

Camden Biodiesel Truck Trial



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Topics of Discussion

- Air Pollution – Our Issue
- Alternative Fuels
- Implementing change – A fuel trial
- Logistics
- Results
- Lessons learnt
- Moving forward

Air Pollution - Our Issue

- Local Air Quality – the primary motivator.



Air Pollution - Our Issue

- The Camden Basin – experiences poor air quality arising predominantly from activities outside of Council's geographical and regulatory areas of influence.



WHERE SYDNEY'S POLLUTION ENDS UP

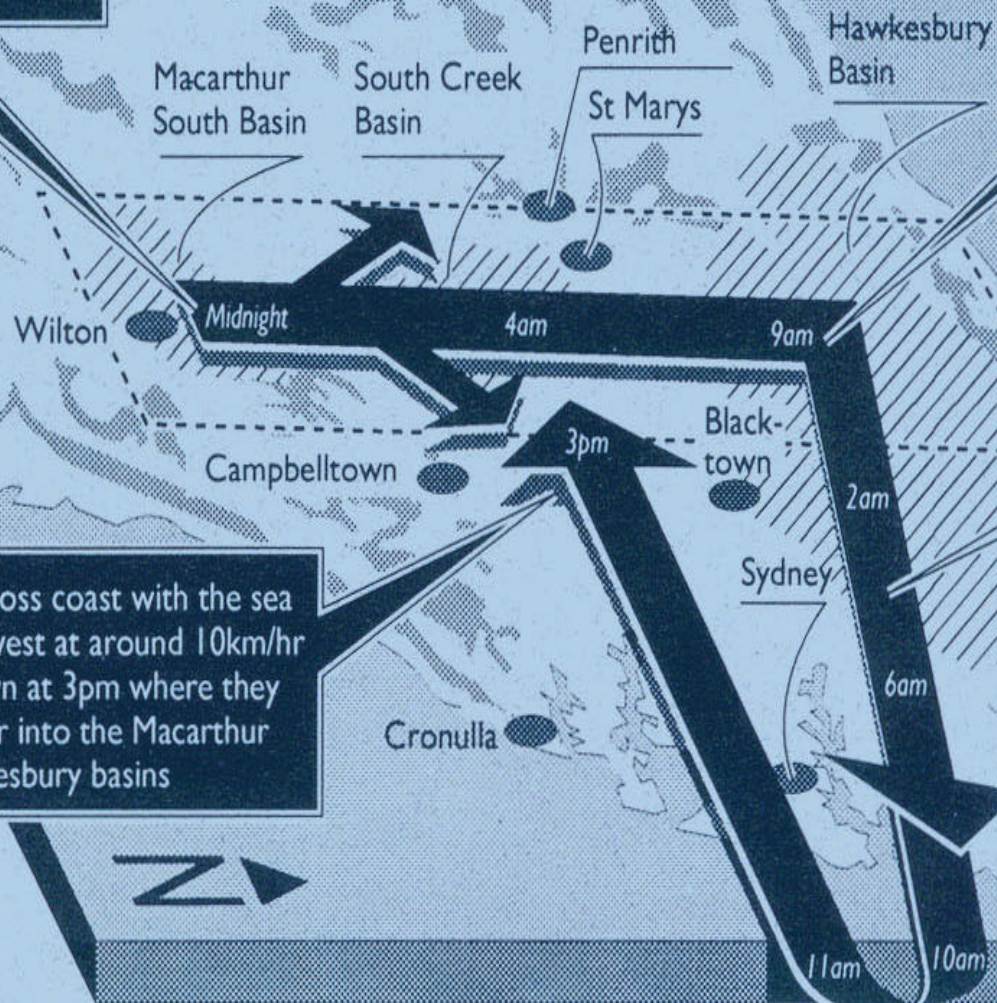
Polluted air begins to drain north at midnight. Some air branches off east to Liverpool and north west along the Nepean River

Most of the polluted air continues north arriving at St Marys, Penrith, Richmond, Windsor and Blacktown at 9am. Under conditions conducive to smog this air stagnates all day until the afternoon sea breeze brings more pollution

Night-time drainage begins at 2am flowing eastwards at 5km/h reaching the coast at about 10am

Air flows turn and recross coast with the sea breeze. They proceed west at around 10km/hr arriving at Campbelltown at 3pm where they continue on to spill over into the Macarthur South Creek and Hawkesbury basins

Smog affects the area within the dotted box



Air Pollution - Our Issue

- The single most significant source of pollutants is motor vehicle exhaust.



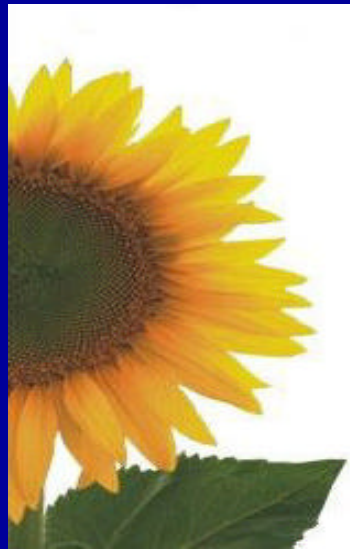
Air Pollution - Our Issue

- Council's 2025 Strategy.



