other producers are able to supply profitably at this level, however, keeping prices low.

34. The Department makes little reference to coal prices, other than to note that they are currently 'softening'.[7] Gillespie Economics assume a thermal coal price of $100 per tonne.[8] In contrast, The World Bank is forecasting prices for Australian thermal coal to increase to US$82.3/t in 2016, before slowly declining to US$78.6 in 2025.[9] The IMF is more pessimistic, with forecasts out to 2019 of US$71/t.[10] This is similar to Rio Tinto's long term consensus forecast of US$72.58/t used in planning for its Hunter Valley Operations.[11]

35. The mines that use PWCS' facilities can produce coal at varying costs. Some cheaper operations may be able to increase sales to world markets under these forecast prices. The majority, however, will not. The average operating cost per tonne of coal for Australian thermal coal mines is around US$80 per tonne and costs have been increasing over recent years.[12]

36. While world coal demand may or may not increase in the coming years, the Hunter Valley's share of this demand looks unlikely to increase based on average operating costs and current price forecasts. This seems to be understood by the PWCS internal forecasts, which correlate closely with coal prices. In Figure 7 below we see that PWCS forecast their highest demand in 2011 when coal prices were at their recent peak. As coal prices have declined, their forecast peak throughput has declined too:

---

[6] http://www.smh.com.au/business/mining-and-resources/bhp-rio-warn-strong-australian-dollar-will-lead-to-more-job-losses-20140526-38xck.html

[7] (Department of Planning and Environment, 2014) p13

[8] No discussion of if this is in Australian or US dollars.

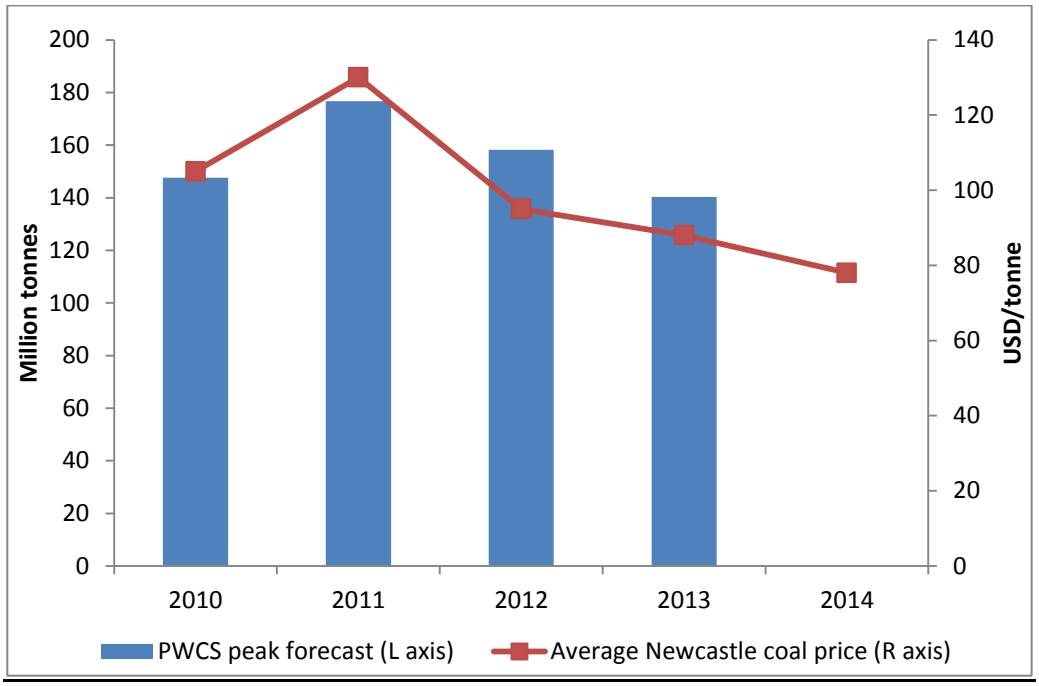
[9] (World Bank, 2014) estimates here in real 2010 US dollars

[10] http://www.imf.org/external/np/res/commod/index.aspx

[11] (Rio Tinto, 2013)

[12] (Morgan Stanley, 2013)

Figure 7: PWCS Annual Capacity Assessments, peak forecast from each assessment vs coal price



Sources: Indexmundi.com Newcastle Benchmark spot price and Documents obtained by HCEC under GIPA Act

37. We see that since the most recent annual capacity assessment in November 2013, prices have declined and are predicted to stay around these lower levels. It is likely that the next annual capacity assessment will be lower still, giving even less justification for the T4 project. The relationship between price and PWCS terminal capacity is overlooked by the Department in the PEAR and PWCS' commissioned economic assessments.

