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THE WEEKEND AUSTRALIAN

MAGAZINE

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WHAT LIES BENEATH

HOW A MUCH-HYPED 'CLEAN COAL' PROJECT BECAME AUSTRALIA'S BIGGEST ENVIRONMENTAL DEBACLE

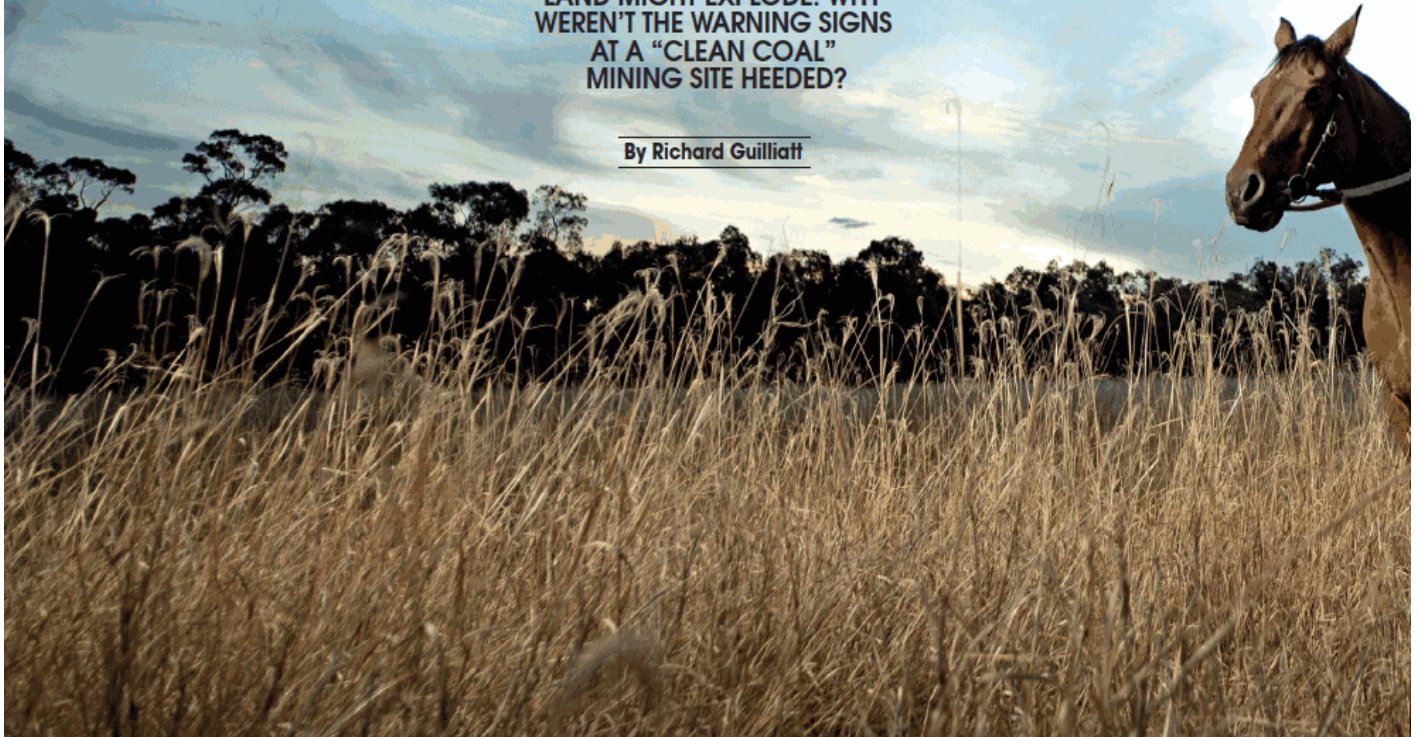
By Richard Guilliat

Photography Eddie Safarik

BURNING QUESTIONS

WORKERS FALL SICK,
GAS READINGS ARE OFF THE
CHARTS, PIGS DIE, THE AIR
STINKS, FARMERS ARE TOLD THEIR
LAND MIGHT EXPLODE. WHY
WEREN'T THE WARNING SIGNS
AT A "CLEAN COAL"
MINING SITE HEADED?

