A Critique of Tasmania's Energy Resources

A Necessary Precursor for further State Development

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1 ABSTRACT

This paper anticipates the commercial development of on-shore gas in Tasmania by Great South Land Minerals and associated parties. The Tasmanian Basin is considered prospective for both petroleum and helium and is comparable in size and stratigraphy to other Basins such as South Oman (Middle East) and Cooper (Australia). Present estimates quantify the hydrocarbons in specific areas of the Tasmanian Basin at some 4 trillion cubic feet of gas and 3 billion barrels of oil. The presumption in this paper is that these commercial quantities of gas will be confirmed in 2000, followed by production in about 2003.

It is further postulated that because of the convenience of an on-shore deposit, ready access to the resource, and the relatively short distance between the source and destination of the fuel when it is made available to the market, the price will be lower than in other parts of Australia. Indicatively, it is assumed to be about 75% of the Gippsland wellhead and haulage prices

For the purpose of this paper a wellhead price of $1.19/GJ and a haulage price of $0.13/GJ are assumed. Further, it is expected that the Tasmanian Government will follow Victoria's example and place an impost or tax on production, the amount imposed being related to the extent of energy intensive industry that the Government wish to attract to the island. This price structure should result in a nominal price delivered to a large customer of considerably less than $3.0/GJ.

A company, viz. Bass Energy, has been created to take advantage of the gas find for the ultimate benefit of the people of Tasmania. It plans to utilise the gas and generate electricity at the lowest long-term marginal cost in Australia, restoring Tasmania as the prime price setter in Australia, a position it occupied prior to the 1980's.

Bass Energy is planning to install and commission a base load combined cycle gas turbine (CCGT) power station with a substantial capacity, able to freely export electricity to the mainland, provide the necessary reserve for the hydro system and with sufficient further excess to satisfy new energy intensive industries wanting to establish on the island. Ideally the power station will be on the present Bell Bay site and that action will reduce infrastructure costs of establishment and underwrite its low base load price to the Tasmanian energy market.

This paper also addresses the value of Basslink in the arbitrage regime and in a role of base load provider for the mainland. Without a low cost energy source on Tasmania the value of Basslink is suspect. This has been adequately described in a paper[1] elsewhere, where it has been shown that because of the price structure in the mainland market, the transport charges for electricity to and from Tasmania and the very clear market advantage of the mainland players, the price of electricity delivered from Basslink would be above that available from new generation assets located in Tasmania.

However, if energy is produced on Tasmania at a low cost, and TUOS charges are avoided, then Tasmania could be in a position to provide generation to meet base and intermediate load on the mainland at a competitive price.

This paper assumes that the Bell Bay Power Station site will be used to locate the new CCGT base load station and addresses the issues of low cost base load electricity supply into the longer term, environmental considerations and positioning to profitably export energy to the mainland (indirectly changing Basslink from a potential "white elephant" to a valuable facility). The strategy is designed to reduce electricity costs, greatly increase cash flow from the mainland to Tasmania, obtain a greater share of the national electricity cake, and promote employment on the island through the establishment of new industries.

2 TASMANIA'S ENERGY SITUATION TODAY

Tasmania's electricity industry has entered, and is still experiencing, a period of rapid change. In the past Tasmania enjoyed a comparative advantage in electricity production viz a viz the other States, an advantage that underpinned much of the State's industrial development. There is however a continuing perception, for many, that Tasmania is still a low cost supplier of electricity with large surpluses available to industry. This is assuredly not so.

There are no new sites suitable for development for significant hydroelectric power projects at an economical cost outside protected areas, and the long-term capability of the existing hydro system is already less than the demands placed on it by system requirements. Thermal support from the Bell Bay power station, originally intended to cover the impact of droughts on plant adequacy, now needs to make a contribution to meeting the system load even in average water flow years if water storages at mark levels are to be maintained.

This situation was recognised subsequent to the decision that saw the cancelling of the full development of the Gordon below Franklin project. For the first time it became

[1] *Refer to a paper on the Tasmanian energy scene, "Basslink", December 1998, by Keith W Laing*

apparent that Tasmania would not be able to attract additional industry to the State by simply offering low price electricity and that electricity customers were now exposed to the risk of an escalating electricity price regime. Some industrial contracts that were negotiated during the halcyon years of hydro development are now seen as having price and duration conditions not consistent with a sustainable electricity industry.

In addition to these problems Tasmania is also faced with a need to embrace competition policy and be seen to observe the National Electricity Code. To meet this requirement the HECT was segregated into three commercial units providing respectively generation, transmission and marketing services. Some concern remains about the position of the generating arm, Hydro, and a private generation source on the island has been deemed essential to meet competition guidelines.

An important key to the Tasmanian economy is low electricity prices and low electricity prices require plant that produces electricity at low unit costs. In this respect a number of generation options have been explored but none have shown the potential required to reinstate Tasmania as a low cost supplier of electricity. These options are explained as follows:

2.1 Using an oil- fired Bell Bay Power Station for base load generation

The advantages from this option are few, but include a proven (albeit an inefficient) technology and as the station has recently been recommissioned, its principal outgoing costs would be contained to only fuel and labour.

However, it has many disadvantages and these include a high cost of fuel, reliance on an imported fuel with real probability of continuing price escalation, poor plant availability (less than 85%), a potential source of significant air pollution in the lower Tamar River basin (whether the plant is fired on oil or Orimulsion), and the loss of a key resource to provide energy support to the hydro system.

Further, because of the consequential high price of electricity generated it would not introduce substantial competition into Tasmania's energy market.

2.2 Solid Fuel-Fired Steam Generators

The advantages of fluidised bed steam generators are to be found mainly in the increased employment that would result if located in the Fingal Valley and the (unlikely) possibility of increased competition in generation if a suitable coal price could be negotiated.

However, high capital investment up front, low plant efficiency, and significant greenhouse emissions tend to remove this option as a viable alternative.

No attention has be paid to more conventional solid fuel fired plant that could be provided to meet energy demands at a lesser investment, however the same problems of high emissions from relatively low plant efficiencies would remain. The newer combined cycle gasification technologies rule themselves out at this time because of their lack of commercial hours and very high capital investments required up-front.

2.3 Off-shore Natural Gas

High infrastructure costs associated with moving gas from either Bass Strait or from Gippsland, a yet to be negotiated price for gas and a small market to defray the total expenditure of an expensive project suggest that to bring gas onto Tasmania would contravene sound business judgement.

The option to place the gas on the mainland without incurring infrastructure costs as high as that required for the Tasmanian project, whether gas is from Yolla or Gippsland fields, seems far more attractive than the long payback periods and low returns involved if gas is to be piped to Tasmania. If gas were brought onto Tasmania then the unit price of generation would be expected to be far in excess of that for new entry mainland plant. Similarly if the gas market was developed high unit prices of gas would be expected to prevail.

Again, because of the consequential high price of electricity generated it would not introduce substantial competition into Tasmania's energy market.

2.4 Cogeneration

The potential for cogeneration is limited although plant efficiencies can exceed 50% (HHV). The advantages are short lead times for installation and modest capital investment. However, most of the cogeneration opportunities have already been trapped and some 20MW of co-generated electricity is already being produced from major industries. What remains unutilised is unlikely to substantially contribute to the shortfall between electricity demand and supply.

2.5 Wind

Tasmania has a relatively high-grade wind source and Hydro have announced a potential development of a West Coast wind farm for up over 400 MW. The advantages of wind farming are modest capital investment, reasonable lead times for construction, multiple streams of development, and relatively benign environmental impacts, excluding visual pollution. There are real and significant synergies between wind power and a hydropower system that is energy constrained and not capacity constrained, as there is always uncertainty with wind power as to when energy will be produced.

The disadvantage with wind power is the unit generation cost, being considerably higher than the unit generation cost of conventional plant. Some benefits would offset this cost from the Federal Government's Greenhouse credits trading system however these conditions are yet to be defined and ratification of the Kyoto Protocol has to be obtained. Even then the cost of generation will be well above the best generation cost profiles on the mainland.

While this proposal has the prospect of providing a good source of energy on Tasmania for Tasmania, it is difficult to envisage at the present level of proven technology that it will be a competitive source in the foreseeable future.

2.6 Wood, Photovoltaic, Solar

The high cost of these options, and their limited output excludes these methods from serious consideration as major new energy sources.

2.7 Basslink

With Basslink in place Tasmania would be a participating jurisdiction in the national electricity market. The advantages of Basslink are an independent source of energy supply to meet Tasmania's electricity needs, access to a market in which to place low cost generation, a supply flexibility to adjust to incremental changes in domestic demands, and a trading facility.

However there is a significant hyperbole surrounding Basslink not the least of which are the purported huge trading benefits possible through arbitrage to the financial advantage of Tasmania. This is unlikely. Further, even though private enterprise money is to be used for the construction and operation of the link, the Tasmanian Government is tacitly locked into contingent financial support (by way of grants or subsidies) if the link is not adequately utilised. Basslink managers would hold powerful negotiating chips in this instance.

Basslink can only provide Tasmania with energy at prices well above the best benchmark prices on the mainland, even buying at off-peak rates and storing in the hydro system. This is basically because of high TUOS and Basslink charges and particularly if the link is less than 100% utilised.

As a supplier of energy to Tasmania, Basslink is an expensive source. As such it would not offer the necessary competition into Tasmania's energy market to facilitate the reform process or attract new industries to the State.

In essence Basslink would be of value to Tasmania only in the event that there is a low cost energy source on the island that can sell energy at a competitive price against the mainland base load generators and obtain reasonably high utilisation on the link.

In this latter situation the value of Basslink increases as its capacity increases up to the capability of the low cost energy source. A different and exciting role for Basslink receives more attention later in this paper.

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In summary, some of these options can supply the required amount of energy to satisfy the future Tasmanian demands although the unit generation costs would, in all cases, be exorbitant. None of these options can deliver electricity at less than the new entrant price on the mainland.

For all the options so far explored, it means that Tasmania does not have a comparative advantage in either electricity provisioning or in electricity pricing. None of the above options can demonstrably drive a reform process in the electricity industry as there are no competitors capable of generating electricity at lower prices than Hydro. This implies that growth of energy intensive industries is more likely to take place on the mainland rather then on Tasmania if these options are the only augmentation schemes to be considered. It also means that the publicly owned hydro will not be challenged to perform in the commercial market

Politically it means that a competitive electricity industry in Tasmania would be unlikely, as the best of these options cannot produce a cost profile better than Hydro. In the organisational sense it does not expose Hydro to the challenge of market forces or produce a driver that would bring about reform.

The next section of this paper addresses an option previously not explored but which has the potential to reduce general electricity prices to the Tasmanian market, give meaning and value to Basslink, provide the competitive edge to drive the reform process, and consolidate low cost electricity supply for the foreseeable future.

3 GAS FIRED COMBINED CYCLE POWER PLANT

The advantage of using combined cycle gas turbines with high thermodynamic efficiencies (>50% HHV) is obvious. It is cost effective and provides an environmentally acceptable method (although not totally green) of generating the substantial amounts of energy needed to support the hydro assets, provide for an increasing load growth and attract new industries to the island. CCGT's are the most environmentally friendly of the thermal plants, the type required if Tasmania is to have a cost effective and unconstrained energy development path.

On the assumptions that suitable quantities of quality gas will be discovered, commercialised and made available at considerably less than $3/GJ and gas turbine plant of the required size and number is readily accessible, it is planned to develop and commission a power station in a location such that infrastructure and transport costs (electricity and gas) are minimised.

The Bell Bay power station site is a preferred location as there would be considerable infrastructure savings made compared with a Greenfield site. However, if that site is not available then the plant will be constructed on a suitable site that minimises transport costs. The remainder of this paper assumes the Bell Bay site.

The existing Bell Bay power station has two 120 MW generators using steam from two oil fired steam boilers. The first was commissioned in 1971 and the second in 1974, its generation cost is about $54/MWh and the plant operates at efficiencies around 30%. At full output the station consumes 1,250 tonnes of oil per day with associated CO_2 emissions of 198 tonne/hour or 850 tonnes/GWh.

The proposed CCGT power station is ultimately a 6 x 70 MW gas turbine station with heat recovery equipment and 2 x 110 MW high efficiency steam turbines giving a generating capability of 640 MW with a specific CO_2 emission discharge of 523 tonnes/GWh.

3.1 Plant Installation

Installation is planned as a staged development and this is depicted on Attachment 1 that indicates progress from the existing station to a fully developed project. The existing configuration, stage 1, stage2 and the full project development stages are shown in diagrams on this attachment in separate boxes with a summary table and legend on the side. The figures on the oil/gas lines in all diagrams are equivalent oil consumption in kilograms per second. A preliminary budget estimate of the cost of each stage is shown in a box above each diagram, as is the MW capacity of the station at stage completion.

- **EXISTING CONFIGURATION**: shows both oil-fired boilers in operation and capable of full output.

- **STAGE 1**: The first gas turbine is installed with a matching heat recovery steam generator. One oil-fired boiler can operate at full output, the other at a reduced output in conjunction with the new heat recovery steam generator discharging into the old steam turbine. This gives the station a maximum capacity of 310 MW. Oil firing is maintained mainly because gas lines would not have been installed from the field at this time and to use oil in storage that would not have a long-term role in power generation. Commissioning of this stage would allow a full assessment of actual performance of the gas turbine and heat recovery steam generator and time to permit debugging of faults, if any.

- **STAGE 2**: At the completion of this stage one oil-fired unit remains and capable of stand-alone generation on oil. The other oil-fired unit has now been fully replaced by 3 x 70 MW gas turbines with matching heat recovery steam generators discharging into a matched high efficiency 110 MW steam turbine. Firing of this plant arrangement is preferably gas but if the gas pipeline installation is delayed or Stage 2 of the plant program accelerated, it could be alternatively fired by oil. Completion of this stage gives the station a maximum capacity of 440 MW, (320 MW on gas).

- **STAGE 3**: This stage is the replication of the Stage 2 on the second oil-fired boiler resulting in 6 x 70 MW gas turbines with matching heat recovery steam generators discharging into matched high efficiency 2 x 110 MW steam turbines. Gas is the selected fuel by this stage. This gives the station a maximum capacity of 640 MW.

3.2 Environmental Issues

Limits for the use of Tamar estuary water for cooling water was set in 1970 for a reserve duty station and catered for the steam heat rejection rate of 240 MW.

However, reserve duty was recognised as continuous operation for prolonged periods, maybe as long as one year if a sequence of dry conditions caused a severe drought depleting water storages.

What is proposed here is a continuous operation process but at a reduced steam heat rejection rate of 220 MW for a power station nearly three times as large.

As far as CO_2 emissions are concerned the existing oil fired power station has a specific emission rate of approximately 850 tonne/GWh sent out. The specific emission rate for the gas fired station is approximately 523 tonnes/GWh sent out.

3.3 Costs

The estimates of costs displayed in the diagrams of Attachment 1 represent the total cost of designing, building and commissioning the facility, including owner's engineering costs, contract costs, foundations, project management and financing costs. The figures should be taken as a preliminary guide to the likely cost but need further work before they may be totally relied upon.

Working through this preliminary analysis of the project indicates by installing a CCGT power station at Bell Bay, Bass Energy could probably send out electricity from the station at a long-term marginal cost of less than $20/MWh and still make a profit.

This has huge ramifications in terms of establishing a real competitive environment in the energy industry in Tasmania, changing Basslink into a worthwhile asset for the State and becoming a player in the national energy market. These issues are now discussed.

4 CONVERTING THE GAS RESOURCE TO ECONOMIC VALUE

A low cost energy supply is intrinsic to the economic health of the State as it attracts industry, improves personal disposable income and is instrumental in providing employment for a range of professions and skilled trades. The long-term marginal cost of energy as low as has been evaluated for the CCGT power station has the potential to cause a major favourable shift in the economics of Tasmania.

This low long-term marginal cost of energy would be the result of cheap on-shore gas won from the Tasmanian basin. Any increase in the assumed price of gas to the CCGT power station would lessen the strength of the economic argument. For example, if the gas price increased to the price expected by bringing gas to Tasmania from off-shore, then the economic advantage to the State in terms of reform initiatives, competition and obtaining value out of Basslink, would vanish.

This paper assumes that the price of gas from the Tasmanian Basin will be as noted earlier because of the favourable geology, relatively short distances from wellhead to market and the assumption of a prudent taxing approach by the Government.

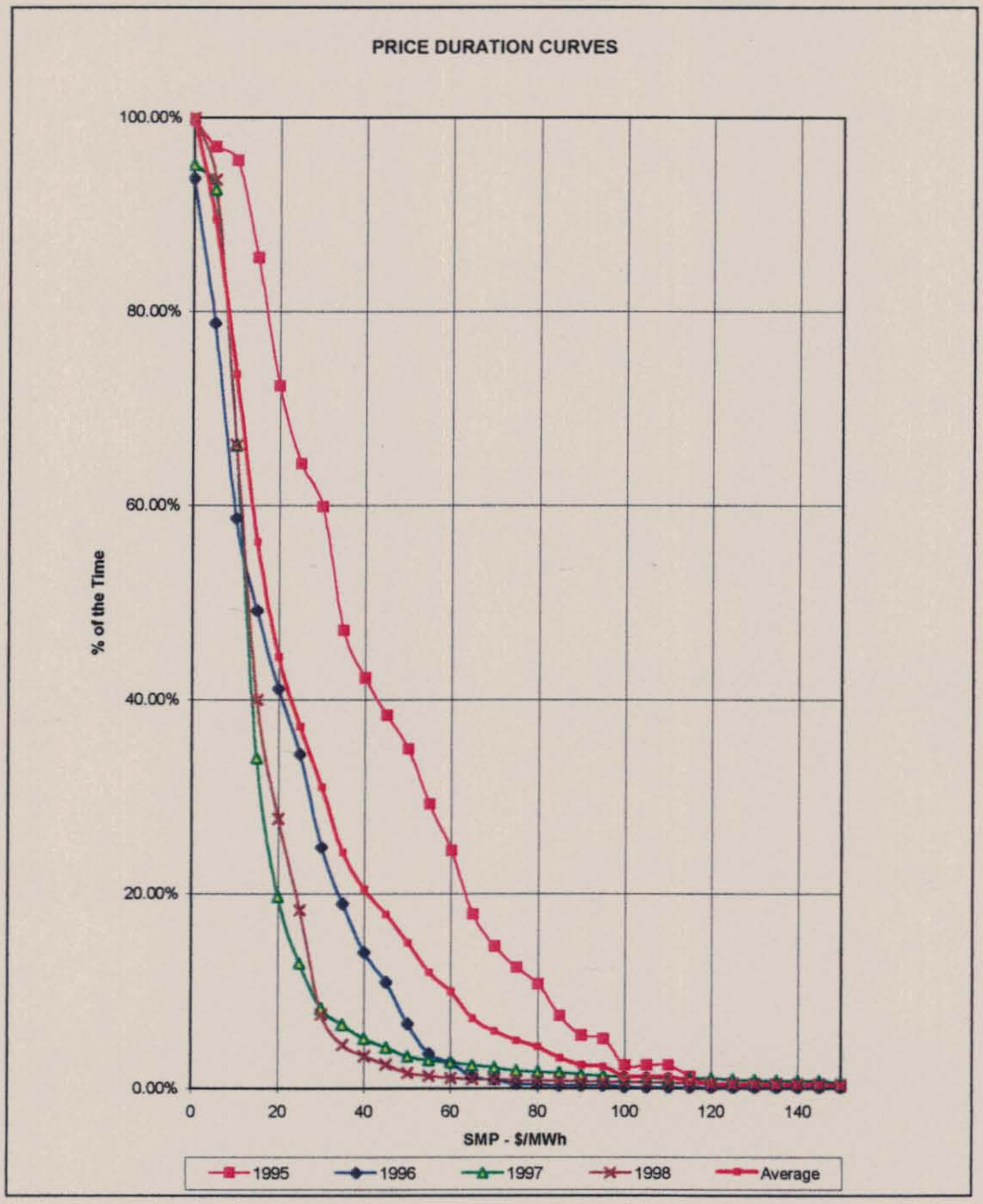
4.1 Basslink

It is most unlikely that Basslink can be economically justified if it is to rely on importing support for hydro from the mainland and on arbitrage from energy trading. Taking account of the expected level of off peak base load prices, TUOS charges from Latrobe Valley to the Victorian Basslink terminal, and Basslink servicing costs at line utilisations at around 60%, energy could not be landed from the mainland at the Tasmanian Basslink terminal at less than $45/MWh. Basslink would have no value to Tasmania compared with other generation options on the island.

However, it is another matter when there is low cost base load generation available in Tasmania, viz. a CCGT power station of Bass Energy.

The amount of trading by Bass Energy on Basslink would be predicated by the SMP in Victoria, and the cost of using the transmission facilities. The SMP in Victoria is crucial to the exercise, because Tasmania could buy opportunistically from this market if required, and sell into it when the price passed a certain hurdle rate. Arbitrage opportunities will be limited because of the intent to sell into Victoria any time that the SMP is above the CCGT price.

The following figure is a plot of price duration curves in Victoria for the years 1995 through to 1998. An average curve has been calculated and is plotted as the heavy line shown on the figure.



An understanding of the price duration curves, ie. the energy price for every half hour, sorted from highest to lowest price; is fundamental to understanding the value of the Basslink interconnection to Tasmania. The shape of the price duration curve is the driver for the effective time shifting of energy across the link.

A number of points are relevant to maximise the benefit from the link for Tasmania.

- The capacity of the link is chosen to approximately match the capacity of the base load CCGT power station and maximise returns.

- The 600 MW Basslink charges should be treated as fixed costs and not be factored into the bid price from Tasmania. This will obtain maximum trading exposure to the Victorian system.

- The bid price should be the energy price from the CCGT's, viz. $20/MWh. Dropping the bid price further results in losing money if the bid price becomes the SMP.

- It can be derived from the curves that this would give Tasmania an average exposure to the Victorian system for about 60% of the time, and generate a profit of about $27M/year after paying a Basslink fixed cost of $72M/year. (If a nominal Basslink charge of $15/MWh were added to the bid price it would result in reducing the exposure to market to 30%, and generate a profit of $15M/year after paying a Basslink fixed cost of $72M/year.)

- With the Basslink charges (treated as fixed charges) being fully met by the selling of low cost energy into the Victorian pool for 60% of the time, the opportunity can be taken by Hydro to import low cost energy at other times from the mainland to put into storages with no Basslink charges.

  For about 20% of the time the Victorian SMP plus TUOS charges is lower than the CCGT price on Tasmania. It would be in Hydro's interest to capture this energy for later use. The saving to Hydro would be of the order of $5M/year.

- For a small time period (about 7 hours a year) VoLL conditions apply and these have not been taken into account in the numbers assembled above. There will be a further value on the link when supplying into the Victorian pool at times of VoLL and this averages out at a little over $2M/year.

From this cursory approach it can be seen that with a low cost energy provider in Tasmania, Basslink can be a valuable asset. It would return to its owners their dividend and contribute to Tasmanian participants some $34M/year.

> *It is to be noted that it is the low cost on-shore gas that is the driver to putting value into Basslink. Without the low cost generation from the CCGT's, Basslink would be a "white elephant".*

4.2 Reform Initiatives and Competition

Reform initiatives in the generating sector of Tasmania are only really possible if competition having lower priced energy is introduced into the market.

If a new base load generator, viz: the CCGT plant owned by Bass Energy, provides a substantial amount of energy at a significantly lower cost than Hydro then it has a pre-eminent place in merit order list for system loading.

This will cause major organisational and operational dislocations in Hydro and force cost reductions and/or legislative changes for electricity market reform.

This is best explained through two simplified examples, with and without Basslink.

Assume the following:

- Bass Energy has a staged program of development for up to 640 MW of installed CCGT plant capable of generating some 5,000 GWh/year of energy, at a cost of $20/MWh.
- The timing of the Bass Energy plant installation program would be tailored such that there would always be more plant available than load to be met.

  Because of the lower cost profile of Bass Energy, Hydro would be under continual pressure to reduce their costs to obtain better merit order status than the CCGT plant.
- The firm (average) supply capability of the hydro system is 9,800 GWh/year.
- Hydro would bid in 40% of their generating capability as run-of-river stations at a zero price, with the other plant bid in to cover Hydro's average costs at $35/MWh.
- The dispatch of generators is on a merit order basis and the system marginal price (SMP) is set by the last unit loaded on the system, viz. Hydro's generating assets on large storages.
- Recognise a Tasmanian load of 10,500 GWh/year.

Example 1 – No Basslink

Bass Energy could aggressively install up to Stage 2 of the project, viz. 320 MW of CCGT plant capable of generating 2,500 GWh/year. Reliance would be placed on a true merit order loading of plant to ensure that all the low cost CCGT's were loaded. Assume competitors bid in at cost. Run-of-river plants are loaded, followed by the CCGT plant and then storage hydro.

In the first planning iteration it would mean that the CCGT plant would supply the local market with 2,500 GWh/year and Hydro would supply the balance of Tasmanian load or 8,000 GWh/year.

The financial result of this would be that Bass Energy would improve their budgeted position by $15/MWh, (the difference between bid price and SMP), while hydro would worsen their situation by about $6/MWh (a surrogate for market loss) and potentially be spilling water.

In the second iteration it would be expected that Hydro would negotiate with Bass Energy to write contracts purchasing some of the CCGT's producing capability. The amount of producing capability purchased would be a function of space in water storages, rainfall, contractual conditions and the degree of success in reorganising Hydro. The need for these contracts would be to avoid spilling water.

At the same time the competition introduced by Bass Energy would force Hydro to retain their bid price but reduce generation costs by as much as 20% to balance the budget. Bass Energy would seek to retain the financial situation of the first iteration while Hydro would need to reduce costs to an extent that would pay for the contracts with Bass Energy and compensate for their lower revenue inflow.

Competition would successfully lead to a necessary restructuring of Hydro to effect cost efficiencies and bring to bear considerable market pressure for Hydro to maintain cost-effective generation into the longer term. However, this strategy can only work if Bass Energy is a willing participant in the exercise and this means that their business result must give the necessary return on investment.

Certainly there will be intense competitive pressure on Hydro and this could provide the impetus to split Hydro into two competing corporatised generators[2] and thus provide bona-fide credentials to the ACCC on the very real existence of a well-developed competitive energy supply market in Tasmania, with both public and private players.

Example 2 – Basslink Operational

In this example, Bass Energy would opt for the full development program, 640 MW of plant capable of generating 5,000 GWh/year. If low cost base load energy can be competitively sourced from Tasmania to supply the mainland market, then a 600 MW Basslink will be the most appropriate size for Tasmanian interests.

In the first planning iteration it would mean that the CCGT plant would supply Basslink with about 3,000 GWh/year, then the local market with 2,000 GWh/year and Hydro would supply the balance of Tasmanian load or 8,500 GWh/year.

The financial result of this would be that Bass Energy would accrue profits from Victoria (through Basslink) of some $29M/year and improve their budgeted position by $15/MWh on the island, (the difference between bid price and SMP). Hydro would gain $5M/year from Victoria (through Basslink) but worsen their situation on the island by about $4/MWh (a surrogate for market loss) and potentially be spilling water.

In the second iteration it would be expected that Hydro would go through the same procedures as in Example 1, negotiating with Bass Energy to purchase some of the CCGT's producing capability, and reducing generation costs probably by 15% to balance the budget. Again as in Example 1, Bass Energy would seek to retain the financial situation of the first iteration while Hydro would need to reduce costs to an extent that would pay for the contracts with Bass Energy and compensate for their lower revenue inflow, but not as low as in Example 1.

In this example there will still be strong commercial pressure on Hydro to reform and the split into two competing corporatised generators would be even more easily achieved and have greater value in this more profitable environment.

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[2] *Hydro can be conveniently split into two business units with catchment areas allocated as follows:*

NORTHERN	*SOUTHERN*
Mersey Forth	*Derwent*
Pieman/Anthony	*Gordon*
Great Lake/South Esk	*King/Lake Margaret*

This allocation would give each scheme a long-term average generation output of about 5,000 GWh/year plus or minus 500 GWh/year; and average operating storages (in electricity equivalent terms) of between 4,500 GWh and 5,000 GWh.

This example demonstrates (simplistically) the huge financial advantages to Tasmania in the Bass Energy/Basslink combination.

5 SUMMARY

This paper has outlined a strategy that has long-term ramifications for the State and its economic well-being. Fundamentally the drivers of the process are low cost gas out of the Tasmanian Basin, a consequential low cost energy from a new gas fired power station, and the development of a 600 MW Basslink having a new and reconstituted role. The clearly identified direct returns from interstate by the implementation of the strategy is about $34M/year and applying a multiplier of about 5 to these direct gains, yields a value of about $170M/year to the State.

Hence, the importance of the strategy to the State demands an involvement from the bureaucracy to facilitate the process; political assistance to clear governing questions and obtain early funding; and seed capital from the State to expedite completion of the confirmation exercises and detailed studies.

Three simple statements encapsulate the actions that must now be taken.

5.1 Confirmation of On-shore Gas

It is imperative that the prospective quantities and qualities of gas in the Tasmanian Basin is confirmed as quickly as possible. It is so important to Tasmania that it would be logical for the State to fund the process up until the provings are made, and confirmation of the find recorded in a bankable document. Subsequently the process would be pursued through the vehicle of a listed company. However, at this time speed of confirmation has a pressing urgency so that wellhead prices and haulage charges can be well defined.

5.2 Confirmation of the Preliminary Studies by Bass Energy

Preliminary engineering analyses has indicated that 6 x 70 MW gas turbines with matching heat recovery steam generators, discharging into matched high efficiency 2 x 110 MW steam turbines could return an energy price of $20/MWh including a profit component. These analyses now need to be reviewed in detail and the whole project management and financing details embraced and satisfactorily concluded. Approval for the acquisition of the Bell Bay Power Station and surrounds by Bass Energy is part of this exercise. In respect to these studies it is also logical for the State to provide seeding capital for an immediate and detailed study, with support from the relevant State departments.

5.3 Definition of Role and Associated Costs of Basslink

Basslink, without a low cost base load generator on Tasmania, would not add value to the development of the State. With a low cost base load generator the whole role of Basslink would change and it would be the medium to transfer wealth from the mainland to Tasmania. The role and value of Basslink now needs to be reviewed with this new intelligence. A resolution in this matter is essential before any commitments are made to parties participating in the present evaluation and bidding process for the construction and operation of Basslink.

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Early confirmation of the perceived value of this strategy is of utmost importance to all the stakeholders and it is in the common interest to have a result as expeditiously as possible. The Government's role in this exercise is pivotal. They have the power, finances and resources to make it happen quickly, it is their prerogative whether this strategy is advanced at a rate that the economy demands.

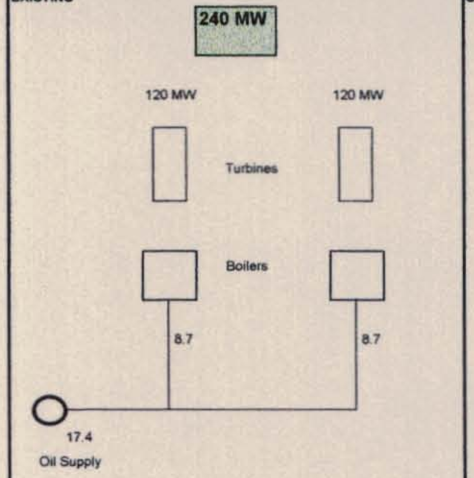
Keith W Laing
Director
Bass Energy Pty Ltd

Attachment 1

CONVERSION OF BELL BAY POWER STATION

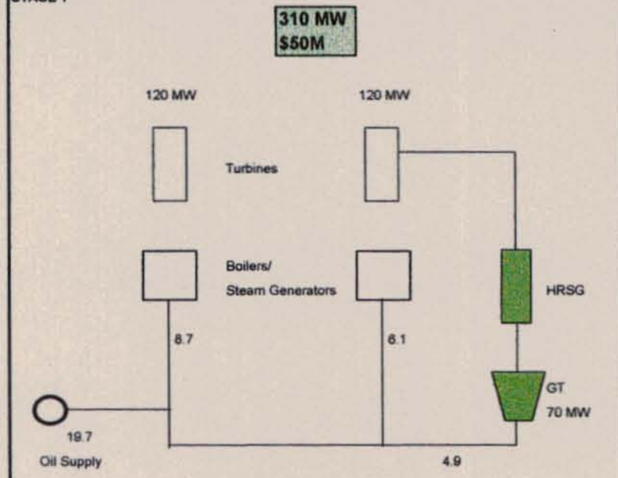
3/01/00

EXISTING



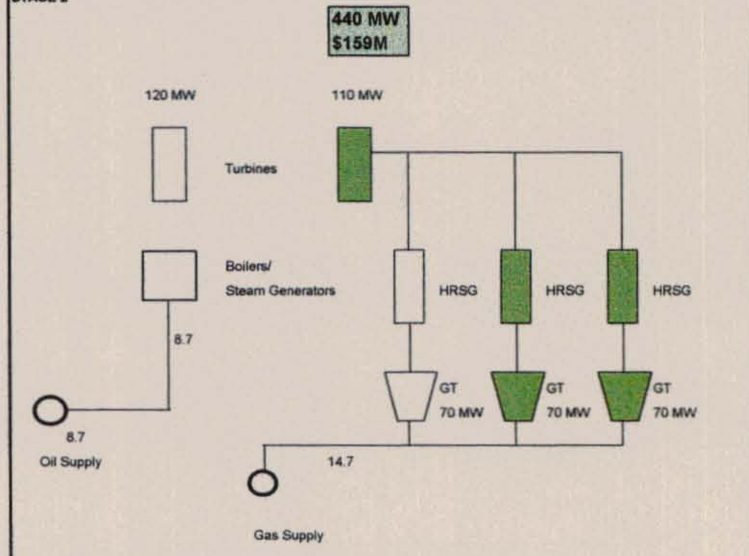
1 EXISTING BELL BAY POWER STATION

STAGE 1



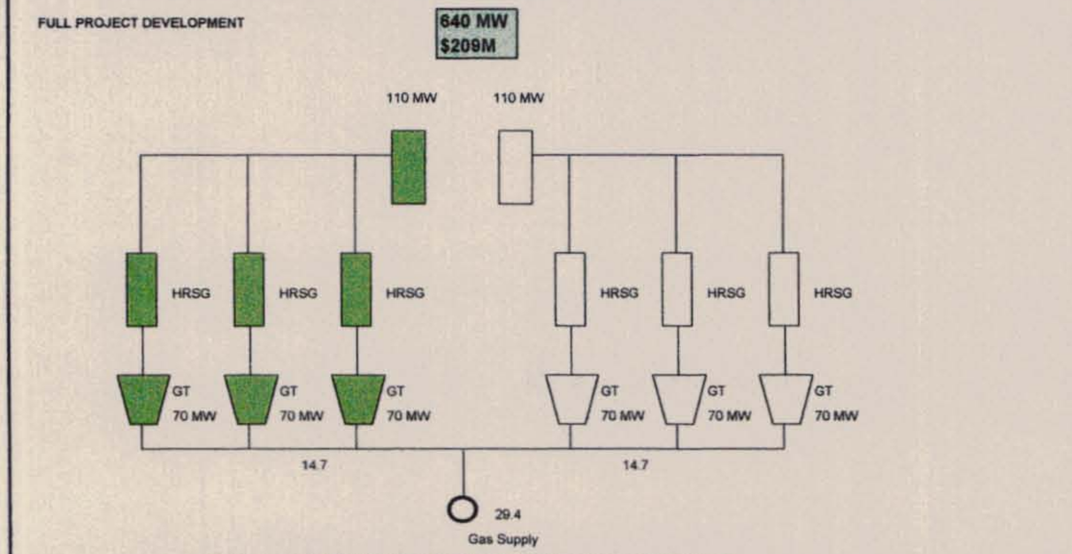
2 FRAME 6FA GAS TURBINE ADDED
HEAT RECOVERY STEAM GENERATOR ADDED

STAGE 2



3 TWO MORE FRAME 6FA GAS TURBINES ADDED
HIGH EFFICIENCY STEAM TURBINE REPLACES OLD UNIT

FULL PROJECT DEVELOPMENT



4 MIRROR IMAGE OF DEVELOPMENT CARRIED OUT ON SECOND EXISTING BOILER

SUMMARY (Specific Capital Cost - AUD):

	Inc Cost	Cum Cost	MW Output	$/kW
Current State	$0 M	$0 M	240	0
First Stage	$50 M	$50 M	310	161
Second Stage	$159 M	$209 M	440	475
Full Development	$209 M	$418 M	640	653

Note: Generic specific capital cost for large combined cycle gas turbine approximates $675/kW AUD

LEGEND

New development per stage shaded thus:
HRSG Heat Recovery Steam Generator
GT Gas Turbine: Frame Size = 6FA
Fuel rates expressed in equivalent kilograms/second of oil

Note: New, high efficiency steam turbine tailored to suit output from Gas Turboines

619020