Costs and benefits of expanding coal production

38. If the PAC was to be satisfied, contrary to my arguments set out above, that there is a need for this project now, the PAC needs to assess whether the project will be of benefit to NSW. The costs and benefits need to be analysed.

Costs

39. Decision makers need to consider the environmental and social impacts of the T4 terminal if enough coal is produced to justify it. These impacts will include direct impacts of the terminal itself, such as reduced air quality and health in Newcastle and ecological impacts at the site on endangered species, as well as costs relating to the need for more mines in the Hunter and other

coalfields. These impacts have not, in my view, been adequately considered in the various economic assessments of the project.

Air quality and health

40. Impacts on air quality and health have costs. A NSW Government study on the costs of air pollution estimated the health costs of air pollution in the lower Hunter at $1 billion per year. Coal mining and transport is the major source of particulate pollutants (PM10) in the Hunter; the same study estimated the cost per tonne of at $35 per tonne.[13]

41. Economic assessment of the T4 project should include assessment of how any extra production would affect air quality and health costs in the Hunter. None of the economic assessments provided by the proponents include this consideration.

Direct environmental impacts

42. The construction of the T4 terminal would have an impact on the habitat for endangered Green and Golden Bell Frogs as well as important migratory bird habitat. The economic assessments take no consideration of these impacts, effectively assuming that mitigation and offset policies will work perfectly. This assumption is disputed by experts who will be presenting to the PAC as well as more widely in scientific literature on ecology.[14]

43. By assuming that offsets will work perfectly, the economic assessments are likely to understate the environmental costs of the project.

Costs associated with increased mining activity

44. At no stage in the economic assessments, or the full EIS, is consideration given to the level of mine expansion that would be required to produce the extra coal to supply the T4 terminal.

45. NSW produces around 167 million tonnes of saleable coal per year, not all of which is exported.[15] The T4 project proposes to exports by up to 70 Mtpa, an increase of around 50 per cent of exports. This is a substantial increase. It would require current production to be maintained, involving the gradual expansion of existing mines, as well as new production to be initiated.

46. If this new production was to be supplied from new mines, it would require between five and ten large, new mines to be built and to continue operating throughout the assessment period. For example, the Mt Thorley-Warkworth

[13] (NSW Department of Environment and Conservation, 2005)
[14] (Bekessy et al., 2010; Gibbons & Lindenmayer, 2007; Walker, Brower, Stephens, & Lee, 2009)
[15] (BREE, 2013)

mine produces around 11 Mtpa. If T4 were to operate to near capacity, six new mines the size of Mt Thorley-Warkworth would be required as well as two Tarrawonga mines.

47. This level of expansion of mining activity would be likely to put considerable pressure on communities, other industries and environmental assets. These sorts of impacts are already being felt. In Preston CJ's Bulga decision in the Land and Environment Court, his Honour noted:

> *I am not satisfied that the economic analyses provided on behalf of Warkworth support the conclusion urged by both Warkworth and the Minister, namely that the economic benefits of the Project outweigh the environmental, social and other costs*.[16]

48. Social, and other, impacts are difficult to value quantitatively, but must be considered against any claimed economic benefits. The potential impacts of expansion of mining required for the T4 project to operate are not considered adequately in the economic assessments undertaken on behalf of the proponent.

Benefits

49. The benefits of any extra coal are mainly royalties, payments to compensate the owners of the coal – the people of NSW – for the rights to process and sell it. Most profits of operations are not relevant to NSW as coal operations in the Hunter Valley are 90 per cent owned by foreign corporations, so any profits are also largely expatriated.[17]

50. The importance of royalties to the NSW economy is, in my view, over estimated. In a survey of Hunter residents conducted by The Australia Institute, respondents thought that on average coal royalties made up 19 per cent of state government revenue. Official figures show that the real figure is only 2 per cent. Most NSW government revenue comes from Commonwealth grants (44 per cent) and state taxation (37 per cent).[18]

51. Some additional tax revenue may be collected if the T4 project results in extra capacity being utilised. Estimating this benefit to NSW is difficult as mining companies generally pay low rates of tax and are granted many generous tax deductions. A recent report commissioned by the Minerals Council of Australia showed that mining companies pay tax on only 66 per cent of their

[16] (Preston, 2013) p155
[17] (Campbell, 2014)
[18] (NSW Government, 2013)(Campbell, 2014)

profits.[19] Research by The Australia Institute suggests mining companies pay around 13 per cent tax on gross operating surplus. [20]

52. In summary, the costs and benefits of any expansion of coal exports facilitated by the T4 project are uncertain.

Further notes on the Planning Department's Preliminary Environmental Assessment Report

53. Although the Department makes no direct reference to the various economic assessments and models provided by PWCS and submissions, it does make reference to various economic issues at a local level and at a state level.

Local economic issues

54. The Department's PEAR states:

> *"The Proposal would also have substantial economic benefits for Newcastle, the State and Australia with the direct investment of $4.8 billion"*[21]

55. From an economic perspective it is incorrect to think of capital costs as a "benefit". Capital costs are a cost to the proponent. Capital expenditure only provides a benefit to other parties if they are paid more for their goods and services than they cost, plus a normal return on capital. Standard cost benefit analysis would not include this as a benefit, as it assumes goods and services are priced at their opportunity cost.

56. The department also states:

> *"[The proposal would] provide for the payment of $528,140 in local developer contributions to Newcastle City Council".*

57. This sum is not included in any of the economic assessment. It is unclear if this is a present value of future benefits, a lump sum, or the undiscounted total payments over some period. It is unclear what costs the council might incur in return for this payment.

58. The Department also states:

---

[19] (DAE, 2014)

[20] (Richardson & Denniss, 2011) and http://www.smh.com.au/business/glencore-tax-bill-on-15b-income-zip-zilch-zero-20140626-3awg0.html

[21] All three quotes here are from piii

> *"[The proposal would] generate 1500 positions during construction and up to 80 positions during operation"*

59. Employment on the project is an important consideration for decision makers. We note that the original version of the project did not assume that extra operational positions would be required. Construction positions will largely displace existing jobs in other sectors, by deferring other projects, rather than 'generating' a new position. This is shown by the most recent modelling commissioned by the proponents, discussed further below. The proponents' modelling presents the counter-intuitive finding that the project would reduce employment in coal mining, due largely to taking labour away from the mining industry.

Coal in NSW economy

60. The Department quotes several figures in absolute terms, which gives a misleading impression of the role of coal and the Newcastle port in the NSW economy:

> *The Port of Newcastle is a state and nationally significant trade gateway, with total imports and exports in 2011-12 contributing $20 billion to the NSW economy. Some 79 percent of this level of investment is largely underpinned by coal exports which totalled $15 billion in 2011-12. The Port and the associated coal terminals therefore play a critical role in the NSW coal industry, along with both the NSW and Australian economies.*[22]

61. In fact, the NSW economy, like most modern economies, is based on services. While coal is a significant export, its role in the wider economy of NSW is minor. The industry accounts for:

    - 3 per cent of gross state product;
    - Less than 2 per cent of employment, only 5 per cent of employment in the Hunter Valley; and
    - 2 per cent of NSW government revenues.[23]

62. Given these low figures, it is difficult to agree with the Department's assessment that the Newcastle coal terminal and the T4 project are "critical" to the NSW economy, let alone the wider Australian economy.

Notes on Regional economic impact assessment by CGE modelling, by Glyn Wittwer

[22] *p2*
[23] (Campbell, 2014)

63. In Appendix B to the Response to Submissions on the Preferred Project Report, the proponents have provided analysis from Dr Glyn Wittwer at the Centre of Policy Studies at Monash University. Dr Wittwer uses the University's Computable General Equilibrium (**CGE**) model to estimate the impacts of the T4 project.

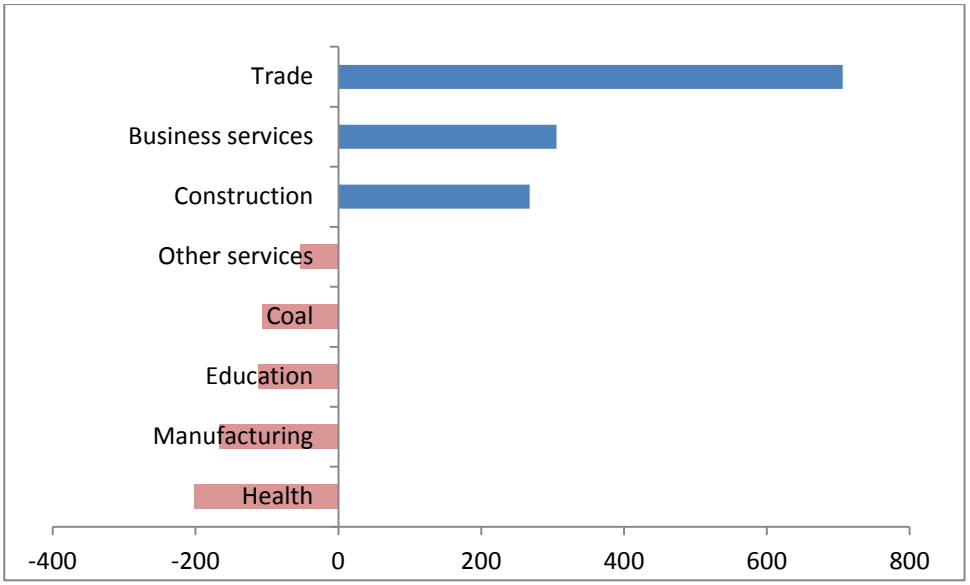
64. CGE models estimate how changes to one part of industry or sector impacts on various parts of an economy. They are commonly used for analysis of policies or projects. They are more sophisticated than other models used for earlier parts of the T4 assessment. Importantly, they acknowledge that an economy does not have limitless resources at its disposal at fixed prices.

65. CGE models are complex, with many assumptions, most of which are not made clear in the Appendix by Dr Wittwer. One key assumption is that demand for an extra 70 million tonnes per year of coal through the project is maintained through the analysis period, with no discussion of demand and supply in world coal markets. The claimed welfare impacts are, therefore, based on coal price and market conditions which do not reflect current conditions or PWCS' own internal forecasts.

66. The model also makes no allowance for environmental impacts such as changes in air quality and related health impacts, or reduction in available water and how that might affect other industries or domestic water supply.

67. While it is impossible to critique the modelling thoroughly due to the many undiscussed assumptions, the results of the model show that the T4 project would greatly benefit the construction industry while it would damage other areas of the economy. Figure 4 below shows the average employment change of the first ten years of the project from the CGE modelling for selected industries:

Figure 8: Average change in employment due to T4 project, years 1-10



Source: (EMM, 2014a) see Appendix B, Table 3.

68. We see that while 'trade'[24], business services and construction employment is strengthened, this is at the expense of jobs in other sectors, particularly health, manufacturing and education. The model likely assumes that these jobs are lost from these sectors as wages are forced up and schools, hospitals, etc are forced to reduce their operations.

69. The modelling presents only results employment in Newcastle, but the model itself acknowledges that Newcastle is a part of the wider NSW economy. It is likely that many of these new construction workers will come from other parts of NSW and not necessarily from unemployed people in the local area. There is no result mentioned for how the project would affect unemployment either at a local or state level, although this would be an output of a CGE model that could be produced easily.

70. Counter-intuitively, the model shows a reduction in employment in the coal sector, despite claiming to incorporate the expanded mining necessary to produce an extra 70 million tonnes per year of output. This is likely due to modelling assumptions that workers are reallocated from the mining sector to the construction sector. Even so, it seems unlikely that the region could add 50 per cent to its coal output with 100 less workers. While Figure 4 shows averages over the first ten years of the project's life, negative impacts on coal employment last until year 22. Interestingly, Table 2 of Dr Wittwer's analysis shows considerable increases in value added from the coal industry, suggesting generous assumptions around productivity of labour in the coal sector, or optimistic coal prices.