By Richard Guilliaff



One morning in February last year, the telephone rang at the home of Dave and Jenny Winfield, who live on a 1000ha grazing property near Hopeland, on the eastern edge of the Darling Downs in southern Queensland. A neighbour was on the line, asking urgently: "Have you checked your mail?" In the garbled conversation that followed, the Winfields learnt the Queensland Government had just notified scores of local farming families that their soil might be contaminated with dangerous levels of carbon monoxide and other "combustion by-products". They were advised not to dig deeper than two metres into the ground without first contacting the government.

Dave Winfield's first thought was that this bizarre development must surely be connected to the coal-gas plant that Linc Energy operated only one kilometre from the northern boundary of his property. As Winfield understood it, Linc set fire to coal underground in order to generate gas, which had never struck him as a smart thing to do in Australia's richest farming country.

"Anyone who has a bit of common sense would wonder about it," says the 43-year-old over his kitchen table. "You're lighting a fire down there, pumping all that air pressure in – something's got to give. I don't know how anyone could dream they could contain it." The state government, though, was refusing to say what caused the soil contamination, leaving 80-odd families inside the 320sqkm "excavation caution zone" mystified.

In the 16 months since then, they've become a lot more enlightened. They've learnt that Linc Energy stands accused of fracturing the rock beneath their land and releasing toxic chemicals into the soil, air and groundwater over a six-year period. They've read that Linc's workers were told to cover up the contamination and drink milk to protect themselves. They've been told that digging a hole in a paddock might release "potentially explosive and/or toxic and/or asphyxiating mixtures of gases". They've heard the Queensland environment minister, Steven Miles, describe it as "the biggest pollution event probably in Queensland's history".

In March, Linc Energy was committed for trial on five criminal charges of environmental damage, a case that promised to be one of the largest in

Livelihood:
Jenny and Dave
Winfield on their
Queensland property



Australian history but is now in doubt because the company is being liquidated. Linc's bombastic former chief executive, Peter Bond, scoffs that the company has done nothing wrong and the case is "bullshit". Senior figures in the coal-gas industry, meanwhile, have told this magazine they warned the state government for years about the potential environmental and economic danger Linc posed.

All of which leaves the community around Hopeland contemplating some bewildering questions. How did a "clean energy" project become an environmental debacle? Why can't they see any evidence of pollution if this is such a monumental disaster? And how can they trust any reassurance about the coal-gas industry from

'THE CASE AGAINST THE COMPANY IS BULLSHIT'

Defiant: Peter Bond



a state government that boasted it had "the toughest mine safety laws in the world"?

Dave Winfield is one who has already signed up for a class action lawsuit to get some answers to those questions. "There's been a bloody disregard for the rules," he says. "How does that work? Someone's got to be held accountable for it."

In the farmlands of eastern Uzbekistan there stands a ramshackle Soviet-era industrial plant which is the only commercial facility in the world that uses the mining technology known as underground coal gasification (UCG). Since 1964, engineers from the firm Yerostigaz have been setting fire to coal deposits beneath the land here and piping the resulting "syngas" to a power station.

Many other countries have experimented with UCG technology – more than 50 pilot plants have been built worldwide since the 1940s – but the

reasons that Uzbekistan alone boasts a commercial operation are not hard to guess. Unlike conventional coal-seam gas drilling, which taps into the natural methane inside coal seams deep underground, UCG involves drilling into coal only 100-200 metres below the surface and igniting it, creating a highly toxic 1000-degree underground fire in close proximity to groundwater and topsoil. In the late 1970s, a US test site in Wyoming contaminated the groundwater so badly that benzene residues were still being detected 30 years later. A pilot project in Spain was abandoned in the early 1990s after a build-up of methane exploded, while others have simply proved economically unviable.

So Queensland's then premier, Peter Beattie, took a bold step in 2006 when he embraced UCG as a key part of his Smart State vision. Like many Labor leaders, Beattie saw "clean coal" as a solution to the political conundrum of being both pro-environment and pro-mining. He singled out Linc Energy as a "Smart State company taking the development of UCG to the next level".

