

SUBMISSION TO THE DEPARTMENT OF THE ENVIRONMENT AND HERITAGE CONCERNING THE PAPER, “STANDARDISING DIESEL/BIODIESEL BLENDS”, Department of the Environment and Heritage, November, 2006.

Executive Summary

Natural Fuels Australia Ltd (NFAL) welcomes the opportunity to comment on this DEH Paper, as the company believes the successful introduction of biodiesel/diesel blends into the Australian fuels market is essential if the Government’s objectives for a smooth uptake of 350 mill litres per year of biofuels by 2010 is to be achieved. The fact that biodiesel (B100) production capacity might exceed this number at any time is no guarantee that successful sales into the Australian market can be achieved.

There are many factors which must be taken into account in this endeavour. Potential environmental benefits, price, availability and quality of the B100 to be used, the interests of vehicle manufacturers and operators, oil companies and end-consumers, plus the tax effects currently inhibiting biodiesel uptake in the market, all have to be weighed in the balance. NFAL believes that a workable arrangement for biodiesel blends is possible if all parties involved are prepared to look for it.

NFAL proposes a comprehensive Framework of self-regulation, supported by government, through the newly-formed Biofuels Association of Australia (BAA) and the concomitant implementation of an Australian Biodiesel Code (ABC) * to ensure the integrity of two biodiesel/diesel blends in the marketplace, viz. –

- **Blend (1-5) comprising 1 to 5% B100 by volume, and**
- **Blend (6-20) comprising 6 to 20% B100 by volume.**

These blends will involve strict application of the Australian Fuel Standards for B100 and diesel as the starting components, the acceptance of a density waiver in the case of Blend (1-5), the reporting of and discretionary acceptance of cold flow properties by customers as fit for purpose where appropriate, the reporting of short form tests in the case of Blend (6-20), and the encouragement of adherence to the ABC as a reliable signal of blend quality to the market. See PART B of this Submission for details, which incorporates answers to the specific questions raised in the DEH Paper.

NFAL believes that only by constructing an agreed and transparent Framework between the parties at interest as described herein, can biodiesel blends be successfully introduced and sustained in the Australian marketplace.

*** At the time of writing, the Biofuels Association of Australia is in the process of being formed through the amalgamation of Renewable Fuels Australia (RFA) and the Biodiesel Association of Australia (BAA). This NFAL Submission is made in cognisance of the joint RFA/BAA Submission to be made to DEH, but is intended to outline an alternative method of blend definition and control.**

PART A : BACKGROUND AND FACTORS TO BE CONSIDERED

A.1 Background

This submission is made on behalf of Natural Fuels Australia Ltd. (NFAL), an unlisted public company owned 50% by Natural Fuel Ltd (NFL) of Perth, and 50% by Babcock & Brown Environmental Investments Ltd (BEI) of Sydney. BEI is owned 30% by Babcock & Brown and 70% by public shareholders and institutions, and is listed on the Australian Stock Exchange. NFL has recently conducted an Initial Public Offering and is now listed on the Australian Stock Exchange.

At the time of writing, the company is in the process of commissioning its new biodiesel manufacturing plant adjacent to the Vopak Oil Industry Terminal in the East Arm Business Park in Darwin. Total investment by NFAL and Vopak in the plant plus associated tankage, infrastructure and working capital is around \$90 million.

The company is focussed on developing biodiesel sales opportunities in two main markets, viz. (a) domestic, and (b) export.

- (a) domestic : the domestic marketplace for diesel is around 15 billion litres/year. If a B5 biodiesel/diesel blend were applied across the entire market, this would result in an uplift of B100 of around 750 mill litres/yr, more than enough to absorb the nominal 400 + mill litres/yr of B100 production capacity already in place ; however there are some key factors which need to be considered in making such a simplistic assessment (see Section A.4). Despite some of the inherent difficulties, NFAL is working to establish a significant place in the domestic market.
- (b) export : biodiesel use in Europe is well established, and is now growing rapidly in the US and parts of Asia. Export markets however are vulnerable to foreign political pressures and policy changes, plus freight costs. NFAL's plant at Darwin is well placed to export into these emerging markets. Through its association with ConAgra, one of the largest agri-businesses in the world, the company is planning to begin export sales in the near future.