[24] It is not clear if 'trade' refers to manual trades, or jobs related to international trade.

71. Other interesting results from the CGE model are the predicted negative impacts on agriculture – the wine sector is expected to lose around $1 million in value added per year for most of the analysis period.

72. In summary, the CGE modelling conclusions are that if demand for coal through the Newcastle Port is strong over the next quarter century, this will benefit the construction industry and business services, while damaging many other sectors of the Newcastle economy. No consideration is made of environmental and health impacts, which would overstate the value of the project considerably.

Conclusion

73. To conclude, I will return to the original questions asked in my brief from EDO NSW:

(1) Describe the economic justification, as presented by PWCS, for the T4 Project.

74. The economic justification for the T4 project as presented by PWCS is based on assumptions which are not supported by PWCS' own internal forecasts, or by likely outcomes based on World Bank, IMF and Rio Tinto coal price forecasts and mine cost estimates by Morgan Stanley.

(2) In your view, are the assumptions relied on in this justification appropriate?

75. No, these assumptions are unrealistic and not supported by PWCS' own forecasts.

(3) Describe the methods used to estimate the economic benefits of the T4 Project.

(4) In your view, are these methods appropriate for the assessment of the T4 Project and have they been appropriately applied?

76. Cost benefit analysis, input-output modelling and CGE modelling have all been used in various reports. More important than the methods, in my view, are the assumptions that have underpinned these assessments, particularly the assumption of rapid growth in throughput. I set out above why I believe those assumptions are misconceived.

(5) In your view, what are the likely economic costs and benefits of the revised T4 Project, as described in the Preferred Project Report?

77. In my opinion, there will be minimal economic benefit from the project, as the required export volumes are unlikely to eventuate. If they do eventuate,

benefits of royalties will need to be balanced against likely increases in social and environmental costs and impacts on other industries.

(6) Provide any further observations or opinions which you consider to be relevant from an economic perspective, having regard to the circumstances of this matter.

78. The Department of Planning's Preliminary Environmental Assessment Report also fails to consider the value of the project under realistic growth scenarios. Furthermore, it makes inaccurate statements about the importance of the project to the local, NSW and Australian economies.

References

Bekessy, S. A., Wintle, B. A., Lindenmayer, D. B., Mccarthy, M. A., Colyvan, M., Burgman, M. A., & Possingham, H. P. (2010). The biodiversity bank cannot be a lending bank. *Conservation Letters*, *3*(3), 151–158. doi:10.1111/j.1755-263X.2010.00110.x

BREE. (2013). *Energy in Australia*. Bureau of Resources and Energy Economics, Canberra.

Campbell, R. (2014). *Seeing through the dust: Coal in the Hunter Valley economy*. The Australia Institute, Policy Brief No. 62. Retrieved from http://www.tai.org.au/content/seeing-through-dust-coal-hunter-valley-economy

DAE. (2014). *Estimated company tax, MRRT, carbon tax and royalties expenses for the minerals sector*. Report prepared for the Minerals Council of Australia by Deloitte Access Economics. Retrieved from http://www.minerals.org.au/file_upload/files/reports/DAE_-_MCA_Royalty_and_company_tax_estimates_30_July_%281%29.pdf

Department of Planning and Environment. (2014). *Major Project Assessment: Terminal 4 Project, Secretary's Preliminary Environmental Assessment Report*. Retrieved from https://majorprojects.affinitylive.com/public/820765d0a2e8756037522f8e6d847346/Port Waratah Coal Services Terminal 4 Project_Preliminary Report .pdf

EMM. (2014a). *T4 PROJECT - response to submissions on preferred project*. Report for Port Waratah Coal Services. Retrieved from https://majorprojects.affinitylive.com/public/85d45886200f07acb23e9b84278bb373/T4 Project_ RTS on Preferred Project.pdf

EMM. (2014b). *T4 PROJECT Preferred Project report response to submissions*.