Linc had been founded in 1996 by Melbourne entrepreneur Len Walker using technology designed by Michael Blinderman, a physicist who had worked at the Yerostigaz plant in Uzbekistan. The company's original chairman, former Queensland premier Mike Ahern, helped Linc secure approval for a pilot plant on rural land 20km southwest of Chinchilla on the Darling Downs. The Beattie government even became a joint venture

partner in the project when the state-owned CS Energy sank \$4.78 million into it in 2000, not long after Linc ignited its first coal seam.

That first trial burn lasted three years and Linc hailed it as a resounding success, although others beg to differ. Richard Cottee, chief executive of CS Energy at the time, recalls that he pulled the plug on the joint venture because Linc couldn't explain what had happened to the carcinogenic benzene and toluene contaminants it produced. "We knew they had to be produced, but where were they?" Cottee remembers. "We were a government-controlled instrumentality and we couldn't answer that." Bob Henricks, a former director of CS Energy, says Linc's technology was always "shrouded in secrecy". "I didn't like it one little bit," Henricks tells this magazine. "My feeling was, 'Let's get out of this, it's going to cause trouble.'"

CS Energy's withdrawal nearly spelled Linc's

demise, but in 2004 a saviour appeared in the form of Peter Bond, a burly, tousle-haired 41-year-old mining entrepreneur who bought the company and announced an ambitious plan to revive it. A former coal-washing contractor from Sydney, Bond had made millions developing coal and gold mines during the resources boom and he quickly showed a flair for dazzling politicians, journalists and investors with his vision of Australia leading the world in clean-coal technology. Rebranding Linc with a green logo, he said he would build a \$500 million plant at the Chinchilla site to convert coal-gas into "environmentally friendly, ultra-clean diesel and jet fuels". Bond barnstormed the globe, raising \$22 million from investors, buying the Yerostigaz company in Uzbekistan and predicting that Linc would soon be producing 22,000 barrels of diesel a day.

Mike Ahern didn't stay for the ride; he resigned as chairman in February 2006 after a blazing argument with Bond over the claims Linc made in its share prospectus. "I'm not a very loud person but we had some very strong exchanges and I said, 'I can't sign off on things that aren't technically right,'" Ahern recalls. The physicist Blinderman quit at the same time, for reasons he declines to discuss, and Bond replaced him with a team recruited from Russia. Premier Beattie remained a believer, however, flying on a trade mission to the US in April 2007 with Bond. Soon two other companies were planning UCG plants – one in Kingaroy designed by Cougar Energy, a company launched by Linc's founder, Len Walker, the other on the Darling Downs proposed by Carbon Energy, a company formed by ex-CSIRO scientist Cliff Mallett.

The government's embrace of such risky technology perplexed people such as Munro Mortimer, at the time a senior scientist in the state Environmental Protection Agency. "Why Queensland got involved in that, God only knows," says Mortimer, who recalls being "gobsmacked" at how little the projects were scrutinised.

Senior figures in the mining industry became equally alarmed, fearing that a catastrophic failure at one of the UCG plants could potentially derail the conventional coal-seam gas industry. Richard Cottee, who became managing director of Queensland Gas Company after he left CS Energy, recalls that he tried to alert senior bureaucrats to the risks of UCG from 2004, without success. "You would have thought that by the time CS Energy exited the Linc trial there would have been a degree of scepticism," he says. But Linc's pilot plant at Chinchilla was deemed "low-risk" and thus required no environmental impact statement. No

baseline testing of water or soil was required and even out on the Darling Downs opposition was muted. Farmers in the region were more agitated about the intrusion of coal-seam gas crews on their land, whereas Linc's operations were confined to its own 1200ha site. "They were just in a paddock up there – it wasn't much of a show," recalls Dave Winfield.

Linc had drilled an "injection well" 125m into the coal seam, through which it planned to pump compressed air to crack the coal apart before igniting it. A second well 30m away had been drilled to draw gas to the surface. One morning in August 2007, Linc's engineers ignited the coal inside Gasifier 2, as it was known. Things went wrong almost immediately.

Thousands of pages of documents have been filed in court during the prosecution of Linc Energy, and the most startling are the reports, emails and memos written by the company's own staff and consultants. The picture they paint is entirely at odds with the company's assurances about green energy and the state government's boasts of its tough environmental regulations.

According to statements from several former Linc workers, rainwater puddles on the Chinchilla site began bubbling with gas within a month of ignition. Monitoring wells nearby emitted a sulphurous smell, a tar-like substance emerged from the ground and some staff sought medical help for shortness of breath and headaches.

By October 2007, staff were reporting carbon monoxide readings "off the scale" and "a strong smell of acid/Syngas". One worker recalled in a statement: "Often in the early hours of the morning and due to the high readings we would have to leave the site by a couple of kilometres to get out [of] the CO [carbon monoxide]. Quite often this was due to us being nauseous." The gas meters worn by staff, this worker recalled, would shut down when they registered carbon monoxide at 500 parts per million – a level that can cause death after three hours. Scientists working for Linc measured benzene in groundwater as high as 20,400 parts per billion, nearly 22 times the Australian "groundwater investigation level". (In drinking water, the safe limit for benzene is one part per billion.)

In November 2007, Linc shut down the gasifier and the company's general manager, Don Schofield, sent a confidential memo to his boss, Peter Bond. Schofield reported that acid from the coal-gas had destroyed well-heads and caused them to leak, and that leaks elsewhere on the site suggested that excessive air pressure pumped into the coal seam

had opened fractures in the rock layer above it. "The UCG field appears to be damaged, as indicated from the extent of gas leakage and inability to maintain pressure..." Schofield reported.

Linc had assured the Queensland Government that the air pumped into the coal seam would not exceed the pressure of the surrounding groundwater. But Schofield told Bond that pressure several times more than the groundwater had been applied "for several weeks" in order to fracture the coal. In a report Schofield sent to the Department of Mines and Energy in March 2008, he acknowledged the poor design of the wells and the inadequacy of Linc's risk-assessment procedures, safety measures and staff training. But the report did not mention that Linc might have ruptured the rock above the coal seam, nor did it provide any data on groundwater readings.

In theory the Queensland Environmental Protection Agency was monitoring Linc, but former EPA staff say the agency was so overstretched by the mining boom that it was incapable of scrutinising such complex technology. "I can pretty confidently say that the EPA would have known nothing other than what the company and its consultants told them," says Mortimer. His account was supported by several former colleagues who told this magazine that the agency had suffered an exodus of staff to the mining companies – including two who left to work at Linc.

A former EPA investigator who monitored Linc for a number of years recalls that he struggled to get a response from his superiors about his concerns. "Linc always said, 'Everything is OK, because the groundwater pressure is inward,'" says the former investigator, who declined to be named. "The problem is: how do you actually verify things that are going on underground?"

The problems at Linc's site became an open secret in the mining industry, according to Mike Herrington, then a senior executive at Queensland Gas Company and now chief operating officer of Central Petroleum Limited. Herrington recalls that former Linc employees joined QGC and shared their stories, and he observed Linc's workers arriving at a hotel in Chinchilla "smelling like diesel exhaust". He says he directly warned the Queensland minister for mines and energy, Geoff Wilson, on at least three occasions that an environmental accident at the Linc site could derail the conventional coal-seam gas industry.

"We warned him about what was going on over there – on two occasions in his office," says Herrington, who recalls being told that UCG was important for Queensland's future. Herrington says he was aghast when one of the minister's advisers told him inspections of the Linc site had been abandoned after waste-water taken from the site had been spilled on a departmental car and stripped the paint. "I thought it was a lame excuse for a regulator to say, 'It's too dangerous to investigate, so we're just going to let it go on,'" he says.

