The water that flows down from Mount Taranaki and through the pristine dairy country that surrounds the tiny settlement of Kapuni is not fit for human consumption. But it’s nothing to do with what’s on the land. It’s what’s happening below it, and it has locals afraid for their health.

Locals say the Kapuni Stream is contaminated and they are blaming the toxic poisons being used by oil companies in an extraction method that has drawn criticism around the world – hydraulic fracturing, or fracking, a process in which liquids laced with chemicals are pumped into the ground at high pressure to force oil to the surface (see diagram on page 9).

They talk about the polluted stream and contaminated ground water and point to a curious cluster of cancer cases. Even the Taranaki District Health Board admits that the death rate from cancer in the province is significantly higher than in the rest of New Zealand.

Secondary school teacher Sarah Roberts says the groundwater in the paddocks around Kapuni which are dotted with oil and gas production platforms, is not safe. She blames it on poisonous water leaching from unlined pits where it is stored after being used in fracking.

“The groundwater is not safe for drinking, stock use, or irrigation, and is right beside the Kapuni Stream. The groundwater at Kapuni it’s not safe to drink.”

It is also known that diesel has been used by oil companies to help them extract oil from the ground, and that diesel contains a toxic mixture of benzene, toluene, ethylenzene, and xylenes, which can have serious degenerative effects on the human central nervous system.

Claims of water poisoning and sickness as a result the oil industry practice of hydraulic fracturing, or fracking, are rife in parts of Taranaki. So what is fracking and how safe is it? Jamie Christian Desplaces investigates.

FRACKING: THE DEEPER YOU DIG, THE DARKER IT GETS
Fracking has become notorious around the globe, rousing environmentalists into a foam-mouthed frenzy and exasperating oil and gas executives in equal measures. For every claim, there’s a counter claim, for every accusation, there’s a defence, in what has become a tit-for-tat merry-go-round of classic mud-slinging. The infamous American Gasland documentary of 2010, an exposé of the usual so-called corporate half-truths, lies, and cover-ups, simply added fuel to the already raging oil-field-like fires.

Fracking has been banned in France and Bulgaria and there are moratoriums in place in New South Wales, Quebec, South Africa and some US states. There is protest in parts of Europe and in some corners of the UK especially, with recent revelations that the practice was the cause of minor seismic tremors last year.

Fracking has been going on in the US for around 60 years, and 90 percent of their natural gas wells now use the process. There have been major concerns over air pollution and the contamination of groundwater, and in turn drinking water that, some say, is having a detrimental effect on the health of those who live in proximity to the gas wells. There have been examples of residents holding lighters to running taps causing the water to ignite, and the Environmental Protection Agency has discovered traces of contaminants in water wells across the country.

A New York Times report last year found a number of waste-water wells to be radioactive, and a House of Representatives study of the same year claimed that of 750 compounds used, 680 contained possible carcinogens.

Hydraulic fracturing exercises have been taking place in Taranaki for around 30 years, but in the past 10 they have become a more regular occurrence, causing some residents to worry about its possible impacts on their land.

In its end-of-year newsletter of 2011, the Taranaki Regional Council says fracking poses little risk to underground aquifers or the environment, and goes on to paraphrase some of the findings of its report of the same year regarding the safety of the practice.

The council’s Director for Resource Management, Fred McLay, is certain of the report’s accuracy. He tells me it found no evidence of environmental problems. David Robinson cemented the report’s, and the council’s reputation, further by saying: “The TRC report looks at the facts in a fair and unbiased way. It’s a quality report, well prepared and thoroughly researched.”

In many ways, it is a thorough report, but only on issues which it chooses to. And besides, few seem to have read it anyway. It appears to take pliability to whole new levels, opening with the following disclaimer: “The hydraulic fracturing and geological information in this report has largely been supplied by oil and gas companies in the region and is believed to be accurate and reliable.”
So, the oil and gas companies have supplied most of the information for this report and the council trusts them to be honest and forthright in all that they say or do.