A.2 Key attributes of biodiesel

In any discussion of why biodiesel blends are important for Australia, it is as well to keep in mind some of the main attributes of straight biodiesel, commonly known as B100. Its key attributes are ---

- it is renewable
- biodegradeable
- clean burning
- non-toxic
- non-hazardous,
- it is able to be blended in any ratio with normal diesel,
- it has slightly lower but comparable energy content to normal diesel,
- it provides good lubricity and ignition in the engine, which should help to prolong engine life,

- it can result in slightly higher oxides of nitrogen, the precursor of smog formation, and
- it has cold flow properties which can cause fuel flow difficulties at low ambient temperatures, depending on the feedstock used and the method of fuel use.

These attributes are well known, and can all be taken into account in an intelligent approach to blending B100 with normal diesel, so as to capture most of the benefits of biodiesel use while avoiding any unwanted effects.

To demonstrate this proposition, NFAL commissioned the Charles Darwin University to conduct an independent Demonstration Program of biodiesel over a six-month period in 2005/06, using B100 made from 90% palm oil and 10% soy oil meeting the *European Standard for Biodiesel EN 14214*, imported from Spain. The cold filter plugging point (cfpp) was + 3 degrees C. The participants included buses from Darwin Bus Services, Darwin City Council vehicles, road trains, trucks, loading machinery, and light vehicles.

The Program showed for **B100** reduced tailpipe emissions of -

- up to 58% for carbon monoxide
- up to 41% for total hydrocarbons
- up to 53% for particulate matter (black soot)
- up to 77% for exhaust smoke opacity,

and for **Blend B20**, reduced tailpipe emissions of -

- up to 15% for carbon monoxide
- up to 17% for total hydrocarbons
- up to 23% for particulate matter (black soot)
- up to 29% for exhaust smoke opacity (1).

In addition, a 1.2% increase in fuel consumption for Blend B20 was recorded in dynamometer testing, but in road use, changes in fuel consumption attributable to using biodiesel were considered negligible. Participants were unable to detect any changes in the performance of the vehicle, with some drivers perceiving improved performance. No reliability issue in any of the trialled equipment was attributed to biodiesel use, lubricating oil sampling and analysis did not reveal any adverse effect on oil condition, viscosity, or engine condition, and no case of filter plugging due to biodiesel was encountered. The cfpp of the blend, using a control diesel with a cfpp of - 3 degrees C, was - 2 degrees C. No cfpp depressant additives were used. This reflects overseas experience wherein cold flow properties of blends up to B20 are largely influenced by the cold flow properties of the underlying petroleum diesel (2).

NFAL believes these results demonstrate that persevering to find an acceptable way of introducing biodiesel blends into the Australian fuels market will offer worthwhile benefits, but care will be needed to ensure that it is done correctly. A good deal of field experience from the US and Europe is now available to guide these efforts in Australia.

A.3 Getting the balance of interests right

The DEH Paper states ----

“Developing a position on blend standards has to take into account the differing perspectives of biodiesel producers, others in the fuel industry, vehicle manufacturers, private consumers and business claimants of fuel tax credits.

Consumer confidence in biodiesel and diesel/biodiesel blends is fragile, and any arrangement should consider the needs of all stakeholders” (3).

NFAL strongly endorses this approach. It should be axiomatic that fuel sold for use in modern diesel engines must meet the requisite quality standards, and that fuel, including biodiesel, that does not meet this standard is not sold for general use. NFAL believes that a suitable method of standardising biodiesel/diesel blends can be found that will meet the Australian Government’s objective to “.....set fuel quality that allows for optimum vehicle and environmental performance” (3). This will require a comprehensive system to control the quality of B100 manufacture or import, blending and distribution to the final consumer, as recommended in PART B of this Submission.

A.3.1 Vehicle manufacturers (OEMs) and operators

The DEH Paper sets out the general view of OEMs in the Australian market that Blend B5 is acceptable for use in their diesel engines, but no assurance can be given for higher blends. It is possible that the density limit for diesel could be exceeded in a B5 blend, but the effect on this parameter and others, e.g. cold flow and oxidative stability, is so low as to be of no concern. Overseas experience supports this view (2), and it should be noted that neither the US nor Canadian standards call for a density limit at the B5 level.

The difficulty arises with blends up to B20 where, theoretically, making a blend using diesel at its limit of 850 kg/m³ and B100 at its limit of 890 kg/m³, could result in a finished B20 blend of density 858 kg/m³, exceeding the limit for which the engine fuel injectors were designed. OEMs are naturally reluctant to guarantee performance and injector life at this level, and in the US have introduced other tests to limit the inclusion of higher boiling-point components in the blend.

