The Department of Infrastructure,
Transport, Regional Development,
Communications, Sport and the Arts

19 December 2025

Dear Sir/Madam,

Submission on Eligibility Criteria and Design on the Cleaner Fuels Program

On behalf of Gane Energy & Resources Pty Ltd (**Gane Energy**), I wish to make the following submission regarding the eligibility criteria and design of the recently announced Cleaner Fuels Program.

Gane Energy is an Australian company established to promote our proprietary Australian technology enabling the use of methanol as an alternative to diesel, to power heavy transport vehicles, shipping vessels, and large machinery, which we call Gane Fuel. Our technology enables performance and efficiency outcomes comparable to or better than those offered by diesel, has very low NOx and Particulate emissions compared to diesel, and when powered by green methanol, much lower net carbon emissions. When Gane Fuel is made from green methanol, net carbon emission reductions of up to 95% can be achieved.

We note that the objectives of the Cleaner Fuels Program include accelerating decarbonisation in hard-to-electrify sectors and improving Australia's sovereign liquid fuel capability. Gane Energy's technology, allied with locally produced green methanol, provides an ideal means of furthering these objectives.

We therefore encourage the Australian Government to extend the eligibility criteria for assistance under the Cleaner Fuels Program beyond so-called "drop-in" alternatives to diesel and enable the development of options such as fuels that include green methanol.

Green methanol has a number of distinct advantages as a LCLF including being the cleanest burning LCLF available, being one of the lowest net-carbon LCLF's and being the product of mature production technologies which can utilise a broad range of biomass feedstocks to produce the green methanol.

Gane Energy is in discussions with large corporate users of diesel, manufacturers of diesel-powered equipment, and prospective green fuel producers. We believe that a clear signal from the Australian Government supporting the green methanol alternative

would galvanise these parties and accelerate the development of methanol as an alternative to diesel. Our technology has global potential and has been extensively tested.

Gane Fuel technology

Gane Fuel is a blend of methanol, water and a lubricity additive which is plant based. It is an Australian innovation, with patents granted in Australia and over 50 other territories around the world.

A key issue to be resolved for widespread use of methanol by industry is that it resists combustion under compression, which is the opposite of that needed in a diesel (i.e. compression ignition) engine.

Efforts to overcome this by others have included using (i) spark ignition, (ii) a diesel pilot fuel, (iii) heating the inlet air and thermal treatment of the piston crown, cylinder head and valves in engines with higher compression ratios.

Each of these involves compromises such as significant modifications to the base engine, reduced performance and efficiency, a continuation of some diesel exhaust emissions, or limiting the ranges of engines that can be modified. In short, they each provide a solution that limits the potential scale of decarbonisation and other air pollutant reductions or the range of applications in which the engines can be used.

The key innovations of the Gane Fuel technology are twofold: firstly, it is a single liquid fuel as delivered to the customer and is a complete replacement for diesel that enables a modified diesel engine to operate on methanol and deliver diesel like combustion and performance without the compromises mentioned above. Secondly, the exhaust emissions of critical pollutants such as NOx and Particulate Matter from operating a diesel engine on Gane Fuel are exceptionally low.

Ignition of Gane Fuel is achieved by catalytically converting a small quantity of the methanol in the fuel at or near the engine to di-methyl ether (DME) which is fumigated into the engine's air pathway under low pressure and mixed into the inlet air. The DME ignites under compression and leads to ignition of the Gane Fuel at an efficient point in the combustion cycle.

This enables engine manufacturers and customers to avoid modifications to their base engines. The principal changes that are required are replacement of the engine fuel supply system to accommodate the lower energy density of Gane Fuel and the use of a DME production unit.

This approach of minimising changes to the base engine is a key driver for accelerating the energy transition. New engines can be produced to run on Gane Fuel (and in some instances these may be significantly cheaper than their full diesel counterparts, as emissions compliance for certain non-road applications can be achieved without requiring the use of Selective Catalytic Converters, or SCRs) but most importantly, existing heavy-duty diesel engine users in industries such as mining, construction, long-haul transportation and shipping can retain many of their existing fleets and retro-fit their engines to run on Gane Fuel.

In terms of supply-chain, Gane Fuel, being a single liquid fuel, provides potential to leverage existing liquid fuel supply chains already in existence in Australia, at lower costs than required for moving similar amounts of energy via electricity transmission lines or hydrogen for example.

Australian low-carbon methanol production

According to generally available published information, there are several low-carbon methanol projects under development in Australia by parties such as Abel Energy, HAMR, HIF Australia and South Australia Solar Fuels. These projects are largely exploiting proven technologies which represent a low-risk, efficient and cost-effective means to produce a low-carbon liquid fuel in Australia. Gane Fuel provides an opportunity to establish widespread use of this domestically produced methanol as a substitute for diesel across a wide range of hard-to abate heavy duty diesel consuming industries. This can provide a multitude of benefits, including reducing local air pollution, reducing the net carbon intensity of our industries and improving Australia's liquid fuel security.

Gane Fuel testing & results

Gane Fuel has undergone extensive independent testing in Germany by IAV GmbH, a leading German automotive engineering firm operating internationally. These tests were undertaken on a Liebherr series-production non-road heavy-duty engine with minimal changes made to the engine to operate it on Gane Fuel. The key results are summarised below:

Engine performance:

- Efficiency equal to or better than diesel
- Responsiveness and torque equal to or better than diesel

Engine emissions:

- 99.5% reduction in Particulate Number compared to diesel

- No soot was detected
- 80% reduction in NOx emissions compared to diesel
- 80% reduction in Particulate Matter compared to diesel

In summary, Gane Fuel has been developed to power existing heavy-duty diesel engines with modest modifications and provide a low risk, practical near-term path to affordable, scalable decarbonisation and reductions of other air pollutants for industry.

We look forward to further discussions regarding future collaboration to accelerate the reduction in fossil fuel use and disseminate unique Australian technology across the world.

Your sincerely,

Paul Cooper
Executive Chairman