Gibbons, P., & Lindenmayer, D. B. (2007). Offsets for land clearing: No net loss or the tail wagging the dog? *Ecological Management & Restoration*, *8*(1), 26–31. doi:10.1111/j.1442-8903.2007.00328.x

Gillespie Economics. (2012). *Terminal 4 project: Economic assessment*. Prepared for Port Waratah Coal Services, T4 EIS appendix R.

Gillespie Economics. (2013). *Terminal 4 project: Economic assessment of modified design*. Prepared for Port Waratah Coal Services, T4 supplimentary EIS appendix S.

IEA. (2013). *World Energy Outlook 2013*. International Energy Agency, Paris, France.

Morgan Stanley. (2013). *Australia Mining Cost Survey*. Morgan Stanley Research Australia.

NSW Department of Environment and Conservation. (2005). *Air Pollution Economics: Health Costs of Air Pollution in the Greater Sydney Metropolitan Region*. Report for the Department of Environment and Conservation NSW with contributions from: Dr Geoff Morgan, Dr Bin Jalaludin, Dr Vicky Sheppeard, Centre for International Economics, EPA Victoria.

NSW Government. (2013). *NSW Budget Statement: Chapter 6 : General Government Revenues* (pp. 1–27). Retrieved from http://www.budget.nsw.gov.au/budget_papers/budget_paper_2

Preston, B. (2013). *Judgement on Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Limited*. Judgement in the Land and Environment Court, New South Wales. Retrieved from http://www.edo.org.au/edonsw/site/pdf/casesum/Warkworth_judgment.pdf

PWCS. (2013). *ANNUAL REPORT 2013*. Port Waratah Coal Services, Newcastle. Retrieved from http://www.pwcs.com.au/pages/design/links/uploaded/2013AnnualReport.pdf

Richardson, D., & Denniss, R. (2011). *Mining the truth: the rhetoric and reality of the mining boom*. Institute paper number 7, The Australia Institute, Canberra.

Rio Tinto. (2013). *Hunter Valley Operations Exploration Results Reporting Table 1*. Retrieved from http://www.riotinto.com/documents/RT_Table1_HVO_ORSC_2013.pdf

Walker, S., Brower, A. L., Stephens, R. T. T., & Lee, W. G. (2009). Why bartering biodiversity fails. *Conservation Letters*, *2*(4), 149–157. doi:10.1111/j.1755-263X.2009.00061.x

World Bank. (2014). *World Bank Commodities Price Forecast* (pp. 1–4). Released January 30 2014. Retrieved from http://siteresources.worldbank.org/INTPROSPECTS/Resources/334934-1304428586133/Price_Forecast_Jan14.pdf

Attachment 1: Expert qualifications:

Roderick E. S. Campbell

Email: roderick@ecolarge.com
Post: 62 Patterson St, Middle Park, Victoria, 3206
Phone: 0438-503-249
D.O.B.: March 21st, 1978

Employment

Economist **August 2013 - Present**
The Australia Institute
Australia's most influential progressive think-tank, based in Canberra

The Australia Institute researches a wide range of political and economic issues, including public finance and fiscal policy, equity and the environment. My position focuses on the coal industry and wider resource and energy sector. Recent highlights:

- Expert witness appearances – I have appeared twice in the NSW Land and Environment court called by the Environmental Defenders Office NSW (EDO). EDO and its client ran Australia's first legal appeal against a coal project with detailed consideration of economics. The appeal was successful and was upheld on appeal in the Supreme Court. My appearance required:
  - Thorough understanding of non-market valuation and environmental economic literature
  - Strong background in economics of climate change
  - Strong public speaking skills and ability to persuade a judge and debate opposing experts
- Article published in *Australian Environmental Review* on the economics of environmental offsets.
- Multiple reports on the Australian coal industry, with media appearances on TV, radio and print.

Director and Economist **2008 – Present**
Economists at Large (www.ecolarge.com all reports available on website)
Melbourne-based network of "economists without borders" providing consulting services to NGOs, development agencies and community-based organisations. Current projects and past achievements include

Economics of hunting in Africa. I have authored several influential reports on hunting tourism and the species conservation in Africa:

- *Horn of Contention* – economics of trade in rhino horns and the potential conservation implications of trade liberalisation.
- *The $200 million question* – assessment of the value of trophy hunting to African economies and communities.
- *Mane assumptions* – critique of hunting industry sponsored research on the value of lion safaris to east African conservation and economies.

