

Before the Manawatu District Council Hearing Committee

in the matter of

Proposed Plan Changes 52, 55, and 60 of the Manawatu District Plan

SUBMISSION

by

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CONCERNS TO BE CONSIDERED

I am concerned that under the Proposed Plan Change 55 – District Wide Rules – “land farming”, which in reality is a form of waste disposal, could become a permitted activity.

The oil and gas industry operating in other regions needs to dispose of a great quantity of contaminated waste. Currently, such solid and liquid waste is spread on farm land and called “land farming” by the industry.

The Gisborne District Council gave resource consent to oil and gas drilling on the condition that solid waste had to go elsewhere. Subsequently, contaminated waste was trucked to Taranaki where the Taranaki District Council gave resource consent to spreading the contaminated waste on Taranaki soil.

A Tag Oil report (TAG Oil Ltd, 2016) announced when oil prices rise the Canadian company expects to take advantage of an exploration boom in Taranaki and elsewhere. Manawatu, being closer to Taranaki, could well become an option for future dumping of waste.

Therefore, I would like Manawatu District Council to be pro-active and declare “land farming” a prohibited activity to protect farming and the environment in the district.

WHY MDC SHOULD PROHIBIT “LAND FARMING”

Hydraulic fracturing uses more than 900 different chemical compounds and the fracturing itself dislodges other elements, such as heavy metals (Elliott, Ettinger, Leaderer, Bracken, & Deziel, 2016). When toxic waste containing even small amounts of these compounds is spread on “land farms”, animals, such as cattle, grazing on plants growing on the drilling waste automatically ingest them. Not only do these compounds evidently evaporate into the air, many are also absorbed by plants, e.g. grasses and clover that may be growing on “land farmed” areas.

These plants are then ingested by stock and other animal life. Humans eating contaminated plants and/or animal products are at the end of this cycle.

Despite evidence about possible contamination, food for human consumption is not sampled for the compounds used in hydraulic fracturing. Criticizing a Technical Paper by the Ministry for Primary Industries (NZMPI, 2014), Veterenarian Allan Thatcher voices concerns that meat for human consumption is not checked for contamination (Thatcher, 2014). Moreover, manufacturers do not have to reveal chemicals used in the fracking process, so even if the New Zealand Total Diet Study wanted to include them it would be difficult, if not impossible, to search for unknown compounds.

New Zealand Chemical Engineer Louise Wickham is a senior air quality specialist who gave evidence on 6 June 2016 before the South Taranaki District Council in the matter of the proposed South Taranaki District Plan. In her report she explains that fugitive sources of harmful emissions are one of the primary sources of discharges to air and that “land farming” is a potentially significant cause, i.e. through evaporation of hydrocarbons (Wickham, 2016).

Compellingly, she lists the toxic and carcinogenic compounds BTEX, PAHs and VOCs used in “land farming”:

BTEX compounds	Other volatile organic compounds (VOCs) including	Polycyclic aromatic hydrocarbons (PAHs) including
Benzene (1)	Acetylene	Naphthalene(2B)
Toluene	1-butene	Acenaphthylene
Ethylbenzene	Cis-2-butene	Acenaphthene(2B)
Xylene	Butane	Phenanthrene
	Ethane	Anthracene
	Ethylene	Fluoranthene
	Hexane	Pyrene
	Heptane	Benzo(b)fluoranthene(2B)
	Octane	Benzo(e)pyrene
	Propane	1,2,3-cd)pyrene(2b)
	Propyne	Benzo(g,h,i)perylene
	Propylene	Benzo(a)pyrene(1)
	Styrene	Coronene
	1,3-butadiene(1)	

Group 1 and 2 carcinogenicity in brackets; 1 = Known human carcinogen, 2A = Probable human carcinogen, 2B = Possible human carcinogen (WHO, 2016)

BEES AS BIO-SENSORS FOR AIR POLLUTION

As a beekeeper, I’m well aware how these harmful discharges can affect foraging honey bees. For many years and in many countries, honey bees have been used as bio-sensors for air pollution.

Honey bees are able to locate large food sources by conveying to other bees information with “bee dances”. The “wagtail dance” gives specific information on distance and direction. The crucial third information passed on by the bee dancer is scent.

Research by Professor Jose D Fuentes in the USA shows that scent molecules bond with air-pollutant molecules and prevents flowers from attracting bees to pollinate. Thus, bees are unable to locate scents. The ability to source scent is reduced by 1000-1200 metres to 200-300 metres in polluted areas. Because of this reduction the honey bees – being specific pollinators – have to spend more time foraging, are less able to find food sources and therefore bring back less food for the hive (Fuentes, Chamecki, Roulston, Chen, & Pratt, 2016).

Furthermore, the study found that wind carries air-pollutant molecules hundreds of metres from their source. Beekeepers have no control over where bees will forage. Studies in the UK and USA show that prolonged exposure to diesel fumes from trucks is also highly toxic to honey bees, disrupts their “wagtail dance”, and reduces their ability to forage for nectar (Gill, 2013). Flying honey bees will also pick up air pollutants that adhere to their electrostatically charged body hairs.

Eminent German researcher Prof Bernd Grünwald carried out research around major German airports, using honey bees as bio-monitors of air pollution from jet fuel. He discovered heavy metals and hydrocarbons were found in honey, wax and pollen from hives positioned at the airports. Six of the many heavy metals – arsenic, chromium, lead, zinc, nickel,

and copper – that are discharged with hydraulic fracturing were among those listed, plus hydrocarbons. Prof Grünewald’s research at Frankfurt Airport also showed that air pollution settles on the ground and is drawn up into plants growing in the area (Stone, 2011).

In 1995, the US Military employed a research team to use honey bee colonies as bio-monitors to screen military waste sites for toxic chemicals, notably VOCs, the same compounds found in toxic waste used in “land farming”. The study of 50 bee hives showed queen bee losses of 50 percent in colonies near hazardous landfills (Bromenshenk et al., 2015).

Clearly, there is enough evidence to show that “land farms” are toxic to animal life, in particular honey bees, the ecosystem, and ultimately to people. Honey bees are an important link in the ecosystem and for agribusiness, not only for pollination, but also for the export of honey and other bee products.

Statistics for 2016 given for Apiary Registered Locations Palmerston North District (covering an area including the Manawatu District) has the highest number of registered apiaries (10,186) and the highest number of hives (179,904) in New Zealand. (AFB Pest Management Plan, 2016)

Air pollution is yet another stress bees have to cope with – beside new pathogens, new parasites and new pesticides.

I’m mindful that previous Mayor Margaret Kouvelis once said she envisioned the Manawatu as a bread basket for the area. Contaminated waste and bread baskets do not go together.

On page 30 of the proposed Plan Change 55 under Earthworks,

I propose Option 1 “to provide clear objectives for earth works and to provide clear standards relating to earthworks that are permitted with the different land use zones”.

Given the evidence of the toxic and carcinogenic compounds produced by the oil and gas industry,

I propose that “land farming” be listed as a prohibited activity to protect farming and the environment in the Manawatu District.

The oil and gas industry is unsustainable as it relies on resource extraction, depletion, and consequent pollution. “Ecosystems [of which the honey bee is part] survive and are sustainable because they circulate and re-use energy and materials” (Eaton, 2014).

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