NFAL believes the only way to overcome this difficulty is to engage with OEMs in field trials in Australia on blends up to B20, as has been done in the US. This would need to be done under carefully supervised conditions and overseen by a strong coalition of industry interests. The newly-formed Biofuels Association of Australia (BAA) could play a useful coordinating role in this regard (see Section B.3). DEH support for this initiative would be welcome.

A.3.2 Established fuel companies

The oil companies also have a natural interest in this matter, being constrained as they are to an upper diesel density limit of 850 kg/m³. This limits the inclusion of heavier aromatic material in petroleum diesel, which can interfere with the optimum economics of Australian oil refining : however, it is understood that this limit is set mainly on health grounds to limit the emission of toxic particulate matter in diesel exhaust. It might also be noted here that more than 30% of Australia’s diesel requirements are now imported from overseas refineries which seem to exhibit lower density levels (4). Where circumstances warrant it, waivers from fuel standards are not uncommon. Over recent years, domestic oil refiners have not infrequently applied to DEH for waivers to permit the supply of diesel with a density below the standard minimum limit of 820 kg/m³ (5).

While oil companies might feel aggrieved at an upper limit on density of petroleum diesel, if a standing waiver were to be given on density for Blend B5, it would be counter-balanced by the clearly lower exhaust emissions produced by using biodiesel

in the blend (see A.2 above), and the need for both components in the blend to meet their respective Australian Fuel Standard as a starting point.

A.3.3 The environment

Environmental benefits through the lower exhaust emissions of using biodiesel are well known, and have been demonstrated by NFAL (see A.2 above). As noted in the Report of the Biofuels Taskforce to the Prime Minister (6), these benefits can be significant, especially in Australia with its high incidence of asthma.

Life-cycle emissions benefits are more difficult to demonstrate as noted by Mittelbach (7). Life cycle analysis is a relatively new branch of science, requiring accurate definition of system boundaries and key assumptions for it to be useful in making comparisons between the environmental advantages in production and use of biodiesel versus diesel. Results of particular studies in particular geographies so far suggest that biodiesel has an advantage in terms of demand on finite energy resources, global warming potential, and human and ecotoxicity and biodegradability in the life cycle (7).

A ground-breaking study on life-cycle emissions of alternative fuels in Australia by the CSIRO in 2000 stated, *“Biodiesel is made from agricultural crops and is thus more environmentally friendly and ecologically sustainable than fossil fuels. Our results confirm that, on a life-cycle basis, biodiesel is more climate-friendly than diesel. The carbon emissions caused by agricultural production and fertiliser production are less than the embodied emissions from diesel made from fossil fuels”* (8).

Work continues on these issues in various parts of the world, but results so far indicate that biodiesel does have net positive effects in the life cycle compared to diesel, but this is always specific to each feedstock – conversion - transport - use chain. The CSIRO study also states, *“The growth of crops for biofuels should be monitored to ensure that principles of ecologically sustainable development are upheld”* (8). NFAL believes this is an area of important research in Australia which should be taken up by the new Biofuels Association (BAA).

A.3.4 Energy security

NFAL notes that the Report of the Biofuels Taskforce to the Prime Minister concluded *“... there is currently no case for the government to accelerate the uptake of these fuels on energy security grounds”* (6).

This seems a remarkable statement given that Australia is currently importing around 25% of its combined gasoline, diesel and jet fuel requirements, with no additional in-country oil refining capacity investment on the horizon. This means these essential imports will have to continue to increase. Imports of crude oil and petroleum products cost the nation almost A\$ 22 billion in 2005-06, with crude oil in particular coming from political regimes in unstable parts of the world (9).

There would seem to be good reason for the Australian Government to be concerned about these trends, and to be encouraging the early development and uptake of biofuels as is happening in other parts of the world. While their contribution to overall energy needs might be small in the early stages, it is the innovation and learning about renewable fuels they enable which is important. The world is now vulnerable to sudden disruptive events, any one of which could result in Australia having to quickly

become more self-sufficient in energy, especially transport energy. It is therefore important for all interested parties to search for acceptable compromises to introduce biodiesel/diesel blends into our energy picture, and extend Australia's use of its own renewable resources.