The report was peer-reviewed by GNS Science, an independent organisation. This is from their website: “We apply our scientific knowledge from the atomic to the planetary scale to create wealth, protect the environment and improve the safety of people.” So far so good.

Fred McLay says the science and reputation of GNS Science “is beyond question.”

I ask GNS Science for an interview, but before I can pose it a single question, I receive this oddly defensive message from their Communications Manager, John Calluan: “There’s a large amount of misinformation about fracking in the blogosphere. It has become a cause-celebre, a bit like cell-phone towers and genetic engineering in the 90’s and microwave cooking and Saturday shopping in the 80’s.”

There are people in Taranaki with genuine concerns about the pollution of their land and the degeneration of their health and of their loved ones. Comparing this to Saturday shopping and microwave cooking is somewhat obtuse. And the last time I checked, the jury was still out on cell-phone towers.

Just how independent are GNS Science, and why were they approached to peer-review the regional council’s report? How much do they actually know about hydraulic fracturing?

“We don’t do hydraulic fracturing,” says Dr Rosemary Quinn, GNS’s Head of Petroleum Geoscience. “We do know about induced seismicity, we do know a lot about hydrogeology.”

I push her about what exactly this peer-review entailed. “We looked at the report for the scientific content and whether the conclusions reached were supported by the data in the field. We concurred with the conclusions they draw. Our input was as a third body review party to say if the science was reasonable and valid. That was our role.”

It’s great that this is being checked up on, of course, but it’s not the science that is worrying people. It would be fair to assume that because the oil and gas companies are already carrying out the fracking exercises, and succeeding in drawing out the desired fluids, they’re already pretty clued up on the science issue. If the peer-review was simply of the science behind the report, then it was not a full peer review. Who is checking that the work is being carried out safely and efficiently? What is happening to the waste? Who is checking that it is being stored and disposed of properly? Who is checking the chemicals involved - are they a pollutant to the environment, are they detrimental to people’s health, are they carcinogenic?

+++ Local Green Party Branch Convenor Stuart Bramhall says: “Last year Climate Justice Taranaki filed a request under the Official Information Act on chemicals that were used [in fracking] and never got a response. So the Green Party contacted the council and learnt that the regional council didn’t even know what chemicals are being used.”

It appears that accessing a full and absolute list of the chemicals involved is as challenging as a quest for the Holy Grail.

John Callum adds, “I suspect most staff at GNS Science would struggle to name the companies that undertake fracking in New Zealand. We were not the only peer reviewer of the Taranaki report.”

Okay, so maybe now we’re getting somewhere. Fred McLay: “There was only one peer review of the report – GNS.” Were there or weren’t there other peer reviewers? GNS’s Rosemary Quinn: “As far as I know, there weren’t.”

What’s going on here? Does anyone know? Surely the council have this all under control? Surely the council are the ones in charge? Surely their authority is absolute and respected by the companies that are renting their land?

Sarah Roberts says: “Tag Oil told me the council don’t know how to do their job.”

It’d be funny if it wasn’t so tragic, wouldn’t it? Well, fasten your seatbelts because it’s about to get a whole lot bumpier.

+++ The Resource Management Act 1991 provides a useful loophole for councils and companies, in that resource consents must be obtained in order to use natural resources but the public need be notified only if it is considered that the effects upon them be greater than ‘minor’. If the affected person, or persons, feels that they have suffered ‘major’ ill effect then the burden of proof is upon them to take the accused party to
court at their own cost. “The guidelines say we’re affected parties,” says Sarah Roberts. “But there’s a clause in there that says the TRC can decide on how to notify consents.

“I found their files that said we were in the effected circle – there was a map showing this – and they told me to go to the oil company. The oil company told me that they were surprised to hear from me because the council had told them that they didn’t need my signature and the consents had already gone through. My lawyer wrote an official complaint. There was no response.”

Fred McLay: “Some people fail to understand that participation in the RMA process is not decided by whoever shouts loudest or longest but on the basis of effects.”

David Robinson says resource consents are not a popularity contest. “People have to be affected before they’re notified and the effects have to be more than minor.”

So how is the significance of the effect judged? What is ‘more than minor’? Is it simply at the discretion of the council? Maybe we’ll find some guidelines ...

+++ I t was a simple question: “Is the main fluid component of hydraulic fracturing always water?”

“Today and in recent years only water, which forms around 90% of the fracturing fluid,” says Bernie Napp, Senior Policy Analysis for Straterra, an industry group that represents the resource and mining sector.

Between 17 December 2001 and 14 October 2005, some 18 fracking operations were carried out by Swift Energy (now owned by Origin Energy NZ Ltd) in South Taranaki. Of those, 17 were conducted using a diesel-based fluid instead of water – and the diesel accounted for 99% of the mix.

“I had no idea of the scale of that practice,” says Bernie Napp. “The impression delivered to me was that this had occurred just once. Could you send me that report?”

I tell him it’s in the Taranaki Regional Council’s report. “Must re-read the report,” he says.

The report goes on to say: “Hydraulic fracturing undertaken by Swift Energy, from 2001 to 2005, is described in a paper presented to a Society of Petroleum Engineers International conference. The paper concluded fracture treatments using oil-based fluids produced better hydrocarbon flows than treatments using water-based fluids.”

David Robinson says PEPANZ “only advocates ‘the use of modern, well-designed fracturing fluids,’ but adds that the use of diesel is not as abhorrent as it appears, because what is essentially being pumped down is just a different form of hydrocarbon to what is being extracted from underground.

So why stop it?

“The use of diesel in fracking is not a good look,” admits Bernie Napp.

+++ B TEX is an acronym that stands for benzene, toluene, ethylbenzene and xylenes and is a very, very nasty mixture of compounds that have serious degenerative effects on the human central nervous system. It cannot be emphasised enough just how toxic this cocktail of poisons is, and it has been banned in the use of fracking in other countries.

It is claimed that fracking fluids used in Taranaki do not contain BTEX, but what is clear is that BTEX is present in diesel. Of that, there is no argument. Therefore, by the council’s own admission, that fracking has been carried out with diesel in the past, they have also consented to allow BTEX to be pumped into the ground. The report also says that the flow-back fluid from the operations will contain BTEX and that those fluids must be stored, treated and disposed of in a correct and responsible manner to ‘avoid adverse environmental effects.’

Adverse environmental effects that they say have never happened...

+++ C oncerns have been raised about the connection between the use of diesel and the increased risk of well blowouts, but Bernie Napp and David Robinson rebuke them. The risk of well blowouts, they say, is minimal, no matter what fluid is injected.

In California, the blowout rate is around 1 in 5200 wells, at the time of writing there have so far been 28 wells fracked in Taranaki.

I ask Fred McLay if there have been any incidents of exploding wells. “In 1995 the Petrocorp Exploration McKee-13 well suffered a blowout. “Environmental monitoring undertaken by the council showed the impact of the local stream took about 18 months to recover.”

Mr Robinson says he is not sure of the exact cause of the well explosion “but there was a discharge into a local stream. Eighteen months after the event, the stream was back to how it was to before the incident.”

Was the stream used for drinking water and/or irrigation purposes? “Not sure, it was 17 years ago.”

Well, that’s okay then, as long as you weren’t drinking the water 17 years ago. Eighteen months is a pretty long time for a...
stream to be polluted by anyone’s standards too, especially if we’re talking BTEX. It also goes against the claims made in the council’s report that there have been no adverse environmental effects caused by hydraulic fracturing, but that’s easily manipulated because the report covers only the period from 2000 to 2011.

Both men say this is the only incident that they are aware of.

+++ Sarah Roberts and her husband, David Morrison, own a farm in Ngaire, south of Stratford. In 2008 they were awarded the Taranaki Regional Council Environmental Award for Riparian Management and Sustainable Farming, something for which they are rightly very proud. Their farm sits on ripe green countryside, their house surrounded by 64 hectares of dairy pasture and a permanently protected hardwood forest remnant which was protected in 1985 with the region’s 7th, and New Zealand’s 13th, registered Queen Elizabeth II Trust covenant. Three more covenants protecting the land were registered last year and the farm has also been recently nominated for another award.

You don’t have to spend long with this couple to see they are fiercely loyal to their land and passionate in their belief of its sacredness. Their once-clear vista across the plains to Mount Taranaki is obstructed by the massive metal structures of Tag Oil at the nearby Cheal well site. Mrs Roberts has found herself the regional spokesperson for hydraulic fracturing. “A whistle-blower from an oil and gas company told me that they consider fracturing to simply be cheap and nasty,” Teresa Goodman of Climate Justice Taranaki tells the meeting. “If they told the truth, they’d be out of business. He said it’s comparable to putting a molester in charge of an orphanage.”

+++ The Government’s campaign of ‘fracking is safe’ is very specific,” says South Taranaki District councillor Michael Self. “They don’t look at what’s going on with the waste, they don’t look at every oil field. The Taranaki Regional Council are giving the oil companies carte-blanche to do what they want.”

The fear is that waste from fracking is not being stored and disposed of properly, something Fred McLay refutes. “[Waste] pits were lined with compacted clay which provides a level of protection for groundwater resources. More recent hydraulic fracturing activity has seen the use of synthetic liners which provide a higher level of protection.”

I ask David Robinson if he can state that all pits in the Taranaki region are now lined. “No, I don’t know whether they are lined or unlined. I don’t know the answer. I don’t see why they would need to be lined.”

The reason they need to be lined is quite clear – it’s in the regional council’s report. If they’re not lined then there’s a danger that waste chemicals, cancer-causing chemicals, and BTEX could seep into the underground water supply and poison people who have no other choice but to use it.

The STOS report that is getting famously overlooked by all of the pro-lobbyist groups even says: “Many well-sites in the Kapuni area contain a blow-down pit, constructed
from the original well-site flare down pit. The discharge of well fluids to blow-down pits has been occurring without any resource consents. The use of unlined earthen blow-down pits was not industry best practice. Furthermore, there was a high risk of significant adverse environmental effects from their continued use.

Even the Straterra website says the company recommends all waste be stored in metal tanks. I visited many sites in Taranaki and didn’t see any metal tanks, just wide-open concaved mounds of earth that certainly didn’t look lined in any way and were often near streams.

“I haven’t seen any metal containers. Any garbage from their activities is kept there [the pits],” Michael Self says. “You have a big downpour of rain and it goes into the rivers.”

When I push Fred McLay on the subject again, he tells me the pits are “generally lined with clay and that some operators are now using liners.”

Only “some” operators? But the tragedy is that even if all companies now use lined pits, for many, many years they weren’t and the damage may have already been done.

“One guy from the oil company told me that they were having difficulty in get rid of their drilling fluids,” says Sarah Roberts. “There was an effluent pond nearby and so they dumped it in there and it overflowed into the local stream. Another guy told me that he was disturbed about how his company was handling the discharge and voiced his concerns and was told that the oil company pays at the front end so that the Taranaki Regional Council doesn’t check at the back. You’re not allowed to burn your green waste in the back yard, but you are allowed to dump hydrocarbon into the water and not be prosecuted. How can they be allowed to do that?”

Waste fluids are even sprayed on to farmland. Bernie Napp says the oil and gas company would approach a landowner. “There are farmers who have had [waste] water sprayed on their pasture. If anything, it acts as a fertiliser. That land will continue as farmland.”

A name that keeps coming up, a name that again is not mentioned in the Taranaki Regional Council’s report is that of Colin Boyd. So I call him to ask what he knows about fracking: “I know nothing about it,” he says. “I have no knowledge about it, I know zero.”

I ask him if he is responsible for the disposal of fluid waste. “Yes, but it’s certainly nothing to do with fracking.”

But the thing is, it is, isn’t it? It brings us back to the Taranaki Regional Council’s report in the sense that it skims over or ignores inconvenient truths. Waste disposal is of huge significance to this issue, maybe even the most significant part of it as improper methods are what lead to the contamination. Does Colin Boyd even know what chemicals he’s spraying on to his land? Has even been trained in the correct disposal techniques?

Colin Boyd is contracted by Tag Oil, so I contact their COO, Drew Cadenhead, to ask for an interview on the matter. He agrees to do so via email. I send the questions but have not received a response.

+++ I ask David Robinson if he is aware of any health or environmental issues that had arisen as a result of fracking. His reply: “Not aware of any health issues and don’t expect there to be. It’s been going on for more than 20 years and it’s extremely well managed by the council. Any produced water is contained, stored and treated appropriately. It is very well controlled – every fracture is performed on a computer model that receives micro-seismic data. It’s a precise science.”

Sarah Roberts has a rather different opinion: “Leaking happened at Cheal A3 and Cheal A4 wells between 2007-2009. No water testing was done. My sister lives out in Cheal and she says that her water quality has changed since they started drilling. Austral Pacific/Tag Oil have been working on the site for five years. We truck in water for the family but we have no alternative for the cows. As soon as I ask for testing for the chemicals they use when they drill and produce, it gets declined.”

Why was no testing done at the time? Fred McLay says the council “became aware of the leak and it was decided no sampling needed to be undertaken”.

Why not?

“Cheal A3 and A4 were never subject to hydraulic fracturing. Sampling was undertaken when a local resident expressed concerns about the impacts on water quality and the results of the first round have been published. The next results will be published next week.”

The first results have given the all-clear to the water supply. However, the leaks occurred between 2007 and 2009. It is now 2012, and if contamination had occurred in the meantime we will never know, and unfortunately it’s very bad luck to those who had to use it. The well blowout of 1995 mentioned earlier lead to a stream being contaminated for a whole year and a half.

“A friend of mine talked to me about her worries about the water over near Kapuni,” says Sarah Roberts. “Shell Todd Oil Services have been using blowdown pits for years, in some cases without consents. The groundwater under many of those unlined pits is over the Ministry’s for Environment criteria for benzene and other chemicals, BTEX chemicals used in fracking. The groundwater is not safe for drinking, stock use or irrigation and is right beside the Kapuni stream. The groundwater at Kapuni is not fit to drink.”

This is no rumour, it is fact. The Kapuni water is not safe and it is not mentioned in the Taranaki Regional Council’s report.

“There’s a lot of misinformation about that,” says David Robinson.

But what he didn’t know was that I had a copy of the Shell Todd Oil Services Ltd Annual Report 2009-2010 for the Maui and Kapuni Production Stations, from which I quoted the following passage: “The groundwater results are attached to this report. These results indicate that, with the exception of KA-5/10, shallow groundwater below the well-sites is not fit for potable or stock water use. Furthermore, shallow groundwater below KA-8/12/15 and KA-13 does not meet the criteria for irrigation. It is noted that no monitoring of groundwater has been conducted since December 2008.”

I would like to make the point again that this report from Shell Todd, a confession of contamination of groundwater supplies, does not appear in the Taranaki Regional Council’s report. Perhaps because it would spoil their boast of no adverse environmental impacts?

“The contamination is limited to beneath the well-site owned by STOS within industry property,” says Fred McLay. Note he says the contamination “is” limited, not “was” limited. It’s still there. “There are no other parties considered adversely affected at this stage and precautionary monitoring is in place to ensure the case.”

But the report says no monitoring has been done since December 2008.