Assessment of Victorian brown coal export potential. I was the main author of an assessment of the financial and economic viability of proposals to export

brown coal from the Latrobe Valley, which required

- Understanding of commodity markets for different ranks of coal, gas and related commodities
- Understanding of carbon pricing
- Knowledge of minerals exploration and mining regulation
- Media skills, as I was interviewed by TV, radio and print journalists

Investigation into foreign direct investment (FDI) in agriculture in Laos. Report into different models for agricultural FDI, commissioned by the International Institute for Sustainable Development (IISD), requiring

- Understanding of development economics and agricultural marketing in SE Asia
- Ability to write for policy makers
- Experience conducting fieldwork, interviews and surveys

Evaluation of livestock-focussed disaster recovery packages. Ongoing project for World Society for Protection of Animals and their Livestock in Disasters project, requiring

- Experience in bioeconomic modelling
- Understanding of the economic and agronomic role of livestock in developing countries
- Knowledge of economic literature relating to disaster recovery

---

Freelance development consultant **2007 - 2008**

Including projects with WWF, European Commission, ACIAR

- Model of environmental service values in the Mekong Basin. Required a thorough understanding of environmental service valuation and benefit transfer protocols
- Financial modelling and project evaluation of EC-funded Sustainable Rattan Harvest Project in Laos, Cambodia and Vietnam. Included fieldwork in project areas and financial data analysis
- Economic assessment of non-timber forest products with WWF Laos, based on primary research in regional markets. Included fieldwork with forestry research agencies and stakeholder survey
- Capacity building in research and fieldwork methods and Microsoft Office for WWF Laos staff

---

Transport coordinator **Jul-Sep 2008**

Lenovo (computer manufacturer)

At the Beijing Olympics I managed transport for the Lenovo corporate hospitality programme.

- Coordinated a pool of 15 vehicles and 26 staff, in Chinese (Mandarin).
- Recruitment and training for Chinese drivers working with corporate guests.
- Negotiated purchase and hire of equipment and represented Lenovo in meetings with transport companies and the Beijing Organising Committee of the Olympic Games (BOCOG).

Media analyst **2006-2007**

Cubit Media Research

Cubit provides media analysis services to clients in IT, telecommunications, government and others.

- Monitored multiple media sources, managed databases and produced client-specific reports
- Worked with native speaking analysts to develop services for Chinese and Japanese media projects
- Production of reports for clients using SQL/Access, Excel and Word.

Australian Youth Ambassador for Development
Australian Centre for International Agricultural Research (ACIAR) **2005 - 2006**

Agricultural development program in China, as an AusAID Youth Ambassador and independent consultant

- Established and coordinated an on-farm research programme. 20 farmers hosted experiments by ACIAR researchers in two contrasting field areas in Eastern Gansu Province.
- Conducted survey of farming practices and farmer attitudes towards tillage research, including survey development, data collection and presentation of results for communities and academic staff

Education

University of Melbourne **1996-2002**

B.Commerce (Economics) & B.Arts (Honours Economic Geography)

My honours thesis addressed payment for environmental service schemes in China, specifically the "Grain for Green" soil erosion control policy. Data collected during a field trip to Shaanxi Province.

Kyoto University

Economics exchange **2001**

I took three subjects for local students, environmental economics, Japanese economy and organisational behaviour, all taught in Japanese.

Other information and interests

Languages: Chinese, Japanese, Portuguese, basic Lao, basic Spanish.

Licences: Driving (car), boat (recreational), first aid level 2

Memberships: Economic Society of Australia, Young Economists Network Victoria, Asialink

Other interests: Kiteboarding, crosswords and music.

Referees

Dr Richard Denniss	**Francis Grey**	**Prof William Bellotti**
Executive Director	Founder and director	ACIAR project manager
The Australia Institute	Economists at Large	University of Western Sydney
rd@tai.org.au	francis@ecolarge.com	w.bellotti@uws.edu.au
Tel. (02) 6206 8700	Tel. (03) 9005 0154	

Attachment 2: Expert brief