A.4 Key factors in the supply of biodiesel in Australia

A.4.1 Quality

There can be no doubt that the quality of B100 to be supplied into the Australian market is of paramount importance. As a minimum, this must meet the *Australian Fuel Standard (Biodiesel) Determination (as amended)*, and cold flow properties should be reported to prospective customers who can then decide to accept the fuel or not. **These requirements must apply uniformly to local producers and importers.** At the time of writing, there are reports of poor quality biodiesel being offered from imported and local sources, albeit at low prices. If this continues, vehicle operators will soon experience operating problems, and biodiesel will fall into disrepute as occurred with ethanol in the decade 1994 – 2004. This must not be allowed to happen.

This concern with quality is one of the principal drives behind current moves to establish Biofuels Association of Australia (BAA) as a strong grouping of legitimate suppliers and marketers of biodiesel. One of its first acts will be to define and implement an Australian Biodiesel Code (ABC) which will specify how B100 is to be supplied, tested and handled in the distribution chain so that quality to the end-user is assured (see PART B of this Submission).

A.4.2 Reliability of supply into the market

If blends of biodiesel/diesel are to be introduced into the fuels supply chain in Australia, reliability of supply into the market has to be certain. This in turn depends on a number of factors such as the availability and price of suitable feedstock, manufacturing costs and distribution economics. Uncertainties and differences exist, but genuine engagement with large customers and oil companies, with a degree of mutual understanding and flexibility, is necessary to explore how this process can be put together. A workable agreement about how to implement a Blend B20 'standard' would be a good start.

A.4.3 Price and availability of feedstock

At present, NFAL is importing its vegetable oil feedstock requirements. This gives certainty of quality, but comes at a price. As more biodiesel projects are announced, so too does the price of feedstock increase, driven by expected demand and futures speculators in the market. NFAL has assessed these risks, and is prepared to continue with its production plans in the expectation that operating margins over the long term will be adequate.

However, the company believes that, in time, the biofuels industry in Australia will need to be driven by growth in local feedstock supply, and is already working with the NT Government and investors to trial soybean oil crops in the Top End. NFAL feels that all interested parties in biofuels in Australia should encourage similar efforts. Climate change and the agronomy of certain vegetable oil feedstocks need to be properly understood so that targeted investment can be successful. This is listed as one of the priority items in the Work Plan for the new Biofuels Association (BAA).

A.4.4 Marketplace effects of the Fuel Tax Act 2006

The introduction of the Fuel Tax Act 2006 has had its predicted effect on the market for biodiesel, i.e. discouragement of biodiesel sales beyond the B5 level, both on and off road. This is especially regrettable in the case of certain applications where biodiesel is eminently suitable, e.g. underground mining, construction and marine applications.

The difficulty arises because the grants available under the Energy Grants Clean Fuels scheme (EGCF) end up in one set of hands (i.e. the producer/importer/blender/last supplier), while the credits available under the Fuel Tax Act and the Energy Grants Credit scheme (EGCS) end up in another set of hands (i.e. the eligible customer). Because the grant available under EGCF has already been applied to the producer/importer/blender/last supplier for making biodiesel available to the market, the final customer is unable to claim any credit for its actual use, other than the run-out of the Alternative Fuel Grants scheme due to expire in 2010. Normal diesel fuel, on the other hand, has its excise fully rebateable in the hands of eligible customers.

As well as requiring more paperwork to handle biodiesel, this has the effect of making petroleum diesel fuel cheaper than biodiesel in the hands of the customer, with predictable results. The only way for this to be countered at present is for the producer/importer/blender/last supplier of biodiesel to offer substantial discounts to customers in the marketplace, thereby reducing investment incentive for local biodiesel production and/or encouraging cheap imports. Neither of these outcomes would seem consistent with Government intentions.

NFAL recognises these drawbacks of the current Fuel Tax regime, and believes that a workable Blend B20 arrangement, involving the key players outlined above and meeting strict quality requirements, can be devised so as to enable Government to treat blends up to B20 as normal diesel for the purposes of the Fuel Tax Act 2006. NFAL strongly recommends that this be done.

A.4.5 Education of the end-consumer

Despite some limited retail availability of B2 and B5, biodiesel is still relatively unknown in Australia, at least among the general motoring public. To the extent there is any awareness of it, the image is often one of 'do-it-yourself-at-home' simplicity and possible fuel tax avoidance. Sophisticated fleet operators are more aware of the potential of biodiesel, but regrettably this willingness to try is inhibited by -

- (a) as yet limited supply through existing distribution outlets,
- (b) the complicated fuel tax arrangements mentioned above,
- (c) some early bad experience with poor quality product,
- (d) echoes of the confused ethanol debate over the past decade.