“The council has experience with the movement of groundwater contamination in shallow aquifers like this,” he says. But hold on. In their report the council doesn’t say there has ever been groundwater contamination so how can they have experience with it? “Containments move very slowly.”

The Shell Todd report shows that there are 10 contaminated sites at Kapuni: “The groundwater monitoring carried out on behalf of STOS in relation to the use of blowdown pits indicates that there is a plume of dissolved phase hydrocarbons in shallow groundwater beneath KA-1/7, KA-4/14, KA6/11, KA-8/12/15 and KA-13 well-sites.”

It’s time for an independent investigation to be carried out at Kapuni. It’s time the council really started to take note of its
residents’ concerns, to listen to their fears.

Sarah Roberts says that when concerns were first raised she knew nothing about fracking and went to see the council. “I had Fred McLay yelling at me telling me I was stupid to go and see the oil companies. But he was the one that told us to see them in the first place.”

Fred McLay says he’s “disgusted and disappointed” in people making comments about his integrity. “I have acted professionally and with integrity throughout my 27 years of service to the Taranaki Regional Council and the Taranaki community.”

But Sarah Roberts is adamant: “Once Fred McLay told me ‘go home and have a glass of wine, don’t worry about it’.”

The Taranaki District Health Board website also says Taranaki has “significantly higher cancer death rates” than the rest of the country.

Of course, this could be coincidence, but many of the other regions that share this unenviable title are also home to oil and gas operations. Surely it is something that requires some kind of proper, independent inquiry? When people’s health is at stake, how can it possibly be worth the risk not to?

Sarah Roberts almost breaks down when I ask her if she feels a certain responsibility for her community, for the fact that people are relying on her to fight these corporate giants. It’s not just taking its toll on her emotionally, but financially as well. She has spent $15,000 from her own savings on this so far.

“Yeah and I take it very seriously. I want people to get it. They don’t read all the reports and they don’t know that all this stuff has been happening. There’s a group of women out near Waitara who go to a mother’s group and talk about how many miscarriages they have had between them. They all drink the water. Every report that you touch you find someone who’s not well.” And so on we go …

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It can seem surreal at times driving through the lush rolling countryside of Taranaki, for as a bend in a narrow backroad straightens then dirty secrets are slowly revealed in the not-so-far distances.

Fires spill upwards as plumes of acrid black smoke slithers serpentine-like from the burning of excess waste and yet even with the knowledge of that unthinkable kindle the streaks of the hypnotic orange flame works its magic. Cows leisurely graze upon thick tufts of the greenest grass against backdrops of towering steel structures that seem to have no place here, and one can’t help but question what cost this will be to this Earth.

“Once the boom is over,” says Climate Justice Taranaki’s Catherine Cheung, “the communities will be left with workers skilled in ways that are no longer useful, with a poisoned environment to try to live off.”

“That’s a new one,” says Michael Self, jolting me from my daydream as we drive past another fenced-off drilling-zone. “They seem to be popping up all of the time now.”

There’s a sadness in his tone, a sadness for a lost innocence of a land whose only crime was to rest atop a fluid that seems to far too often arouse the worst traits from men.

“These oil companies are like legal party drugs,” laments the South Taranaki District Councillor. “As soon as one shuts down another starts up and you’re left legislating about things when the damage is already done.”

At the tour’s conclusion we take the highway upon which the Shell Todd’s sprawling complex sits among the splendiness of Taranaki’s threatened purity. As we pass he tells me that the road is “littered with canister victims”.

The councils of Christchurch, Selwyn, and Kaikora have now called on central Government to suspend hydraulic fracturing, until a proper independent investigation is carried out, amid fears of the resulting potential seismic activity and ground contamination that may ensue.

But judging by Energy Minister Phil Heatley’s recent glowing report of the fracking activities in Taranaki, they, too, might have one hell of a fight on their hands. Opponents probably take little comfort from the fact that the polluted sand in which their regional council is burying its head is at least delivering it one mighty dose of toxic karma.