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 Chair, ENRC  
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Dear Ms Lindell

### ENRC INQUIRY INTO THE PRODUCTION AND USE OF BIOFUELS

Thank you for your invitation to the Department of Sustainability and Environment to provide a submission to the ENRC Inquiry into the Production and Use of Biofuels in Victoria.

A copy of the Department's submission is attached.

Should you require further information with respect to the submission, please contact Mr Ian Porter, Executive Director, Sustainability Policy on 9637 8608.

Yours sincerely

8/9/06

**PROF LYNDsay NEILSON**  
 Secretary

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**ENVIRONMENT AND NATURAL RESOURCES  
COMMITTEE OF PARLIAMENT  
INQUIRY INTO THE PRODUCTION AND USE OF  
BIOFUELS IN VICTORIA**

**DSE SUBMISSION**

September 2006

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## 1. Purpose

The purpose of this submission is to address the 9 August 2006 request from the Chair, ENRC to the Minister for Environment that the Department of Sustainability and Environment make a detailed written submission to ENRC on this issue.

A number of agencies across Government are expected to make submissions to the ENRC inquiry. Consequently the DSE submission restricts itself to a consideration of those issues pertaining to biofuels production and use and their impact on the environment.

## 2. Context

### *Scope*

The current inquiry by ENRC has the following terms of reference –

Inquire into, consider and report to Parliament on:

- Current manufacture, availability and use of biofuels for transport applications in Australia and Victoria;
- Potential environmental, economic and social impacts of increased manufacture and use of biofuel for transport applications;
- The impact of reducing reliance on oil imports as a result of increased use of biofuel for transport;
- Barriers to and incentives for increased use of biofuel for transport; and
- The role of government in the manufacture and use of biofuels for transport.

### *Background*

#### *Commonwealth Action to Date*

In 2001, the Commonwealth Government set an objective that biofuels would contribute at least 350 million litres (ML) to the total fuel supply by 2010. The Commonwealth commissioned a study into the appropriateness of the 350 ML objective in light of the latest evidence on the environmental and other benefits of replacing fossil fuels with biofuels. The resulting 2003 report (*Appropriateness of 350 million litre biofuels target*) by CSIRO/BTRE/ABARE suggested that, with respect to biofuels:

*“It is worth noting that numerous studies assessing the viability of ethanol as a transport fuel have been conducted in Australia over the past two decades. The conclusions in most of these earlier reports were not dissimilar to more recent reports. That is, ethanol is not economically viable without substantial levels of ongoing government assistance. Somewhat in contrast, fewer studies of the economic viability of biodiesel have been conducted in Australia. However, recent analysis concluded that it is possible that some new biodiesel projects using waste feedstocks could be viable. In this case, however, it was concluded the limited availability of low cost feedstocks would be likely to limit its potential future contribution to biofuels production in Australia. It was also concluded that biodiesel produced from dedicated energy crops (such as*

*canola) is not economically viable in Australia without ongoing government assistance”.*

This report prompted considerable debate and, consequently, on 30 May 2005 the Prime Minister announced the appointment of a Biofuels Taskforce. On 22 September 2005, the Prime Minister released the report of the Taskforce, which found that:

- there are potentially significantly greater health benefits from ethanol use than previously thought; and
- greenhouse and regional benefits are similar to previous research undertaken; but that
- the biofuels industry faces considerable market barriers including low consumer confidence and high commercial risk; and
- on current settings the Government's biofuels production target of 350 megalitres (ML) by 2010 will not be met.

In response to these findings, the Prime Minister reaffirmed the Government's commitment to achieving the target of at least 350 ML of biofuel production by 2010. The Prime Minister also announced a package of measures to help address market barriers and restore consumer confidence in the biofuels industry. The Government will:

- work closely with oil companies to develop Industry Action Plans to underpin the achievement of the 350 ML target;
- closely monitor progress against the Industry Action Plans to ensure all actions are delivered on time;
- demonstrate its confidence in ethanol blended fuel by encouraging users of Commonwealth vehicles to purchase E10 where possible;
- undertake vehicle testing of vehicles in the Australian vehicle fleet to validate their operation with E5 and E10 ethanol blends and work with the Federal Chamber of Automotive Industries to ensure that consumers receive accurate and up-to-date information;
- increase fuel quality compliance inspections to ensure ethanol blends meet fuel quality standards;
- simplify the E10 label, which inadvertently acts as a warning to consumers against using ethanol;
- subject to the results of vehicle testing, allow E5 blends to be sold without a label, as in Europe, giving fuel companies greater commercial flexibility to increase supply;
- work with Australian fuels and transport industries to establish standard forms of biodiesel to provide certainty to the market;
- work with the States and Territories to adopt fuel quality standards that are transparent, nationally consistent, and take full account of the latest information on the effects of ethanol blends on air quality;
- commission a study on the health impact of ethanol to validate overseas research under Australian conditions; and
- promote biodiesel's beneficial environmental properties such as biodegradability through a B5 biodiesel trial in Kakadu National Park.

## ***Victorian Action to Date***

In July 2006 the Victorian Government released *Our Environment Our Future*. Action 15.2 indicated that:

*“Victoria will develop a Road Map for the alternative fuels industry to assess the viability of a biofuels industry in Victoria. As well as requiring drivers of Government vehicles to use ethanol blended petrol (E10) wherever it is available, practicable and cost-effective, we will trial the use of biodiesel (B5) in our heavy vehicles depot and work in partnership with International Council for Local Environmental Initiatives to promote the use of biodiesel in heavy vehicles in the local government sector.*

*A Biofuels Action Plan for Victoria will focus on building the capacity of the local biofuels industry to increase production capacity in response to Victorian and Commonwealth Government programs that will increase demand for biofuels”.*

### **3. Environmental Impacts of Biofuels Production in Victoria**

#### ***Water availability***

Production of biofuels will generally require water in significant quantities. This water is required for both:

- the production of biomass (ie. energy crops) – in cases other than where waste/residue biomass is used; and
- the actual production of fuels from this biomass.

Some indication of the scale of water required for biofuels production can be given by recent statements made by Australian Ethanol.

Australian Ethanol has recently chosen a site for Australia’s first grain-based ethanol production plant, at Woorinen South, near Swan Hill, Victoria. Australian Ethanol says that the large-scale plant will produce 100 million litres of ethanol annually, with a starting date estimated for December 2007.

A spokesman for Australian Ethanol stated, in an August 2006 Media Statement, that the plant would require “around four megalitres a day” (source: Farmonline.com.au). This equates to approx. 1.5GL/a. This is a significant quantity of water, particularly in a region which is facing prolonged drought and competing demands for water.

Any new development that requires water in Victoria, in general, will require the purchasing of an entitlement from an existing user on the water market. This applies in northern Victoria, as the MDBC cap was established in 1994. The Government’s *Our Water Our Future* action plan, has extended the moratorium on the issuing of new water entitlements to all fully allocated river basins and aquifers across the State.

Significant changes in land use can impact on water availability. The Victorian Government has recognised the need (*Our Water Our Future* Action 2.20) to account for and manage the impacts of plantations and other land use changes on water resources. The National Water Initiative also requires that States develop mechanisms for managing the impact of “significant intercepting activities” such as farm dams and plantations on water resources. In both cases, it is recognised that mechanisms for managing the impacts of land use change on water resources must take

account not only of the impacts on water yield, but also other associated environmental, social and economic benefits and costs. These mechanisms might include the use of planning provisions, pricing and incentive schemes, regulatory measures, and the requirement to purchase a water entitlement.

Any significant development of biofuel cropping in dryland areas has the potential to have significant impacts on water resource availability. At this stage DSE has not had the opportunity to assess the quantity of water required for an expanded biofuels industry in Victoria.

### ***Landscape and Biodiversity impacts***

Land use change, which may arise as the result of either changes in the extent or intensification of biofuel production, can have direct and indirect implications for native biodiversity. For example, direct negative consequences may include clearing or alteration to terrestrial and aquatic habitats, changes to water availability and food resources, the introduction and spread of weeds and pests and altered fire regimes. Conflicts between wildlife and agricultural production can arise. Indirect consequences of land use change include hydrological changes, salinisation, erosion, soil compaction, genetic pollution, the consequences of chemical use, changes in nutrients and other impacts arising from human use of landscapes (e.g. recreation, housing).

Biofuels, in whatever form, seek to capture energy of sunlight and, with soil nutrients and water, convert this to fossil fuel substitutes. Although sunlight is 'free' the other environmental goods, soil nutrients/water/land space, are not. Cereal and other cropping, including some second generation logging, are associated with nutrient decline. Adding nutrients (e.g. superphosphate/nitrogen) is associated with other declines in natural capital (e.g. soil acidification) and may require large external inputs. Any biota-based biofuel industry must take the complete effects into the economic/ecologic equation.