Alternative Fuels – an Option

- Alternative fuels were seen as one way of acting locally to improve air quality.



Alternative Fuels- the Options



- Many options – one good solution.
- Council reviewed studies which comprehensively assessed the differences in performance and emissions of LPG vs CNG vs Ultra Low Sulphur Diesel (ULSD).
- We investigated and installed catalytic converters on our trucks.
- Bio – what ???
- **Biodiesel** – renewable, sustainable, achievable, do-able.

Getting Started: How we went about the Trial

- Terms and Conditions:
 - Scientifically rigorous and valid
 - “Without loss or harm” to fleet
 - Results transferable to other operators
 - Partnerships
 - Support of Management
 - Support of Council employees
 - Finance



How....cont'

Objectives

- To determine operational performance characteristics of Biodiesel (B100) compared with ULSD (50ppm sulphur) with a view to convert the Camden diesel fleet to biodiesel.



How....*cont'*

Objectives...*cont*

- Undertake a cost benefit analysis to evaluate environmental performance and risks with operational costs for Biodiesel and petro-diesel.
- Undertake an emissions verification trial to quantify and compare emissions of both fuels under operational conditions.
- Raise community awareness throughout the domestic, commercial and government sectors of the environmental benefits of using Biodiesel.

Logistics

- 2 garbage trucks, the same age, the same kilometres, the same hours, undertaking the same duties.
- Run one on B100 and the other on ULSD for six months in routine activities.



Logistics...cont'

- Minimise the variables including driver/operator performance and familiarity, collection districts characteristics, tyre wear & tonnages.
- 2 Part investigation:
 1. Operational
 2. Emission testing

The Partners



- EPA (the money \$\$\$)
- RTA (the testing through Diesel Test Australia & CSIRO)



- Gilbarco (the bowser sponsor and service)



- Tri-City Trucks (Vehicle inspection, reporting and servicing)



- Cummins (the engine manufacturer)
- Australian Biodiesel Consultancy (the fuel provider)

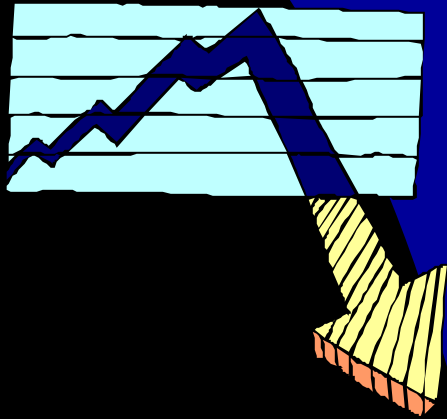


- Pacific Air & Environment (Consultancy)

The Results

- “There’s nothing like a trial to remind you of why you are doing a trial in the first place.”
- Expect the unexpected – gel points, filters, fuel quality....
- Emissions testing and operational results – make it all worthwhile!

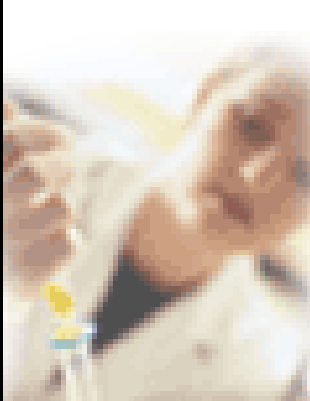
The Results



B100 Biodiesel achieved significant reductions in tailpipe emissions compared with ULSD for:

- ◆ Smoke (↓ 79%)
- ◆ Particulate Matter (↓ 91%)
- ◆ Hydrocarbons (↓ 68%)
- ◆ Carbon Dioxide (↓ 4%) and
- ◆ Air Toxics – significant for VOC's and PAH's
- ◆ There was no significant difference in NOx emissions.
- ◆ There was no significant difference in fuel consumption.
- ◆ Power at 80kph (↓ 17%)

Outcomes



- First scientifically valid study of B100 in Australia and it is a Local Government initiative.
- The results were better than anticipated.
- The B100 vehicle engine performed well without any modifications and there is no evidence of undue mechanical / operational wear.



Are we Happy?

- Yes – there are huge benefits to be had from the use of good quality fuel.
- The drop in power output was acceptable in the type of operation that we perform. Refinements could be made if required.
- Fuel quality is our area of concern.

Moving Forward



- The industry needs to build confidence in the use of Biodiesel and that can only come with a Quality Assurance program that places an unquestionable responsibility on the manufacturer of the fuel to provide fuel that meets all specifications.
- The industry **MUST** ensure a stable and reliable fuel supply.
- We all need more research in terms of emissions for various blends i.e. B30, B40, B50 etc. to determine the break point for sustainability and triple bottom line.

Way Forward....cont'

- Camden will more than likely move to a blended fuel.
- Short term: Most probably B20 or B40 subject to satisfying quality criteria.
- Longer term: B100 or best break point based on further test results from blend emissions analysis and subject to satisfying quality criteria.



Thank you



Thank you to all the partners who have assisted us during this trial.