In April 2008 the state government – now led by premier Anna Bligh – approved Carbon Energy's UCG plant, 20km from the Linc site. The coal-seam gas companies were so alarmed that they organised a high-level presentation by geologist Paul Wright to senior government bureaucrats, detailing the dangers of the technology. One former mining executive present at the



Debate: Linc's UCG plant at Chinchilla

meeting recalls: "We told the government guys, 'Be it on your heads – we're telling you that you will fracture the ground, you will form all these waste products and you will render the coal useless for us.'"

But a year later, the government approved a third UCG plant, the Cougar Energy facility in Kingaroy. Contacted by this magazine, Anna Bligh said her government was aware of concerns about UCG and "took steps to limit and control it" by only allowing three facilities. She said she could not specifically remember whether minister Wilson or senior bureaucrats had alerted her to the concerns raised by other mining executives.

Publicly, Linc trumpeted its technology as "the

safest form of coal mining" and commissioned a report from PriceWaterhouseCoopers, which asserted that it had proved "groundwater quality can be managed". Linc wooed the local community by donating a \$10,000 trolley to Chinchilla Hospital and sponsoring a diabetes fundraiser in nearby Dalby. Peter Bond's personal wealth, meanwhile, soared to an estimated \$350 million as mining shares boomed; his \$95 million mansion in Brisbane's Fig Tree Pocket featured parking for seven cars and its own cinema.

In August 2008, Linc ignited a new cavity in the coal seam. According to an internal company report on the court file, the air pressure again exceeded groundwater pressure, this time for eight months, causing well casings to rise out of the ground and staff to record notes such as "entire area full of gas outside". A report from Linc's technical consultants concluded that "many shortcuts

consulted more than 100 experts, he says, and cherry-picking the comments of one or two gives a distorted picture of what was happening. He denies the company was cavalier about worker safety and says the allegation that Linc instructed workers to drink milk – made by the prosecution during the committal hearing – is ridiculous.

Bond insists that Linc stopped fracturing the coal with excessive air pressure after 2007. But the company's own internal files say that Gasifier 3 was overpressurised for eight months, until a toxic substance comprised mainly of benzene, toluene, ethylbenzene and xylenes was detected 60m away from the burning coal cavity, prompting a shutdown in April 2009.

That month, the Rudd Labor government's resources minister, Martin Ferguson, arrived at the Linc facility to preside over the official opening of the gas-to-diesel plant. After touring in a hard hat and ceremonially pulling open the curtains on a commemorative plaque, Ferguson pronounced Linc an important part of Australia's energy future. A grinning Bond told the attending media: "We can now look to our friends, children, neighbours and partners around the world, comfortably put our hand on our hearts and say we can largely fill the energy gap in Australia. We don't need foreign oil, we can do it here, in Australia, cost effectively, easily and cleanly."

Shay Dougall first noticed a petrochemical smell drifting over the Darling Downs in late 2010, not long after she and her husband Andrew moved into their new home on a 2ha block surrounded by farmland about 20 minutes south of Chinchilla. Dougall

were certain she recognised that smell, because the previous year she had worked as a health and safety officer at Carbon Energy's nearby UCG plant, where the tar-like stink made her so nauseous she had to quit. "Once you have smelled it you'll never forget it," she says. "Andy and I just called it 'that benzene smell!'"

Dougall surmised that the Linc plant 10km away must be the source, and she knew enough about benzene's carcinogenic properties to become worried after she fell pregnant in early 2011. So she contacted Linc, who assured her the smell had nothing to do with them. "Linc would turn up and have a little chat with you in the kitchen," she recalls of her dealings with the

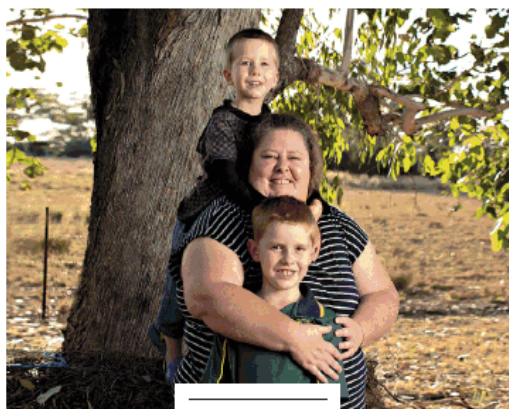
company. "They would say, 'Don't you know agriculture produces an awful lot of odours?' That would make me really, really angry. How dare they treat me like an idiot?"

Around the district, the smell became known as the "Linc stink". A few kilometres from the Dougalls, 64-year-old pig farmer George Bender called the company repeatedly to complain. Linc offered to air-condition Bender's house if he would sign a non-disclosure agreement – an offer accepted by some of his neighbours – but Bender was already furious about coal-seam gas companies encroaching on local farms, so he gave an interview to *Queensland Country Life* revealing Linc's attempt to gag him. Six weeks later, in September 2011, he got a letter from Linc boss Peter Bond asserting that the company's rigorous scientific tests had determined the smell wasn't coming from the UCG plant, and suggesting it might be Bender's pigs. Bond closed the letter by threatening to sue the farmer for "injurious falsehood".

Over the previous year, the families living around Hopeland had learnt some uncomfortable truths about the mysterious technology that Russian engineers were testing just up the road. In July 2010, the Bligh Government had shut down Cougar Energy's UCG facility in Kingaroy after benzene was detected in groundwater. A year later, Carbon Energy was charged with failing to disclose a waste-water spill from its UCG plant into a creek (a charge that would result in a guilty plea and \$100,000 in fines and costs). Bligh was cooling on the technology, announcing a scientific review of the entire industry even as her environment department assured the public it was "not aware of any breaches by Linc Energy".

Bond was even more emphatic. "We manage everything in such a way that there is no environmental damage," he told the ABC's *Landline* in April 2011. Bond's wealth had by then rocketed towards \$600 million after Linc sold its coal tenements in the Galilee Basin to the Indian company Adani, a deal estimated at \$2.5 billion. The swash-buckling mogul had just bought Dunk Island for a reported \$75 million and launched a television production company after appearing on *Secret Millionaire*, where he lived rough in Redfern for a week and pronounced himself humbled. To counter the bad publicity around UCG he drove a diesel-engined car from Queensland to Perth, a publicity stunt that was officially launched by Queensland's mining minister, Stirling Hinchliffe, and included a Canberra stopover so Bond could gladhand with resources minister Ferguson.

Bond would soon claim to be planning UCG



Worried for the future: Shay Dougall with her sons

were taken" in the construction of the wells because the company was scrambling to fulfil its diesel production schedule after the failure of Gasifier 2. Six months into the coal burn, the consultants warned that contaminants were spreading uncontrollably and that continued over-pressurising of the coal seam risked the same "catastrophic" result as before – vertical fractures in the rocks.

Contacted by *The Weekend Australian Magazine*, Peter Bond says he doesn't specifically remember this warning. "I don't recall the report exactly in its context," he says. "It was just like, 'Yeah, it's no f.cking good.'" Bond insists that any problems at the Linc site were the routine issues of a research and development project; the company

plants on five continents and announced a shale-oil discovery in South Australia with reserves that could potentially rival Saudi Arabia's. But by early 2012 the company was under scrutiny on three fronts: the Queensland Department of Mines and Energy was finally investigating the gas leaks, the EPA was investigating residents' odour complaints and the scientific panel reviewing the UCG industry was combing through Linc's technical data. Curiously, although the gas leak investigation found benzene and carbon monoxide levels at the Linc site were above Safe Work Australia guidelines, the mines department never made the results public. And the report of the scientific panel, when it was published in June 2013, contained no mention of gas leaks, no data about groundwater contamination and no mention of workers' health concerns.

Professor Chris Moran, the University of Queensland geologist who led the review, tells this magazine his team had no authority to demand information from Linc and relied on data which the company supplied on the condition that it not be published. His team criticised the poor regulatory oversight of all three UCG projects and questioned the safety of burning coal seams at such shallow depth. But Moran says he was unaware that Linc had possibly fractured the rock overburden. "If we had seen evidence that Linc had over-pressurised the seam in such a way that it fractured the rock overburden and caused contaminants to travel into the surrounding environment, we would have told the government to shut it down immediately."