It is now understood that to conserve biodiversity, we must plan across the landscape to ensure that appropriate habitat areas are spatially and temporally available. Land used for biofuels needs to be planned to achieve the best outcome with land that is important as habitat, both now and in the future, for biodiversity. In some cases, a change to biofuels may have benefits for some wildlife species, where the change in use provides additional quantities or diversity of resources to current use. This can lead to further conflicts as those species benefiting have impacts on other species. Threatened species and habitats may be particularly vulnerable to human-induced changes in the environment and so the impacts of land use change need to be carefully considered.

Climate change is likely to have significant impacts on native biodiversity so any remediation of human-induced climate change through reduced use of fossil fuels will make a positive contribution. Biofuel production is most likely to be compatible with biodiversity conservation and agricultural production (e.g. water availability) if it is well-planned with other uses of the landscape, takes account of potential impacts and threats, and is as consistent with ecological principles as possible (diversity, patchiness etc.).

## 4. Environmental Impacts of Biofuels Use in Victoria

### *Victoria's Transport Sector Greenhouse gas emissions*

In 2004, the transport sector contributed approximately 15.4% of Victoria's total greenhouse gas emissions, with around 85% of these emissions coming from road transport (cars, trucks and buses)<sup>1</sup>. Together with the stationary energy sector (which is responsible for 68.6% of Victoria's emissions), the transport sector is a strong source of growth in greenhouse gas emissions. Analysis by the Apelbaum Consulting Group indicates that CO<sub>2</sub>-equivalent emissions from passenger cars are projected to increase by 33% between 2003 and 2013. Consequently, in addressing the need for deep cuts in greenhouse gas emissions, it will be critical that policies and measures are introduced to ensure the transport sector plays its part in abatement efforts.

There are a range of options available to Victoria to reduce the greenhouse gas emissions from the transport sector. These include:

- Minimising the transport task;
- Facilitating greater efficiency in the transport network;
- Encouraging modal shifts;
- Use of more fuel efficient vehicles; and
- Use of lower emissions fuels for vehicles (eg. biofuels).

The first three of these options are being explored through planning-related policies, such as *Melbourne 2030* and *Meeting Our Transport Challenges*. It should be noted that these policies are pursuing a range of benefits in addition to greenhouse gas emissions reductions. The use of more fuel efficient vehicles is expected to accelerate, predominantly driven by fuel price rises. In this context, the potential contribution of biofuels to greenhouse emissions reductions from the transport sector needs to be assessed.

### *Biofuels – greenhouse benefits*

Analysis undertaken for DSE in 2005 provided the following full life cycle assessment of the relative benefits of various biofuels blends as against conventional fuel alternatives (ie. unleaded petrol, and diesel). These have been expressed as percentage reductions in grams CO<sub>2</sub>-equivalent per km.

#### **E10 (10% ethanol blend with petrol) – passenger cars**

	<b>Total emissions relative to Unleaded Petrol (ULP)</b>
E10 (feedstock - molasses with cogeneration energy)	5% lower
E10 (feedstock - molasses)	4% lower
E10 (feedstock - sorghum)	3% lower
E10 (feedstock - wheat)	2% lower
E10 (feedstock - wheat starch waste)	4% lower

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<sup>1</sup> Victorian Greenhouse Gas Inventory

## **B20 (20% biodiesel blend with diesel) – trucks**

	<b>Total emissions relative to Low Sulfur Diesel (LSD)</b>
B20 (feedstock - canola)	14% lower
B20 (feedstock - tallow)	10% lower
B20 (feedstock - waste oil)	20% lower

## **5. Conclusions**

Based on this analysis, it would appear that both ethanol and biodiesel have the potential to contribute to reductions in Victoria's transport sector greenhouse emissions. It is also apparent, however, that this potential contribution needs to be balanced against an assessment of:

- the potential size of the local biofuels resource;
- the relative cost (\$/tonne CO<sub>2</sub>-e) of achieving greenhouse gas abatement through the use of biofuels (as opposed to other abatement initiatives – including those within the transport sector); and
- the impacts of local biofuels production on water availability, and habitat / biodiversity.