



# **Storying With Groundwater: Why We Cry**

A project submitted in fulfilment of the requirements of the degree  
of  
Doctor of Philosophy

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## **Declaration for Candidates Submitting a Project**

I certify that except where due acknowledgement has been made, the work is that of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the project is the result of work which has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid, carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

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Deborah Wardle

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## Peer Reviewed Publications throughout the Candidacy

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Wardle, Deborah 2016, 'Can Groundwater Speak? Fictional Voices of Non-Human Entities', *Fusion Journal*, Charles Sturt University, NSW Australia.

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## Abstract

This PhD inquiry adopts a creative practice methodology to produce a novel-length manuscript ‘Why We Cry’ and an inter-connected dissertation, each of which interrogate the creative writer’s approach toward the problem of how largely unseen matter, in this case groundwater, might find expression in climate fiction. Groundwater’s potency and fragility in the Anthropocene, its scale and invisibility, its links to ecological and anthropogenic calamities, and that it cannot be directly experienced in the manner of flood, storm and tempest, puts it in need of narration. The contribution of this thesis towards knowledge production, through the enmeshment of artistic practice and material eco-critical analysis, illuminates the processes of ‘storying’ the facts of groundwater in narrative long-form fiction. Through a contemporary setting, a realist fictional style and a critical engagement with science, it is proposed that climate fiction writers might employ the novel form to enable the significance of groundwater to be seen and felt in an accessible way by a wide range of readers. By ‘storying with groundwater’ through climate fiction, this PhD draws attention to the social, cultural and political imperative for engagements with the ‘storied matter’ of non-human actors (Iovino and Oppermann 2014), and aims to show how fiction writing might express the necessary urgency for action on climate change.

The PhD proposes three modes of intervention for climate fiction writers and creative writing scholars to address the question: **How might climate fiction give narrative expression to groundwater?** Firstly, by establishing ‘ways of knowing’ groundwater as matter; the thesis spells out how writing groundwater as a hyperobject (Morton 2013) enables its enmeshments with humans to be affirmed and performed through narrative. Secondly, merging the features of the novel form in fiction writing with a non-representational, posthuman viewpoint is argued as a way to address the problem of representing large-scale, unbounded and inter-relational matter, such as groundwater, within a contemporary fictional narrative. The thesis argues for a permeable exchange between the parameters of climate fiction and non-representational

perspectives. Thirdly, the thesis proposes climate fiction's role to invoke affect as a means to avoid the problem of didacticism in narrative. Whether affects, such as threat, fear, passion and hope, might lead to readers' real world agency or political activism remains speculative. This PhD argues that by interweaving these three interventions, climate fiction writers and scholars might vitally elucidate and complicate their performances of the vulnerability and potency of inanimate entities such as groundwater under the effects of global warming.



Creative writing

# **Why We Cry**

November 2018

Deborah Wardle

## One: DRAWDOWN

More water moves underground than across the surface in these parts. She squinted through the windscreen into glaring summer light. Windmills spun, sucking water from pinprick bores, like small stalked eyes peering into the earth. Except you can't see subterranean flows, their rippling darkness. You can't use your senses. Unless you hold out your sticks, like Dad used to, wandering around like a preying mantis, waving antennae, waiting for the call, waiting for the touch. He had the touch. Feeling for the pulse of water deep down, far away, he'd say. Feeling for something that's bigger and more mysterious than you can imagine, feeling for underground water. What a wanker. He was always pulling the wool over, when he wasn't dropping back a few.

Frankie Pankhurst's musings drifted as she drove the straight flat roads of Northern Victoria, on her way to see her father, Lennie, who was holed up in his hut by the Murray River. She wound down the window, let in an oven blast of smells of dry grass and hard-baked soil. She tugged her hair forward across her throat as it whisked around her thickened, buttress-like neck. Pelting to Lennie's river cabin at the nurse's bidding gave her time to think. The nurse had said it wouldn't be long, but she didn't know Lennie's wiry core.

Drought lolled across the country like a sun-dazed cat. It padded north through the Mallee and leapt across the Murray River into inland New South Wales, panting. Its food-bowl tipped on edge, the prowler yowled for the losses. The deadly feline presence crept across flatlands and hills, stealthy, not a stranger, but unwelcome where it crouched, grim and steadfast. The land gasped.

By late afternoon Frankie's car was dipping through potholes on a narrow track, passing close stands of river red gums. She knew that on still summer nights, these giants groaned and dropped their limbs, crashed with a final thump. Widow-

makers some called them, for the lives they crushed. She gripped the steering wheel with nut-knuckled hands, pulled up at the cabin. Lennie wasn't there to greet her. She heard a familiar cough from inside the cabin. Beside the hut, weather-beaten wine casks and empty port flagons overflowed from a forty-four gallon drum. Drips from the leaning water tank pooled and seeped underground through hairline fissures.

She glanced toward the river, slow swirls, quiet flows. Since a child, she had taken time with sentences. Some people waited to hear her, others skipped over her, ignoring her silences, unaware of the internal wrestle and sorting out of thoughts that jammed somewhere deep inside. She could think many things about Lennie at the same time, all different in her beehive of thoughts. She had wanted to talk with her father about moving back to the family house at Cawling where they'd bumped and crashed in the years after her mum, Claire, died. She imagined that a return to her childhood home, empty for years, might settle ghosts, calm uncertainties, give her a fresh start. The call from the nurse pricked open doubt that sloshed enough to make her nauseous.

Inside, her father was bent up in a squeaking recliner with a grey blanket pulled to his chin. In the gloom, the stench of urine and rotting food hit hard. He had a shrunken look, like a brush-tailed possum peering out from his gloomy corner. The last phases of emphysema and the ravages of drink and hard work were taking their final toll. Air crackled dry, her dad bristled poor.

'How you going?' She didn't wait for an answer, tried to turn on the gas under the blackened kettle. Empty cylinder.

He groaned. She stooped to light the firebox, to warm some food, sparked a match to the leaves and kindling. Firelight licked the space from grey to golden. Faded posters of famous rivers lined the walls, faded, torn. The Mekong, Amazon, Danube, the Seine's convoluted turns through Paris. One featured the River Ganges, the goddess Ganga flooding earth, Shiva tangling his hair in long roping strands along her streaming flow. Lennie's posters had mesmerised Frankie as a child, now leapt in the candlelight. She knew Lennie had never travelled beyond Australian shores, but had revered rivers mightier than the narrow threads of water that veined the surface of this ancient continent. Stronger than rivers, was Lennie's love of

aquifers, deep leads and springs. As a diviner he had long been intent on finding groundwater, bringing it to the surface.

In the gathering dark, Lennie's voice trickled with stories about rivers and aquifers. Places of sacred ritual, connections to gods and goddesses. Frankie scooped baked beans onto a piece of toast, snatched a whiskey bottle from Lennie before he emptied the dregs into his own glass. He was mumbling as if to himself, introspective.

'Without the Ganga who are they? Indians without the Ganga.' He paused for breath. 'Without the Murray, who are the Yorta Yorta?' He hacked beside his chair. 'See how the river makes us. But where does it come from? Tell me that.' His voice was husky, passionate.

'The mighty Murray.' Frankie sighed. 'Could have been, once.'

Frankie's dreams that night were of swirling hair, vibrant saris and turbans whisked into cyclonic spirals, her mother disappearing into the spinning spout of water, wind and debris. She woke with a start, grasping at the air, expecting to catch her mother's ankle before she spun away. She listened to creaking walls, Lennie's wheezing breath.

Over a week, father and daughter slugged beakers of whisky, roamed through conversations, sometimes lost their trail, as if there was plenty of time. Lennie's musty, male-sweat smell was sweetened by alcohol, which seemed to seep from his skin. His hands, once blackened and calloused hard from wielding steel, were now sponge-like, shook with each tilt of the mug. When he peed into a bedside bucket, stained shorts hung low off skinny hips, his bony feet enormous on the end of stick-like legs. Deep furrows ploughed across his brow, dark eyes clouded. Lennie slept for hours each day, dozed in sluggish torpor. Waiting for inevitable death, days were punctuated by visits from intrepid nurses who tried steering Lennie through fluctuations of medications, pain relief.

'He's perked up with the company,' the nurses said.

Frankie asked him about her plans to return to Cawling.

'It's all yours, love. Too many memories of your mother. I can't go back there.' Lennie scratched at his armpit. 'I tried.'

'Sure, Dad. Thanks.'

'Your mother'd be glad,' he wheezed, 'about you finishing the science thing. You could keep an eye on the horses too. That'd be good, love.' He glanced at her from red-rimmed eyelids.

The horses, Bob and Carol, had been left on their five-acre block of land on the edge of Cawling. Bob, an arthritic grey gelding, was a legacy of her mother's interest in horses. Lennie had brought in Carol, a younger bay mare, as a paddock companion. He'd arranged the neighbours to throw them hay because, as he said, on poor country, horses need feeding. He said he'd be back to Cawling every now and then to check them, particularly with the drought.

'I'll look after the horses.' Frankie's voice had a stoic edge.

'Good, love.' They sat silently.

Lennie had left Cawling ten years ago, after one of his five-day binges, insisting it was time for him to return to his hut. Frankie left too, for the city, to start a science degree as a bright-eyed eighteen year old. She hadn't returned to Cawling for years, but visited him intermittently at the riverside cabin, stopovers that often ended in fierce arguments. She'd drive away angry, vowing to never see him again. She stayed away while he lost his wiry strength, and his breath changed from hacking coughs to a desperate wheeze. He grumbled he could no longer read, nor hold the sparking welding torch steady on a metal join. His hunched back and tussled hair made him look frail, scavenging bird-like.

Lennie turned his head away, grumbled when Frankie asked him about Kasha Duff. He mumbled of his childhood feuds with Kasha. It had started as a tiff over a game of marbles, where Lennie was sure Kasha had fudged. The boys accumulated small grudges, like an avalanche gathers snow in its descent. As teenagers they resorted to fist fights. A dispute about whether Kasha had stolen the cigarettes he was offering around had ended in a brawl.

'Kasha snotted me, before I had my guard up, flattened me.' Lennie winced at the memory. Frankie knew of the litany of grievances between the men, had grown up with Lennie's disparaging remarks about the Cawling bore driller.

‘Groundwater needs protection,’ Lennie paused for breath. ‘It’s not a business,’ he closed his eyes, ‘Kasha’s a crook. Look beneath the surface.’ Lennie’s words murmured to a finish, he drifted back to sleep and didn’t mention Kasha again.

Not long before he died Lennie woke suddenly, eyes alert, his voice clear.

‘Go to the source, go to the... Just go beneath the surface, love,’ he coughed.

‘What’s that, Dad?’

Lennie was snoring when Frankie gently covered him with a blanket. His familiar musty scent dragged a deep bloom of tears from her aching sternum, through an ocean of memories, to pool and blur her vision.

A rare summer show of thunder and lightning dumped heavy drumbeats on the tin roof.

Frankie woke to silence, could no longer hear his raspy breath. Cold ash spiralled white, gusted up the chimney. She found him in a foetal curl under his grimy sheet. She phoned the nurse, who phoned the doctor, who arrived an hour later in her four-wheel-drive, pronounced him dead, said she’d fill in the paperwork. He’d died on his own in the racket of the storm while Frankie slept on a thin mattress on the floor near the fireplace. Wouldn’t have her hold his hand.

All efficiency, the nurse collected a bowl of water, and with Frankie, they washed his scrawny body, straightened his limbs and wiped his face for the last time. His aged, bony skin was leather-like, stretched. Capillaries no longer mapped his cheeks. The end of his nose showed no hints of its previous purple bloom. Silvery eyebrows, long and wild, his normally furrowed brow calmed. On the nurse’s instruction, Frankie fossicked in his wardrobe, found clean underpants, an almost white shirt and stained pants. They dressed him in his best clothes, brushed his hair, shrouded him with his sheet.

‘Get the funeral people to collect him, I’ll get going. You right here?’ The nurse laid her hand on Frankie’s arm. Frankie nodded.

The nurse packed the borrowed medical equipment into her vehicle. ‘It’ll be used again before the week’s out.’ As she drove away, she waved out the window

as if she was going on holiday. Lennie's body lay, well-dressed, pallid, cold and grey.

Frankie sat beside Lennie, a last vigil, as the riverside chorus raised his spirit, carried it along its flow towards the ocean. Midday heat was thick, carrying blowflies' slow hum. She was glad Lennie was well covered.

Early afternoon, Frankie heard the hearse lurch up the track. Crisp-shirted undertakers complained about getting lost and about the deep rutted pathway as they unceremoniously wrapped Lennie's body in thick orange plastic. Slick, cold. They took him away, back to Cawling, efficient, heartless. Zipped, disappeared, gone.

Staccato calls from fairy wrens hopping around the wooden verandah were silenced by Frankie's long howl, a wail from deep in her chest. Birds hushed their business, scattered. The verandah post slowed her slump onto the rotting floorboards. Frankie cupped a frog in her hand, watching its pale gulping throat. Their palms touched, their skins met. A new cold space. She shivered, the frog jumped away, disappeared into a clump of grass.

Frankie walked to the river's edge, and squatted on the bank. Motionless, but for a slow rocking, she gazed at the passing current. The Murray's muddy water swirled slowly, far down broken banks. Ponderous weights of river red gum giants hung like boxer's arms. Cockatoos screeched. Eyes closed, she listened for river sounds, became a little girl reaching for her dad's blackened hands. He held a piece of forked wire out front, eyes closed, intent. 'Don't knock me when I'm dowsing.' The little girl waited, watching.

Tears left a salty trail down her cheek, across her thickened, webbed neck. A passing bee landed on Frankie's cheek, feather-light, dabbed its proboscis into the salty tear, sipped her minerals. She felt the slight caress from its pollen-laden legs, brushed at her cheek absently, flicked the bee from her finger before it injected its sting.

A flock of cockatoos wheeled and screeched overhead, searching for roosts, gathering to chatter and quarrel. Yellow crests flared, white feathers flashed. Watching the afternoon sun bronze up the forest, she recalled as a small child peeking into the shadows of his workshop at Cawling. He'd scoop his large black

welding mask to the top of his sweaty head, swear his refrain, 'Ned Kelly couldn't of done a finer job.' He was once proud of his labours, all he made with his hands. 'There's life in steel, how it handles heat and cool, changes shape according to its mood. You just have to know it,' he'd say. She never really understood why he sang the praises of steel, but loved the wink he gave as he lit up a cigarette and waited to hear whatever message she was bringing from her mother.

The next day Frankie potted around Lennie's cabin, swept the floor, moved a car battery from the kitchen bench. She dragged her father's bed to the front yard and stacked firewood beneath the frame and mattress. She splashed petrol from a rusty drum across the pile. Flames whooshed high when she threw a match, black smoke coiled as blankets caught and shrivelled in the heat. The bonfire roared, she moved closer as its power faded, nudged the dulled coals with her boot. Loneliness can kill a person, and since Claire died Lennie's loveless life had withered his heart, left an empty shell. She stared at the ashes, lost and liberated, heavy and light.

She threw a bucket of water onto the remnant fire, which steamed and stunk. She packed her rucksack and pulled the door locked behind her.



Frankie took the road back to Cawling, to stay at the old house, and to prepare Lennie's funeral. It wouldn't be a big affair. She guessed the old home would need a clean. It had been vacant for years. She stopped on a hillside overlooking the township. Her gaze traced familiar haunts, remembering. There was Lizard Green's house, still leaned to the left, held put by the water tank on stumps leaning to the right. The shed out the back of Lizard's place used to be for milkers. She and Clem Silver had hidden there for their first smoke, smelling cows and tobacco in a heady mix. Behind that there was Betty Winsome's, her washing all white and flappy on the line. Further on Clem's parents' old place, neat as a pin, trimmed and clipped. Must be new owners now that they're in the nursing home. Skinny Bernard Blandthorne's back yard was still littered with bicycles. The primary school oval was bare. A thin whirly lifted dust and paper scraps in a wispy spiral. The rusted roof of the community hall marked the centre of the town, solid and rambling with



extensions and side-wings. Next door, paint peeled from the roof of the pub, ARLTON only just discernible. In the distance the line of trees along the river hid Kasha Duff's place, except for a glimpse of his machinery shed. She shook her head, feeling like nothing had changed, and that at the same time everything had changed for her to be tipped back here to Cawling.

Before driving on, she phoned her best friend Clementine Silver. Frankie puffed as she spoke, sniffed habitually.

'Umm, Dad died. Couple of days ago.' First time she'd said it, she gulped. 'Up at the cabin.'

Clem was silent, chewing.

'You there?' Frankie checked. They'd been to Cawling primary school together, bucked at the boredom of Broadville high school with equal vehemence, then caught up intermittently in the city. Frankie half envied Clem for finishing her science degree straight from school, a bundle of As and distinctions. She was always her brilliant friend. After a few years gaining experience in labs in Melbourne, Clem had scored a job in a pathology laboratory back in Broadville. Frankie knew she took the job to live closer to her ageing parents, with the hope of being able to keep up visits to highlights in the city.

'Sorry, shit sorry. Were you there? With him?'

'Yep, been there a week. Sort of saw him out. He wouldn't go to hospital.'

'What are you going to do?'

'I got this letter, from the university. It says I can't defer any more, or I won't get credits for the subjects I've already done.' Frankie grasped onto a life raft of an idea.

'That was five years ago you pulled out.' Clem was obviously eating something.

'So.' Frankie paused. 'I'm going to try to finish.'

'Yeh?'

'Before they take away the credits. I only have to do eight subjects. I could do them by distance. Online and stuff.'

'Tell me something I haven't heard before.' Clem slurped on a drink, sounded like a straw gurgling at the bottom of a can. 'No, yes.'

'I just want to finish.'

'Mmm. How?'

'Study online, in the day. Work at night. I thought I'd come home to do it.' Frankie gazed at the small cluster of buildings that called itself a town, familiar and alien at the same time.

'Back to Cawling? Live in Cawling?'

'It'll be a cheap place to live while I study. Closer to you when I need help with assignments.'

'Cawling?' Frankie heard Clem splutter. 'You'll have the past staring at you.'

'I told Dad, he was OK.' Frankie knocked at her sternum as if to dislodge the hot seed gnawing in her chest.

'Least I might see you a bit more. Let me know what I can do.'

'I'll tell you when the funeral comes together. See you, Ugly.'

'Bye, Froggie.'

Frankie smiled at the terms of endearment they had used since they had played as children.



Frankie drove across the Linden River, a trickling waterway lined with steadfast, sprawling eucalypts. The river divided Cawling. A broad levy bank had been built to protect the township from floods that used to follow ferocious deluges perhaps every ten years. Every second year now. Frankie remembered toffee turbulence that skidded whole tree trunks along like corks until they wedged in tangled mounds, hung in stacks, stranded high along the riverbanks.

In a good winter the river flowed gently and was home to water rats, platypus, honeyeaters, and in spring sacred kingfishers and rainbow bee-eaters

returned. In good summers deep waterholes cast reflections of sky and overhanging boughs. Tannin dark pools were silken calm in the moments before children lambasted them with shrieks and bombs, limbs asunder, leaping off ropes. When the river ran people walked the banks, headed there to swim. When the river ran young and old lounged in rippling shallows, floated over rounded river stones to plunge and bob in the next deep pool. Families basked on warm gravelly sands, which stuck to elbows, found its way into sandwiches and the bottoms of teacups. Children pushed their feet below surface gravels until river mud coated their toes. Frankie remembered tossing smooth pebbles into the shallows and watching rippling circles of sunlight dance and crash as they rebounded from the edges. That was when the river ran.

Now the drought had everything, people and animals, the ground and the air they breathed, in its vice-like pinch. Wouldn't let go, edged itself into every aspect of living, like a spotlight had hit their eyes, paralysing. Creeks and water holes dried out, riverbank reeds crumpled and fell over under merciless skies. Starved stock were shot, carcasses pushed into pits with front-end loaders. Farmers who couldn't afford to pay the machinery drivers to bury the mounds of corpses burnt them on enormous bonfires that smouldered, stinking for weeks. Surviving sheep drooped their heads, bunched together in bald paddocks trying to be invisible. Sunken triangle sides hinged ribs and coat-hanger hipbones. Crows hung around, chimeras waiting, beady-eyed waiting. River flats that used to be called flood-prone harboured thistles and slumped bales of hay, caught out in last year's storm, not worth stacking. Frankie knew that frogs sheltered from scorching days under the sodden lumps. Clouds passed across the sky, whisked away hopes of rain.

From the river Frankie drove the familiar stretch through forest re-growth to their old home. Lennie and Claire had purchased their ten acres just beyond the edge of the township as newlyweds in the late 1970s. Property prices were low, rain charts escalated predictably in winter and country jobs could be found. They chose a block on a slight rise, where the house now sat, well beyond reach of a hundred-year flood. Lennie must have known that the gully showed potential for a spring. The closest neighbours were on the road into Cawling, beyond view, out of earshot. The district had been mined for gold in the 1860s, stripped of trees and scoured by goats and sheep. Bush recovery was slow, imperceptible. Their weatherboard came

from a soldier settlement block out west. It had been sawn in half and shifted on the back of a truck to its spot on the rise, to be stitched together again on new stumps. The cut line down the central hallway had always looked to Frankie like a suture scar on skin.

She pulled into the driveway of the stitched together house, walked around the back of the sagging weatherboard. Weeds sprouted below the water tank, dust settled on the petals of a wilting rose near the back gate. Heat-fried blooms drooped. Brown leaves curled, clinging to life. She flinched as a stench of death wafted.

The small paddock adjoining the house yard was grazed bare, littered thickly with horse manure. She gasped, winced. A horse's corpse was tangled in the wire fence near the empty trough. Bob, the old grey gelding was crawling with ants, his tongue lolled between his teeth, grey and swollen. Frankie gagged as flies lifted in a cloud from Bob's bloated body. The ground was scoured where the horse had pawed hopelessly for release. Thirst had drained Bob's large mammalian life, like a thin dribble of sand falls from a crack in an hourglass. Dirt mounded against his fur, spiralling grass seeds were caught on his hooves and in the soft crevice in his abdomen. Bob was decomposing fast. Across in the paddock, Carol, the younger mare sat on her haunches, front knees bent under, as if she was about to topple. She lifted her head, groaned feebly. Crisp red algae lined the bottom of the trough. Frankie tried the tap, turned the stop valve, desperate, nothing came.

Frankie ran to the shed, filled a bucket of water from the water tank and carried it sloshing down her legs to Carol. The mare smelt water, lurched to her feet. Her flanks were tucked, sunken sockets over her eyes. She pushed her muzzle deeply into the bucket. Her lips pinched tightly as she gulped the precious liquid, defying gravity. The horse trembled, her shoulder muscles twitched. She drained the vessel. Still in shock, water dribbled from her lips. Wire marks striped her neck from where she'd stretched across the fence, seeking escape. Frankie refilled the bucket and this time Carol whickered, soft and expectant.

Frankie covered Bob's corpse with an old horse rug from the shed. She pulled off the pump cover, fiddled with switches on the bore-pump, turned the power off and on. The machine buzzed momentarily before shutting down again. A smell of burnt rubber and hot steel flared. Frankie's jaw clenched, she kicked out at

the dry trough. She carried more buckets of water for Carol and threw her the last bale of hay from the shed. Lennie had said he'd arranged a neighbour to check the horses, left plenty of hay. She slipped and fell, spilling the precious water at the fence. Carol lurched away, but still desperate, muzzled at the trickle of muddy soup flowing under the wire. Frankie swore, wiped her cheeks, felt the grit of soil.

Not wanting to give the mare colic, too much water too fast could turn a horse's guts in knots, Frankie carried one last bucket, hefted it through the fence. Carol drained it, fiddled with the empty pail with her lips, watched as Frankie walked across the house paddock to check the dam. It used to be spring-fed, half-ringed with cumbungi reeds, which shed pillows of fluff when the flower stalks shook off pollens from summer seed heads. A spring-fed dam was gold, Lennie would say. Frankie remembered that their dam remained full while neighbouring waterholes evaporated to sluggish muddy sinks. Now it was cracked dry, a mosaic of shrinking clay, a crusted basin growing thistles.

Lennie had sunk a bore, reached into the mysterious underground source. Frankie recalled the day Lennie held out his sticks, wandered around the paddock till he found a spot where the sticks twitched and danced. This was the place. He'd said he needed water to raise poddy calves. Frankie remembered them as pot-bellied, with permanent ochre-coloured ooze pasted under their tails and down their back legs. They rushed at any human big enough to carry their bottles of powdered milk. As a child she'd waddled hand-in-hand with Lennie to watch a batch of new calves wiggle their tails as they slurped milk through rubbery teats, hungry frothy mouths. She'd pushed her arm through the wire to let them suck her thumb, their raspy palate and curled tongue dragging at her skin. There was always water from the bore.

Frankie stomped to her car, to phone the pump man, arrange a backhoe to bury Bob, and abuse the absent neighbour.

She shrieked into her mobile. 'The horse is dead, where are you?' The neighbour's answering machine beeped back at her. When the local excavator driver, Ed, heard her story, he agreed to come as soon as he'd finished the job he was on in Cawling. The pump mechanic arrived first, a specialist in diesel motors,

who liked the deep thumping sounds of reliable machines. Electric powered pumps were more cantankerous, more like mosquitos in his view.

'Fourth one of these I've seen this week,' he said as Frankie led him to the pump house.

'They all on the same warranty?' Frankie quipped, sceptical.

'No, nothing wrong with the pumps, just nothing for them to pump,' he announced, as if pleased it was not his responsibility. 'Looks to be the same here.'

'What do you mean? There's always water.'

'How deep's the bore?'

'I've got no idea. Dad always said the bore was fine.'

'Most are about sixty metres around here. Into a deep lead.'

'Nothing wrong with the pump? Could it have been a power failure?'

'No, it self primes if the power goes off. Nothing down there for it to pump, it switches off automatically.' He wiped his hands on a greasy rag. He glanced towards Bob's corpse. 'Sorry, love. It's happening around the district. And sorry about your dad.' He cleared his throat, because he wasn't used to saying anything personal. Frankie worried the dirt with her shoe, ever amazed at how news travelled.

As the pump man drove off, Ed's backhoe rumbled into the yard.

'Sorry to hear your news, Frankie. What a bastard of a drought.' Ed scratched his crutch through oily, dark-blue shorts with his stumpy, grease-black fingers. Frankie looked skyward. He reported that the ageing neighbours had been gone for months, took the caravan somewhere north was what he'd heard.

'Why'd the bore dry up? Never has before.' Frankie walked towards the paddock, wiping her face with her sleeve. 'Why didn't they tell Lennie they were going, arrange some thing else?' She knew Lennie was impossible to phone at the cabin, no landline, refused to use a mobile.

'No bloody idea. It's happening around the district.'

'That's what the pump guy said.' Frankie shook her head.

Ed paused and saw Frankie's puffed eyes and muddy clothes. 'Kasha Duff's working his drill rig in the district again, pushing back beers at the pub every night this week. He's bragging about a new residential development. Down by the river, back of his place.'

'Kasha, fucking Duff.' Frankie shook her head.

Ed climbed the steel steps to the cab of his machine. He called to Frankie. 'Go inside, love, you don't want to watch me do this. It's not a pretty sight, mate.' His machine belched to life, spurting black smoke, trundled towards its task. Frankie caught Carol, led her to the front of the house so that the horse would not watch the machine pick up Bob like a rag-doll in its teeth, scoop him into the enormous hole. She breathed into the horse's mane. Carol pushed towards a skerrick of grass growing from the base of the mailbox. Within an hour Ed's faded-yellow machine, with its gaping ladle up front and claw at the rear, had backfilled the grave and rolled out of Frankie's yard in a cloud of dust.

As evening crept in, Frankie slumped in a sagging lounge on the verandah. Chirruping crickets drilled the still night air, mesmerising. It had always been Lennie's house in her adult mind, though she recalled that shadows of her mother's presence had haunted corners for years after her death. Frankie had soon realised her mother's aromas couldn't compete with Lennie's metallic smell. A familiar waft of creosote crept across the floorboards, licorice-like, the sump oil lingered. Lennie had sloshed it onto the stumps under the house so many years ago, crawling with a tub of the shiny black tar. 'Keeps the white ants away,' he'd announced. He became defensive when Claire had complained about his oily clothes in the wash basket and about living in an oil refinery, and how the fumes were ruining her meals. She regularly admonished him for chain-smoking and how he didn't seem concerned that his flicked matches and cigarette butts could start an inferno. He'd grumbled his reply, 'You wait and see, this house will be standing in years to come.'

Restless with memories, Frankie wandered through the house, past two small bedrooms, theirs and Frankie's opposite. The hall led to the dimly lit sitting room. The fireplace streaked smoke stains up the walls. Windowsills collected dead flies and light clusters of moth wings. Yellowing curtains framed shadows from the overgrown garden. A dapple-green table and four mismatched chairs filled the

kitchen, the caramel-coloured wood stove was cold. Mould spread across the ceiling where water had leaked under the loosely nailed corrugated-iron roof. She remembered the incessant flap on windy nights.

Frankie opened and closed cupboard doors, lifted and wiped down crockery on her jeans. She spied the old vegetable grater on a shelf. The rhythm of her mother grating carrots for a salad leapt to mind. She glanced into the bathroom, a shallow pink bath skirted by a brown-rimmed shower curtain was where she'd played water games with Clem. The timber framing creaked in the heat, drafts edged under doors.

She watched a moth banging against glass, the open door just beside it. She guided it to freedom and watched it disappear into the dark.

Outside, a dead tree bleached white from years of pelting sunlight caught moonlight, reminded her of war veterans with lost limbs. Boughs had thudded to the ground over time as biting winds cracked their hold.

She immersed herself in the sounds of frogs calling in the night, engrossed in their indecipherable conversations, their repeating deep vibrations and trilling chirrup. The deep plonk of the Pobble Bonk, calling, calling. The single chip of the Striped Marsh frog sounded like a carpenter hitting a hammer onto wood, chip, pause, chip. Repetitive, plonk, chip, plonk, chip. The maniacal cackle of the Perrin's tree frog crescendoed. They were males calling for a mate, calling for their life.

Her sleep was filled with the terror of a recurring dream. Frankie was alone in an unknown place, trying to reach a water tap in the distance; perhaps it was connected to a tank, perhaps to a bore. Heat pulsated, shimmering mirages. A running tap was a crime. Water gushed onto dust, running, gurgling. She knew the tap must be turned off; precious water in a silver stream began a small erosion hole in grey dirt, a miniature trench washed away. Her legs could not move her towards the tap. She tried to shout, 'turn off the tap', but her voice wouldn't carry, tied in a cabled knot in her throat. Her leaden legs would barely walk, kept buckling under her, she tried to crawl, but it was as if the air was sand. She struggled, gasped, no sound. She choked on sand, her legs and arms weakened, flapping ribbons from her torso. She made an enormous effort to scream, 'Turn off the tap!'

Persistent thumping clattered into her dream. She half woke, sweating, tangled in the sheets in her narrow childhood bed, the sound of something guttural



ringing in her ears. The nightmare had left her sweating, parched, leaden. Her mind moved slowly, viscous, to gritty memories of half-awake thrashings. Knocking continued. She lay on her back, the pillow over her eyes, trying to cushion the harsh entrance to light. She coughed to see if she could make a sound. 'Hullo,' she mumbled to the room. Relieved to hear her husky utterance, half-asleep she lumbered from her bed to answer the door. Banging persisted, loud, repetitive.

'Coming, wait up,' she called, brushing her hair over her neck with her hands, knowing only one person who knew about her father, who knew about the horse. Frankie had sent one text. 'Bob is dead. Thirst.' She recognised the tall outline of Clem Silver behind the frosted glass pane, pulled open the rattling doorway and hugged her long, best friend. Tall as ever, with a twitch of blonde ponytail, Clem smiled. Her thin top lip showed her gums above large front teeth. She strode down the hallway, long natural strides, her inherent optimism held in her familiar pencil pine posture. Clem had the ability of old friends to know when to be there. Clem just turned up.

'Bastard of a time.' Clem's elbows hung over Frankie's shoulders in their embrace. It was always as if they'd seen each other yesterday.

'Kettle's on.' Frankie followed Clem to the kitchen.

While Clem made a pot of tea Frankie remembered when she'd had the year on androgen-based hormone injections, which turned her tomboyish. How Clem had helped her through her absences from school, her regular blood tests, after which the doctor would adjust her injection levels of human growth hormone. Her body didn't make its own. When they were twelve years old Frankie had started oestrogen replacement therapy. 'It will initiate secondary sexual characteristics,' Frankie had aped what the doctor had said, mimicking him flicking and testing the syringe with her fingers. They had discussed the options endlessly, Frankie telling Clem what doctors told her about Turner Syndrome, adding her own take from her on-line research. Clem regularly heard the refrain, 'I only wanted to make five foot.' Side effects were a vague possibility that made little sense — muscle mass, more hair. The possibility of heart problems, a weakened aortic valve, was never discussed. What were they to know or care, they were only twelve and Frankie's desire to reach five foot overpowered all other information. Lennie had listened to

his daughter's pleas, and as in most things, let her make the call. Frankie spent a year injecting the hormone daily into her thigh and measuring herself weekly on the frame of the kitchen doorway, which was etched with marks and pencilled dates like centipede legs.

As Clem found mugs and rinsed them, Frankie rubbed her hand over the pencil marks, smudged closely together on the paintwork. She had gradually changed shape, at first indiscernibly, then suddenly ended up with the appearance of a rugby league player, large-thighs, broad shoulders and a bullet-like form to her narrow hips. When the treatment finished Frankie crumpled, she only made four foot ten. Clem and Frankie had measured and re-measured, stretching with the book on her head, ever hopeful of gaining some last minute spurt of growth.

Frankie and Clem sipped their tea, amicably silent.

As a child Frankie's dreams had often verged towards nightmares. Her buttressed neck extended to wings so wide that she could fly. At school she had peered at images of sugar gliders, their skirt of skin extending between their limbs, imagining that her thickset neck would one day reach her arms, her legs and carry her away from school-yard taunts. Shortie, no-neck, Froggie, they yelled in the playground. She'd think of Ned Kelly's armour, ignoring cruel intent. She tried to let jibes bounce off, but barbs stuck, wavered about her heart. Children knew to call her Froggie in the privacy of their games, not in front of teachers. She often read books in the library rather than face the barrage of the yard. Froggie was the name that stuck, the nickname she absorbed. In moments when children's narrow-eyed taunts found their mark, it was as if liquid glued Frankie's throat, plugged her voice. Her already dulled hearing gave scant protection to their taunts. Dogged determination thickened in self-defence. It was Clem who shouted at the mince-eyed bullies to nick off.

'Remember the frog project?' Clem asked.

Frankie's most memorable success was her class five project about frogs. After school, rather than going home, she had visited the local library where she looked up pictures of frogs, learned about their cold-blooded lives, their transformation from tadpoles. With Clem she collected foamy frog spawn from the dam. They examined the small black spots wobbling in clear viscous jelly under a

magnifying glass. The potential in the trembling frogs eggs, their potency for a future life both intrigued and assured her. Frankie had learned about the fragility of skin, learned something of herself. Perhaps to deflect the sting of her nickname, she focused on the beingness of frogs, imagined their private lives, listening to their calls in the night as if they were expressing all the pains and uncertainties that she herself could not express. She learned their characteristics, their quirks, their tenacious songs. Frankie knew that male frogs, bulls, called persistently in the breeding season, ever hopeful for a mate. 'I refuse to sing', she'd say to herself, thinking of the silent females, who crawled towards their chorister, choosing who they considered the chazzan with the most virile tone. She hadn't imagined herself becoming silent.

'Sure.' Frankie gazed out the window, wouldn't be drawn.

Frankie's voice felt shaved raw when she finally spoke with Clem about Lennie's last days, and about burying Bob. They chewed over Frankie's idea to return to Cawling, to complete her science degree.

Clem stood to leave. 'Gotta go. Taking Mum to the toenail clipper. There's always something. Good to have you back in town. Bye, Froggie.'

'See you, Ugly.'

After Clem drove away Frankie gawped at Bob's grave across the paddock, wiped her nose on her sleeve. Her mind trickled through her plans: start on two subjects first, get a job and then if it all worked out, really cram into the study next year to finish the science degree. It was more of a plan than she'd had in years.



In the days before Lennie's funeral, he surfaced large as life in her musings. She loved and hated his interruptions. Her chest ached when thoughts flooded of his distant fathering and regular absences. Lennie would not go away.

Aunty Bub, Lennie's younger sister, arrived, came to stay for a week. They visited Lennie's watering hole where Cawling people told stories about her father, each remembering him under a different light. Some ducked their heads, unable to give condolences for the man who'd been the town drunk. Some of his drinking

buddies slapped limp hands on Frankie's back, awkward, said they were sorry he was gone. She wondered if Cawling would give him a place of repose.

They knew he'd never want to end up in a church, so after a short service in the undertaker's lobby, Frankie and Bub stood by Lennie's open grave, watched the pastor and inquisitive townsfolk disperse. The cemetery fell quiet, drilled only by the pierce of vibrating cicada legs. The mound of raw umber earth beside the hole was pitted with shale and lumps of white quartz. A few limp flowers, the sprig of eucalypt leaves Frankie had tossed in at the end of the drone of prayers, lay on top of the coffin. Bub was as soft as Lennie had been wiry. She put her arm over Frankie's shoulder.

'Times like these, let your soul guide you, love.' Bub stroked Frankie's hair.

'Don't know if I've got one.' Frankie wiped at her eyes. 'Don't know.' Frankie leant into Bub's embrace. 'The end of a life. The end of what?'

'You're alive, love. Don't you forget it.' Bub said.

Frankie kicked a clod into the grave. 'Never knew much since Mum died.' Frankie turned away from Claire's headstone, which was growing lichens in the chiselled-granite lettering.

'She may be dead, but her beating heart is in you, as sure as I'm here telling you. She was my sister-in-law, my best friend, an ally when things were tough.'

'Yer, yer. But she's dead.'

'She had a connection to nature you wouldn't believe.'

'I know. She's in me.' Frankie twisted her hankie into a tight tube and wrapped it around her finger, till the tip went blue. 'Do you reckon she liked frogs?'

'Probably.'

Bub gestured to the gravedigger who was leaning on the back of his ute. He had been an old friend of Lennie's from school days, a boy that Lennie had protected from one of Kasha's schemes. He'd taken up as the local gravedigger, even though since his mid-twenties, he only had one leg from an accident with a bandsaw in the bush, collecting firewood with his dad. People speculated about his left testicle, gossips said it had also been sliced in his fall onto the blade. A glossy

wooden stump was held to his body by a wide leather strap that crossed his barrel-like chest. He was nearly retired, but had agreed to come out for Lennie. Frankie remembered being terrified of the gravedigger as a child, when he'd come for a beer in their kitchen, sweat dripping from the leather strap across his chest. Before Lennie's funeral she'd asked to help him fill in the hole. He'd agreed and now carried two shovels. Frankie bent to the task, dropping the first few shovel loads gingerly, then with gusto till she puffed and sweated. The gravedigger kept a rhythmic swing to the task, never pausing, moving slowly around the pile of dirt.

'Lennie wouldn't want any part of Kasha's machinery pushing anything over him.' Frankie said, puffing.

'Leave up, girlie. You've done your bit,' he replied, as Frankie leant on her shovel, wiping her brow.

'Hell of a lot of dirt.' Frankie started shovelling again, desperate. Bub watched. Soon, physical exertion, the strain of muscles, sweat and thumping heart, moved the lump of sadness in her sternum. Lightness, vacancy. Puffing, she stepped away from the hole, into the new place of being without a parent, without the buffer. She leant on Bub's pillow-like shoulder.

'Why's it hurt so much?' She bit her bottom lip.

'Come on love, leave it, for now. Let's go and have a drink to the old bastard.' Bub took Frankie's hand and they walked away, leaving the sweating, pirate-like gravedigger swinging the shovel low and full, thumping earth into the hole.

The day she buried her father was one of Frankie's hardest, her mouth felt full of salt. The following week passed in a blur. Guilt wrestled with paralysis, paralysis led to shame. Frankie stocked up supplies because Aunty Bub said she was staying a month.

She spent a lot of time hanging around the paddock, watching Carol, the horse do horsey things, swish her tail, gaze at nothing, graze a little, swish her tail again.

*Becoming an orphan sucks*, was all she could write in her journal. She couldn't sleep, dragged herself heavily around the house. She finally collapsed on the couch, listening to Bub snore in the spare room.

It was Bub who organised the change to the headstone on the newly shared gravesite, adding Leonard Pankhurst's names and dates, the words, 'Water for life.' Frankie visited the grave, grief pinged her stomach like air punched from a flock of frightened birds. Gradually Lennie quietened, left her to get on, as without him as she'd ever been, as present as always.

## Two: DARCY'S LAW

Frankie knew that a horse on their own yearns for a herd, gets depressed when separated from their mates. She connected hoses and joiners to reach from the house tank to the trough, wondered how long her tank water would last.

She hadn't expected to feel like she was passing through stone in a slow seeping way, heavy and permeable. She remembered the rawness of life without her mother's love. A return to her childhood home meant she unwound, not in the sense of winding down to a calmed, restful state, but unravelled in the manner of a spool of wire pulled apart, springing, ending in a tangle of crimped and knotted loops. A familiar past seeped from the walls of the old house, wrestled with an unknown future. Within a week she felt dumped in a white haze of depression, through which blurred shapes of daily events emerged and passed away in slow motion. Sleeplessness had wired her nerve circuitry to repeating thoughts that, when sifted in the cold light of day, made her shudder. Days passed in a fug, a blood-pulsing hiss shut her in an empty box with painful memories.

She walked in the surrounding forest, returned to the house and sat, gazing at the mound in the paddock, which came to represent Lennie's death, her mother's long-ago passing, mixed with Bob's rotting body and desiccating hide turning to slush. Had she brushed her hair in days? Her hairbrush seemed to move around the house with its own volition, her black-brown strands matted in its bristles. She found it in the bathroom, then on a chair in the kitchen, on the verandah rail, with no recollection of using it. In the mirror, her hair looked like seaweed strewn haphazardly on a shoreline. Her skin felt bleached and mottled. She found her hairbrush on a bench in the garden and pulled it through recalcitrant strands, finally ready to strike order into the disarray of knots. Brushing her hair, being back in the house, brought back old pangs, reminded her of her mother.

Claire Pankhurst died when Frankie was seven, old enough to feel the engulfing loss of the woman who had been her whole world. Claire had worked as a nurse at the Broadville health clinic, knew everyone in the town and where they wore their warts and sore spots. Her hands were as pink as Lennie's were stained and hardened. They had loved each other and their differences and each in their own way passed on that kernel of love to Frankie.

Claire crashed her car into a tree driving home into the sun, maybe swerving to miss a roo, Frankie heard adults speculate. Frankie had looked out for a scarred tree on the roads around town for months after her mother's funeral, wondering where it happened. 'Where did Mum actually die?' she asked Lennie, but he ignored her in his blinding grief. The killer tree burned a hole in Frankie's imaginings, and she pleaded with her father to lay her eyes on the place. When her dad finally drove her there about nine months later, the slurring skid-mark scar of wheel tracks that finished at the base of the enormous eucalyptus had been erased by rain and passing traffic. There was only eerie roadside silence. Gravel crunched underfoot like popcorn going off in Frankie's ears. She looked at the ragged rip into tree flesh, which still bled amber juices. The slowly hardening sap was like the steady drip of pain in her chest. It might crust over, but inside the soft honey fluid would not dry. Lennie stood beside her, hand on her shoulders. She jumped when he gulped out a sob. She smelt his fear, the odour of metal and the grease on his shorts. She couldn't move.

'All right. Come on, lets go feed the poddies.' Lennie wiped snot with the back of his hand.

With his arm over her shoulder, Frankie returned stiff-legged to the battered ute, crawled in and hugged the door handle. They never drove that road again.



The oak tree in the front yard of the sutured house was coated in dust. It dropped its roughened, craggy bark, which was covered in grey-white lichen reminiscent of the beards of old men. Acorns from last summer split in half on the ground, their red kernels withering. Frankie mused over an acorn, carrying all the genetic material



to be a tree. She pocketed the bundled potentiality, carried its potency through the fabric of her jeans.

Unpacking her belongings, she had rummaged in her old wardrobe, found a bundle of childhood diaries, must have stashed them out of Lennie's reach. She'd rarely reread these reflections, words trying to untangle atrophied pains. She mostly wrote when she had worries, something to sort through, and in the process of letting phrases flow from mysterious sub-consciousness she found surprising solutions and relief. She took a moment to scan a hand written entry, from when she was maybe fifteen years old. She read:

*Turner S. Had I proper ovaries, they would hold my potential in every egg. I make no ovum, no eggs, no seeds, will never produce. 'No genetic inheritance, I will not pass on genes. I was born as I am, imperfect chromosomes, imperfect face. I am short, my arms are short. Hormones determine my chemistry, my fate. I will pass like the breath of moonlight. I hold no potential for new life. My life remains in me alone, in these existing cells. My one life is what I have with no further chance to pass on anything. No tree will grow from me, no limbs would kick at my womb. I need pills to tell my uterus to bleed.*

She slammed the journal shut. 'Self absorbed clap-trap,' she said to herself. She had heard women refer to menstruation as the curse, wishing the blood flow and cramps gone. For Frankie taking the pill had meant potential, the hope that the bleeding hormones would make her grow just a little more.



She started to look for work around Cawling, Broadville and beyond. She applied for several jobs, was offered several interviews in shops, which would fall flat the moment prospective employers saw her. 'We like your application, you show good strengths, character,' they'd say on the phone. When she faced interviewers she saw a familiar look in their eyes, a blink, a glance flicked away in aversion, then back to stare at her with unnatural fixity, as if to say, I can look at you. The smile would be too rigid. They'd look away. Some brave ones shook her hand in greeting, warily,

as if her palm might be like a frog's hand, long, limp and sticky. She opened their replies, hopeful at first, then with frustration and disinterest as rejections mounted.

She eventually applied for summer work at the smallgoods factory in Broadville, known locally as 'the Pig'. She hoped a few evening shifts per week would be enough. Two days later she took the phone call to start. 'Come in early to collect your boots and uniform from HR. Turn up to the canteen and the room coordinator will collect you all. You're in Bulk Hams with Kingsley Hull. Evening shift. Four 'til midnight. Don't be late.'

Kingsley Hull, The Hulk, as he was known around the factory, managed the bacon and bulk hams sections of the enormous smallgoods business as if his life depended on gaining continuously higher outputs. He was fat, puffy and aggressive in his dealings with staff, caught in the vice of a hungry management team on one side and a mostly casual crew who couldn't care less about factory profits on the other. He had wide ruddy cheeks, thick eyebrows bunched over pin-pricked eyes, and black hairs poked from his nostrils. He tried to remember names, but so many people came and went each season, he bluffed his instructions by pointing at anyone talking on the line, not working fast enough.

'What's the product tonight, Kingo?' That's what they called the Hulk to his face.

'Uncaging first. Dunno after that, whatever comes out of the chillers.' There was a groan. Frankie quickly learned that the spring-loaded metal moulds that shaped the ham-glue into squares could bite. After it had been cooked hard, workers removed the hinged cages, which shredded plastic gloves, pinched her fingers as the springs snapped.

In noisy and freezing conditions on the factory floor, Frankie soon learned the dulling effects of habituation to a lifeless space. The product, the raw material, the pig, was invisible. She called the factory 'the Invisible Pig'.

'It's a matter of demand,' she heard the Hulk say, clearly parroting something someone higher up the chain had parroted to him. 'If they demand pork, we provide it.'

'They' being those who eat it, Frankie thought. She mumbled to herself. ' "They" are not invisible.'

'What?' The Hulk turned towards Frankie.

'Nothing.' She looked at her white gumboots. Pigs have a similar sized brain as humans, are at least as intelligent as dogs, with an ability to express emotion, feelings of terror and frustration at captivity, she wanted to say. They wait in cages, thousands of cages, wait to be killed for the sake of the dollar, for the sake of an idea about the taste of bacon, ham, salami. Frankie's thoughts tumbled in the cold.

'Whatever. Get back to the line.' The Hulk pointed towards the new trolley loaded with hams, waiting to be processed.

Fuelled by the stench, the repetition, the mindless nature of the work, Frankie started to consider what she could do about the failed bore, the bore that killed Bob. 'All streams start as a trickle, love.' She heard Lennie's voice in her mind, above the factory din. Something mercurial was taking shape, inchoate ideas emerged. There must be a reason for local bores to be drying up. Is it just the drought? Where's that water going?

A tall Sudanese man wheeled a new batch of product out of the chiller. Frankie sighed and resumed bagging hams with the team of Taiwanese holiday visa workers, who chatted happily, incomprehensibly, worked like lightning.



'Clem, it's me, Frankie. I want to find out why Bob died. It's not about my neighbours pissing off, but why the bore failed. I reckon Kasha Duff's got something to do with it.' Frankie leant on her elbow in her dishevelled bed, her mobile phone pinned on her shoulder. Her lap top computer was opened amid a pile of books and papers. Frankie's decision to return to Cawling, where she hoped familiarity would outweigh bad memories, was as much about living closer to Clem, as a place where she could finish her studies.

'And I'm sick of studying,' she added. With the house half set-up she could study on her bed before each evening shift, balancing her computer on her lap, completing progress quizzes and reading lists amid a pile of pillows and a row of used teacups.

'Yer, how?' Frankie heard Clem's standard languid reply to her early morning phone calls, to her announcements made from overnight cogitations.

'Get off. Will you help me?'

'Why do you bother asking? I'll come out to Siggy's cafe, meet you at ten.'

Frankie tapped her phone off, threw on clothes.

It was going to be a scorcher.

Frankie and Clem sat outside the cafe, watching vehicles cross the one main intersection in Cawling. Tipper trucks from the quarry up the road, farmer's utes and semi-trailers carrying loads of hay rumbled past. Clem relished her morning coffee like it might be her last. Frankie sipped lemonade. She appreciated Clem's offer to meet in Cawling, but jiggled her heel, kept her head low. She shrank from being on view, after the funeral, shied away from the feeling that everything was watching her, the trees, the sagging walls, squinting locals, that drop-eared cat, all staring at the weird daughter of the local drunk.

'I asked my Biology lecturer what's the difference between human and non-human animals?' Frankie told Clem about the email she'd shot off.

'That's a big question. How is this leading to the bore water question?'

'You know what she said? "Not in this course. Do philosophy for that discussion. In science we learn the anatomy, physiology, not the beingness of creatures." And I quote her.' Frankie watched the bubbles in her glass, shielded her face from the heat of the day. 'Is science about what they are, I mean we, or what they feel?'

'In my field those little micro-critters respond to light, the chemistry of their environment. Couldn't say how they're feeling.' Clem regularly peered at super-magnified images of bacteria and viruses that looked like outer space monsters.

'Tiny mitochondria live in underground water too, Clem. Life forms way down in the aquifers. Stygofauna, live without light.' Frankie's voice lifted, she looked at Clem expectantly. Going beyond the course notes Frankie had searched out articles that proclaimed the sentience of creatures, their relationships and rights,

even the possibility of legal status of rivers and other non-human entities. She admitted she hadn't found much about the feelings of mitochondria. 'The research hasn't been done yet.'

'How was work last night?' Clem asked.

'Same, same. I'm good enough to lug hams. Being a casual sucks. I think of the money.' Frankie took the evening shifts offered, was moved between different production rooms.

'How is it on your hearing?' Clem mumbled, not knowing what else she could say.

'In there hearing doesn't matter. It's all noise. Machinery and conveyor belts, the refrigeration system. I wear earmuffs anyway.' Frankie swilled her lemonade and continued, 'There's always someone with more experience, taller or something.'

Clem shrugged.

'No one's going to say that I'm too short or too deaf, or too clumsy. That I look like a troll. They can't. That's discriminatory and they're not allowed to. So they won't say anything. Just give me shit jobs.' She slumped with her chin in her hands.

'So how are we going to get to the bottom of Bob's death?' Clem brought the conversation back.

'I've started Googling groundwater. It's enormous. It's probably more than just Bob. There are potato growers south of here, totally reliant on bores. Most farms are. Even the factory uses it.'

'I did some geology in second year, that's a century ago.'

'The idea of water travelling beneath the surface, gets me every time.' Frankie had looked at pictures of cross-sections of landscapes, where porous rock was coloured blue, as if it were an underground pool, layered above brown cross-hatched non-porous rock. 'It's all rock under there. How does the water move?'

'I remember some stuff about the water cycle. Water in the ground will always move towards the lowest point, usually towards the ocean. Gravity I guess. Then it gets taken up into clouds again, and ends up as rain or snow on the land.'

Over and over.' Clem dredged up facts from long stored places. 'I remember the terms, um, porosity, or was it permeability. That determines how the water will move through the rock, through the cracks and stuff. You have to start with Darcy's Law.'

'Who's Darcy?'

'Some French guy. Made a formula about how water moves through sand and stuff.'

'Impressive. Do you know any people into groundwater, hydrogeologists I think they're called?' Frankie asked.

'Matter of fact I had a tutor at uni who did her honours, then a PhD in that. Studied pollution in underground water systems.' She closed her eyes to remember a name, a context, a link. 'I think she's specialising in clean-up assessments, when businesses leave toxic chemicals that leach down into the watertable. She's with a government branch of something. She was nice, must have toughened up to keep that job.'

'Reckon you could contact her?'

'You can find anyone these days. I'll do a search. Helen Mack.' Clem pounced on the name as it came to her. 'Can't be too many hydrogeologists with that name.'

'Thanks. Sometimes it eats at my insides, since Bob died. I keep thinking about Dad and his thing about protecting groundwater. I'll keep learning the basics. There's an amazing amount online.' Frankie sensed a growing potential for an avalanche. In the way a storm may follow an eerie calm, she felt a tsunami was coming. University assignment deadlines were constantly upon her, work at the factory exhausting. Bob's murder haunted her thoughts, as that was how she was starting to think of Kasha's responsibility for Bob's death. Responsibility, the ability to make a response can lead to something great, she mused. Potential was germinating, starting to percolate. She had no idea of the consequences of the unease inside her; she could merely feel thunderclouds rising.

As they sipped their drinks a passing truck slowed. A long overhanging auger over the front cab, it looked like a red unicorn, noisy and on wheels, belching fumes.

'That's Kasha's rig.' Frankie bridled, the sight of her father's nemesis brought a rise of gall to her voice. 'I reckon he's behind this.'

'How are you going to find out? Doesn't Bernard Blanthorne still work for Kasha? Remember him, he asked you to the end of school ball. You said no.' Clem leaned back on her chair to peer up the street.

'He was hyperactive. Always slimy. Too keen.' She deflected Clem's stare by offering to buy another drink. 'Let's move inside, it's too hot out here, and too noisy.' As they moved towards the doorway Frankie noticed a dob of frog poo on the arm of a chair. Black, about two centimetres long, dry. The frog must have sat there in the night catching insects. A frog takes a seat, head of the table, catches a feast. Did it call, she wondered.

Frankie remembered Bernard from school, had seen him around Cawling recently. She flushed, recollecting her refusal to attend the school dance, and the way his eyes thinned when he looked at her.

Inside Siggy's the hiss, clunks and grinding of the espresso machine, the hum of drink refrigerators, the clack of a wobbling fan grated. Frankie turned her head, bird-like to look for somewhere quiet. Partial deafness, as a result of regular childhood ear infections, meant that sounds ground through her skull, blunted and dull. She bore cafe clatter stoically. Her hearing loss had slipped past her father, whose larger preoccupation with survival through his ingrained sadness meant he ignored her cocked-head calls of 'what'. For Frankie, the vibrations of air turbulence, the disturbance of noise through her damaged eardrums was both a source of pain and irritation, as well as unexpected pleasure. She sought silence over incessant noise. As Frankie and Clem settled in a quiet corner, they were interrupted by the presence of a tall figure approaching their table.

'Bernard Blanthorne!' Clem stood up and offered her hand. 'We were just talking about you.'

Bernard hesitated, glanced at Frankie and shook Clem's hand with exaggerated up and down gestures. Momentarily uncertain, his expression flipped, like a clown's malleable face shifting from sad to happy and back again.

'Haven't seen you two together for a long time. Still as thick as thieves.' Bernard was six foot two when he was seventeen, crept closer to six-four in his twenties. His mousy hair was thinning early, his long narrow face had deep furrows between his brows, which lifted and fell like elevators according to his observations and moods. Now his eyebrows sat high, his smile enormous, his tall frame moving from foot to foot. He rubbed his hands, extended one towards Frankie. She tightened her lips and reached her arm towards him. He bent and bobbed, shaking her hand vigorously. His arms were muscly, his shoulders tanned around his navy blue singlet, his work boots and the knees of his work pants were covered in creamy-white clay.

'I come in here to buy my lunch, great pies. Even on a hot day. The sauce is good. Home made. Coke with a pie, just right.' His propensity to talk nervously had not changed. Frankie and Clem observed his chatter.

'You still working for Kasha?' Frankie wanted to get straight to the point.

'Sure. Been on and off with him for years. He's doing a lot around here at present. No more of the big miles. Used to travel up to Queensland to put down into the Great Artesian Basin when things were quiet around here. I hated staying in those greasy pubs, salty bore water to drink, crusted-up shower heads.' He suddenly realised he'd said too much and tried to close his lips.

'What's the project around Cawling, Bernie? Thought there were already more than enough stock and domestic bores in the district to go around.' Clem's voice mixed honey and sharp spice in the same sentence, levering information.

'Why you snooping around Kasha? You got it in for him?' Bernard asked.

'He's been a crook for years, his wrecking our water supply. He's greedy. Anything else?'

'Leave him alone, he's alright.' Bernard bobbed his head.

'He's not alright, and if you think so you're an idiot.' Frankie snapped. 'You're turning a blind eye, like most other people around here.'



Bernard looked at the clock on the wall. 'Looks like I'd better get going. Time for work anyhow. Kasha's got a lot on. He's got plans, big plans. It's all gone through Council, he says. He reckons Cawling is ready to take off. He's getting the water ready for the growth.' Puppet-like, his body moved up and down, his hands flapped.

'What growth? Cawling hasn't grown since Noah left town.' Frankie's face didn't crack, poker-faced behind her reference to the floods that came irregularly now with increasing ferocity.

'Gotta go. Kasha's waiting for his pie. We're drilling out on Quencher's Road, gonna be his new estate. Gotta fly.' He flashed a smile at Frankie, ducked to the counter, where he collected his order in brown paper bags.

'Sauce is in there,' Maddy Meadows snapped from behind the counter, before he asked. She wrote down the order on Kasha's tab and nodded to Bernard like she couldn't wait for him to leave and she could resume filing her nails, fixing her hair. He collected two cans of coke from the fridge and pushed out through the plastic fly strips at the front door.

'There's something fishy. Anything to do with Kasha, big plans, gotta be fishy.' Frankie tapped at the sugar bowl with a spoon. 'I'm sure he's behind the watertable dropping. Bob dying.'

Clem leant back to watch Bernard fold into his ute and drive away.

'Yep, so what's he doing drilling near the river? Reckon we ought to find out?' Clem swung forward and prodded Frankie's arm.

'Sure. Gotta do something.' Frankie pulled her hair forward to cover her neck.

### Three: THE WATER TABLE

Kasha's stubble was white, patchy, harder to shave around the wrinkles. He puckered his mouth, pulled his top lip down over brown-stained teeth. Deep lines down the side of his face looked almost gouged, as if he might have dug a trench line with one of his excavators. His bi-colour pink-brown brow exposed his permanent hat line. Peering into the mirror he pondered how he'd failed early in attracting a wife.

'Not that bad,' he muttered and jammed his oil-stained hat low over protruding ears. He'd not resigned himself to bachelorhood. 'Never give up,' he mimicked what he knew they said behind his back down at the pub. Always having a go at him. They don't know how loneliness could shrivel a bloke, all them in their cosy kitchens. I haven't met a sheila to match me, that's all, he mused. Except Joan.

He looked around his bathroom, cracked tiles and mould in the grout. Paint peeling from the ceiling. He was keen to get down to his shed before Joan arrived for her weekly attempt to keep some order in his home, to sweep the floors and scratch a brush around the toilet bowl.

Joan Hardy, his house cleaner and occasional bed companion could spend a day silently working around his house, stopping occasionally to stare at him. He had to admit she had wonderfully smooth skin for a woman in her late sixties, an inheritance from Scotland she'd told him. She had the dour, glass-half-empty bearing of her ancestors and a capacity to stand up to his fights. He had to respect the way she withstood his drinking bouts. 'Feisty too,' he muttered again, thinking of Joan's tendency for self-preservation. As he headed through the kitchen towards the back door he glanced at the whisky bottle on the bench. He thought about taking a swig of hair-of-the-dog, imagining how it softened sharp edges, eased him into a quiet passivity, at first. He was a harmless drunk, not prone to violence beyond

disparaging quips and condescending jibes, his hallmark, and pissing in inappropriate places. Over the years he'd killed off garden plants, leaving his yard sparse, spotted with withered stalks. He left the bottle on the bench and sauntered into the bright morning light. His dog, Spud, followed close. His cat, Slinky, meandered behind.

Kasha first met Joan in the cleaning aisle at the general store, both looking for a new broom, he'd later quipped. He wasn't against chatting up a likely looking lady, and soon she was doing more than sweeping the floors of his bachelor's domain. She would listen to his long-winded orations about what was wrong with the country, the world. It griped him at first that before he climbed into bed beside Joan, he had to make sure he was washed. If she could smell oil or grease she could make his side of his double bed as cold as the seat of his backhoe on a frosty morning. He had to be stone cold sober and clean to attempt any skerrick of touch, or she'd order him out for an uncomfortable night on his own couch.

Years ago he'd hinted to Joan that if she stayed loyal to him he might remember her in his will. He was comfortable with her. Wouldn't be any offspring. As a young man he'd swallowed the suspicion that he'd never have kids, not medically confirmed, but from the inkling that his infertility came from a late bout of mumps, which had cooked out any chance of sperm production from his testicles. An early girlfriend put the pieces of circumstances together, and spat it at Kasha when she stormed out. 'You can screw me all you like, but you're firing blanks. I'm not hangin' around for nothing.' He used to crow about his girlfriends, relieved inside that his emptiness didn't affect his virility.

For years Kasha occasionally paid for encounters with city prostitutes, which left him feeling strangely hungry for something he couldn't identify. His skinny body was taut, his sex short and vigorous. He peeled notes from a fat wallet, because much of his work was paid for in cash and he preferred to keep it away from the banks. 'You'll never get it back if they crash,' he'd say to Joan. She accepted his crisp folded notes for the cleaning. Their sex had been by mutual agreement, a comfort to both of them as they idled through their fifties and sixties. To his astonishment and chagrin Joan had called a halt to the sex about five years ago. She just didn't want it any more. He pined for warmth, but she smacked his hand away if he sidled up to her with any intentions.

He stretched back on his chair in what he called the office, a table in a corner of his shed. Kasha's hands ached. Calloused, yellow, wiry, his knuckles bulged with arthritis. He massaged the thumb joint that hurt the most. He dislodged his hat, ran his hands over his hair feeling it thin and lank.

He was thinking about putting his water-drilling rig into the annual Broadville agricultural show parade, and imagined it purring and belching diesel fumes. He'd watched clusters of school kids, sporting clubs, the garden club members all decked out on the backs of floats each year for most of his life. He could slip in front of the Country Fire Authority trucks, which always took the rear of the parade and blasted their sirens to make the crowds leap.

'It's advertising, I'll show them. Let them try to live without water,' he mumbled to himself. He'd give the rig a hose down, polish her hubcaps. His bore drilling rig, was at first a sideline to the earth excavation business his father had started. Kasha was proud that he was renowned for his accuracy on big machinery, could direct the claws of his backhoe as delicately as a cocky can select and move a nut to its mouth. He guided his machines to pick up weighty rocks and scoops of earth with precision, dropped the load exactly where it was meant to fall.

Over the last ten years his most lucrative work had become drilling for groundwater anywhere around Victoria and into New South Wales and Queensland, setting up bores for the increasing numbers of small landholders, lifestyle farmers, or hobby farmers some called them. Kasha called them money fountains. They wanted an assured water source for vegetables, pet goats or horses, occasionally a milker, for those who tried even harder to be self sufficient for a while. Most reverted to the supermarket, but were glad to have the bore as a backstop in dry times. Some wanted to make sure they had a water source for fire fighting in the event of bushfires or grass fires around their property. Everyone knew that the risks of fire were increasing. Kasha supplied the conduit to groundwater, the link to the underworld, he sometimes chuckled.

He heard Joan pull up and bang the fly-wire door. He was starting to think about a quiet retirement. The prospect that he might subdivide the back block, sell his plant and business and spend days in a deck chair on a beach, propped beside his fishing line, popped into his imagination. He climbed into the cab of his boring

rig, held the ignition switch to warm the glow plugs, turned the motor over with a roar and belch of black. He'd just do a bit more on the bore down in his back paddock. The engine idled, Kasha fiddled with his dowsing wires, remembered his feuds with Lennie Pankhurst, couldn't believe that his froggie-looking daughter was back in town. He'd noticed his young offside, Bernard Blandthorn, go all mushie over her for years. Didn't know what he saw in the weird looking girl.



Kasha and Joan sat at the kitchen table, both leaning over a morning coffee, breathing in the steam. Joan wore an apron over her tracksuit pants and tee-shirt, her thin grey hair tied in a tight scarf that leaked a curl at her temple. He prepared a slice of white toast with a smear of vegemite, the same breakfast every day, comforting automatic gestures, familiarity of routine. He threw a crust to the dog, Spud, and to Slinky, the cat. Spud, a bull-terrier cross with scars across her white and pink snout, accompanied Kasha to work, chained to the back of the ute. The dog gulped her crust and walked towards the cat, who gave her a pat on the nose with a soft paw. Kasha liked the ritual.

'All I want to do is make some money to retire on.' Kasha declared.

'If you didn't drink and smoke it all away, you'd be better off.' Joan gave the usual refrain. When Kasha was worked up his liver-coloured skin matched the sublunary hues of a volcanic mouth, like he came from the earth. Joan watched his face change colours. She got on with sweeping the floors, she still needed the cash.

Kasha's block sloped down to the river on the southern edge of Cawling. When the Linden River burst its banks, muddy water would climb the levy bank and occasionally gush through Kasha's machinery shed, leaving a horizontal line of dried silt glued to the corrugated iron. Grass stayed for months in thick strands on the top of barbed wire fences, pushed sideways, bristly like schoolboys' hair on a blustery day. Sometimes water would lick at his back step. He'd scoff and push a little more dirt onto the levy bank with his backhoe. The 2010 flood had made it into his kitchen, when water backed up behind broken tree trunks on a river bend three kilometres away. The dammed water, carrying creamy sludge, spread higher

than ever before, oozing onto Joan's freshly mopped lino, not quite making it into the cupboards.

Kasha parked his retired machinery in his back paddock and also stored piles of over-burden and rubbishy dirt that he sometimes sold as clean-fill. House-sized mounds of blackberry bushes harboured rabbits. This was the paddock where Kasha had the inspiration to develop a small housing estate. He could push a road up the middle of the block with his grader, end it in a cul-de-sac. He did a rough count and reckoned twenty-five houses would fit around the keyhole. It seemed to him in reverie that this project was surely the key to his retirement, the trove where he would make enough money to give up driving heavy machinery, boring for groundwater and spend more time fishing. He went so far as to have a surveyor, Clayton White, draw up a sketch plan marking out the rows of the matchbox sized blocks. Kasha turned up at Clayton's office to discuss the subdivision.

'If I supply water to each block, that'll increase the value. Water's not too deep, this close to the river.' Kasha was enthusiastic about the idea. His voice was shrill, though he could gulp deep undertones from his enormous Adam's apple when he wanted to sound serious.

The surveyor, a skinny, imp-like man with a straw-like flop of hair, said it wouldn't be necessary for the planning permit, but that council might let it through. He straightened a pile of papers on his desk.

'What's it got to do with council?' Kasha knew he had the tendency of a cockerel to flare his feathers, to lower his head and become antagonistic to ideas that breached his thoughts of territory. He was used to having his way and would flush deep red around the neck and ears at the notion of impediments.

Clayton backed off. 'Tell me if you want me to prepare the application to council for the subdivision. They have rules about where they want houses to go around the district. The water authorities will determine if you can sink a bore.'

'I'll let you know.' Kasha spat onto the ground, headed for his car. He scratched his head, a tuft of yellow-grey strands came away, lodged in his fingernails.



On sunset, Kasha liked to wander down on his back block with his rifle to shoot a bunny or two. His neighbours called it ‘Rabbit high-rise’. One shot would ring through the undergrowth, silencing the birds, making the neighbour look up from whatever she was doing. Not infrequently he would return with two limp pelts dangling from one hand, the rifle in the other. One day at the clothesline Joan asked how he came to be carrying two rabbits when she’d definitely heard only one shot.

‘Lined ‘em up,’ he’d explained. ‘Saves a bullet.’ Kasha laughed infrequently, but when he found something amusing, his cackle started sharp and breathy, leading to a high-pitched bray. His Adam’s apple bobbed in his scarlet throat, seeming to have a life of its own, somehow a reflection of his unsettled interior. It was like a float on a fishing line, where a fish was nibbling, making it dip and bounce. Joan couldn’t help a twitch of smile at his frugality.



Kasha peered at his computer screen. Joan and Bernard leaned in behind him towards the machine he tried to master. Spud and Slinky were curled under the table. Coffee went down the wrong way, Kasha spluttered, spraying beads of drink and spit onto the monitor that glistened in tiny rainbow balls. He leant to wipe them off with his work-roughened hand.

‘Not with your hands,’ Bernard cried. Kasha searched for a hankie. ‘You’ll scratch the electricity. It’s in the screen,’ Bernard explained to them.

Kasha dabbed with his sleeve, leaned back gazing at the smeared lines on the glowing interface, wondering at all that streamed into that small box, linking the endless electronic outside world and his dun-coloured lounge room. He wondered whether electricity could be scratched. Wires and wifis, modems and monitors were baffling domains.

‘You have to talk with them,’ Joan said.

‘They make the rules.’ Bernard added. He helped Kasha navigate to the planning application section.

‘I can’t type all that.’ Kasha was for a moment lost.

‘Without a printer, mate, you can’t do much.’

‘You have to talk with them,’ Joan repeated.

Kasha arranged a meeting with the local planning department. He dressed in his best short-sleeved shirt, white with a crisp collar that quickly chafed his neck. He cleaned his work-boots, refused to wear his only other shoes, black lace-ups that were only meant for funerals or weddings.

The meeting with Melody Blayne started slowly.

‘You new around here?’ Kasha surveyed her apple-seed hair, tied tightly into a ponytail. A bobbed fringe edged over her dark-rimmed glasses.

‘I’ve worked for the Broadville Council offices for three months.’

They eyed each other over the counter. Kasha explained where his land was and his intent to subdivide. ‘Should get twenty-five blocks out of it,’ he crowed.

‘The planning scheme sets limits as to how close to the river that houses can be built,’ Melody started to explain in a monotone voice. ‘There are strict regulations on treatment of waste water from houses within one kilometre from a waterway.’

The words ‘limits’ and ‘regulations’ made Kasha’s Adam’s apple contract and he felt his ears redden. He remembered Joan’s advice. ‘Don’t answer them back, just find out the rules.’ Kasha swallowed.

‘So what do I have to do?’ His closed his eyes, focused on staying calm.

The young woman tapped at the keyboard on the counter. ‘I’ll just print out the application form, and the guidelines. Have a look at them and see if you think you can comply.’

Kasha gulped at the word ‘comply’, watched his hands strum the counter. The young woman handed over a thick wad of warm printed paper. Kasha’s goat



eyes widened at a glimpse of her cleavage, which pushed at her button-up shirt. He lifted his eyebrows, felt his hat move upwards as his whole scalp raised.

‘I know it’s hard if you haven’t got the Internet, Mr Duff.’ Melody started to explain the forms in a syrupy tone, flicking through their headings, giving dates and orders. Kasha’s eyes glazed.

‘I have got the internet. Thanks very much,’ he eventually interrupted. He carried the bundle of papers out of the office, threw them on the front seat of his ute. He gripped the steering wheel, white-knuckled, gritted his back teeth till the sound reminded him of dragging his backhoe over hard rock. He snapped the car into gear, headed home.

That night, leaning on the kitchen table, he considered his options. Spud and Slinky sat on either side.

‘Think we’ll have to spend money to make money. To complete this subdivision.’ He bowed his head in defeat. In the solitude of his house he would include his dog and the cat in his considerations. Spud wagged her thin tail, Slinky licked her front leg.

‘When’s it been any different?’ His announcements that he was buying a new piece of machinery, extending his borrowings even further, had met with the same response. He had accepted back-breaking terms from the bank on loans for years, as long as it meant he could keep digging holes and scraping earth, drilling to kingdom come for that elusive squirt of water from deep below. Spud gave a curt nod, possibly dozing. Slinky swished her tail.

‘Right then, I’ll pay that surveyor, Clayton whatever his name. He can do all the reports and stuff that council is asking for.’ The list was long and mostly incomprehensible, but Kasha knew enough to know that putting on water supply, electricity and sewerage didn’t come cheaply. Meeting new fire prevention and flood mitigation regulations would also cost him. ‘Never had to do all this paperwork shit before.’ Kasha leant back on his chair to reach a beer from the fridge. If this project was to be his retirement fund, he’d have to minimise costs, make the most he could. The animals had heard it all before. They wandered to the scrap of carpet on the lino floor and curled up together to sleep.

## Four: WATER FLOW

Frankie, Clem and Aunty Bub sat on the back verandah of Frankie's house grazing on the remainders of a salad. A late Sunday lunch had wandered on. They sat amongst the last of Frankie's boxes, things she had not yet unpacked.

'I love coming here, again.' Bub had already said this three times. Clem and Frankie grinned. Aunty Bub lived in a city 'apart-ment' she called it – 'We're all squashed in this block of bricks, together but apart. Linked by cables and satellites to the world, but not knowing each other, not speaking with the person next door, down the corridor.' She'd told Frankie many times that she felt lost in the city, how she loved any chance to come to Cawling, when Claire had been alive. She'd struggled with the downward spiral of her brother after Claire's accident, had been happy to direct her attentions to her niece.

'But what are you going to do about Carol, she looks so lonely,' Clem asked, glancing at Bob's mound of earth.

'You'll have to find her a mate again,' Bub offered.

'Either I bring in another horse, or send her off to someone else with horses.' Frankie had not been able to make this decision. 'I've been too busy to sort her out.'

'How's the study going?' Bub asked.

'Pretty good. Passed the assignment on environmental change I handed in last week. Next semester I'm going to do three subjects. And work.'

'Still like the online study?' Clem asked, to keep Bub's thoughts and the conversation away from Frankie's work at the factory. Bub had made it clear that Frankie shouldn't be wasting her energy in a dead pig factory.

'Yep, I can do it at my own pace, in my own time. The online tutorials and discussion groups are pretty useful.'

'What's your major?'

'Hydrogeology, of course. Got to work out what Dad wouldn't tell me. Science is more reliable.' Frankie stood suddenly and started collecting plates.

'What's up, leave it be, love.' Bub snatched a glass from Frankie's reach. Frankie deferred, balanced her feet on the edge of the verandah, rubbed at her chest.

'Something's still gnawing, about Bob, about the water going away.' Frankie felt more than the itch of intent, a small seed-like point like the teeth of something feral slowly snarling in her sternum. 'Finishing this degree is not just about me, or me getting a job. It's giving me something else.' She put her hands on her hips and stood looking at dusk's pink lights on the dam bank. She walked towards the embankment, lost in thought. Her friends watched her familiar short-legged sway, watched her almost duck-like silhouette. They knew to let her take the time alone. They sat silent on the verandah while Frankie climbed the dam bank and squatted, hands under her chin, looking into the dam. Neither Clem nor Bub said anything about frogs. They heard the chorus of croaks and bonks syncopated like an orchestra tuning.

A pool had collected in the base of the dam from a short storm that passed the previous week. Too late for Bob. The puddle was shrinking daily. In daylight it was the colour of muddy lions, at dusk, caramel musk. Frankie stared, motionless, as the water was bathed in late afternoon light. Five galahs bobbed their heads to drink at the edge, ruby chests illuminated. The dam had once been spring fed, now rippled rim lines marked the bank.

Beneath the surface, beneath the ground, where water flowed as veins and capillaries of the earth, there is no distraction. Frankie stared into space, swallowed by thoughts. Underground water, the idea of liquid under the skin, shivering through the shallow crust of the planet. Frankie cocked her head, as if to hear its deeper tones. The galahs shrieked and spread themselves away, fluttering cerise and grey.

'What's under there?' she muttered, rocked on her heels. After a few minutes, her legs ached, she stood, stretched and returned to the verandah.

'Did Mohamed speak?' Clem asked.

'Maybe. I'm going to learn public speaking,' Frankie announced. Clem and Bub both gaped at Frankie as she climbed onto her chair, stood arms extended. 'Friends, Romans, country women.' Frankie's voice rang out across the paddock.

'You never know what an empty dam is going to tell you.' Bub raised her glass and toasted Frankie. 'Speak up, girlie. Or we'll never hear you.' She started to clap.

'What will you be speaking about, and to what public?' Clem helped Frankie back down to the verandah with one outstretched hand.

'Hell. I don't know. Something will come up.' Frankie didn't know. 'I'm dreading it.' She felt the growing responsibility of knowledge, that whatever she might look like, she wanted to be able to say what she was learning. She wanted to find words coming from her mouth, to be heard by others.

'I don't just want ideas stuck in my head. Someone has to speak for things that have no voice.' Frankie kicked air under her chair. Swinging her feet was an old habit. Her shoes did not reach the ground. It meant that something was kindling. Clem had seen Frankie agitate her short legs under tables throughout their childhood, as if each swing was building momentum inside Frankie.

'Sometimes there's power in saying nothing.' Clem was always the voice of reason.

'Maybe, in a well-timed silence. But I feel like a mute.'

'Aren't swans mute?' Bub asked.

'Just the white ones, from the northern hemisphere. The ones with elegant long necks. Question marks.' Frankie scoffed, stretching herself to her full height. 'And that ain't me.'

'Shit, yer. Make noise alright. But you got to know when to shut up too.' Bub sipped at her glass.

'To speaking out. Hollering.' Clem raised her glass. Three beakers clinked, three women howled at the sunset. Carol lifted her head, pranced a few steps, snorted.



Cawling's choir gave vent to people's unconscious love of extra oxygen, for connection. Singing communally at Thursday night choir practice was for some a religious moment, as good as church. Frankie decided to join the singers as a way to meet people, to feel part of something other than her work and study. The choir was a mix of Cawling residents, from both sides of the river. Regardless of who they were, in the moments of singing, each became a better self, a connected spirit contributing to a greater sound. Voices resonated, harmonies shimmered. At first Frankie scuttled to the back rows, wondered if she should stand with the tenors or the female altos. She tried not to be seen by Ariet Noble, the musical director, particularly tried not to be heard. The choir aspirated in unison, pronounced the practice-exercise consonants crisply. Ariet's warm-ups at the start opened mouths to vowels and consonants, to sounds that most Cawling residents didn't make in everyday speech. At first Frankie mouthed the words, not daring to let a sound escape her lips. She let others' voices surround her, basked in the conjunctions of tenors, seconds and sopranos, not feeling any capacity to contribute. She came to trust their voices wavering in their own ways around her. Ariet watched, brought her to the front row, listened for any sounds. Waited. Frankie mimed.

Ariet Noble, made a habit of introducing herself with the sub-title 'Ariet, not Lariat, not Hariette. Ariet, with an A.' She'd resumed her maiden name when her husband walked out on her two years ago. Left her with her seething teenage daughter, Maddie, who worked the front counter at Siggy's, the local cafe, with a surliness that tried to cover her grief and uncertainty, and grim determination to get out of Cawling. Ariet wrote the 'What's On' column for the *Cawling Echo*, reported news of club fundraisers, meetings coming up and who in the town were celebrating significant anniversaries and birthdays. She had perfect pitch and conducted the choir with precision, with an ear for each section's different harmonies and rhythmic parts. She chose songs which she found uplifting, which lent themselves to moving arpeggios and crescendos. Her tall thin body swayed with the sounds, her hands dabbed the air, her fly-away hair was held loosely to the top of her head with clips.

The choir accompanist, Betty Winsome, thumped on the ageing upright piano, rarely turning to watch for the choir leader's instructions. Betty Winsome was, unlike her name, solidly square. She anchored the sopranos with her throaty tones as she played. Her pudgy face was crowned with grey curls, which flounced along with her enthusiasm on the keyboard. Ariet tolerated Betty Winsome's pursuit of musical dexterity in the way an old dog lives with aching joints. Betty finished each musical phrase with a flourish.

Frankie recognised some people from the factory. Ken, the forklift driver, Wade Keane, the guy who mopped the ceilings with a seven-metre pole, dabbing away condensation before it dropped onto the conveyor belt.

Lizard Green sung in the bass section. 'Since the choir began,' he was quick to tell Frankie. Lizard was a long-time friend of Lennie Pankhurst, had seen Frankie grow up. Lizard and Lennie had shared an interest in water divining. Lizard had heard, in the way that news travelled in a small township, from person to person, like a trickle of water gaining momentum on its path towards the ocean, that Frankie was interested in groundwater. He sidelined her after choir practice one Thursday night. They were both sipping glasses of water, quenching thirst. Lizard sneaked a dash from his hip-flask.

'I hear you're worried about the groundwater.' Lizard was direct, spoke straight from his thoughts to his mouth. He had been given his name in the same schoolyard as Frankie had been christened Froggie. As a boy his skin had looked desiccated, rough, and he had a propensity to stand stock-still and stare. Even the teachers let his distinctive habit go uncorrected, called him Lizard Green on the roll call as a gesture of affection for the skinny dry-skinned boy. He almost forgot at times that his real name was Leo, a name his parents thought may have given him a royal demeanour and a large voice. At first they scolded him for his immobile moments, then they too started calling him Lizard. When he was a teenager his mother surreptitiously left a jar of skin moisturiser beside his bed, in concern for his flaking legs and arms, his scaly face. Lizard thought it was a gift from his father and used it liberally on his private parts, which rose and shone with the attention.

Frankie nodded to Lizard.

'Sorry about your horse, love.'

Frankie nodded again. Wade, the ceiling-mopper at the factory, joined them holding a mug of black tea, looking at his feet. Lizard greeted him with a thump on the back. Wade soft punched Lizard's arm.

'You two know each other?' Lizard gestured between them. 'Frankie, Wade.' They both nodded, while Lizard continued.

'A sense for groundwater is ageless, almost lost, you know, love.' Lizard's end-of-the-day chin stubble was sparse, grey. Frankie leant away from his doughy breath.

'Diviners are rare, often raise suspicions. People think their wobbling sticks are a scam.' Lizard continued to lean towards Frankie. 'I seen you heading out of the library truck with a barrel load of books under your arm.' He winked as if there was some connection between books and scams. That day Frankie had borrowed books about Indigenous people's knowledge of underground water, how they found springs. She'd read that Aborigines had dug wells in the lower bellies of dunes, survived along dry watercourses, moved between long lines of mound springs in the desert. Ancient rock paintings showed water sources and paths to sacred water places. Mostly the walking routes between water sources were held in song and stories, passed from generation to generation.

Frankie also wanted to know whether diviners were pretending they could find water, when they waved their wires and sticks in front of them like headstrong antennae. She was suspicious of trickery, having watched her father step slowly over parched ground balancing two bent twigs on his fingertips. Had he looked up old groundwater maps to increase his chance of success? Did he just read the landscape with open eyes, knowing where trees sought water, where folds and dips of rock might catch and direct flow?

'How do they do it, Lizard? You knew Dad.'

Lizard sipped his water, licked his lips and rubbed his hands together. They made a rasping sound, audible above the chatter of other choir members. Frankie imagined the frictional vibrations of a praying mantis preparing its front legs for a killing. Wade moved from foot to foot, slowly.

Betty Winsome, the accompanist, wobbled towards them holding a teacup with a slice of cake teetering in the saucer.

'You three talking groundwater? Old as the hills.' She puffed, her face was flushed and sweat beads had formed under her eyes, threatening to roll down her pillow-like cheeks. Frankie, Wade and Lizard made room, could see she had something to say.

Betty spoke in a rush, keen to share her views and knowledge, not needing an invitation to begin. 'You can't tell me groundwater is a new thing. Way back, Abraham drilled into the hidden sea. You just read Genesis.' She eyed Lizard, who was well known for his heathen ways. 'The Old Book tells you how Abraham dug wells. Limestone hillsides it says. Lined the wells with stone.' Betty's face beamed, her eyes shone, she was on a roll. Her chest rose like a bowl of pink blanc-mange with a deep fold down the centre, swelling above the swooping neckline of her cotton shift. She took a sip of tea, continued before her audience could do any more than nod.

'He lifted that old water for his family, his flocks, sheep and goats, from the deep. Made him very wealthy, influential, because of his access to water.'

'What's changed? Who hasn't heard of Abraham?' Lizard chipped. Betty shook her head and nodded almost simultaneously. She was determined to prove an important biblical point, but Lizard continued.

'Reckon he climbed down ladders on those damp white walls, or raised the dirt and rocks out on a levered pole with a wooden bucket on one end? How'd he lift the water?' Lizard asked Betty, who was flummoxed by such technicalities.

'How'd he find it underground in the first place?' Frankie asked.

Betty continued, ignoring Lizard, addressing Frankie and Wade with her biblical facts.

'When Canaanites tried to take over his wells, Abraham negotiated with them to share the water. He gave them stock, a gesture of good will. Which of course confirmed his ownership of the wells, maintained his power, his herds, food for his family. He knew not to fight his neighbours.' Betty nodded as though it was all over. The answer was clear. She ate her cake, looking for Frankie's response. They turned to Wade when he spoke.



'Underground water, it's as precious as the top stuff. Been found around here for tens of thousands of years. Even before your biblical stuff.' He shuffled, uneasy. Betty shook her shoulders, like a chicken after a dust bath.

'It's how much you take.' Lizard's voice was roughened like the burring of cicadas thick on summer air.

'Nobody shares their extraction rates from stock and domestic bores. There's power in keeping that quiet. No one knows who's taking what,' Frankie stated. She knew she was avoiding Betty's point, but was not going to start discussing biblical incidents she knew nothing about. 'And there's more people now,' she added.

'It's a pumping race now. Who can extract the most, the fastest, wins.' Lizard rubbed his nobbled hands together again.

'You don't fight your neighbours.' Betty repeated her thought.

'You don't shit in your nest.' Lizard scratched at his neck.

Wade nodded.

'Everyone's silence is at the cost of aquifers. Most bores are totally uncontrolled.' Frankie's voice wavered, her water glass slopping as she gestured with her arms. This was her first public articulation of her growing unease. Embryonic ideas, quietly drilled home by her father over decades, smouldered. Lennie had repeated his missive. 'Go to the source.' As a child, Frankie often repeated the phrase in her pre-sleep, listening to Lennie throw empty beer cans at the kitchen bin. Now she said it to herself on the conveyor line at work. Something of the tinder had caught a spark. Betty caught some of her verve and continued talking, excited, long-winded.

'To drink the deep waters of ancient aquifers is to taste life, life from before Jesus, before Moses,' Betty paused for breath.

'Before Aboriginal people?' Frankie asked.

'Spot on. Even before prehistoric marsupials were here.' Wade added.

'You're talking like a prophet, Betty.' Lizard leant towards her, momentarily immobile.

Betty continued, not really heeding Lizard's comment. 'You know Isaac, son of Abraham, well, he re-dug his father's wells at Sitnar, Rehboth and then at Beer-Sheba. He made a covenant with God and the Philistines. Preserve groundwater. That's what he demanded. And for your information, a prophet isn't trying to foresee the future. They just remind you that if you continue on with your foolish ways, there'll be trouble. Do you know how many times the word well appears in the bible?'

'No bloody idea.' Lizard shook his head. Wade and Frankie shrugged, looked at the floor.

'Preserve groundwater.' Lizard raised his hand as if in toast.

'It's simple really. We've got to think of the place we live. Wider. You don't wreck your place.' Frankie was unused to the feeling of her words coming from her mouth unedited.

Wade continued to nod, then added, 'Especially when a million other creatures share it, need it.'

'And the plants.'

'Deep-rooted trees.' They were on a roll, their comments swirling like liquid in a glass.

'You'd think Kasha Duff would know better.' Lizard Green had to say what they all thought. Frankie shuddered, Wade rolled his eyes upwards, Betty stared into her cup.

'To groundwater, and all the aquifers.' Frankie lifted her glass and made to click glasses with Betty's teacup. Betty sipped her tea, grinned, pleased with her contribution to the cause, not concerned that they had not attempted to answer her question, as she didn't know the answer. After choir they returned to their homes, turned on taps to wash their faces before they went to bed.

Over time Frankie came to see her friends from choir as co-conspirators, people bound together for an invisible cause. They sang together, small aspirations, important connections. Perhaps it was because she felt separate from Cawling and all that her childhood here had meant. She wrote in her journal in a flush of entanglement after one Thursday night's practice.

*Singing in a small space makes me feel safer. It's a softer sound than talking. We are, in the rest of our lives, relative strangers, yet here we come together in an exposing action, opening our throats. We make sounds in harmony, which then comprise a sonic activism – a way of reaching the souls of others. We sing, we sing our messages, to be heard by trees, ground, plants, the soils and their wriggling earthy inhabitants. We follow the breath, the bodies and sounds of those around us, we follow Ariet's hands. The song becomes us, it sings us. Elbow to elbow, breath mingling with breath. Is this a relational activism we create for two hours weekly? We work together in relation to sound, our bodily proximity as we sing together, our different tones knitted into a whole. Are we activists as we work our voices, as we sing? Communities are precarious enough. We sing. Like the frog chorus, we sing.*

The following Thursday at choir practice Frankie stood behind Wade. She began to sing. She had watched him at the factory, dark-headed, soft-eyed, craning his neck upward, waving the sponge on a long aluminium pole, gently dabbing, wiping condensation from high white ceilings to prevent water from dripping onto the product. His hair was thick, for the way it filled his blue hairnet. His arms strong for the way he steadied the sponge, aimed it and swiped. He was solitary, focused on the ceilings, his face lifted heavenward for the long hours of the shift. She watched him in the smoko break, quiet at his table, intent on eating his plate of chips and gravy.

At the canteen in the Invisible Pig, Wade pulled up a chair to sit beside Frankie for smoko. All the tables were crowded with workers in white uniforms and blue hairnets, some kept their red earmuffs around their neck or perched on the back of their head like scarlet ears. Sounds of eating, chatter, some watched the television.

'Do you like those old revolutionary songs?' Wade nibbled on a muffin. Swilled it with milky coffee.

'What do you mean?'

'At choir. All we get is old hippy tunes, flower songs. We could do something with a bit more guts. Hip hop. Paul Kelly would be better.'

'The oldies would like that.' Frankie scooped warm soup from her thermos.

'Would you?' Wade looked at her as if he expected her to have an answer.

'They're classics.' Frankie shrugged. She couldn't say much else about music, but decided to read the words of the choir songs at home after the shift. Ariet's song sheets were in a folder she rarely looked at.

'How about a coffee.' Wade coughed, nervous.

'Sure. Why?'

'Just thought we could talk.' Wade shook his head, stood. 'Better get back, it's raining in there tonight.'

'Sure.' Frankie flushed. Wondered why she so often wrecked things.

They didn't sing together or meet up at work for a week. The invitation sat between them, an unopened envelope.



Lois Menkle pushed through the fly strips across the door at the Siggy's cafe as if they were covered in contagion, went to the refrigerators for milk. Frankie and Clem leant forward over their coffees.

'Hi girls. It's folding day today. We're always looking for volunteers.' Lois sang in the sopranos in the community choir. She was a retired Kindergarten teacher, who had moved to Cawling with little superannuation and a penchant for commas. She published the *Cawling Echo* fortnightly to spread news snippets from community clubs, sporting results and letters to the editor. After changing the banner design, which had the locals shaking their heads, muttering it's not how it used to be, the *Echo* was now quickly snatched from letterboxes and shop counters in Cawling. Residents were keen to see what was happening in the township. Lois

thrived on being responsible for local media, ignoring pleas by some to give the *Echo* an online presence.

'Hi, sorry but,' Clem began.

'It won't take long, we'd love your help.' Lois paid for a litre of milk, counting her coins carefully. Clem and Frankie shifted uneasily.

'I can afford an hour or so,' Frankie sighed, stood up, 'See you Clem. You've got a date with a gate, don't you.'

'Yep, better get going. Have to take Dad to a medical appointment this arvo.' Clem edged to the counter and paid Maddy Meadows with a swipe card. 'My shout. Bye, Ugly.' She waved to Frankie who was already swooped under Lois's wing, shepherded towards the office of the *Cawling Echo*. Lois's eyes were glowing, her wavy, died-black hair bouncing.

'Thanks so much, dear. Aren't you Lennie Pankhurst's daughter?' She peered towards Frankie.

'Yes. I can't stay long. I'm working this evening.'

'Oh. Where do you work?'

'I'm studying. Do a few shifts at the Baco, the Pig, the Invisible Pig. Suits me for now.' Frankie couldn't believe she'd agreed to help Lois Menkle. All she wanted was to get home.

Lois ushered her into the small room behind the stage at the hall. Frankie remembered the sign, '*The Echo*' in faded gold lettering, from years ago, while she had waited in the shadows before her school performances on stage at Christmas concerts. Nothing changes in Cawling, she thought. The blinds were down, throwing a tawny light over the central table. Frankie recognised Betty Winsome from choir, standing hunched over the table. Betty was folding news-sheets, her bent knuckles running along the crease to hold it firm. *Echos* lay in concertinaed mounds on the floor beside her.

'Cup of tea then?' Lois asked. 'Don't you know each other from choir?' They nodded. Frankie took a pile of news-sheets and started to fold, copying Betty's meticulous joining of the corners for the first dozen, then more quickly. Betty and

Lois chatted. When Frankie heard Lois mention Kasha Duff, she lifted her head to listen.

'He thinks he's going to build a new residential development on Quencher's Road. Twenty-five new houses. Out the back of his place.' Lois clucked.

'All services provided,' Betty read from a news-sheet.

Frankie snapped up an *Echo* to read the front-page article, titled 'Housing Growth in Cawling.'

'How do you get to know all this?' she asked Lois.

'I read the council minutes and notices. They're public documents.' Lois stirred two spoons of sugar into her third cup of tea.

'Is it approved? Actually going ahead?' Betty asked.

'It's hard to tell. There were appeals. Threats of court action from the owners on the other corner of Quencher's road who don't want to have their river view blocked by twenty-five houses. They say they didn't receive notices of the application.'

'That'll slow him down.' Betty almost hissed.

'What's your problem with it, Betty?' Frankie asked.

'It's just that if it's a Kasha Duff project, it's likely to cause problems. It's his specialty.'

'Yer, I know.' Frankie remembered her father explaining Kasha's reputation for over-charging, over-counting the depth of bores he'd dug.

'When farmers left him at the task he'd drill, say forty metres,' Lennie had shaken his head, 'till there was a minimum flow, maybe from the first lead he hit. We called them floaters, floating aquifers, not turds.' Lennie had seen Frankie's smirk. He continued. 'Then he'd tell the farmer he'd gone sixty metres deep. He'd charge for the extra bore casing he never used and for time he wasn't there.' Frankie wondered whether new folk in the district who didn't know Kasha were still being ripped off. He had a monopoly, no other bore drilling rigs around. He saw to it that no one moved onto his turf.

'The permit application says he's providing bore water to every site.' Lois continued folding paper, stuffing them into boxes.

'Sorry, Lois, I have to fly.' Frankie stuffed a few *Echos* into the box at Betty's feet and shuffled towards the door.

'Thanks, dear.' Lois called as she left. 'Nice girl, but very quiet. Self-contained or just shy? I'm not sure.' Lois turned to Betty.

'With a father like he was, it's a wonder she talks at all.'

'What was it, ten years ago he shifted away, up to the river? Small funeral.'

'Yes, the girl could have stayed. But you know country kids. Bright lights call at first.' Betty kept her head down, folding.

Frankie started to call to see Lois twice or more a week. Lois's directness, her no-nonsense approach and commitment to the Cawling community interested her. She tried to learn about commas for her assignments, but the rules eluded her. Conversations wandered as the friendships warmed. Frankie spoke with Lois perhaps as a young woman would to her mother, with a consciousness of the gaps in the conversation. She tried out ideas, experimented with thoughts. Lois listened knowing it was early days.

'I have never been what it means, you know, to be a woman.' Frankie paused. 'I'm infertile. Ovaries don't form properly with Turner's. I will never be able to produce children.' Lois nodded, looked at her knitting, pulled a long thread of wool from her bag. Frankie had previously told Lois about Turner Syndrome, the androgen injections she gave herself daily as a teenager to help her reach maximum growth.

Frankie continued, 'Just because I'm a woman doesn't mean I have to have a baby.'

'Many women don't.'

'I don't entertain their gaze. Men and women. They don't want to look at me, without, like, disgust.'

Lois placed her knitting on the table and stared at Frankie, 'Stop this. You don't need to be trapped in other people's perceptions of who you ought to be.' She untangled wool from her chair leg.

'Least I can't be reduced to a unit of reproductive function. I'm missing the essential parts. Void. Stitched together by hormone injections. I thought they'd make me grow.' Frankie shrugged her shoulders, glanced down at her thickened thighs.

Lois kept knitting.

Betty arrived, wheezing like bellows, to prepare copies of the *Echo* for the weekly mail out. She and Lois started a run down of tasks for the day. Frankie broke into their chatter, testing a new idea.

'As women do we have to be more altruistic than guys?'

'Some give a lot. Mostly they like to hold onto their power. But don't forget, their grip is just a fabrication. They make it safe for themselves.' Lois bundled news-sheets into a box.

'It's an excuse to not give up anything.' Betty added. 'You do enough, dear.' Betty was head down, drawing her thumbnail across the fold of each news-sheet.

'A go nowhere, change nothing attitude is tempting.' Frankie looked out the window.

'You don't need to make comparisons with the blokes, Frankie. Just be yourself. You're changing enough around here. Just being here.' Lois chuckled.

'Give me a break.' Frankie carried a filled box to the doorway, stacked it. 'I'm small. My bones haven't grown. So what?'

'So, you're not as tall as some, taller than others.' Lois kept the door always open.

'It's not that I remember actual comments, but it's the way people stare at me, or rather glance, then look away. You can tell they're embarrassed by my appearance, uncomfortable with ugliness. I'm not the perfect shape, the model form.'

'What's normal?' Lois's voice raised a notch. Frankie shrugged.



'My arms, too short. I walk like a penguin.'

Betty and Lois looked at her, mouths closed, lips tight.

'My Turner Syndrome isn't all that obvious, unless you know what you're looking for.'

They nodded.

'I may be short, but I am not stupid. I am NOT my condition.' Frankie's eyes blazed.

'Now you're talking.' Lois smiled, her eyes softened.



Helen Mack overflowed her chair. Her cubicle looked to Frankie to be in disarray. A cascade of papers and coffee cups spread from her desk to the floor. The half-height velcro wall to her workstation was pinned with curling photos of distant hills and post-it tabs with cryptic reminders that may or may not have been achieved. Coloured maps and government reports were strewn haphazardly, she had two computer screens running, one connected to her laptop, the other to the departmental network, Frankie presumed.

Helen was in her early forties, a square face and dark currant eyes amid doughy skin that creased, delta-like, when she smiled. She wore a baseball cap backwards, her straight nut-brown fringe escaping the band across her forehead.

'Working in a bureaucracy, everyone's out to step on your neck, if they're not getting ready to stab you in the back,' she whispered. 'The hat sort of makes them keep away.' Helen wore striped leggings that bulged over rounded folds. A long floral chemise flowed from the horizontal plateau of her enormous breasts. Her Blundstone boots were under her desk, for fieldwork days, Frankie assumed. Helen worked for Central Goldfields Water Authority, monitoring groundwater pollution across the region stretching from the Murray River to the northern edges of

Melbourne's metropolitan sprawl. It was her first job out of uni, after a string of degrees, Clem had told Frankie.

'Thanks for seeing me.' Frankie half stood to shift in her seat.

'Fire away.'

Frankie had written down some questions, remembered the first one, but kept the list in the pocket of her jeans.

'If water is everywhere, constantly recycling itself, why is it so scarce? And humans are made up of it aren't we?'

'Seventy percent water in most mammals. Can't comment on human biology, that's not my field. Ask me about hydrogeology.' Helen wiped a bead of sweat from her top lip, looked at Frankie, fierce and puzzled and kind all at once. She continued before Frankie could speak. 'Water cycles, recycles itself, globally. Water is finite. The same water that appeared four and a half billion years ago might now come out of our taps, flows in our rivers, seeps into our aquifers. That's where it rests, away from the hurly-burly of surface water activity.' Helen moved her cushion-like arms in a wave, like she couldn't resist the languor of groundwater. Frankie noticed her use of the possessive, wondered if she'd take her up on that. Who owns the aquifers?

'You're saying that water's lucky to get underground. It's unlucky to be sucked up prematurely,' Frankie still thought of drilling for ancient water as like aborting something before its time is due.

'It's unlucky to collect the pollution humans keep dropping into it. Domestic sewers, industry, big and small. Petrol station leakages, dry-cleaners releasing solvents, don't get me started on coal miners and their deep holes. Holes in the head.' She pushed her cap back. 'Let alone chemicals used in fracking for coal-seam gas, fire retardants at airports.'

Frankie took a small notepad from her bag, made some notes of things to follow up. What was it about dry-cleaners and groundwater?

'There are dead water zones, where groundwater is sort of killed by salt, chemicals, pollution. It's people making pollution. Sometimes the age of the aquifer. Tens of thousands of years.' Helen kept throwing ideas for Frankie to digest.

Helen continued, explained the effect of living in an area with a gold history. 'Groundwater has got a white-fella story around here. And a black-fella story too.' She sipped the dregs of a cold coffee. 'Below Cawling and Broadville, gold mining tunnels, honeycombed in parts.' Helen was on a roll. 'The first recorded water trading was from a guy in the early 1850s who was pumping water from his shafts, sold it, in a drought summer, to another guy downstream who was sluicing, needed something to wash his slurry when the creek stopped flowing over summer.'

Frankie knew that capping off old mine shafts was superficial, many mines and disused wells in the bushland surrounding Cawling still gaped open, leaking dank air from dark underground passages. Lennie had often said to Frankie to watch out walking in the bush around their place. She remembered his regular beef. 'No one thinks below the surface, unless it's about making money, unless it's Kasha Duff,' he'd added. 'He'd drill, scrape, excavate a hole as if it were nothing, nothing underneath. He thinks he's having an impact in his own short life.' Frankie remembered her father's hands rubbing his chin.

Helen coughed. Frankie had only partly applied herself to the first year geology subject, years ago it was all complicated terms for incomprehensible time periods and rock types were like another language. She wished she'd listened more. Helen continued her explanation of local geology. Granite uplifts and exfoliation, basalt flows, how slate is metamorphosed into shale, Ordovician, Quaternary. Frankie scrawled notes, later indecipherable.

'And then there's the law.' Helen punctuated her monologue, wiped her brow and sipped her coffee.

'The law says that people can only own the top fifteen metres when they buy land. That means all the rest is open to prospecting, right?' Frankie had read rudiments of the legal situation, checked now with Helen.

'No and yes. In our State, you own the land fifty feet below your boundaries, just over fifteen metres. Minerals and stone in that area, though, belong to the Crown. But you can get royalties. The Crown gives out licences for groundwater.' Helen tapped a report on her desk. 'But regulation is the missing ingredient.'

'That's incredible.'

‘Hypothetically, water is the property of the Crown, but in reality we think of it as ‘ours’ when we collect it. In dams and tanks.’

‘All water? Rain? Or groundwater?’

‘It’s all mixed up in the rules and reality.’ She paused. ‘For groundwater licences, for extraction, you have to apply first. Comes through this government department, upstairs. Licence to drill and construct. It’s complicated.’ Helen paused. ‘Some of the stupidest laws this country hangs on to.’ Helen looked around her office, over the cubical wall, as if nervous that a colleague might challenge or report her for such heretical comments. ‘They don’t challenge the laws of the country in this department,’ she whispered behind her pudgy hand. ‘I’m trying to tell them upstairs that the EPBC is relevant to our work.’

‘EB...?’

‘Environmental Protection and Biodiversity Conservation Act. Legislation passed by government when they had some sense. It’s about GDEs. Groundwater Dependent Ecosystems.’ Helen paused, watching Frankie take notes. No one had listened to her like this before. ‘Looks like this is getting me into deep water, so to speak.’ Helen was looking over her shoulder again. ‘Maps create a place for places to speak.’

‘Did you say a place for voices to speak?’ Frankie asked.

‘Places. Voices. They all speak. I’ll show you the 3-D images next time.’ Helen turned to her computer, started at the long queue of emails awaiting her attention.

‘This is like, another language.’ Frankie felt like she was swimming, just holding her head above water.

‘Sorry, listen, I gotta go. I’ve got to do an assessment for a cemetery application, for a new bore. They want to keep the lawns green, and the ponds full in the Chinese section. Reflection and that. Cultural.’

‘Sure, thanks. Better go. How about a meal with Clem sometime?’

‘Ok. Give me a call.’

Frankie found her way out through the confusion of aisles and workstations, each occupied cubicle with its own fragments of decorations. Conundrums clashed. Pumping underground water for a cemetery, recycling life amidst death. She re-entered bright sunshine outside the office block, blinking.



A week later Helen and Clem came for a meal at Frankie's. The kitchen was thick with stewed aromas. Red wines breathed, glasses clinked, conversations started without warm-ups.

'What do you think of the term Anthropocene? Clem asked Helen, thinking that she'd have a geological argument off pat.

'Some geologists think that humans are altering the planet, now more than ever in the past, that the effects of human activities can be seen in geological processes. Some don't.'

'Haven't humans always affected where we live, changed things, say with fire?' Frankie said, felt her skin prickle.

'Yes, but that didn't make a geological epoch. This is something bigger.' Clem stood to stir the pot on the stove, inhaled deeply over the savoury vapours, gently replaced the lid.

'If it's to do with increasing carbon in the atmosphere, how does that affect geology?' Frankie asked.

'Some say the planet is cooling, agelessly cooling after the first big bang. That this blimp, a spike on the graphs, is nothing in the long term.' Helen swirled her wine glass.

'You geologists, always take the long-term view. Super long.' Clem egged them on. 'Least my little mitochondria are immediate.'

'I'm not saying that there's not atmospheric warming, and oceanic warming, and acidification.' She paused. 'Disasters. And we could say that the thin layer of carbon, from us burning fossil fuels for only two centuries, is making a hell a lot of damage. There's plenty of evidence and I believe the science. It's just that the term

climate change, maybe even global warming now, has more political clout than is useful.'

'What do you mean? Doesn't the environment need political clout to get anything done about this mess?' Frankie started to ladle the stew into bowls.

'Yes, sure. But take for example, today. I had to write a submission for funding to assess the risk of the Murray Darling Basin Plan on groundwater systems in this region. We may have to revise the groundwater management plans around here, if water usage around the Murray changes. In the submission I had to predict weather patterns for 2041, only 25 years away. It was near on impossible. They think we know.'

They each savoured the meal, dunked bread.

'Not even the most canny, observant of scientists really know. We're the first to admit blindness,' Clem said, chewing.

'The story of groundwater is the story of geology, a story that stretches into deep time,' Helen continued. 'And we never ...'

'Never say never,' Frankie piped up.

'Well, we never really see it, while at the same time I'm mostly made of something like it - water.' Helen stared into her bowl, as if searching for the answer to a philosophical question.

'I use a microscope to see my subjects. My prosthetic eye.' Clem held her circled fingers to her eyes, rolling them in a Frankenstein sort of way.

'Different stories in different places.' Frankie said between mouthfuls.

'Geology tells different stories to different people. It all depends on where the water flows, and how. It's not the same everywhere. It has to occupy the space it has. It flows through different rocks, different formations, in different ways.' Helen nodded at her plate.

'Maybe we need to turn to artists.' Frankie waved her fork, like an antenna seeking ideas, a painter flourishing a brush.

‘So it’s up to artists to explore shapes, patterns, represent sombre moods, movement. How would they paint groundwater’s character? Impossible.’ Clem was wide-eyed.

‘Yer, why not? Watercolour runs.’ Frankie remembered pigments seeping into fibrous pores of thick, wet paper from her high school art classes. ‘Uncontrollable.’

‘I put my faith in evidence, hard words, hard data,’ Helen said, shaking her head.

‘Just thinking of options.’ Frankie wanted to appease.

‘We know more than we did in the past.’ Clem raised her glass. ‘To the cook.’

‘But not enough.’ Frankie chipped at her empty bowl with her spoon.

## Five: RECHARGE

Frankie signed up to Speechmakers, a public speaking club, after she heard Lois mention her experiences twenty years ago, of overcoming a mild stutter. Frankie chose to drive to the tired community house beyond Broadville on Wednesday evenings for the sake of anonymity. She could hardly afford the fuel, but decided to hang the expense for the sake of not being exposed locally. She didn't tell anyone of her activities, distracted Clem with tales of visiting Lennie and Claire's grave. Clem thought it strange that she went so regularly, but let her questions lie dormant.

Eight weeks attending Speechmakers wasn't enough for Frankie to face and dismantle old habits, to learn to stand in front of a group without jiggling and sweating, wringing her hands, let alone speak coherently. Recognising the clamp on her throat was one thing, loosening it was harder than turning a rusty nut welded to a bolt from years of neglect. The programme was tight and purposeful, culminating in the requirement to deliver two short speeches to the other participants. One had to be off the cuff, the other she could prepare. Excruciating nervousness, clammy palms, jouncing kneecaps, hot neck, flushing cheeks; she endured it all each time she stood up. She prepared a short talk on the death of a horse and the decision to bury it, rather than have it collected by the dog-meat truck. Breathe, say each word slowly, let the sentence flow. Breathe. Her compatriots clapped quietly when she finished. Her impromptu topic was arachnophobia. She blurted for five minutes about inane fears, black, hairy legs, and finally named her inconsistencies and ambiguities, culminating with, 'Fearfulness may be inexplicable, paralysing. It's always worth trying to understand why, to let your fear make you stronger.' The five other participants clapped more sincerely as the group leader thanked Frankie and invited the next petrified rabbit to the stage.



When she finally told Clem what she'd been doing for the past eight Wednesdays, she realised that her voice sounded different, that she could control in a small way the tone and pauses in her announcement.

'Shiver me timbers. Frankie's speaking.' Clem laughed over the phone. She couldn't see that Frankie was deadly serious. 'So, when are you buying a podium? Or will I bring a soap box next time I see you?'

'Shut up, Ugly.'

'See you soon, Froggie.'



Frankie and Clem perched on stools in the Cawling hotel, sipping fresh beers with foaming tops. Around them men leant on the bar, coins in front, from which the bartender selected a few each time she refilled their glass. Local families walked through to the lounge, where they ordered pub meals on a Friday night.

'This is a global problem you know.' Frankie said.

'Australia's a dry continent. Some ways we're lucky, compared to the Middle East, the desert parts of India, China. They know long droughts.' Clem had started reading about water shortages too.

'They're using groundwater like it's going out of style. In Brazil, they sucked out so much groundwater that this whole city has started sinking. Subsidence.' Frankie reached for a handful of chips. 'They're trying to pump wastewater back into the aquifers. Imagine what that will do for polluting underground supplies in the future. They don't really know the connections, I mean between aquifers and surface waters. They're connected, but in all different ways.' Frankie found she had to speak about the things she was learning. Holding ideas in her head was becoming impossible. The man beside them listened in, as their comments spilled along the bar.

'Sounds like they're putting rubbish under their own pillow.' Clem said.

'Who'd do that?' The man joined them.

'We're talking about water, underground.'

‘Yes, I heard.’ The man extended his hand, introduced himself. ‘Don.’

Frankie and Clem said their names, shook his hand.

‘Ex-architect, if we’re ever ex. Self-proclaimed greenie,’ Don continued. ‘Groundwater, yep, we all rely on it. Don’t we Mac?’ He indicated a farmer sitting further up the bar. Mac was a potato grower on basalt country who irrigated his crops with groundwater, Don explained. ‘Pipes and sprinklers everywhere, splayed across his paddocks like stick insects, moving, dribbling, spraying.’

‘Hell of a lot of work,’ Clem added.

‘No kidding,’ Mac called.

They sipped on their drinks, sat in silence for a while, Frankie felt her usual Friday tiredness. Talking with strangers was both liberating and constricting. Clem nudged her as Wade sauntered towards them.

‘It all gets back to population growth,’ Barb, the bartender said, wiping glasses, stacked them on racks overhead.

‘How fast is Cawling growing?’ Clem downed her beer and indicated for another round, for Frankie and herself, then added Wade and the two other guys at the bar. They nodded, thanks.

‘This is not just about Cawling. It’s the whole water cycle thing, where water comes and goes, the spaces it occupies across the globe. A lot of water is tied up underground, sometimes for thousands of years. Some is tied up in our cells.’ Frankie swung her legs.

‘That’s the short cycle. From the glass to the bowl,’ Mac added. They all grinned as he indicated from his beer glass to his crutch.

‘When Australia exports wine, that’s our water we’re exporting to other continents.’ Don raised his eyebrows, incredulous.

‘It’s all the same water. Always has been, no more no less.’ Frankie was lubricated by beer, found words coming from her mouth she had not anticipated.

‘Dinosaur water, we call that underground water.’ Wade sipped his beer, nodded thanks to Clem.

‘What about the oceans?’ another man along the bar asked.

‘Ninety-seven percent of the world’s water is in the oceans. Salty.’ Barb stated, confident in fact.

‘Clouds, rivers, lakes,’ Don added.

‘All that freshwater is less than one percent.’ Barb flourished her tea towel.

‘Tears, our wee, the plants, the dewdrops.’ Clem’s arms flourished a wide arc. ‘Water’s everywhere.’

‘But nowhere enough in this place,’ the potato farmer leant forward to join in, leaning over his hat on the bar.

‘What about a pipe? They ortta bring it down from the Ord. The Top End wet season, all ends up in the ocean, don’t it.’

The group at the bar were leaning towards Frankie and Clem, edging them into and out of the conversation at the same time.

‘What gov’ment will pay for that?’

‘Floods one place, drought another. That’s Australia.’

‘Always been droughts, always will be.’

‘Nothing like this one, hot on the heels of the last lot.’

‘Millennium drought they called it. And here’s another one on the way.’

‘What about the storms? Weather patterns are all arse up.’

Frankie and Clem watched the interchange.

‘What do you reckon, girls?’

‘It’s complicated, that’s all I know,’ Clem said, unsure whether to be insulted at being called a girl, whether to encourage the conversation. Frankie shifted uncomfortably, having missed some of the interaction for the back-noise of the television blaring football on the wall behind them.

‘What’d they say?’ she asked Clem.

‘Everyone’s worried about the drought, love,’ the closest man said to Frankie.

'No recharge happening when it don't rain.' Mac, the potato farmer, knew that the main way that water refuelled the aquifers that grew his crops was rainfall. What was almost incomprehensible was that it was rain that had fallen on basalt hills tens of kilometres away, perhaps decades previously that supplied the rich waters he now accessed. He couldn't begin to explain the complexity of recharge.

'But not everyone's drilling our bore water like its endless,' Frankie retorted.

'Isn't it? It's always been there.'

'I heard that the Great Artesian Basin is bigger than sixteen Sydney Harbours.'

The men talked on, glad to have the attention of women, keen to show what they knew.

'Ain't it endless?'

'Groundwater, that's thirty percent of freshwater, globally. Glaciers and icecaps nearly seventy percent. And look what's happening there.' Barb continued to chip in facts, concentrating as if she were laying decorative icing a cake. 'It's true.' She tapped towards her iPad, where she had been finding facts to relay.

'There's a lot underground. But we're not over the Great Artesian Basin,' Frankie said. 'Our aquifers are smaller, narrower, different geology around here.'

'Geology, eh?' One man said, as if impressed that such a scientific term was gracing the Cawling pub. Frankie knew that she was getting to the limits of her knowledge, felt the discomfort of having spoken too much. She gave a short nod to Lizard Green whose walk towards them could be described as a swagger, though something more crab-like.

'Frankie. Giddy, love.' Lizard nodded at Clem. His lips hardly seemed to move, his eyes glanced around the group.

'Lizard.' Frankie nodded at the man who had known her since she was a baby. They had an old way of saying their names and nothing else in greeting.

'You know this old bastard?' The guy beside Frankie indicated Lizard. She nodded. Frankie's repute lifted a notch with others at the bar.

‘What’s on the menu tonight, fellas?’ Lizard asked. They all knew he was asking where the conversation was going.

‘Funny you’re here, Lizard. We were just talking about groundwater. Frankie, here, reckons it’s to do with geology.’

‘Yeh, well. It is. It’s in rocks underground, aint it?’ Lizard gave a wink to Clem, who sat up, unimpressed.

‘Geology is a science. They believe they can measure things. Rocks?’ Clem started out confident, but dropped the word rocks like a stone into a still pond.

‘Measure rocks? What you talking about?’ I can do that with my tape measure.’

‘Sure,’ Frankie suddenly fired up. ‘Measure the way a mountain lifts over thousands of years, how a fault line separates fractures miles long. What about the minuscule pores between grains of sandstone? You gunna measure all that with your tape measures?’

‘Hold up.’ Lizard held out a steadying hand. ‘I could get all outraged too.’ He paused for effect. ‘At the assumptions of, what you call science, geology. Especially if you assume that science knowledge is better than practical knowledge.’

Four people started talking at once. ‘I’d back practical over science any day.’ ‘Blue collars over lab coats.’ ‘That’s right, Lizard. It’s what we do with our hands, not just sitting around thinking about things.’ ‘Science, never could get it at school.’

‘Ya gotta think, ya mug.’ Lizard leant back on the bar, his skin almost creaking it looked so dry. ‘I’m just saying that science mightn’t know it all.’

‘That’s right, Mr Green.’ Clem always called Lizard, Mr. Green, a childhood habit held onto for the comfort of the respect it created. ‘We don’t know everything, but we’ve got to keep looking.’

‘You’re into biology, right? Micro, tiny things?’ Lizard asked.

‘Yes, the pathogens that live in guts and blood. I do the tests.’

‘Do you count them?’ Lizard leaned forward.

‘Yes, sometimes. When the population density is significant.’

‘You count them, down a microscope?’ Lizard was bending his knees, as ready to make a pounce.

‘Well, we estimate.’

‘There! Gotcha! Estimate. That’s all you scientists do. Fancy formulas, straight line graphs and drawings, as if there’s one definitive answer. You bloody estimate. We all bloody estimate.’ He guffawed. ‘You all know how groundwater flaps up and down, seasonally. When it’s wet the water table’s high. When it’s dry it drops.’

‘Seasonal flap,’ one of the men along the bar imitated, his arms extended like the slow wings of a sting ray on an ocean current.

Frankie was on Lizard’s wavelength. ‘You know with hydrogeology, it’s particularly vague. You can’t observe groundwater. There’s a lot of fact, sure, but then the perhaps and possibilities start coming in. They don’t really know, where the water flows, how deep, what gets filtered.’

‘We know a hell of a lot.’ Clem jumped off her stool. ‘Micro-life lives in aquifers. Stygofauna. They’re important.’

‘Now that’s marginal living.’ Lizard said.

‘They’re mostly where groundwater blends with surface waters, rivers and stuff. Invertebrates, larvae of minuscule algae. Some can even live in hot springs, others in snow fields, others in the fluid guts of animals.’ Frankie supported her friend.

‘We’re all related, love.’ Lizard continued to egg the conversation to wider spheres. ‘Diversity is the occupying bloom in underground places.’

‘Traces of microscopic ecosystems, deep in the earth.’ Clem nodded.

‘We’re all connected.’ Lizard insisted.

‘Yer, Lizard. You always looked like you were related to one of those micro-things.’ A man up the bar snickered, elbowed his neighbour.

‘It’s what we do with our knowledge that counts.’ Lizard took a long draft from his beer, holding his gaze on the now squirming badgerer.

‘We gotta go,’ Frankie edged off the stool, reached her feet to the floor, suddenly feeling small.

As they walked to their cars Frankie said, ‘Who’d a thought that people are actually interested in this stuff?’

‘Glad you didn’t mention Kasha, true loyalties might have come through then.’

‘It’s always who you know in a small town.’ She looked for her car keys in her bag.

‘Keep talking to Helen. She knows her stuff.’ Clem nudged Frankie’s shoulder.

‘Yer, sure.’

‘Yep, sure.’

‘See you, Ugly.’ Frankie drove home, agitation growing inside. She planted her foot on the accelerator, swerved into her driveway. She felt heated by potency, smouldering memories meeting oxygen.

She dreamt long and complex dreams. Horsemen coming, galloping, endless galloping towards the stunned and waiting crowds. Why don’t they move, wave their hands, do something. Perhaps they’re trying not to be seen. Catastrophe will hit them regardless. The horsemen have all gone. Removed their weighty saddles and jingling bridles from sweaty heads and broad backs of noble equines. They’ve put down the cudgels and now lie resting on calm green meadows, blowing dandelion seeds, wondering what all the fuss was about. There is no catastrophe coming they seem to say as they whistle and hum in the sunshine. They are waiting to catch us all off guard. They’re just trying to fool us.

Even the horses are lying on the grass, noses resting on sweet earth, their tails curled over folded hooves. Their eyes are calm, knowing. There is no danger in the wind, no threat, no chance of suffocation from sands and dust. Relax.

You don’t see the wave coming. Run, run away from these dreaming deceivers. The voice of a newsman. You’re a panic merchant, someone shouts. Save the aquifer. Save the aquifer. Save the aquifer and you save life. A crowd of voices swelled, flags flew on a horizon.

Frankie woke from her dream, trembling, wondering who she'd been talking too. Where did her words come from? She wrote in her journal, let words flow.

*Some say nothing bad is really going to happen. So what if we have a few dry years. So what if the drought draws down the aquifers, and large, deep-rooted trees wither and crack, no longer able to reach their water source. That's what happens when you're taking a closed-eyed approach. You lose sight of the dangers. You can't point at an aquifer. You just curl up and enjoy each moment. They want to see you swallowed by all that they represent. Death's just resting, death's waiting to pounce.*

*Just because we can't see artesian water doesn't mean that it's not doing something, that it's not a source of life, the base of ecosystems large and complex above it. Fools try to capture all its elements. We can best leave it to connect and intermingle in all its wondrous ways. Ways we can't imagine.*

*Surely you want to understand it more. Doesn't it thrill you, petrify you to know that without one species of birds, say the Mistletoe bird, whole sections of forests will eventually die out. I cannot clutter my mind with too much detail. I simply want to see the large viewpoint. The aquifers need someone to talk for them. Who can best do that?*

*You can't talk for underground water if you're running fearfully from imaginary horsemen. See them there, resting, giving you a chance to get a word in. Speak up you say. I have no voice. You must speak. You are water itself, you must speak. Will you join this fight? It's not fought by individuals. We will shout together.*

The sun was already strong, she made a coffee on automatic, stood on her verandah looking out at the paddock. Carol stood by the fence licking the dew from tiny clover shoots. When would it rain?



## Six: AQUITARDS

A black-shouldered kite drifted onto a long-dead branch jutting from a yellow gum. Claws spread, she grasped the grey limb. Keen eyes under heavy brows peered across the landscape, spotting tiny lives, small wriggling opportunities for a feed. Forbearance. Arrogance in her pose, a silhouette against an early pink sky. A pair of galahs, tied together in flight, squawked and veered when they felt the pierce of the kite's gaze. Frankie watched all this from the veranda with a steaming coffee cupped in her hands. The day would be warm. She wrote in her journal.

*We've all been warned to use our eyes, our ears, to use all our senses to find our place, to know our place. We are momentary guests of the intrepid forces of Mother Nature. She is flicking her skirts, annoyed at the poking and prodding. She'll wave her arms more, let loose a flood or tornado or two.*

People were coming to Frankie's house to talk about how to make objections to Kasha's planning application. There was going to be a council meeting, they had to be prepared, Lois said. Despite not being house-proud, Frankie started a clean-up, sweeping into each small space. She tossed the broom away, thinking about how violence can spread across a group, feeding like grassfire on emotions that have simmered unknown and unrecognised. She feared such a smouldering might erupt at the coming council meeting about Kasha's plans. The expression 'lily-livered' spun in her head. Frankie imagined her liver had turned white and quivered, jelly-like.

She laid out mugs on the kitchen bench.

The current rumbling rage of farmers of the district was focused on what they saw as Frankie's suggestion that they desist pumping water from the ground. Her article in the *Cawling Echo* implied their foolishness in draining aquifers, lowering the water table. She'd described her concerns about increasing droughts, that recharge to local aquifers was not what it used to be. That there were more bores in the district than ever. The letters to the editor in reply reverberated with venom, reminding her of the rage of schoolyard boys who had their territory invaded. A woman's voice was not required, especially that of a midget with a wide neck.

She tossed teaspoons into a mug, cracked the ceramic edge, the mug shattered. Teaspoons clattered. Would she be able to take their shots, feeling like a freakish sideshow target? She threw the mug pieces in the bin, set out the teaspoons on the bench. She arranged tea bags, a jar of instant coffee and filled the sugar bowl. She waited for the gathering to take shape. Would she ever have the courage to speak, while around her farmers' desperations crawled and spread like molten lava? Was silence complicity? She took out her notebook and wrote:

*Imagine the state of living where the sound of an alarm, piercing loud, heralds not the frustration of a false alarm, but the urgency that there is a fire, a real fire. At this stage you can only see the smoke so you know it is somewhere, likely to be causing panic, real chaos somewhere else. You know the heat and destruction may happen here at some unknown time in the future. When do you become alert to a real future, but still a future that is not here yet? When do you start to take some precautionary or even life-saving action?*

*Cowardice - do cowards have white livers?*

*I look at my resistance to reaction or is it merely paralysis. The absurdity of over-reaction flares. I cover my ears and eyes trying to keep the alarm away, trying to stay calm.*

*What are my instincts? Can I bear to be in a state of continual hyper-vigilance? What of the usual dogged vigilance, ever on the look-out for guilt? There is a hustle, an indistinct fuzziness as to whether I move, whether I act, whether I even acknowledge how I have been affected by the alarm of climate change. I may*

*be immobilised, as if a patient asleep between two white sheets. I am alone in this stillness. Am I a frog being slowly boiled, my body tricked by slow increments in temperature?*

*Or I might be activated by some pre-emptive acknowledgement of terror, to be more than a banner-waving ranting protestor on a rally, marching with a horde of other activists, feeding my will. I might rush around crazed by alarm calls, ineffective against the coming storm of flames. What will I do? What moral courage can I muster? What capacity do I have to act on what I see as wrong?*

A knock on the front door, Frankie tucked away her notebook, greeted Lois, waved at Lizard and Betty who were climbing from Lizard's ute. She propped the door open. Wade pulled up in a cloud of dust. Before long there were seven people around Frankie's kitchen table, reaching over teacups for papers, talking over each other, asking questions. Wade was watching, not speaking. Lois had raised objections to council before, had an idea of how to write such correspondence.

'We should all compose our own letters. Tell the councillors how Kasha's plan robs us of water.'

'Shouldn't we speak to them too?'

'Yes, it all helps.'

'We have to show material loss, not just emotion.'

'I saw a water tanker coming out from Kasha's place last night. Sloshing water. Full,' Ariet Noble announced.

'Ah, the old sneak. He's selling his water, while he's waiting for the permit.' Lizard scratched at his chin.

'He can't do that.' Lois shook her head.

'Bottled water. That place down south, they can't get enough, to slap on their labels. Spring water.'

'Come to think of it, I've seen a few trucks going through town, recently. Thought it was people buying water in the drought.' Betty was stirring her tea, setting up a fast rhythm of clicks.

‘That sneaky bastard.’ Lizard’s eyes squinted, his head and body immobile.

Frankie had for years winced at what she saw as wilful blindness in many Cawling residents, wondered at the intractable wilfulness with which they kept their heads in the dark. Here she was seeing quiet determination, people gathering strength. As if the question of Kasha was too hard, talk turned to climate change.

‘I’m sick of how some people talk about the weather, how it doesn’t feel too hot to them,’ Lois remarked.

‘We’re all learning what climate change means.’ Lizard gulped his tea.

‘Some just learn faster than others,’ Betty quipped.

‘Been changes for a long time,’ Wade added.

‘None like now. Ever since we’ve been burning fossil fuels. Since the Industrial Revolution, they say,’ Ariet said.

‘Who’s riding their bike to these meetings?’ Lois challenged the gathering. The chipping sentences stopped.

‘Frankie, did you tell them about your horse?’ Lois resumed.

‘Nope.’

‘You should.’ The room quietened and all eyes were on Frankie. She wished she were under a bed, hiding. She took a deep breath.

‘OK, I’ll write a letter. I’ll phone the mayor. Should we arrange a meeting with the engineer? Who can come?’

Lois and Lizard raised their hands. A small tile slotted into place, a new trajectory was forming. Hope glimmered.

‘Good on ya, Frankie.’ Lizard clapped her back.



‘What did you work on last night?’ Clem had an appetite for the macabre of the factory work. Perhaps she was helping Frankie let off steam. They sat on Frankie’s bed with her latest assignment and text books strewn around. Frankie would always oblige, but couldn’t tell Clem that she looked at death most times she entered the

factory floor, garbed in plastic apron, plastic sleeves, blue plastic gloves, how she felt the shadow of her own potential to die. How her thoughts wandered to weird ideas. How at the end of each shift she experienced the compulsion of her body to avoid death, despite slurring towards that dead-end in her bone-weary tiredness.

‘I was on the bandsaw. And the floors are hosed down with high pressure bore water every night.’

‘One of many industries tapping aquifers.’ Clem sucked her pen.

‘Occasionally the women on the bagging table yell out, ‘Hold-up’. Their table gets full.’ She explained to Clem how they needed time to catch up. ‘I turn off the bandsaw. Always the slowest cog in the machine sets the pace.’ She told Clem how she waited till the baggers were ready to slip more enormous legs of ham, or whatever shaped product, into bags to be vacuum-sealed. ‘And while I’m waiting, I’m thinking about all sorts of things. Like frogs, about how frogs would simply die in there, saline, briny place. My hydrogeology assignment. Mostly how to stop Kasha Duff drilling more bores around here. How I can nail him for the death of our horse.’

‘Thought you wanted to save the water, not get Kasha.’

‘Retribution is tempting.’

‘Not worth it. Stick to the issue.’ Clem was ever the voice of reason.

Frankie occasionally had aspirations to fly. In dreams she could soar from a hillside and glide swiftly down to the township and along streets, just above the traffic, dipping to avoid power lines. She told Clem how, in a moment of spontaneity, feeling hidden in the noise of the factory floor, she raised her arms as if to flap them gently, as would a pelican considering flight, taking off from a lake. She stood on the bed to demonstrate.

‘Workmates stared, looked away.’ She flopped back onto the bed, realising her ungainly gesture. She might have freaked out her work buddies. Perhaps they thought she was thinking to escape the next task. Perhaps she went to a place where fantasy was a more likely survival strategy than clinging to reality. In the moment of simulated flight she felt gracious and powerful for an instant, imagining the power of Pegasus was there to glide her away from the cold.



The work at the ‘Pig’ became familiar, but never easy. Each smoko Frankie headed for the same table, the place in the clattering canteen where she might run into Wade Keane. Conversations started slowly.

‘That long pole hurt your shoulders? Carrying it, and that?’ Frankie asked. He shrugged. ‘Must kill your neck, looking up for hours.’

‘You get used to it.’

She told Wade how the work made her feel shut down, for survival. He shrugged.

‘Can’t wait till I don’t have to work here anymore. I’d rather spend my energy on more useful things. Like learning about frogs, like understanding how groundwater flows.’

‘Yer, there’s a lot to learn.’ Wade reached for salt for his chips, bumped hands with Frankie. Both snatched their arms away.

‘I need my energy for this groundwater thing. I don’t want to make it just about Kasha, about retaliation, even though...’ She paused. ‘Keep it simple. It’s just what seems inherently sensible. Don’t stuff up the water supply. We all need water. It’s not just a resource for some.’

‘Yeh, I know. You keep saying that.’ Wade was hunched over his chip bowl.

‘Just got to write this letter to council, make my objections make sense. You writing one?’ Frankie asked.

‘It’s not just council, you know. It’s the water authority around here too. There’s this big government organisation that manages all the ground water licences. I talked to my mentor about it and he explained that there’s this place called Central Goldfields Water Authority, and they control all the groundwater management plans for each district. They determine how much groundwater can be pumped.’

‘What mentor?’ Frankie asked. The hooter rang.

‘Tell you later,’ Wade shrugged. They returned to work, missed each other at the end of the shift. She stayed up late reading about the local water authorities. The next night at the smoko table Frankie started.

‘What mentor?’

Wade took a deep breath and started to explain how his aunties and uncles were involved with the local Aboriginal organisation, Yaluk Cooperative. Elders from the district were taking time with young men and women to pass on culture and information.

‘It’s because lots of us haven’t got much family, between removals and those who keep getting put in jail. Not my mob though. They been working around here for years. So, anyway, we learn from those who know culture, remember some stories.’

‘Sounds a bloody great idea. I wish I had one.’ Frankie paused. ‘But I’ve got Helen, and Lois. And I guess there’s Lizard. Aunty Bub. And I suppose my dad told me things.’

‘You got good circles. We never ceded this country, you know.’

‘What?’ Frankie leant forward to hear.

‘We still care. Living on country is like,’ Wade paused and looked at the ceiling. ‘It’s just about as good as it gets.’

‘So how come your mentor knows this water authority stuff?’ Frankie pushed her ear muffs to the back of her neck.

‘Long story. You got time?’ Wade looked at the canteen clock as Frankie nodded. ‘Short version for now.’ He leant towards Frankie, looked over his shoulder, started to talk.

‘Some people think its only about land for us Koories. They forget we lived around waterways, they were lifeblood to country, our veins. They were the first places stolen from us, bogged up by white shit and sheep crap. They pushed us back to poor country.’ He paused. Frankie nodded.

‘So now we’re having more of a say about waterways. That’s where many of the scar trees have survived, not chopped down by farmers. We call it cultural waters. The songlines of rivers and creeks and waterholes. Gotta keep them going to keep the water flowing. Waterways are country too.’

‘Shit. That’s important stuff,’ Frankie murmured, flushing.

‘Yer, lots to learn. My mentor is on some committee, they’re writing letters and stuff to the government.’

‘Letters, letters.’ Frankie scraped her plate. Checked the clock.

‘That’s one way. Talking is harder.’ Wade mopped gravy with his last chips.

‘Reckon. So I’m trying to find out why the local watertable is dropping. You’ve got connections to the water authority that gives out the permits.’

‘Better keep talking.’ Wade grinned.

‘They reckon they know how much water is down there. How much to allocate.’ Frankie had started to read the groundwater management plan for the Cawling/  
Broadville district, written by the Central Goldfields Water Authority.

Wade watched Frankie’s face, nodding. ‘How do they know?’

‘Hydrogeologists measure, well they actually calculate an estimate of the aquifer’s capacity. Helen told me.’

‘What? How do they really know how much water is under the ground? Thought you said that they don’t know how big aquifers are.’ Wade lifted his shoulders, furrowed his eyebrows in question.

‘Helen, my mate the hydrogeologist, says there are formulas, depending on the porosity of the rocks, their permeability. Darcy’s Law. And they have test bores around the place, where they actually measure the height of the watertable. They put the results onto maps, shows the flow direction.’

‘You can’t map underground, can you?’ Wade was scratching his head.

‘Hell, I don’t know. I’m still learning this stuff.’



At midnight when the swarm of workers scurried from the factory to their vehicles in the carpark, red glowing tips of cigarette-ends dispersed in the night, trailing wafts of cigarette smoke behind them. Frankie felt like one of a colony of teeming ants, with hardened faces. The trajectory homeward was unstoppable. She kept an eye out for Wade, walked with him towards their cars. They leant on the bonnet of Wade's ute, looked at the spread of stars in the sky.

'Glad that's done for the day.' Frankie puffed air through her lips. Wade watched the sky. After a moment of enjoying the warm night air, Frankie turned to Wade, asked,

'How do you see country? Your country?'

Wade started talking soft and fast, like a plug had been taken from a deep bowl and the water was swirling away, unstoppable.

'Not like Google, like. Not like you see the pixilated squares of agriculture, each paddock a different colour, depending where the cropping or grazing is up to, with lines of roads and railway tracks and stuff stretching out like webs from little clusters of buildings. That's the satellite stuff. Sort of like our bird's eye thing. My ancestors knew their country, like, the details, but without the farming pattern stuff, bigger, more blurry. I don't know this stuff. My past got broken. I'm just learning little fragments. Still gotta make the big picture.' He lowered his head, sucked air through his teeth. 'But we're learning. We're getting our place back. Starting with good water.' Wade ground his fist into his palm, shot a glance at Frankie who watched him agape. The car park was nearly empty, the dust settled on the few remaining vehicles of night-shift team. A chorus of frogs in the reeds beyond the carpark sang out.

'Same journey. Same water journey.' Frankie said.

'Suppose. Just different highways.'

'How different?'

'For us mob, we follow water, watch out for everything it does, where it goes, in the sky, in the ground, how it moves. How we fit with it. We're not so much about stopping up the flows, dams like, taking it, pumping it from place to place.'

'I want that water looked after too, you know.'

‘Those rivers are Country, places we used to find food, make Ceremony.’

‘Ceremony?’

‘Yep. Not much now, but it’s still important.’ Wade yawned, stretched his arms tall, as if he might reach through the heavens. His jumper lifted, his shorts dropped.

‘I gotta go.’ Frankie headed towards her car.

‘Frankie.’ He didn’t argue, accepted her pronouncement. He backed away, alarmed at the intensity of her smile, as she bolted to her car. She was on her way home before Wade had finished gazing at the stars, climbed into his cab, scratching his head.

Over the next week Frankie worked in the factory each night, studied in the day. At the canteen table she sat with Wade, encouraged him to tell her about his family, a trail of connections and broken branches from his parents, to aunts, uncles and cousins. She told him about Claire and Lennie, Aunty Bub. They shared what they knew about the Linden River swimming holes.

At home she wrote and re-wrote her letter to the mayor about Bob, finally posted it, happy with her research on the downdraft caused by deep drilling of groundwater bores, how the vortex underground robs shallower bores nearby, maybe even watercourses, as aquifer levels drop in a funnel-shaped pull towards the deeper bore. How Kasha’s unauthorised drilling had killed her horse.

## Seven: DIVINING

The ceiling creaked, walls dripped in heat, stifling air caught in cracks. Cobwebs drooped in dusty strands, flies congregated, thick under eaves, seeking cooler shadows. Frankie scanned weather predictions on her iPad. She peered at radar loops, watching small white patches of clouds jitter across the map and dissipate over Cawling. Arcing low-pressure systems slid away to the south, or stayed resolutely in the north, seeming to avoid central Victoria as like poles of a magnet push iron-filings away.

Sleepless, restless, she decided a walk in the forest might calm twitching legs and mind. Bark and sticks crackled underfoot, tree trunks shimmered under moonlight. A gentle breeze softened earthy smells. Dry lichens and blackened mosses clung to a low ridge where tipped up layers of rock emerged like rows of giant's teeth. She heard a dog barking, muffled, close but far. The whining, crying grew louder as she reached a thickened patch of cassinia. Listening carefully to track the sound, she crept towards the source, a dark hole, from where the now frantic barking rose. Around the edge of a mineshaft quartz glistened. The cavity, about a metre and a half in diameter, dropped to blackness, no ledge or curb, no covering. A mound of overburden lay like a sleeping beast a few metres from the mouth. A yellow gum sprouted from the pile of rubble, tough and tenacious, its sapling trunk contorted. The dog cried, a high-pitched howl in relief, in anguish, in desperation to be rescued.

'How'd you get down there, ya dope? Don't worry, I'll see if I can get you out.' She heard the dog panting, the rustle of falling stones as it scrambled at the sides and fell again to the bottom.

‘Hang on there. I’ll be back.’ Frankie guessed that her ladder should reach. She left the wailing dog, and hurried back to her shed, collected a long rope and the wooden ladder, thankful that Lennie had left some things behind. She grabbed a torch from the house and headed back into the bush.

Once again the sounds of the crying dog led her to the hole.

She knew from Claire and Lennie’s cautions to her as a child that there were many disused mine shafts scattered in the forests of Central Victoria, remnants of 1800s gold prospectors. Some were old wells and water cisterns where miners tried to store water for long dry summers.

‘Legacy of the walk away approach,’ Lizard Green had called them.

‘Too many to be filled in, on public lands, on farms.’ Lennie had shaken his head, growled that they were used as rubbish pits for mattresses, couches, washing machines. Frankie had once seen an old Vauxhall leering from an abandoned shaft, rusted and dinged with bullet holes. This shaft was well beyond the reach of vehicles, hidden in a clump of cassinia, less than a kilometre from Frankie’s house.

The dog whimpered.

‘Nearly there, buddy.’

Frankie tied one end of the rope to the nearby tree, the other to the top rung of the ladder, lowered it over the edge of the hole. It dropped from her hands to the base, disappeared in the gloom. She peered over the edge. Should be able to reach that, she thought. She tested the end of the rope tied to the tree, lay on her stomach and stretched her legs down towards the ladder, the rope coiled around her hands. She lowered herself, dropped onto the top rung. Sharp stones grazed her chest and upper arms. Clinging to the rungs, she climbed into the hole, into the dark. The desperate dog jumped at her, scratched at her legs, panting, barking, whining, all at once.

‘Steady, steady.’ Frankie pushed the dog down and patted a broad forehead, a chunky collared neck and thick body. ‘Shit, I left the torch up there.’ She held her hands on the dog’s back, it turned sideways, quivering, glad for human touch. In the pitch dark she could not see its colour.

She bundled the dog in her arms and tried to climb the ladder, with it dripping on her hip. The dog was heavier than expected. She made it up one or two rungs before the dog wriggled and leapt back to the bottom of the hole, started jumping at the base of the ladder.

'Hold up, don't knock me off.' Frankie climbed back down and tried again. Same effect with the boisterous animal. 'Wait there then, I'll get more rope.'

Frankie climbed up, perched on the top rung, and tried to pull herself up to the top. Rope burns blistered her hands. She did not have the strength to shimmy back to the surface. She tried every possible way to scale higher, to grasp the edge, nearly fell.

'How the hell did this happen?' She fumed. Stuck in a hole, with a dog, no way out. She finally climbed back to the bottom of the shaft, exhausted. Blackness. The sky at the top of the hole a dark circle, no stars, vague traces of tree branches that leaned together, conspiratorial. She yelled at the top of her voice, 'Help,' but realised that hers was the closest house, and that no one in their right mind would be walking in the bush at this time of night. The dog stopped whimpering, stood with its front paws on the too-short ladder, its wagging tail whipping at her legs.

'If you weren't so heavy and wriggly, I'd get you out. You mongrel.'

The bottom of the hole was littered with stony rubble. The hollow clunk of a kicked can told her that someone had cast rubbish, thinking it was away. Never away. She reached for the sides of the shaft, which in the dark, felt cool, rough. There was a section of brickwork; it might have been the start to a water well. Rocks fell when she tried her weight on them. Moss felt soft under her fingers.

Frankie estimated it must be about two in the morning, that daylight would come in about three to four hours. She held her hand in front of her eyes, nothing. She touched her face and was almost surprised to feel its reality. She explored her hair, her arms for the comfort of knowing something of herself.

She sat cross-legged at the base of the ladder, suddenly bone tired. The dog eventually curled to lie down at her feet, trusting. Frankie tried not to think of spiders, snakes or millipedes, or other venomous creatures that could dwell in cracks and crevices in the shaft. Above an owl hooted, a magpie lark chortled. Cold air dropped into the hole, circled Frankie's neck, reminding her that time did exist.

Her eyes sought relief from blackness, peered towards the gloom and shadows on the walls above her. She tucked her hands in the folds of the dog's neck-skin, trying to keep warm.

She entered the edge of sleep, where time folds into itself, where consciousness skirts the sides of dreams, where discomforts escalate. She ached with cold, her head jerked from her chest as sleep dragged her in and out of consciousness.

Water moved around her, through spaces in rock. Through her. Deep, dark, slow, infinitesimally slow. Liquid matter beneath the surface, fluid-filled matter, spaces within rock, within her, spaces brimmed. Subterranean flows. Water seeped, underworld life. Seep, seep, slower than sleep. Deep, dark, underground dark.

Time passed. Frankie dozed, watched dreams flicker. Water dripped and pooled in a dragon's cave, the scaly whipper-snapper slept through the dowsing. Volcanoes spurted fire, earth-shaking destructions, groundwater dropped deeper.

Springs released water to the surface, to light. Gushed, bleeding. Met air in a rush. Gurgled, hissed and flowed, pressure released.

Through grinding crust's cracks and pores, water cried an array of symphonies, in forms as varied as those composed by whales. Not one song. Rocks groaned and growled. Water whispered as it passed. Unheard, imperceptible tones.

Frankie groaned in her sleep. In her dream a water dowsing probed water's presence with pieces of sticks, the tingling skin of hands. Lennie appeared, claimed that divining was something extrasensory, more like perceptions.

'Like magnetism, you feel its presence, you search imperceptible tones.'  
Lennie's voice.

'You find the places to prick the crust, to bleed it dry, you mean,' Frankie replied.

A clan of musicians, diviners, hydrogeologists, rallied, carrying placards, marched in rows across a hill, lock-stepped, holding hands. Enormous machines scratched holes, uncovered sediments. A water-borer pierced deeper, ever deeper, buckling rods. Dropped a pump, sucked water to the surface. People threw their hats in the air, happy with their stab holes. Pressure released, artesian flows.

Something goes. Joys and grief grappled side by side. There's only so much to give. Aquifers are on life support.

Mosquitoes droned in Frankie's ear, she slapped at the air.

'Life support. Life...' Frankie heard her own voice, snapped to attention as the first sounds of the dawn chorus found their way into the cavern. The sky above glowed purple.

Frankie stretched, stiff and sore, bursting to urinate. She squatted under the ladder, relieved herself. The dog sniffed the spot, added its own contribution.

She tried again to climb from the top of the ladder, but again found the surface tantalisingly out of reach. She cursed her size, her lack of strength, shook the ladder in frustration. The dog shot to the other side of the hole when a rock dislodged and fell with a crack to the base of the hole. She climbed back into the gloom and watched the circle of light above change from mauves to golden, to harsh white as the heat of another day rocketed above. In the hole she was cool, damp, hungry, but primarily thirsty. The acrid smell of urine, pervasive.

Time and time again she climbed to the top to the ladder, yelled and screamed, invited the dog to join her chorus. Eventually it too howled and barked as she balanced at the top of the ladder hollering. An hour or more passed between her efforts to attract attention. In between she sat with her thoughts, watched them ramble and weave, started to wonder would she die down here with the dog. Who would last the longest? Would she eat the dog? Would the dog eat her? Breathing hard, smelling the dank, musty air, she felt around the ground for rocks and stones, an armoury, a way to raise the height of the ladder.

A frog grizzled near her. Perron's Tree frog, she thought, sometimes called Maniacal Cackle frog. What would you do with a name like that, she mused, wondering where the frog was in the dark. Imagining its fragility of skin, the kick of its legs, the bulge of its eyes.

'I will be a frog.' Her voice was soft. She remembered how she leapt into water, breast-stroked back to shore, held herself in stillness, immobilised, waiting. She swam underwater, in a bubble. As children Frankie scared Clem when she stayed underwater at the dam for too long. Now, in the mineshaft, she bent low, checked the air, smelt invisible insects. The frog called, loud, piercing.

By mid afternoon, parched, hungry and exhausted she tried throwing stones in the air out the top of the hole.

After one toss, she heard a familiar voice, unmistakable.

'Hey, what's that? Who's there?'

Frankie screamed, from the ladder, yelled to the sky, 'Help. Help. We're here. Down here.'

Kasha's ruddy face emerged across the face of the hole.

'What you doing there, Froggie? I mean, Frankie?'

'Kasha. Hell. There's a bloody dog here. We're stuck. I can't get out.'

The dog barked, hysterical.

'So that's where you are, you scoundrel. Spud.' He called her name. 'I've been looking for her all day. She took off yesterday afternoon, didn't come home.'

'Hey, you're not Kasha's dog?' Frankie looked towards the dog, heard her tonguing, whining at the sound of Kasha's voice.

'Course she didn't come home, she's stuck down here, and because I tried to rescue her, so am I. For god's sake get me out of here.' From the top of her ladder Frankie looked up at Kasha's legs and under the rim of his hat, his face looked distorted, upside-down.

'What about my dog? How will I pull her out?'

'Use this rope. I'll tie her, safe. Steady the ladder.'

Kasha grunted assent and untied the rope from the tree, held the end firmly while Frankie took the other end down to the gloom at the bottom of the hole. Her hand felt for the top of Spud's broad forehead.

'Sit. Lie down, ya mut.' She trussed the dog, cradled rope around Spud's chest and stomach, twitched her legs together so she couldn't struggle or be strangled.

'Hey, Spud. Nearly gotcha.' Kasha called words of encouragement.

'Ok, pull her up.' Frankie called, lifting the terrified, but tightly bound dog up the first stages of the ladder. Kasha heaved on the rope, dragged his companion



over the edge of the shaft onto the surface. He untied Frankie's knots. Spud ran in crazy circles.

'Ok, see ya.' Kasha called, and made to walk off.

'Ya bastard. Throw down the rope.' Frankie raged.

'Here you go, just kidding. Stand clear.' Kasha dropped the rope slowly into the gloom. 'Tie it around your waist. Get out of it, dog.' Frankie heard Spud whimper as she slid away from a swipe.

With the rope wrapped around her waist, Frankie climbed again to the top of the ladder. She reached up towards the ledge and waited for Kasha to pull her out. He heaved. Frankie scrabbled for the surface but could not get a purchase. They tried again, the rope burning Frankie's skin as Kasha pulled.

'What'd you have for breakfast?' Kasha squawked.

'Shut up.'

'Sorry, love. I'll have to go get some help.' He hated admitting he had not the strength to lift her. He pushed his way out of the scrub, not waiting to hear Frankie's muffled reply.

'Shit. Weak bastard. And next time, look after your fucking dog.' Frankie heard Kasha's footsteps recede, felt the silence of her earthen cave descend.

Alone. Time unfettered. Aloneness. She remembered Lennie. 'Go beneath the surface, love. Get under the skin.' In the deep dark hole she felt synapses to deep inside pathways.

'Below the surface now, Dad. Well below. Plenty of time to consider things down here.' Her voice was low, sounded muted, muffled by the close press of earth. She waited in silence, listening, thinking of her half-dreams during the night. Thoughts rattled. Why Kasha's dog? Why me? What's down this hole, in this earth? She tried to make a silent space behind her brow, to select one thought from her cluttered mind. Consider it from all angles. What's the geology of this place? What would Helen see down this hole? What can aquifers tell me? She imagined sounds of earth's incremental shifts, the slow drizzle through fractures as the walls to the shaft breathed on her. From the mix of memory and geology a thought illuminated her mind. A sentence formed, word by word. She spoke it, her voice at first muffled.

'Groundwater must speak. Groundwater must speak out. Groundwater must itself speak. Groundwater must have a legal voice, a voice in the courts to be heard.'

A legal entity. The thought repeated and repeated. Legal entity. Groundwater must speak as a legal entity. Beneath the surface, she felt immersed in layering of millions of years, sedimentation, immense pressures of folding, heating, cracking. Beneath the surface. In these walls, thousands of stories were covered, revealed, both. Groundwater must speak as a legal entity. At least she knew she wouldn't die down the hole.

Thirsty, disoriented by time, she crouched, finding comfort in the pose of a frog. Her hands held her chin, her elbows rested on her knees. She waited. Her neck ached from looking upwards towards the circle of light above.

Frankie heard Kasha's return, the ricochet of his voice against trees. He was talking to someone. Then he called down the shaft. 'This is the first codger I found.'

Frankie started to climb the too-short ladder and saw Wade leaning over the edge, peering down into the hole, his face sweating in the heat, melted by gravity.

'Shit, Frankie. You're sure stuck.' Wade called.

'Get me out of here.' Frankie's sense of equilibrium evaporated. For fleeting moments in her waiting time she had felt calm. Now she just wanted out. Kasha had brought extra ropes and together with Wade hoisted Frankie from the hole. She popped out, not unlike a cork released from underwater. On the surface again, she smelt the grass, the sweet tang of eucalypts. She felt both heavy and light, clean and dirty, free and constrained. Spud sniffed her.

'You alright? I'll help you home if you like.' Wade offered her his hand.

Kasha bundled his rope into a perfect coil, his arm extending as he looped it, rhythmically into his hand. He flicked the final hank around the coil, flopped the coil over his shoulder.

'I'll be off then.' Kasha turned to leave, Spud at his heels.

'Thanks for the time with your dog.' Frankie rolled her eyes. They looked at each for a moment, the unspoken fight snarled, before Kasha turned his back, hunched away, Spud trotting ahead.

Frankie turned to Wade, 'I'm right, thanks.' Frankie rubbed the burning welts around her waist. He nodded.

They each walked away separately, in different directions, their paths spoking away from the shaft, as they picked their way through the bush to their own destinations. Frankie toward her home, Kasha to his car, with Spud darting after forest-floor smells. Wade strode up the highest ridge in the forest. The ridge overlooked the region, was where rain first entered the ground, was the place where he could see both distance and immediacy in one glance.



Two days later Frankie met Lizard as planned on the corner behind the pub. As she climbed into his tinny Toyota ute, a familiar smell of old man and timber shavings assailed her. Lizard often made her feel nostalgic.

'Lizard.' Frankie nodded at the man who had watched her smearing peanut butter on her school lunches, had called round at odd hours to keep half an eye on Lennie after Claire died.

'Frankie.' Lizard fired up the ute, ground the column shift gears into place and drove off, leaving a cloud of burnt oil behind. 'How's the underground? You and Spud.' Lizard hid a smirk.

'Bloody hell, word travels fast. No comment.' Frankie flushed, was wondering what Lizard had called her for, where they were going.

Lizard explained that he wanted to show her a favourite place, a place not grazed, nor razed, nor trashed by miners. 'Somehow they missed this place. An unburnt forest is rare these days.'

A dry creek crept through open box-ironbark woodland. Even in the heat of summer there was a softness, a largesse in the sweep of the hillside, the limbs of ancient grey box trees reached for the pale blue sky. Herbs and grasses flourished, mid-story acacias bounced. A pair of long-billed corellas loafed in a hollow of an enormous dead bough, seeming to lean towards each other, wing feathers touching. Their pink smudged faces and drooping beaks seemed melted by the simmering warmth. They flew off together as Lizard and Frankie approached.

An ephemeral creek bed was filled with smooth stones, rounded and scoured by a millennium of intermittent flooding flows. Caramel browns and dark greys, the rocks knocked against each other underfoot, sounding like lawn bowls. There had been water here, but for the past ten years, nothing. Frankie peered under stones hoping to find a frog, or insect worlds. Some were homes to centipedes and slaters.

‘What are we looking for?’ Frankie asked.

‘Adam’s Ale. That’s how I see it. Ageless and sweet.’ Lizard was searching for ways to tell Frankie about his passion for groundwater. He rambled through a series of questions, half sentences, part formed ideas that together sketched a picture for Frankie of his ideas and thoughts. ‘If Neptune is the god of under the sea, why isn’t there a god for groundwater?’

‘Maybe it’s a godless place.’ Frankie was still peering under stones.

‘There’s magic in the emergence of water from rock. Maybe there is a god of aquifers. We just have to make it up.’

‘Sure.’ Frankie moved a larger rock with her toe.

‘There’s been droughts before, girlie. There’ll be droughts again.’ Lizard scratched at his scalp. Frankie quashed the retort that she was no longer a girl.

‘Yes, but there are more people in the district now. Nearly as many as the sheep. And humans use more water.’

Lizard shot a glance at Frankie. ‘It ain’t just the town’s bigger. All the hobby farmers around the edges, on their ten acres and that, they’ve all got alpacas or horses or donkeys, or think they can still water their gardens, have lawns like bowling greens.’

Frankie hesitated, thinking of the amount of water her horse, Carol, was drinking. ‘And they’re all getting Kasha to put down new stock and domestic bores,’ she added.

‘It’s drying out down there for a lot of reasons.’ Lizard pointed to his feet.

‘For stock and domestics, they don’t need a license for the quantity of water they take. But I think they have to register their bores with the water authority.’ Frankie wanted to show Lizard what she was learning about groundwater.

‘The rules are different everywhere, you know. Different regions, different states. Different countries.’ Lizard continued along the creek bed, scouting for signs of greenery.

‘That’s right. Here you only need a licence for commercial use of bore water. The government monitors what’s used for irrigation, factories, and industrial stuff. But not for private bores.’ Frankie felt a small flush of confidence in her knowledge. Lizard raised his eyebrows.

‘Yes, they monitor commercial bores. Government. Waterboys.’ Lizard repeated Frankie’s statement as if he’d always known it.

‘That’s what I just said, Lizard.’ Frankie knew that Lizard repeated women’s words, expected to be given credit that they were his. She continued. ‘But the water authorities might soon start trying to monitor stock and domestic bores too.’ They walked in silence along the dry creek bed.

‘You know who controls the groundwater now, Lizard?’ Frankie asked, but before Lizard could reply she added. ‘Aquifers cross borders. Surface borders mean nothing to an aquifer. It’s not simple.’ She drew a line in the air, so they both knew she was talking about the arbitrary lines on maps.

‘Never was.’ When Lizard sat down on a log, scratched his head, Frankie knew he was going to take the long way round in this conversation. ‘Betty isn’t the only one to know that biblical stuff.’ He paused, plucked grass stalk, sucked the end. ‘Isaac moved his clan to the Well of Lahairoi. Translation, Well of the Vision of Life.’

‘Betty told you that,’ Frankie swiped at a fly.

‘Water was their life stream.’ Lizard looked at the sky.

‘Still is.’ Frankie wandered towards a large grey box, wider than her arm span, peered up its trunk.

Lizard continued. ‘We don’t see it that way nowadays. Take it for granted. Mostly people don’t even know where their water comes from.’

They walked on in silence, blow flies cutting the air, heat trickling into their bones.

‘Groundwater gets whatever’s left over, after everything else has a go.’ Frankie mused.

‘This is not the River Jordan. Imagine the rows over that water.’ Lizard sat down again on a fallen branch. ‘Palestine and Israel draw on the same aquifers that feed the rivers that flow through both their territories.’ He paused while Frankie turned towards him, impressed. ‘Israel diverted a whole river out of Lebanon for themselves. Jordan and Saudi Arabia both pump from the Disi aquifer for agriculture and for their cities.’ Lizard took a deep breath.

‘Makes our State water arguments look like playground spats.’ Frankie said watching Lizard searching the inside of his skull for what he was trying to express. She continued before he could find it.

‘Where the wells and bore sites are found is based on a combination of geology, economics, politics, laws, right?’

Lizard nodded.

‘So how did those bible people work all that out? It’s bureaucrats and accountants in offices controlling things nowadays.’

‘Where’s the moral considerations?’ Lizard ignored Frankie’s question. ‘Some people bloody pump aquifers to top up their swimming pools. Why don’t we remember the ecosystems that rely first and foremost on groundwater?’ Lizard gulped his growing agitation, tightened his lips ready to sprout his outrage.

‘Lizard, what? What’s the matter?’ Frankie stood near.

‘We’ve just lost the ways of finding...’ Lizard paused.

‘What are you trying to say, Lizard?’

‘You know your dad was a diviner?’

Frankie nodded.

‘Well I always wondered if you had the gift too.’ Lizard looked sheepishly from under his hat. ‘I’ve got some sticks for you to give it a go.’

‘Lizard! Hell. I don’t know.’

‘Go on Frankie, give it a shot. Along a dry creek bed is as good a place as any to get a tweak. They say the water flows under the surface in the ancient stream beds. Deep leads. Electro-magnetic fields give them away. Reckon you can find it? You got the touch.’ Lizard half grinned, enticing, provocative, nervous at once.

‘Hell, Lizard. I thought you were going to tell me something I didn’t know about Dad. Some long lost secret.’

‘Maybe it is something you never knew. We’ll find out if he gave you the touch. The touch for water.’ Lizard held out two sticks with the bark rubbed off, smoothed to a low sheen. Their surface patina attracted Frankie and she reached to touch the wood. Lizard handed them over. Frankie examined the sticks, fingering the tactile curve and flow of the wood grain.

‘Where’d you get these sticks?’

‘Found ‘em. At Lennie’s place. He said I could borrow them.’ Lizard sat stock still.

Frankie knew that Lizard had occasionally visited Lennie at the cabin, to fish and chew stories with his old mate.

‘These are Dad’s dowsers?’

‘Thought you’d better try with the best.’

Frankie smoothed the sticks in her hands, recalling her father’s nobbled knuckles rubbing them down with an oily rag. She saw an image of Lennie threading his way across a paddock, led by his sticks out front, head down concentrating on the deep cycles of earth, its magnetism, its deep time stories. She’d heard that Kasha kept a pair of wires under the front seat of his bore rig truck. Brought them out each time he pulled up for a dig. She was convinced he was making it all up. She stared at her father’s divining sticks, remembered playing with them as a child, Lennie shouting at her to put them down. ‘They’re not toys, you know,’ he’d bellowed.

‘OK.’ She sighed deeply. ‘But don’t expect anything. It’s probably bullshit.’ She remembered her geology teacher scoffing at the suggestion that diviners could really find water underground. He told the class that diviners worked a few short tricks, looked at the landscape for the most likely place to wave their wands. Some

even rang up hydrogeologists to get the overall locations of water before they went on to a site to hoodwink the landowners. Lennie had always scanned the landscape when he went dowsing, went to the lower spots in the land, looked out for the biggest trees that might be tapping into aquifers. But what made his sticks dance in his fingers like puppets? A memory of his twitching hands gave Frankie a tingle up her back and neck.

Frankie held out the sticks, balancing them between her thumb and the middle joint of her index finger, as she'd seen Lennie hold them.

'You've got it, love. Go on.' Lizard encouraged her with a gesture up the creek side.

Frankie walked slowly, balancing the baton-like sticks in her hands. Her skin touched them lightly. She wondered what she might feel. She placed each foot cautiously, stepping over rocks and logs, sticks crackling, long grasses waved seed heads and bumped her shins. Birds called her approach. She froze when a brown snake slithered away, disappearing into undergrowth. She turned in the opposite direction still holding the sticks out front, till her arms ached and beads of sweat dripped down her back.

Lizard was perched on a fallen log in the shade of a tree on the edge of the creek bed, watching her every movement from under his hat.

'This is hopeless. I don't know what I'm doing,' she called, stretching her arms.

'Keep at it, love. It's an ancient art.'

'Come on, Lizard. Lets go home. These are Dad's sticks. It's not my thing.'

As Frankie approached Lizard, she held out the sticks one last time. The air thrummed with cicadas, dry heat vibrated. Perhaps her toe stubbed a rock, perhaps she stood on a twig which cracked and made her jump. The sticks twitched and wavered, pulled her hands towards the ground. She let them drop.

'You've found it. You've got it.' Lizard leapt to her side.

'I just tripped, Lizard.' Frankie collected and clutched the sticks together.



‘Come on, dig here.’ Lizard wouldn’t take the sticks, was on his knees, scratching at the ground, pulling at a large stone. As he heaved it from the earth’s hold a dribble of water pushed into the hole. ‘I knew you could do it. I knew.’ Lizard stood up beaming and held Frankie’s shoulders with his dirt-covered hands. ‘Look, you found it!’ Lizard jiggled a little and bent to cup his hand into the tiny puddle.

‘It was always there. We’re in a dry creek bed. Look, the hills around mean that this is where the water has to collect.’ Frankie waved the sticks in front of her face to hit away the flies as well as dismiss Lizard’s claim to her success.

Lizard let the dribble of muddy water run through his fingers. ‘Wish I could tell that father of yours.’

Frankie flushed, strutted away, heading back towards Lizard’s car. ‘Come on, I’ve got uni work to finish. A geology assignment actually. This is crap.’

Lizard rubbed the sludge between his hands, wiped it onto a rock. He followed Frankie, muttering. ‘I told that old bastard that she had it. I told him.’



Local farmers pulled into Cawling in dusty utes, sauntered in to the milk bar to buy bread or cigarettes, heads down, as if guilty for being away from their toil. Some stayed in the pub. Isolated, demoralised by the relentless grind of seemingly futile farm work, repeating tasks they knew led to no financial return. Old farming families who had seen droughts come and go over the century were beyond being stoic, wondered whether they’d see this one through. Women took whatever off-farm work they could find, feared the contagion of suicidal tendencies lying behind their silent menfolk. Across the region, seven men had ended their lives over the past five years as mortgages were called up, as their options shrank to nothing. Banks tightened their strangle-hold, murderous, making cold-hearted clutches at money that was not there.

Frankie and Clem continued meeting at the Cawling pub on Friday nights. The regulars let them have the same stools. They were circled by Reg, the local plumber, Pam, a bookkeeper who worked from home so she could mind her

children. Brendon, a cabinet maker who specialised in recycled timber, wore a pudding-bowl beanie. Bev, a crop farmer from the plains west of Cawling, who picked at her nails, flicked the findings behind her. Clive, a pudgy retired accountant and Don, the lean and angular ex-architect cradled their wine glasses. After bemoaning how townfolk were losing their gardens, carrying water buckets from their showers to sustain a few precious plants, the conversation started on money. Frankie kicked things off by stating that she had little regard for people whose main interest was in making money, at the expense of anything else.

‘It’s bloody comical what some people will get up to because they think they need more and more money.’ She looked around for a response.

‘“I couldn’t possibly live on less than a million a year”,’ Clem aped TV celebrities in a garish voice.

‘Halve that, quarter it, one-hundredth it and it’s still a squillion more than I get at the Pig, and probably what most people around here live on,’ Wade said, sipped his beer.

‘Come on guys, and I mean guys, there are not many women among the truly wealthy. Some fellas compete for size when it comes to amounts of money they can make.’ Frankie edged her stool onto two legs.

‘Oh yer, size,’ someone spluttered.

‘Where’s your interest in sharing the wealth around?’ Two beers had tipped Frankie towards confidence to provoke.

The conversation toppled around the group like a coin spinning lazily, about to drop.

‘It’s companies that own the money, not the bosses.’

‘Not my money, the CEOs say.’ Clem imitated shaking her hand after touching something too hot.

‘It’s not just men with money. It’s the company. The corporation,’ Brendon replied to Frankie, looked to the other men for support.

‘Whatever that is? It’s only people making decisions in the end.’ Bev had worked her grandfather’s farm for over forty years and had a fierce sense of individual endeavour.

‘Poor excuse. Look at CEO wages. Over eighty per cent male. Managers on fat packages everywhere.’ Frankie was feeling edgy about the prospect that Kasha’s development plan would go ahead, that he was selling water on the sly.

‘What’s wrong with earning big money?’ Clive asked.

‘You can only spend so much in one lifetime.’ Clem replied. “Can’t take it with you.’

‘The rich pretty easily forget responsibility for the common good.’ Don sparked at Clive.

‘Self-interest prevails, just for a change.’ Bev’s voice was tired, tinged with resignation.

‘Is it really us against them? Rich versus poor?’ Brendon pushed back his beanie.

‘Company wealth, economic growth. It’s a ruse for the wealthy to stay that way, whatever the cost.’ Don was skinny towards gaunt, had moved to Cawling to plant trees and discovered how slow bush regeneration work was, especially during drought.

‘My responsibility? Common good?’ Pam, the bookkeeper, was genuinely puzzled.

‘Yer. A company can be secure without endless growth, profits, profits, profits.’ Don said.

‘They should be made to give it away,’ Wade chipped in.

‘That’s called taxes. Some people pay them.’ Clive, the ruddy-faced ex-accountant adjusted his stomach over his belt.

‘A big chunk comes out of my salary each fortnight. What about company taxes?’ Clem added.

‘Pigs might fly. The bigger the company the more they avoid them,’ Pam added.

‘I’m happy to pay taxes. We want a civilised country, don’t we? Should be more scrutiny of those who take the cream,’ Bev, the crop farmer chipped in. She had a ledger-like straightness to the cut of her fringe.

‘That’s how it is already.’ Pam flounced her packet-blond hair, then added, ‘There are ethical businesses, you know. They’re not all crooks just because they make a profit.’

‘Isn’t it to do with how money is distributed. The government gives tax breaks to big polluters, aluminium smelters, coal mines,’ Wade growled.

‘If I was prime minister, I wouldn’t pay people to ruin things, it’s against my work ethic.’ Reg, the plumber weighed into the conversation. They chuckled, knowing that his work ethic was long ago relaxed.

‘I’d lower taxes on fuel for farmers,’ Bev said quickly.

‘That’s already there,’ Clive grumbled.

‘That’s if you can afford to install a storage tanker and buy in bulk. I’d have to borrow more from the bank to get that sort of infrastructure on my place.’ Bev, they all knew, had sold out her sheep to go into canola, sowed the bright yellow crop each year, risking losses if rain came at the wrong time, or didn’t come at all.

‘I’d be stopping the coal industry, replacing it with clean energy providers. Probably create more jobs doing it that way. I’d limit groundwater drilling.’ Frankie muttered her last phrase. She looked around the group of beer-holding Cawling residents, feeling warmth for their differences, the way conversations revolved around the bar. Blowflies in the window bumped the glass to get out.

‘If I controlled the taxes.’ Frankie paused, as they all looked at her, ready to pounce.

‘There’s a lot money can say. Already says. What people buy tells you what’s valued,’ Clive butted in, loosened his collar.

‘What, like, take fancy clothes for example? Adverts everywhere. Some people must pay what we spend on two months’ groceries, for a skimpy bit of fabric, or some animal fur to drape on their anorexic shoulders for one night. Ends up in the op shop, or landfill.’ Frankie flushed.

‘Hold up. You’re talking about what some people value. That’s what money can buy, so they buy.’ Clive said.

‘Are you suggesting that there’s no arguing about different values then? How they are influenced, by advertising?’ Clem edged forward on her stool.

‘It’s the consequences of, what did you call it, capital, that bugs me. It’s all about economic growth and profits at the expense of the planet we live on,’ Don said.

‘That’s capitalism.’ Clive shrugged.

‘Don’t get me started on plastics.’ Clem looked momentarily fierce.

‘So this is about values, not money?’ Wade asked.

‘Monetary value, the things we record on accounts.’ Clive stood up, stretched his knuckles backwards till his pudgy fingers cracked.

‘What do you mean?’ Wade pressed.

‘I read something this week about accounting for nature.’ Clive looked sheepish, as if he might be joining the wrong side. ‘It reckons that accountants can save the world.’

‘Accountants? With ledgers?’ Don scoffed.

‘So, it’s a new idea. It’s still taking on.’ Clive shifted on his stool.

‘I value nature. Trees and critters, water, and that sort of stuff. Seems none of that’s worth any money to anyone, expect for when its cut down, dug out, smuggled or poached to extinction. Then it’s only the idiots causing all the damage who are making any money out of killing our planet.’ Frankie shook her head.

‘That’s exactly why accountants are getting on the job. Giving a monetary value to natural things.’ Clive stood tall.

‘While it’s alive and healthy?’ Clem asked astonished.

‘Where do you find this stuff to read? I thought accountants sat in offices in grey suits.’ Wade quipped.

‘Played golf on Wednesday afternoons and drank chardonnay with their prawns,’ Clem added.

‘Now, now. Don’t get caught in the stereotyping trap. It’s unnecessary.’  
Clive wagged his finger.

‘OK. So how will accountants make a difference to me trying to save the groundwater around Cawling?’ Frankie turned to Clive, waited for an answer.

‘Starts with the ideas around accounts. That means what is counted, in what categories in companies, corporations. Even whole countries have a set of accounts. What comes in and what goes out.’

‘Gross Domestic Product. Stuff like that?’ Don asked.

‘Fortnightly salary, in. Rent, fuel, food out. Then there’s the rellies. Always seem to run out. Never seems to stretch enough.’ Wade shifted uneasily.

‘I’m not an accountant. This is another language.’ Frankie pulled her hair forward over her neck.

‘We used only to count two types of capital – fluid and solid.’

‘Sounds like groundwater - water and rock.’ Frankie half-grinned.

‘Financial capital, which is sort of fluid, like the way money moves from place to place. And then there’s manufactured capital, solid things, like buildings and roads.’ Clive raised his glass to indicate the walls.

‘Factories,’ Wade added.

‘Washing machines and fridges.’ Clem was leaning forward, following.

Clive was nodding. ‘Yes. To keep it simple. Now accountants, well some radical ones, reckon we ought to count a whole lot of other things that are exchanged, things that have value nowadays.’

‘Like women’s domestic work,’ Clem chipped in.

‘Yes, exactly. Human capital, social capital and this book I read reckons we should count nature, natural capital.’ Clive was pleased with himself.

‘Now that it’s running short, nature’s worth counting?’ Don sniped.

‘Does it mean we should count the costs to nature when we chop it down or dig it up? Or before?’ Clem asked.

‘That means we’d need to give nature a pre-determined value.’ Frankie squinted her eyes, as if calculating the multitudes of arithmetic convolutions that might be involved.

‘Pretty dammed hard to do.’ Wade looked unconvinced.

‘The common example is, say if you included all the real costs in producing a hamburger.’ Clive paused and the others chipped in immediately.

‘There’s the environmental costs of raising cattle for meat.’

‘The costs of running a health system for diet-related illnesses.’

‘The costs of the water for manufacturing the bread and growing the hydroponic lettuce.’

Clive nodded. ‘Goes on and on. Yes, some accountants did some sums, drew a line and said a Big Mac could cost \$200 if we included all the external costs. External to Maccas.’

‘So there it is. If accountants are saying count the value of rivers and forests, you ought to get them to include groundwater in the equation.’ Don could see the potential.

‘How?’

‘They’ll find a way,’ Clive persisted.

‘It’s the principle that counts. Get the money makers to count the real costs,’ Clem said.

‘Even though they can’t see it or even measure groundwater too accurately. It’s changing all the time.’ Frankie was still unconvinced.

Wade was clearly worried. He coughed and asked, ‘Isn’t putting a cost on natural things a sign of defeat. Accepting that the idea of money is stronger than the ideals of preserving the planet. If accountant type people are talking about counting the financial costs of nature it’ll only be because they want to make more of a buck out of it. They’re just making it another commodity.’ He turned to Clive, jutting his chin, pointing his beer at him.

‘It’s about trying to get two different languages talking together. Greenies and accountants. If they don’t understand each other, if they don’t talk, the destruction continues.’ Don was following Clive’s line of thought.

‘Sure it takes money to buy water, but as it becomes more scarce, won’t that mean that only the rich can buy it? What about the principles of fair distribution?’ Clem asked.

‘What principles?’ Clive asked, momentarily flummoxed.

‘An ethic of place, an ethic of justice, distributive justice, might be a good start,’ Frankie replied.

‘What does all that mean?’ Wade asked. ‘It’s Country.’ He added, as if the term and all it stood for could find meaning in a small bar in a drying farming district. ‘Country.’ He repeated, lowering his head as if in a cathedral, and the powers of creation dreaming swept into him.

‘It means being prepared to consider and preserve the air we breathe,’ Frankie said, ‘the water we drink, the water that floods. The fire that warms and destroys, the ground we stand on. Not just this square metre.’ She indicated the space around her.

‘Global markets don’t mind what trees and rivers you like or love or disregard.’ Clive’s chin jutted as he held his ground.

‘Global markets are just a bigger scene. Rich countries make pollution. Poor countries hunt and chop whatever they can for survival,’ Clem said. ‘An ethics of place,’ Clem repeated, trying the phrase, as much as talking to others.

‘It’s like, about seeing the big picture, our planetary needs as well as your own back yard.’ Frankie swung her legs under the barstool, continued talking, her voice raising a tone. ‘Not just short-sighted efforts to maintain a few pastoral vistas to rest our gaze upon. Sometimes called National Parks. I know that they help city-slickers. A weekend to rest their souls from the invasion of straight lines and right angles, cityscapes. But this is about putting the environment, nature, Country, whatever you want to call it, putting it first. Whatever the cost. Preserving groundwater will take more than economics.’ Everyone went quiet, considering Frankie’s outburst.



‘It means giving a financial value to all that,’ Clive added quietly, determined to have the last word. ‘And it’s at the level of the corporation, in politics, that these decisions are made.’

Frankie wouldn’t let go of her ideas and glared at Clive, talking fast with her lips tight.

‘OK. So what about ‘The Pig’, as an example. That’s a corporation, international. They pump bore water on an industrial scale to hose the floors. They wash out the brine into local creeks. And how much water is used in the pig farms, all of them across Australia, and overseas, where most of the meat comes from, by the way? How’s putting a big price on water going to stop them using groundwater like it’s never-ending? It doesn’t change their moral attitude towards water. For businesses water’s always a resource to be purchased as cheaply as possible. If water costs more, so does ham. People will keep eating it. Just the rich ones.’

‘I give in, Frankie. I don’t know.’ Clive shook his head. ‘But I still think giving groundwater a monetary value is a way to give it voice. Money speaks.’

‘Doesn’t speak for me. Money speaks crooked, pretending that it speaks for natural resources.’ Wade shook his head.

‘Valuing coal hasn’t stopped the mining industry. Can’t see that idea stopping Kasha Duff’s plans,’ Frankie said, grittily.

‘I’m not so sure that speaking out is an exclusively human prerogative,’ Don suggested, attempting a reconciliatory tone.

‘But it sure as hell ain’t the single prerogative of money. My ancestors reckon that Country speaks to them. Sings lots of stories. It’s those stories I’m wanting to learn.’ Wade’s voice suddenly sounded to Frankie like the deep chime of an enormous bell.

‘It takes all different views.’ Clem tried to soften the crackling edge to the air between Frankie and Clive. They both sipped their drinks, eyeing each other over their glass.

‘Who knows. We’ve all got to try something.’ Frankie let out a puff of air.

‘I’ll get the last round. Money says something.’ Clive paid up for their drinks.



## **Eight: AQUIFERS**

Fierce, swirling weather systems whipped monsoon-like storm clouds southward and dumped a sudden late-summer deluge on parched paddocks. In the Cawling district, heavy downpours picked up and washed away leaf litter, scattered branches, lifted precious soils from bare ground. It rained steadily. Flash flooding spewed brackish floodwaters from the river, pushed over fences. Plastic bags and street rubbish blocked drains. Cawling residents were ill-prepared for the mess and slurry of water as it swelled from the banks of the Linden into their streets and low-lying homes.

Frankie called to see Helen at her office. Helen was suffering an ear infection, which gave her vertigo. She'd risked a swim in the river after the water had settled from turbid to deep-tannin waterholes, promising relief from heavy humidity. Now, swaying down the corridor towards her workstation, she tilted precariously towards the wall. She said the feeling made her think of the whirligigs at the local show, modern life. She looked dislocated, not sure of her direction. She shook her head, sipped on her instant coffee, straight black, as Frankie now knew.

'Don't want another Hinkley here,' Helen peered at a report on her computer, closed a series of screens before she turned to Frankie. Frankie knew the *Erin Brockovich* movie, had started reading the backstory about the industrial pollution of aquifers in Hinkley, California. Before she could muster a reply, Helen continued, fast, resolute.

'It's simple for me, the scientist. I'm compelled to make sense of things. It's my job to ask why. Groundwater exists in subterranean holes, tiny and large spaces

in rocks. Is that something strange? More importantly, what does it mean for groundwater to exist at all?’

Frankie decided to parry with another question. ‘If what you thought you knew is wrong, namely that groundwater will last forever, if it is actually running out, how do you know that anything is right?’

‘What is an aquifer, really? What’s it made of? What’s any matter made of?’ Helen persisted, leaning back in her chair to look to the ceiling.

‘Where does hydrogeology come from, does knowledge have any meaning?’ Frankie swung her legs under her chair.

‘What does any of it mean?’ They paused their jousting, took stock. Helen continued. ‘Descartes said the outside world is all measurable, mechanistically knowable. Heavy, hard and knowable.’ Helen tapped at her desk. She gazed into the space between herself and the ceiling, drew back on ideas from a paper she’d read years ago.

‘Everything else is sensory and subjective, then.’ Frankie cocked her head, birdlike.

‘Yes, according to Descartes. Cartesian thinking. Nature, culture. Mind opposed to matter. If I can think, I exist. Non-human animals are machines. Humans alone can think. You know that old line. From that, science and mathematics rule. If I don’t think, I don’t exist. Other than as a resource, open to rape and pillage by humankind, of course. And let’s face it, that’s mostly the males in charge of that,’ Helen added, with a shrug of her mountainous shoulders.

‘But if I disagree, I’m trapped, the world is nothing but ideas. There is no reality, unless it’s measurable?’ Frankie scratched her head, befuddled by the fast turn into philosophy. ‘Don’t you think that matter and the mind fit together?’

‘Thales said it first, “Everything is water”. He was a Greek philosopher.’ Helen stroked the air with two fingers to emphasise the quote. ‘He saw us all as the one thing, connected.’

‘Der.’ Frankie was feeling well out of her depth, but determined to hold her own.

‘It’s like, now, more recently, modern physics, quantum physics and the like, is drilling down to aspects of matter that just don’t follow the known rules. Things seem to bend ideas of beingness. Nothing touches. Sound waves, or is it light, can move through two slots, and be in both places at the same time. Some things are so big, and come and go, so only computers can make funny images of them.’ Helen gestured towards her computer screen. ‘But how do we make sense of time and scale? Say of groundwater, for instance?’ Helen had a bead of sweat forming at her temple.

Frankie shrugged, not knowing how to respond.

‘Is the world as we see it, really its reality?’ Helen looked directly at Frankie.

‘Now you’re doing my head in.’ Frankie paused. ‘Seems to me that we make up our own realities.’

Helen pounced. ‘Scientists don’t make up anything. We only say what facts we observe, what we think we know, from research, replicable research. Anything else is,’ she paused, ‘not yet known.’

‘Things we don’t know,’ Frankie paused, ‘some call it god. There I said the word. Not that I believe or anything. But isn’t it the same thing? If you don’t know, you call it god. Mysterious.’

‘Yep. Spinoza said something like that too, in the seventeenth century. Dutch philosopher. Called it Pantheism. Means that god is in us too. You and me.’

‘Shit. So you can use logic, mathematics, deduction to try to understand reality. Or what about if you use your senses, experiences. Like, how I feel is a type of reality isn’t it? How red are the reds I see? How purple I think Kasha’s nose is. Isn’t that just as real as some measurement?’

‘You can’t experience groundwater, underground.’ Helen persisted.

‘Except maybe to drink freshly pumped bore water.’

‘We know it’s there, from our measurements, the experience of drilling holes, recording the depth of the water table. The inexact data we continue to collect. We don’t just believe it’s there because it customarily comes from the holes we dig, after we’ve done the geology to estimate its location. We deduct from the

data. And we stay sceptical. We question our data.’ Helen was looking grittily determined.

‘See, you’re a scientist at core. I want to think differently about groundwater. By knowing it’s there, I want to know how to preserve it. What if I’m happy to be unsure of exactly what’s the difference between groundwater and my subjective inability to perceive it, to experience it? Groundwater in all its immensity and immeasurability. Isn’t it about what a thing does, more than what it means?’ Frankie cocked her head, looking at the ceiling to hold her train of thought. She continued. ‘You might think that inanimate things only come to life when we lay our attention on them, our eyes, our ears, our consciousness, our caring.’

‘Not like the light in the fridge? Is it really off when the door is closed?’ Helen smiled.

‘No, not exactly that. It’s more my concern that things have their own life, right down in their atomic activity, all the time, whether we are looking at them or not. It’s the liveliness of atoms, of everything, the way we are all tangled up, connected.’ Frankie paused, remembering. ‘Dad used to say that steel could talk to him. I suspect that groundwater can act for itself, speak.’

‘But it needs a human voice to do its representing,’ Helen replied, doggedly. Frankie felt herself getting tied up in knots of ideas that would not unravel.

Helen continued, ‘You’re talking like a philosopher. I know I invited it. But this is about geology, water in rock formations, hydrogeology.’ She drained her coffee mug and pulled up a map of groundwater flow lines on her laptop.

‘Seems that what we know about things has to stay in segregated compartments. Biology for this, chemistry for that, geology for that.’ Frankie raised and lowered her palms, holding them apart, making separate columns in the air.

‘Geology underlies everything.’ Helen grinned. ‘Some call them knowledge silos.’

‘But there must be wider ways of knowing the connections.’ Frankie’s throat tightened. She gulped.

‘Listen, I just want to show you where we think groundwater is around here. Our best estimates, our deductions. From measuring things, doing mathematics. I’ll stick with the data. You stick with the fancy ideas.’

‘You started it.’ Frankie shook her head.

‘I want to show you something.’ Helen clicked on her mouse, scrolled through several long menus.

Helen’s boss had led a committee that developed digital maps to represent the geology and hydrogeology of the region. It brought together data sets from several government departments and agencies, which had each collected separate information about groundwater for decades.

‘Complex models of groundwater’s scope and depth are being aggregated on a site called Visualising Victorian Groundwater. Never been shared before. Public access is the important principle,’ Helen explained. Frankie had explored the site, fascinated by the digital elevation models of underground geological surfaces. Imagined surfaces, she thought. The mix of science, art and technology had a potency that engaged Frankie’s imagination, distracting her for hours.

‘OK. So it helps us imagine the invisible. But who knows how much of science is imagination anyway.’ Frankie persevered. Helen rolled her eyes, continued to scroll up and down, flicking at the touch pad. Coloured maps fluttered as she searched for their location. She waited as data downloaded, images spread first as chequer-plate squares, then as multi-coloured landscapes, that at first resembled slides of single-celled organisms. Possibilities of enmeshment between the large and the small leapt to Frankie’s mind, but were beyond this conversation. Another time, she thought.

Helen began to explain the difference between saturated and unsaturated rock, the effects of geological compression on capillarity, how water flows through rock. As often happened in their conversations, Helen turned to her notepad and began to sketch simple pictures of cross-sections of under the earth – aquifers and different rock layers represented in lines and cross-hatched spaces.

‘You draw these things as if there are fixed boundaries, lines between earth and water. I know, we need something, but it’s like a comic. Subterranean worlds

can hardly be expressed in lines.’ Frankie’s scepticism tumbled out as she sat back on her chair.

‘This is not a Disney world we’re talking about. But it’s the best we have to represent water underground, its flows, its sort of shapes. Words seem to fail us.’ Helen too leant back for a moment. Then, determined, turned back to her computer, continued to explain hydraulic gradient and hydraulic conductivity to Frankie. ‘Different rock types allow water to flow at different rates. It also depends on the groundwater head, the height of recharge areas, and how fractured the rock is.’

‘Aren’t you worried that the aquifers are being wrecked?’ Frankie interrupted.

‘There are laws and management authorities. That’s their job. I try to find the facts. That’s why I work here. Now concentrate, you’ve got an assignment to pass.’

‘OK, what was that formula again?’ Frankie didn’t know how to explain to Helen her hope that some day groundwater would be given recognition as a legal entity, a capacity to be represented in an Australian court of law, on its own merits, its own importance. First she had to learn the science.



On the weekend, heat blared from an empty sky. Frankie carried her new extension ladder to the disused well, drew it out to full length, lowered it in. The top of the long ladder protruded from the hole. She climbed down into the cool dark space. She’d planned this moment. She’d been thinking of the well, not as a vacancy gouged from the skin of the earth, but a place where tens of thousands of years were layered dimly before her eyes, an exposure of sedimentation. She wanted a quiet place to think. She left behind the glare, the heat, the blinding summer light, the crashing pressures of too much to do. She breathed musty air, felt the pebbled base to the digging underfoot. The top of the shaft haloed above. She leaned her back on the earthen wall of the shaft, closed her eyes, let the deep force of earth hold her still. She felt her breath warm in her nostrils. Her thoughts trickled, wandered.



Frogs sometimes live in the secret world of wells, where water seeps to fill the space. Moistens their skin. She imagined the nictitating lid of a frog, wishing for one extra layer of protection to draw across her eye, a shroud to wrap around her shoulders. She licked her lips. Wells are connections to aquifers. Domed brick lids, buckets on ropes. Hand dug wells, hand dug mine-shafts. Holes have been dug into the earth for thousands of years. Frogs have found these spaces.

Beneath the faint rustle of wind in the trees above, a sensation rose, like cyber-waves, whirr of technology, electrons in metal wires. Beyond vibrations of her damaged tympanic membranes, pulses in her veins vibrated. Too much screen time, she wondered. But different. She tried to see what she heard. Two senses merged. She observed and listened through her skin. Rhythmic thump of a loosened tabla drum, goat skin, thrumping, pulsing. Pitched low, profound. Her whole body absorbed her surrounds. Air, earth, water. Her skin called for water, called into the porosity of stone, ricocheted in micro-spaces in her bones. She was leached, beached, run aground. Memories flashed.

Moments of terror experienced by a frog stranded on concrete on a scorching day, assaulted by wind or dust. Not heard. A human approaches, mountainous, a hand extended, pink, threatening, like an intergalactic monster. The frog leaps for safety, leaps and leaps to get away. Frankie's legs twitched. Pain, terror of the dry. She touched her arm, felt her face, held her throat. Skin of the frog world, alerted to danger through her large dark eyes, her mouth, her tongue, her ears. Her heart banged.

Sounds became sensations, came and went, her thoughts leapt, her body cooled. Frankie let her thoughts ebb and flow.

A chorus of voices uttered, murmured, indecipherable. Deep time, swallowed sounds, stuttering, whispering. Repeats, cycles, ancients build the chorus. Groundwater's song, inheritance from rain, mother rain, perhaps fifty million years ago. Some fell only thousands of years ago, some fell in last week's storm. A torrent, replenished fissures and micro-spaces at the surface, topped up shallow coffers. Tree roots sang in relief. People danced in mud, singing high trills.

Water plied the surface, followed laws, gravity pulled it to lower places. It juiced the land.

Frankie imagined footfall above, water diviners following water's traces, through deep rift valleys, across deserts, seeking survival. Lennie holding out his sticks. Fossickers, skin scratchers, found water, sipped from springs.

Deep, dark, slow, infinitesimally slow. Liquid, fluid-filled, saturated spaces, fractured rock, subterranean stones. Water-filled interstitial spaces, dissolved minerals moving. Soaked salts from rocky substrates, tang, saline suspensions, carried to the surface. Sulphurous farts lingered sour.

Sweet water, drill deeper, deeper for sweeter. Taste the bore, lick the tap. Taste the bath, bitter. Taste your clothes. Mineral salts. Earthy. Borers' sweat mingles with salty flow. Taste the bath. Taste your clothes. Mineral salts. Taste the bath, suck your sleeve. Earthy mineral salts with moving electrons, moving energy, the start to life.

Frankie licked her arm. Closed her eyes again to listen.

She remembered stories of cave divers. Images from a telly show of people scuba diving in deep-pooled caves, exploring pearled depths. Crablike in crevices, bubbling through faults, through vaults into darkened caverns. People swam in endless embrace, floated on ancient infinitesimal flows. Some were lost in the labyrinths and drowned, gone too far, lost the safety line. Some were saved. Frankie shuddered.

'Who am I, what am I?' She shook her head. The double-life of amphibians knocked on her sense of identity, asking to be let in. Am I frog on land, on water? Am I tadpole, becoming frog. Becoming what?

Like indecipherable aquifers, Frankie felt an unknowable cavity yawn inside. Up there, water cycles lurched out of shape. Inside, becoming something, always becoming. Dwelling in the place she both came from and is journeying to. Unknowability of self, the indeterminacy of aquifers, same same. Quickening life, a source of vitality. Her sense of self felt as intangible, as unreachable as subterranean flows. Yet so surely there, living, moving, becoming.

Frankie stayed in the mineshaft for an hour or so, breathing, thinking, dreaming. Water seeped below her on an underground sojourn, soaking through capillaries, seeping into fractures beneath her cavernous refuge. Moving, ever deeper through the earth. Seeking release. Seeking release. A beetle scurried, a moth

batted its wings in the dark. Her legs ached, she stood to stretch, her hands searched the darkened space.

She climbed back to the surface, lifted the ladder and carried it back to her shed. She descended into the mineshaft again the next day, and the day after, and continued for a week. Each descent brought new waves of fear, of calm, of numbed loss of senses, of solace. She was at times seduced by the dark, captive, held in the moments of seeing and not seeing the tangible earth around her.

She felt at times looked upon, as if the walls of the shaft had vision. She felt in her skin a porosity like the permeability of the earth around her. Forces passed and penetrated, inside and out. As if by osmosis she absorbed both gravitational heaviness and the lightness of angels. Each visit to what she secretly called her 'tabernacle' gave respite from surface distractions, brought her closer to imagining an amphibian life. To gaze at a layer of sedimentation, meant not just the touch of its exposed surface on her outstretched hand, the smell of water in the sides of the shaft, as she inhaled musty, dank air. Here she entered an imaginary space, a time where simple statements of truth jumped into stories, a time where water flowed.

'This is not a fall. I am meant to be here. I have water in my bones,' a voice called in her head.

Water circled through rock, roiled, coiled, drawn by gravity, timeless, slow. Invisible. Calling.

She wrote in her diary.

*Subterranean water flowing through geology's underworld. Moves tentatively, as if in search of relief. Crevices divert the flow. Waters silently passing time, moving through warped spaces, indeterminate. Water filling air spaces, lubricating life between crystals, soaking, soaking, seeping. All that is solid, all that is fluid. Continuous flow, incremental movement. Deep slow, seep. Deep seep. Finite, not endless, never innocuous.*

*Pinholes bleed, water retreats, withdraws, beyond reach. At the surface we see springs, swamps, leakages from stream beds. Grounded no more.*



‘Heard you got a soaking at the standpipe.’ Lizard Green’s wizened cheeks tightened into a smirk.

‘Nothing goes unnoticed around here.’ Frankie and Lizard chatted in the break at choir. She and Clem had been drenched when the standpipe hose had escaped the white cube tank on the back of Frankie’s ute. She was carting water for Carol because the house tank levels descended.

‘That’s it, love. Small town, fast gossip.’ Betty joined them with her teacup rattling, the saucer decorated with biscuits.

‘Fast to help if there’s a problem too.’ Lizard slipped one of the biscuits from Betty’s saucer into his mouth. She pulled her cup close to her bosom.

‘I’ve got that standpipe thing sorted now.’ Frankie looked over her coffee mug at Lizard’s Adam’s apple, which swelled as he swallowed Betty’s biscuit.

‘Just like your father.’ Betty nibbled at a Monte Carlo.

‘Easier from the standpipe than out divining.’ Lizard’s eyes narrowed, as if the memory of Lennie’s talent might escape.

‘Yer, yer. Who knows how he did it, Lizard. I’m sticking to the standpipe.’

‘You’re not like your father then. He had the gift.’ Betty nodded.

‘Why’d he drive the water tanker then?’ Frankie felt familiar hungriness for any snippet to help her know her father.

‘He gave up on groundwater. Said it was becoming a commodity. Too precious for that. Better left in the ground.’ Lizard shook his head.

‘He joined the system then. Took water from the pipes, not underground.’ Frankie said.

‘That’s about it. But it’s hard to know the difference, Frankie.’ Lizard leaned towards her, his breath like old milk. ‘If the standpipe comes from surface water, piped from man-made reservoirs, fed by rivers, which are also linked to aquifers,

aren't they?' Lizard made a circle in the air with his cup, raised his eyebrows as his question looped.

'Yer, yer, the global water cycle and all that.'

'They're calling us back.' Betty gulped her dregs. Popped the last biscuit into her mouth.

'He knew. Knew it was vulnerable.' Frankie shook her head.

'Reckon he did.' Lizard's throat pulsed. 'Who knows what he thought.'

'Reckon.' Frankie grumbled as they took their positions on the bleachers.



Frankie caught a train to her summer school on hydrogeology, a two-day intensive on the geology major she was working through. She was to give a presentation, part of the assessment, about draw-down and the radius of influence – the effect where deeper bores can rob neighbouring sources by funnelling the aquifer beyond reach of the shallower wells. Porosity and permeability determine the rate of water flow. Water in the earth, invisible, essential, cycling for centuries, sometimes millions of years underground. Fossil water would have infiltrated aquifers in times when climates and vegetation were different to today. Frankie reflected on its agelessness and wondered why some people assumed a right to drag this ancient water back to the surface, for short-term gain, for their immediate use. Couldn't it be left for the future of wider ecosystems, she mused, especially when water shortages were predicted to be even more stringent? Money in the bank, Clive would say.

As the train ricketed between country stations she wrote in her journal.

*The consequences of naming an invisible problem and taking action include:*

*Discrediting. Cruelty. Isolation. Attack. Marginalisation.*

*It's the same for looking different.*

She dozed, her pen making small drizzle marks on the page, then woke with a start, with an idea. She scrambled for her notebook and wrote again.

*Margin or Mainstream*

*Collusion with a mainstream flow of thought, blinds me, can dull resistance. Some say we have to collaborate with those in power to get anything done. We need their influence to create change in mainstream structures. Should I become an activist, a water activist, an ecoterrorist? Marginal points of view are easily discredited.*

*Perhaps I need to stay on the boundaries, chipping at the margins without the constraints of needing to play by other people's rules. I can scream from the edges, whereas I will talk with hushed tones in the corridors of institutions that do not want to hear my voice. What route will I take?*

*Disappearance in a mineshaft appeals.*



At the University campus, she found her single room in the student accommodation and made it to the first class. In tutorials students took their turns to present their assignments, clapped politely after each set of overhead slides closed. Frankie's presentation about draw-down concluded with a comment about limiting extraction, planning for environmental needs. Questions shot from the class about property rights and industry's need for water. The tutor called the class to order on the grounds that the task was to understand hydrogeology, not economics or sociology.

After the class, a small group of students chatted over coffees at an outdoor cafe.

'The tutor can't say it's only science.' A young red-haired woman spoke in a shrill voice, her multi-coloured scarf drooping over her shoulder. Frankie sat forward.

‘Yer. It’s not just the science. It’s the politics, the economics, the values we all hold about the stuff,’ Frankie said. Beads of sweat formed across her brow. Others were quick to reply.

‘You have to know the science, to be able to describe it in any way.’

‘For governments to listen.’

‘For courts to listen.’ The conversation bounced quickly.

‘But we know that the science is indeterminate,’ the red-haired woman pressed on. Frankie nodded.

‘They don’t know that. They pay hydrologists for reports, interpreting data, so that they can believe them.’

‘They are accurate, as far as possible.’

‘The science can be made to say anything. Depends who pays for the reports, doesn’t it?’ A young man looked for approval.

‘Science has to tell governments the facts.’ An innocent-faced student scratched at his motley beard.

‘When governments fail to listen to facts, fail to act, fail to legislate to protect ordinary people from greedy ones, then ordinary people need to become heroes.’ The red-head flicked her hair, defiant. Frankie was reminded of a childhood book on the Celtic queen, Boadicea, who rallied troops to slow the Romans.

‘Become heroes? I only want to be a scientist.’

‘Even scientists have opinions.’

‘Based on how they interpret research.’

‘They just have to speak out.’ Eyes blazing, the red-head tapped at the table.

‘Practice simple sentences.’ Frankie said in a muffled voice. She was parroting her Speechmaker’s teacher, wanted to show allegiance to the red headed woman.

‘This is a science course, not politics.’ The conversation spiralled and spiked as each tried to hold a perspective.

‘One of the few geology courses remaining. Universities don’t offer unpopular subjects anymore, too costly.’

‘Just at a time when we really need to understand hydrogeology, the risks of water scarcity.’

‘I had to come from Queensland to do this subject.’

‘Queensland is turning a blind eye to groundwater risks.’

Frankie and the red-haired girl shook their heads, walked away. Opinions were left to marinate as the group dissipated, each drifted to their rooms to prepare their assignments for the next day. Frankie and the red-haired girl shared a drink in the common room.

‘I want to be as loud and bold as Madonna when I’m in my fifties, as wild and predictably unpredictable as Germaine when I’m in my seventies. Let me strut my stuff.’ Kirsty was fired up and flushed after two wines. ‘And I expect to be heard.’

‘Why is it that when men speak they are listened to?’ Frankie sipped at her beer. ‘People listen, often without questioning. Most women will think twice before questioning statements by men.’ Frankie posed the question to her new friend, she didn’t want to ask who Germaine was.

Kirsty spun her hair in her fingers and settled in a crossed-legged position on her chair. She started in a voice that had Frankie leaning towards her.

‘Imagine this. I drive along the highway, I see a billboard of three men, newsreaders, grey haired, smiling pearly teeth, well-tanned. The whole sign shouts that I am expected to listen to them, that they have the automatic authority to speak. No questions. If they were three mature women beaming at me from a billboard, society automatically asks who are they, what gives them the right, the authority to speak, to have a public voice, what is it that they have to say? They’re questionable. That’s if they’re not young and nubile, and posed so that their bodies might sell things.’ Kirsty paused to take breath. ‘For what reason? Why does this happen? This is not new.’

Frankie nodded and shook her head, urged her new friend on.



‘When women fought for the right to vote, a member of the House of Lords asked something like this.’ Kirsty put on a plummy accent. ‘Why would they want a vote, their husbands vote for them.’ She continued passionately. ‘This type of attitude still happens. We are not expected to have a public voice. We are beaten and derided, in private, in our homes for speaking our opinions.’ She sat back, crimson-faced.

Frankie couldn’t speak, her thoughts raced.

‘Sorry about that. Spouting monologues is my speciality.’ Kirsty collected their glasses.

‘For me, it’s not so much being frightened to be in disagreement, it’s being ignored that stings the most.’ Frankie said.

Kirsty rubbed her eyes. ‘Better get tomorrow’s homework finished.’

Frankie nodded. They walked down the corridor to their rooms, and as they opened their doors they darted glances at each other, grinned and gave a loud hooting, howling screech. They slammed their doors, before other students poked their noses out.

The second day of classes passed uneventfully and Frankie returned to Cawling satisfied that she would pass two more subjects.

As soon as she arrived home she collected her new ladder, carried it to the well. Puffing and sniffing, she pushed through the scrub, lowered the ladder into the gloom and climbed down to the calm of underground space. Billowing cumulonimbus clouds receded above. Saturated sandstones seeped. She closed her eyes, imagined hanging tendrils, roots of trees dangling in a subterranean cave. White-blind roots seeking moisture in cavernous air spaces, coiled in their search for water. Blood vessels withering in a moment of paralysing fear. Darkness prevailed. She sat on the bottom rung of the ladder, covered her eyes with her hands, considered the science that battered at her brain. Mathematical formulae can’t guide water’s flows. Numbers come from estimated models. It’s all about how good the models are. Water travels broad and elusive trails.

Darcy's Law. Henri Darcy, found a sweet pleasure in mathematics. There's nothing wrong with that. Artois needed water, to think. We all need water to think. Hydration counts.

Frankie settled herself at the base of the well watching darkness, smelling the gloom. Thoughts and memories bumped into each other, like flotsam on a rushing river.

'You might think of aquifers as sponge-like.' The voice of the lecturer echoed in Frankie's wandering thoughts. 'Sandstone is a porous substrate, with the extent of porosity dependent on how well cemented the grains are. Sometimes groundwater's spaces are hairline fractures in rocks, basalts. Sometimes water containing weak acids eats away limestone, carves caves.' River beds through limestone caves, carriages through underground space. Rocks, spaces and water - together the holy triumvirate. Like people need a skeleton, need blood and the vessels to carry it. Images of old bores, metal pump casings and long pipes. Open channels spewing artesian waters. It's all plastics now, tens, hundreds, thousands of metres of black tubing snaking across the land. We are water, people are water.

The mouth of the mineshaft turned gauzelike grey, she climbed the ladder to the surface. She decided to leave the ladder there to make it easier to visit the well. As she walked home a flock of cockatoos shrieked away, dipping and turning, sulphur crests flared, looking to find a roost for the night.



Frankie helped Lois and Betty fold the *Cawling Echo*, sensing she had something to learn from these women. Frankie asked about the piece that Lois had written in the *Echo* about an upcoming community meeting.

'People are leaving Cawling. Frightened by the drought, the floods that are sure to follow. It's mostly the newcomers, heading away. Locals know the score.' Lois went on to explain how the meeting was organised by local council to try to plan for the future of Cawling. 'They've realised they have to respond to climate change, for people to stay around here. I've decided to talk at the meeting,' Lois said.

‘I could never do that.’ Frankie still felt the terror of public speaking, despite her experience at Speechmakers.

‘Don’t count anything out. Human tendency is to focus on the threatening things around us. Too often it’s stronger than letting the good moments shine.’ Lois reminded Frankie of human beings’ propensity for negative bias, her voice strident. ‘We lose capacity for action when negativity reigns.’

‘Maybe it’s a survival thing,’ Frankie suggested.

Throughout her childhood Frankie had been taught in the subtlest of ways to take the edge from her voice, to smooth her spikes of irritations, her grumbles of pain. ‘Don’t whinge about it,’ was a common refrain from Lennie. As a teenager anything that may have been a contrary opinion was hushed. Dissent rumbled unheard, grumbling in deep internal tones, like river-smoothed stones tumbling. This had been going on a long time. What might happen if she spoke against this current, if she screamed? Would any sense of dignity be shattered, what would be salvaged if she bellowed what she increasingly knew must be said? It was no longer comfortable to keep people at ease, to be silent when wrong things were spoken, when she experienced the assault of ignorance or worse, other people’s silence. She wondered whether she could speak up, like a lone Pobblebonk frog calling in the night.

‘It just seems better to let it all out.’ Betty moved on her chair.

Lois continued, ‘Research says that you’re more likely to see the two angry or negative faces in the crowd rather than the thirty-two smiling supportive ones.’ Frankie rustled her newsletters into a pile, lassoed them with a large elastic band.

‘Don’t worry, it’s normal to be nervous. Maybe it’s survival.’ Lois leant forward and confidently pulled Frankie’s blouse forward, straightening the collar. ‘Come to the meeting, Frankie, you could make some comments to them about groundwater. We need it if the town’s going to survive.’

Frankie spoke to herself and the glowing dashboard as she drove homeward. ‘If I want to be a heroine I start with raising my consciousness, learning how to communicate with a hostile, ambivalent world. I will not be dependent on shaky ideas. I will not be a drudge to other people’s opinions. There are so many simple one-liners from the climate sceptics. I am too easily silenced by other people’s

boldness, definitive statements of things that may or may not be true. I have to learn the retort, find the reply, discern the balance of facts from ill-informed commentary.'

At home she looked up climate change ideas, searched for answers to the questions of sceptics.



Frankie sat with Clem on her bed and a pile of handwritten notes, summaries of material written in a notepad from browsing on the internet.

'There's plenty of material from the sceptics. Hope I've picked a reasonable website'.

'Let's rehearse your lines,' Clem said. 'I'll be the sceptic, you give the answers.'

'OK. Bring it on.' Frankie shuffled her notes.

'It's a natural cycle, the warming we had to have. It's not us causing it.' Clem put on a whining tone.

'In fact, no previous climate cycle matches the current warming spike. The links to man-made greenhouse emissions, which are pushing up carbon dioxide levels, are known as the main cause of global warming. Herds of cattle produce methane. Burning fossil fuels, coal, gas, oils, in industry and in domestic uses, specially including petrol fumes, increases CO<sub>2</sub> in the atmosphere. The escalations in CO<sub>2</sub> and temperatures started with industrialisation, then escalated after the wars.' Frankie paused from reading her notes. 'Too long-winded.'

'No, it's good.' Clem put on her sceptic's voice again. 'There's no correlation between carbon dioxide levels in the atmosphere and rising temperature.'

'This is complex as there are many factors involved in measuring CO<sub>2</sub> increases and temperature increases, and what causes what. Ocean currents and temperatures, lag times, natural and anthropogenic carbon dioxide, causality and correlation arguments are all involved. The long-term patterns show correlations on

graphs that are indisputable. I just say look to the science, not the pseudo-science for a discussion of these factors. I am not a climate scientist. I am a trusting citizen, happy to accept science's majority view. I've got nothing at stake to make me want to discredit what science is showing. I'm off the answer here, but trying to refer to wider sources for more accuracy.' She suspected that she'd never remember this *ad lib* bit in front of another person.

Clem persisted. 'What's the difference between weather and climate anyway?'

Frankie put down her notes. 'Weather is what we see and can comment about on a daily basis. Climate is a descriptive summary of longer-term observations of weather patterns, extremes and averages. Climate commentary may come from as many as thirty years of weather records, or more. Climate descriptions are predictive, indicating we have an inkling of future expectations of weather patterns. Climate change is a term that says that long-term weather patterns indicate we can predict patterns of increases in temperature and subsequent changes in rainfall patterns, extreme weather events – droughts, cyclones and rising sea levels as temperature causes snow melt at the poles and in glaciers and on mountains.' She took a deep breath.

'You've got it nailed.' Clem started packing her things to leave. 'How you going to make that mean that people will stay in the district?'

'I dunno. Population growth is the main problem. More people need more water, and no-one is planning enough where it comes from.'

'You'll work it out. Bye, Froggie.'

'See you, Ugly.'

Frankie went to sleep talking to herself, with her notes scattered on the bedcovers. She woke in the night and wrote in her journal.

*I cannot write with water, it would be invisible, at first blurry, then fade to nought. There's the pragmatic me. An artist may move beyond the practical to the expressive. Can I? If I were to tell a story with the intent of expressing water's power, where would it lead? Toward the ocean? Pugnacious. Minuscule capillary movements of water in the pores of sandstone may rise up to three or four metres.*

*A resurrection. Science tells me it's measurable, the forces between the water molecules, clinging to surfaces, clinging to each other when they meet air, to hold a trillion specks of surface tension within the sponge-like rock. Rock, sponge, it's a stretch of the imagination, into the pores, the spaces between the particles of stone. Rub a piece of sandstone with your mighty mitts and grains drop in your palm. Flimsily held. Can I see the film of water that may cling to each granule, if it hasn't been baked off in summer heat?*

*I paint a watercolour painting, telling a story with watery solutions, pigments floating in aqueous slurries. Is this how I write with water?*

*My blood is pigmented water, stained crimson with iron, haemoglobin, filled in with platelets, yellow plasma. I paint with my blood.*

*Is groundwater clear or muddy?*



In the community hall, thirty or so people sat in squashed rows of plastic chairs, fluoro lights flickered. Frankie was beckoned by Lois's waving arm and felt comforted by her confident glowing face. Lois greeted Frankie with a wink, tapped the chair beside her. At the speaker's table, the glistening jug of water, a row of glass beakers half-filled, waiting to be poured into nervous dry mouths. A cordless microphone lay, lizard-like on the table. She'd seen Bernard sitting beside Kasha Duff near the back, heads together. She saw people from her childhood, people she hadn't seen in years, some workers for the factory stood at the back.

An air of tension rippled through conversations. Lois was examining her palm cards, shuffling them into a new order at the last minute. Frankie stretched her feet to touch the slippery wooden floor, which screeched as each stackable chair was dragged an inch one way or the other. The room folded to silence as a local councillor stood and tapped a glass. Frankie was glad to be beside Lois, who held her notes in her hand, tapped her foot.

Two people sat behind the table. Lois whispered that they were the local council representatives. One would chair the meeting, and the man with the blue shirt was the consultant charged with compiling a report to Broadville Council

about the future of Cawling as a result of climate change. They would be repeating this meeting in six or seven places around the district. After the welcome to country, which the councillor read in a monotone voice, the audience breathed out, shuffled on their seats. In his speech, he explained that the council wanted to make a plan, needed to start thinking about the effects of climate change. Someone called out, 'There's no evidence.' The chairperson ignored the comment and invited the blue-shirted man to speak. His top lip beaded sweat and his cheeks were ruddy over a blackening stubble across his chin. He explained that council was joining with other councils in the wider region to make a coordinated response to climate change, how they wanted the district to flourish. A rustle of shifting feet drifted around the hall. He invited questions or comments from audience members. Lois stood smartly and gripping the microphone tightly to her mouth outlined her ideas for Cawling's future. Frankie heard the words community, sustainable, transport, and opportunities to meet and welcome people. Someone else stood and spoke, a man with a bulging stomach straining at his buttons. Frankie felt Wade's gaze as he leant forward and turned towards her from further along the row. Did anyone have anything they wanted to say? The microphone was held out. Then it was in Frankie's hands and someone yelled, 'C'mon on Froggie, tell us why people are leaving our town. What's wrong with you, got no voice?' She stepped forward off her chair, turned to face the crowd.

The microphone wobbled in her hand. She took her grip. The crowd settled into an expectant silence, looking towards Frankie as if she might either have all the answers or none. Her knees trembled. She breathed deeply and cleared her throat. Words flooded from her in sentences that started and ended before she understood their full intent. One or two doubters heckled. 'Who are you to speak?' 'She don't know what she's on about.' They were silenced with a nudge from their neighbours who wanted to hear what Lennie Pankhurst's daughter had to say.

'This is not about me, this is not about you. This is about the ground we stand on. Climate change doesn't care about us. But it means we have to think about preserving the water we all need to live. Who won't panic at the thought of your taps turning off?' She paused, caught a glimpse of Wade nodding, not looking at her.

‘You one of those who reckon you can take our water?’ A voice pierced above beading faces of the crowd. She took a deep breath and continued.

‘We are on the way to living in a desert. That’s the prediction, from scientists. This is about respecting the lives of all the plants and creatures in this district who need a natural supply of water to survive. If we want to stay in Cawling, now is the time for us to change how we think about water, how we use groundwater, so that at least the town survives. Not just “at least”, but to become something new...’ She stopped, unsure of where to go next. Perhaps bolt for the door? The urge to flee, to drop the microphone and disappear was overwhelming. But something leaden held her feet still, something avian lifted away her fears, released the stranglehold that usually quashed her ability to speak. Her energies flew across the crowd, lifting hope. Most lifted their heads to catch what she said, confident now to let her words feed what was already inside them.

‘We are the new custodians, together. Aborigines and us introduced people. Yes, we whities are an introduced species. Settlers on other people’s land. We can be responsible or irresponsible custodians. What would you rather be?’ Her voice wavered.

‘If we could only look and listen, we would learn to see, to hear, to feel the threats that climate change brings. We have to believe the science.’ She paused to let her knee stop jiggling.

‘This lack of water is not just about what falls from the skies. It’s water everywhere. The water cycle is everywhere. In the trees, the rivers and creeks, the oceans and lakes, and most importantly, under the ground. Did you know that the second biggest freshwater source in the world is groundwater? Not as much as in glaciers and the icecaps. Melting. This water cycle is one huge thing, beyond our own small catchment, beyond local, state and often international boundaries. Our watershed is precious enough to conserve and care for. We have to think beyond the immediate, beyond the money that water brings.’ She paused, preparing to scuttle back to her chair. A hand shot up at the back, a familiar voice called a question, taunting.

‘So you reckon climate change is having an effect in our district. How exactly?’ Bernard asked, sneaky-faced. ‘Seems the winters are still pretty cold



around here,’ he added as if he could unsettle her. Frankie could see that he was a plant, that the question had been deposited in his mind by Kasha Duff, whose face narrowed to a slit, looking not dissimilar to the folds of skin under a cow’s tail.

‘Before I answer that,’ she paused, decided to change tack. ‘It might take time for the severity of the loss of groundwater to hit home. Many places don’t have the luxury of time anymore. If you’re on your computers you can read about groundwater, and the water cycle. There are a lot of campaigns you can join. Lock the Gate, Get Up, those conservation sites. Knowing stuff helps in a small way.

‘Climate change means more heat waves, fire risks, more floods. Mostly it means everyone has to reduce our carbon footprint, city and country. Rich and poor. This is not just about panic in cities. Out here we can have more ownership of our local problems, more specific solutions. If we want Cawling to stay on the map ...’ She paused, blank, no more words, her tongue dry.

‘Live more simply,’ she uttered, heard a murmur in the crowd, perhaps unsettled because she had not answered the question correctly. Someone started a slow clap, others joined in till the hall sounded like it was raining on the high tin roof. Most were nudging each other, nodding, some scratched their heads. Kasha Duff rose, grabbed Bernard by the sleeve and left the hall, scowling. Frankie replaced the microphone on the table as if it were hot, nodded to the crowd and walked on shaking legs back to her seat.

‘Well done, love.’ Lois patted her shoulder. Frankie shrank in her chair, dazed by adrenalin, staring at her shoes, not seeing them or anything.

The day after the meeting Frankie worked day shift in mould-fill, the room where raw product is transformed into a myriad of shapes of so-called hams. She joined twenty men and three other women working in the refrigerated chambers, preparing the raw flesh for the smoke rooms and ovens. Frozen blocks of mushed pork and fat arrived in trucks, was thawed at the factory, churned through giant bowls like cement mixers. Workers followed the recipes, added salts, sugars, binders, preservatives, flavours, dropped by the bagful into enormous revolving vats. The brew was pumped through wide pipes to machines that filled rolls of collagen,

imitation skin and netting. Salamis, sausages, pressed hams, pizza toppings. Meat was rolled into ham shapes, bagged or netted like fat ladies' legs squeezed into tights, before being trundled on large trollies into the cookers and smoking chambers. Frankie worked in a daze, tired.

'Keep up,' Kingsley Hull called.

'Good on you, Frankie.' A voice raised over the din.

'Tell 'em, love,' another person added. Others nodded at her or patted her back as they passed.

'Good talking. