CONSIDERATIONS RE THE INTEGRATED DUEL GAS COMBINED CYCLE POWER STATION PROPOSAL AT MORWELL.

Any new fossil fuel power station proposal should be seen in the light of global atmospheric levels of greenhouse gases.
The main factors in this regard are: -

- The normal level of CO_2 in the atmosphere for at least the last 800,000 years has varied between 200 ppm and 270 ppm.
- Humans (Homo sapiens) and the biosphere in general have evolved to comfortably exist at the level of temperatures that this range of greenhouse gases causes.
- At present, the level of CO_2 in the atmosphere is around 390 ppm. This is about 40 % above the 270 ppm level that could be considered the normal level.
- The warming that this increased level of carbon dioxide has already generated has led to further warming from the increase in water vapour (also a greenhouse gas), which in turn has produced warming which has led to the melting of tundra and led to the release of methane, which although shorter lived in the atmosphere is 21 times more potent a greenhouse gas than CO_2.
- We know that even if humans stop putting any more greenhouse gas into the atmosphere from burning fossil fuels, the CO_2 equivalent greenhouse gas level will reach about 450 ppm by 2050. This is simply as a result of the chain effect of processes like the ones described previously.
- Glaciers were melting and other impacts of a warming global climate were being observed when the level of atmospheric CO_2 was only about 340 ppm.
- The long periods of drought followed by wet spells and greater levels of extreme climate variability such as the drought and heat waves in northern Europe and Russia, the extremely wet monsoon in Pakistan and India and the extremes seen in the last 13 years in Australia were all predicted as likely scenarios of increased CO_2 levels in the atmosphere.
- The warming trend will eventually stop ice from covering the Arctic ocean during summer and this could trigger a runaway greenhouse climate, where no matter what actions humans take to turn the situation around, nothing can be done to stop the situation.
- By 2050, the CO_2 equivalent greenhouse gas levels will be well above 450 ppm unless we quickly phase out burning fossil fuels.
- It is necessary now or as soon as possible to not only stop putting greenhouse gases into the atmosphere but start taking massive amounts of them out of the atmosphere, by any means possible. Increasing the areas of forest are a first step, but industrial means such as biochar production will need to be considered.

If one follows the above logic, then no new fossil fuel power station should be considered anywhere in the world.

However we realise that at this point in time other factors have to be balanced against this and considered in a way as to give a balanced perspective.

In case of the IDGCC proposal at Morwell, these include

- The availability of enough electricity from renewable sources to provide for the states needs for the next 20 or so years
- Whether Hazelwood undergoes a staged phase down sooner rather than later

- Whether this development is seen as the proto-type for similar or larger coal fired power stations in the Valley and elsewhere. If this development leads to further coal fired power stations being developed in Australia or elsewhere, then this is seen as a negative
- Whether this proposal is CCS ready
- The level of water use is small compared to the other power stations. But would this always be the case. Any water held back from the Gippsland Lakes in a dry year puts pressure on the Environment to cope.
- Would the water be supplied at commercial rates or whether the government subsidizes the price at one cent per kL as the other power stations receive at the present time. We would much rather see no subsidies at all for fossil fuel energy.
- Would the coal to be used in this plant be extra to what is already consumed in the Valley or would it be as a replacement from a down-sizing of Hazelwood?
- World wide economic trends. In the last week or so Maruis Kloppers of BHP and some prominent economists have urged Australia to put a price on carbon – most likely through a carbon tax with a limited trading scheme. India, China and Europe already have such schemes and Australia is at risk of having border taxes put on our goods and services because of our lack of such a scheme. If one was to be suddenly imposed a few years down the track, then much disruption to our industries and energy sector would be the result. Would the price of fossil fuel fired electricity rise to the point that even this plant would be uneconomic to run and the consumers overall be worse off?

The LVSG position

We would prefer

1. That no new coal fired power station be built anywhere in Australia or the world for that matter because of the greenhouse gas emissions.
2. As an interim measure to enable the part closure and eventual phasing out of Hazelwood, then this would be considered more favourably. However, if there was a danger that a successful implementation of this project was somehow seen as a green light for opening other similar coal fired power stations around the world, then we would not encourage its development.
3. We are afraid that money will be diverted from renewable energy technologies to fossil fuel energy generation if this project goes ahead and further delay the day when we have a truly sustainable carbon free energy sector and our economy becomes carbon neutral. We do not see CCS technology as a solution in this regard. See our critique in the appendix at the bottom of this document.
4. We do not want any more high value land such as we have in the Latrobe Valley/Gippsland region to be lost to mining. We want this land to be available for food production, living space and environment for future generations. We can't see the justification of good land being lost forever to provide energy for one generation, when alternative technologies are increasingly able to deliver a secure power supply.
5. The fact that this plant requires only 5 to 10 percent of the water that the Yallourn and Loy Yang power stations use is a good thing, but 2 GL is still a significant loss to the Gippsland Lakes in a dry year.
6. If the IDGCC proposal was linked to the phased shut down of Hazelwood, then it would be considered more favourably. This includes a consideration of transferring job skills from Hazelwood to the IDGCC.
7. We note that the NO_x and SO_2 emissions are well within the allowable limits, but it still adds to the load of pollutants in the Latrobe Valley and so will the load of particulate matter from the open cuts and ash fines and state this as another reason not to proceed with the development.

APPENDIX

OPPOSITION TO CCS

- We view the option of **GEO-SEQUESTRATION as non-viable on price and effectiveness** when compared to the suite of renewable technologies on the cusp of delivery. This is because

    - Billions of dollars will be needed to set up the infrastructure of carbon capture and then sequestering it under the ground. This money can only come from **tax-payers and would be better spent on renewables.**

    - Nowhere near 100 % of the CO_2 emissions would be captured. Effectively, it is said, that a maximum of 90% could be captured and the reality is likely to be much less than this, because of the law of diminishing returns. **Investment money would be better spent** on technologies, which **guarantee at least 90 % savings of CO_2 emissions** including the embedded energy of construction. Including materials and construction costs, wind farms produce 98 % CO_2 free electricity.

    - **Effective geo-sequestration will not reduce CO_2 emissions in the near future.** Geo-sequestration involves not only billions of dollars of investment, but we have been told this technology will not be available to roll out on a large scale till well after 2020 and possibly 2033. If we are going to avoid catastrophic climate change, then we need to act well before then.

    - **The long-term safety of storage of CO_2 is another matter of conjecture.** There is no evidence that the CO_2 sequestered will stay in the ground and form carbonate rock as has been suggested by some sources. It is more likely that it will sit as a compressed gas or liquid (because of the pressure) for the entire time it is stored. Future earth movements could release this gas into the atmosphere and cause local asphyxiation initially, and then world-wide rapid increase in atmospheric CO_2 leading to almost instant global warming. Who will pay for the global litigation – the taxpayers of the "guilty" nation most likely. In all likelihood, the state or Federal government will have to assume responsibility for the storage after the private enterprise operation has ceased to exist i.e. taxpayer liability.

    - Carbon dioxide is a type of chemical matter, which sublimes and does not have a liquid phase at standard temperature and pressures. It needs to be pressurised before it becomes a liquid. If it reverts back to a gaseous phase underground and because gases occupy a far greater volume than liquids, the question must be asked. "**Will there be enough capacity to store the carbon dioxide as gas** in the depleted gas wells of Bass Strait and for how long?" Some estimates say only about 50-60 years, providing that the CO_2 remains in the liquid phase.

    - **Cost effectiveness**. When a certain **proportion of the energy produced** by a fossil fuelled power station has to be **diverted** to provide the energy to run a **carbon-capture** and **sequestration operation, then this reduces the profitability** of that power station. The parasitic power consumption as the industry refers to it, is about 30%. This means that a power station with 2000 MW capacity can effectively only send about 1400 MW out to the grid. We will **NOT support any compensation to fossil fuel fired power stations by the taxpayer for this loss of profitability**. The coal fired producers need to cover this themselves by becoming as efficient as renewable technologies.

    - We encourage the fossil fuel fired power companies to **develop geo-sequestration by RAISING CAPITAL FROM PRIVATE INVESTORS**, but the fact that they are increasingly asking for government money shows that they think this is futile. By contrast, private investors are only too willing to invest in renewable energy generation and development is only being hampered by government regulation at the moment.

    - We demand that the cost of any fossil fuel fired electricit**y factor in the cost of sequestration of CO_2 and that this is reflected in the wholesale price of the electricity provided by the producer.**