It is critically important that the introduction of biodiesel into Australia's fuel portfolio is not crippled by bad practice and misleading information. DEH has an important role in policing fuel quality standards at the point of sale, but NFAL contends that the construction of a workable arrangement for blends up to B20, backed up by a Code of Practice and Certification, will do much to make biodiesel more widely available and accepted in the marketplace. The new Biofuels Association (BAA) intends to

actively promote the benefits of biodiesel to the general motoring public. The NRMA has committed financial and other resources to join this effort.

A.4.6 Cooperation of the established fuel companies

It is easy to surmise that the major oil companies would not welcome a competitive fuel in their domestic market, especially as they have invested heavily to produce Ultra Low Sulphur Diesel (ULSD) at their refineries, and have extensive diesel distribution infrastructure already in place. This may not be the whole story however. Guaranteed quality, reliable supply, acceptable economics, and consonance with individual company strategies and objectives, are probably just as important.

NFAL takes a realistic view of the existing diesel market and believes that, provided the above background requirements are met, it should be possible to introduce blends up to B20 into the market with the cooperation of the major domestic diesel fuel suppliers. This will require a comprehensive system of quality compliance plus some modest adjustment on the part of the oil companies, as explained further in PART B of this Submission. Given that the Government's biofuels objectives are publicly supported by the oil companies, this should not be impossible.

A.4.7 Government support

The Report of the Taskforce on Biofuels to the Prime Minister correctly noted that, *"Globally, and in the absence of subsidies, biofuels cost more to produce than petroleum fuels"*, and that *"...many countries have adopted policies to assist the production and use of biofuels. While national circumstances vary widely, in every case biofuel production has required significant government assistance"* (6).

This remains true in Australia. While the new Fuel Tax regime has provided support for the supply of biodiesel at the plant gate, this can only be effective if there is a willingness on the part of potential customers to buy it at a price that is competitive with petroleum diesel at the plant gate. As explained in Section A.4.4 above, the current workings of the Fuel Tax Act 2006 can make this difficult in the case of B20 and higher biodiesel blends. However, this should not be the end of the matter. If Government is serious about its biofuels objectives, it should be prepared to consider what is required to enable blends up to B20 to be made available on a reliable, consistent basis to vehicle operators who want it at a price competitive with petroleum diesel, and be prepared to adjust policy where necessary.

NFAL contends this can be done by adopting a proposed **Framework for Biodiesel Blends** in Australia as set out in PART B of this Submission. In brief, this support from government would be in the form of ---

- (a) endorsement of the Framework,
- (b) amendment of the tax regulations such that, provided that biodiesel blends up to B20 comply with the Framework plus the requirements of the Australian Biodiesel Code (ABC), such blends will be treated as normal diesel for the purposes of the Fuel Tax Act 2006,
- (c) agreement that where biodiesel blends above B20, or straight B100, can be shown to have significant environmental, safety, or health benefits in a particular application, and the fuel quality is acceptable to the customer, a grant equal to the prevailing rate of excise on diesel would be granted to the customer,

- (d) more rigorous fuel quality surveillance by DEH, both at the point of importation (where this applies) and at the point of sale to the end-consumer.

PART B : A FRAMEWORK FOR BIODIESEL BLENDS IN AUSTRALIA

B.1 Benefits

Taking the above background and key factors into account, the benefits of establishing an agreed Framework within which biodiesel/diesel blends up to B20 can be produced and sold on a competitive basis with normal diesel are to -

- capture the known environmental benefits
- provide certainty of quality and availability to the market
- eliminate poor quality and bad practice from the market
- involve all key players on a cooperative basis
- stimulate local feedstock production
- advance the government's own biofuels objectives.

B.2 THE FRAMEWORK

For the importer or domestic manufacturer of B100 :

<u>mandatory requirements</u>	<u>optional requirements</u>
1. must meet B100 biodiesel standard	none
2. must report cold flow properties ⁽¹⁾ and have them accepted by the customer as fit for purpose	none
3. must be ABC ⁽²⁾ certified	none

For the blender :

<u>mandatory requirements</u>	<u>optional requirements</u>
1. must use B100 and ULSD complying with respective standards	none
2. if Blend (1-5), density waiver applies	identify as Blend (1-5)
3. if Blend (6-20),	
(a) must report cold flow properties of the blend, and have them accepted by the customer as fit for purpose	none
(b) must label as Blend (6-20)	none

(c) if ABC certified, must make available typical results of short form tests including density ⁽³⁾	if requested by the customer
(d) if not ABC certified, must report results of short form tests including density on every batch supplied	none

For the last supplier ⁽⁴⁾ :

<u>mandatory requirements</u>	<u>optional requirements</u>
1. if Blend (1-5), none	label as Blend (1-5)
2. if Blend (6-20), must be labelled	none

Notes : (1) Cold flow properties, comprising the cold filter plugging point or filter plugging tendency, plus one of --

- (a) cloud point
- (b) pour point.

(2) The Australian Biodiesel Code (ABC), to be implemented by Biofuels Association of Australia (BAA). This will establish a best practice code for biodiesel supply, testing, blending and distribution.

(3) The short form tests are as set out in the Paper by Duncan Seddon and Associates (10), excepting the cold filter plugging point or filter plugging tendency, which is already reported as above.

(4) The last supplier to the end-consumer. This can be the same corporate entity as the blender and/or the manufacturer or importer, but in all cases, the requirements at each step will apply.

This Framework incorporates NFAL's view of the Options presented in the DEH Paper, viz. –

- (a) Option 2 is preferred over Option 1 for Blends (1-5),
- (b) Option 4 is preferred over Option 3 for Blends (6-20).

The important point is that, to be effective, neither preferred Option can stand alone ; they must be seen as part of a complete system of blend definition, control and monitoring. The Framework is considered to be a practical way of meeting the reasonable requirements of all the main parties involved in getting biodiesel blends from B1 to B20 into the market with certainty for the consumer. Essential points in the Framework are made mandatory, with some options around certification under the Australian Biodiesel Code (ABC), provision of test results, and labelling. This mirrors existing practice in North America and Europe where blends up to B5 are generally

accepted as diesel, but incorporates more stringent requirements in Australia for blends between B6 and B20.

B.3 Formation of Biofuels Association of Australia (BAA) and the implementation of an Australian Biodiesel Code of Practice (ABC)

An essential feature of the above framework is the formation of BAA and the implementation of the Australian Biodiesel Code (ABC). In August 2006, members of the existing Renewable Fuels Australia (RFA) and the Biodiesel Association of Australia (BAA) decided to investigate merging or forming a new organisation to be known as **Biofuels Association of Australia (BAA)**.

It was thought that a single, well-resourced, fully representative organisation would be better able to advance the interests of legitimate biofuels producers and marketers in Australia. At the time of writing, these moves are well advanced, and it is hoped that the new BAA will be in place early in 2007. One of the early tasks will be to develop and implement an **Australian Biodiesel Code (ABC)** to establish good practice in all aspects of biodiesel supply, testing, blending and distribution. This may well draw on the existing US Code BQ9000 and European ISO 9000, but adapted for Australian conditions. A considerable amount of work has already been done to define what is needed.

These ideas have been built into the Framework outlined above to provide a mechanism for strict supply chain oversight and enforcement, and to demonstrate industry self-regulation. NFAL believes this is consistent with government philosophy on such matters, but it is important to have it backed up by more rigorous DEH quality checking at the point of biodiesel sale to the end-consumer. If these proposals are adopted, it might be necessary for BAA to receive some financial support from government for the development and implementation of the Code.

B.4 Conclusion

As a new and substantial producer of biodiesel in Australia, NFAL makes this Submission in the expectation that it will be given due consideration. The issue is important, and could well determine whether biodiesel will have any significant impact in Australia. Company personnel are available to discuss the Submission at a mutually convenient time.

Sydney
January 22, 2007.

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- (4) *Australian Petroleum Statistics*, Department of Primary Industry, Melbourne, 2006.

- (5) *Variations to the National Fuel Standards*, Department of the Environment and Heritage, Canberra, 2006.
- (6) *Report of the Biofuels Taskforce to the Prime Minister*, Canberra, August, 2006.
- (7) *Biodiesel, the Comprehensive Handbook*, Mittalbach and Remschmidt, Austria, 2004.
- (8) *Life-cycle Emissions Analysis of Alternative Fuels for Heavy Vehicles*, Beer, Grant, et al, CSIRO, Parkeville, Victoria, 2000.
- (9) *Australian Bureau of Agriculture and Resource Economics*, Canberra, 2006.
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