The EPA investigation of Linc, meanwhile, suffered its own blow when the new government of Campbell Newman sacked thousands of public servants in late 2012. "They smashed us," says one former EPA investigator. "Three-quarters of the UCG team inside the EPA was laid off."

In October 2013, government investigators finally raided Linc's Chinchilla plant and Brisbane corporate offices to seize files and computer records. A month later, Peter Bond announced he was closing down the Chinchilla facility because of the "tough regulatory environment". "We underestimated just how difficult it is to do business here in Australia," he said.

Shay Dougall recalls that her neighbours around Hopeland reacted with a mixture of hilarity and outrage last year when the state government advised them that digging deeper than two metres might be dangerous to their health. "And the method of telling us – a letter in the mailbox!" she

sports. "No town meeting or sending someone to explain it all. Just: 'Be alert but don't be alarmed.'"

After reluctantly agreeing to a community meeting a year ago, the state government admitted that Linc was the suspect. But residents only learnt the full story two months later when the ABC revealed the government had commissioned a 745-page scientific report, which concluded that hydrogen and carbon monoxide from the Linc site had caused "irreversible" harm to the soil of neighbouring properties. At least six farms are said to have anomalous levels of gas in their soil; the acidification effects might not be known for years.

For George Bender, it was all the explanation he needed for the mysterious illness that had been killing his pigs since 2010. The old farmer didn't live to see that hunch tested, because he committed suicide in October, apparently in anguish over a coal-seam gas company's lucrative offer to buy one of his properties. His daughter Helen has since taken up his fight, although she admits there's no direct evidence connecting Linc to the deaths of their pigs.

Like many farming families around Hopeland, the Benders have been told by the state government that the results of tests on their soil, water and air are all normal. That fact has confused and divided the community, with some landowners fuming that all this talk of ecological catastrophe is unnecessarily threatening their livelihood.

"We've been unfairly painted as polluted country," says Toby Trebilco, a third-generation grazier whose property Ewerleigh is only a few kilometres from the Linc site. Standing in his cattle yard, the 65-year-old recounts how government inspectors have failed to find any contamination of his bores or soil. "The water in this bore comes straight out of the Linc Energy holding," he says, pointing to an open pond surrounded by hundreds of wild ducks. "Have a look at that for wildlife – I tried to count those ducks once and I challenge anyone to have a go because it gets a bit boring after a while. I'd be the first to put my hand up if I had a dead fish. But not only is the bore perfect, the air is perfect; the ground is perfect; the cattle are perfect. D'you want me to keep going? Honestly, what's this all about?"

Some geologists agree with this veteran grazier, notably Dr Chris Cuff, one of the three scientists who reviewed the UCG industry three years ago.

He believes the state government's 320sqkm caution zone was a "total overreaction" and that the gases detected on farmland may well be a natural phenomenon. Linc's lawyers argued the same point during the committal hearing in March, pointing out that the government's own soil expert acknowledged he could not distinguish between natural acids in the soil and those from Linc. Peter Bond puts it less delicately: the government has no evidence, he insists, and the magistrate who committed the company for trial was "a f..king idiot".

The Queensland Government has now declared that UCG is dead and buried in the state, and the government is attempting to extract

"WE'VE BEEN UNFAIRLY PAINTED
AS POLLUTED COUNTRY"

No concerns: Toby Trebilco



\$29 million from the carcass of Linc to pay for the clean-up of the site, as government lawyers consider charging Linc's executives. However things play out, the state's taxpayers seem destined to wear the cost of this adventure in "green" energy. If the farmlands of Hopeland have been permanently contaminated, the compensation costs could be immense. If the government – having failed to regulate Linc – has now overreacted and unnecessarily damaged the value of 80 rural properties, that could be a final and costly irony.

"The only thing we know for sure that Linc have done to us is devalued our land," says Dave Winfield. "We can't sit here and say they have actually caused us any environmental harm yet. But if that stuff is in the ground, where is it going? People can say their bores are OK, and that might be true now. But what about five years? What about 120 years?" ●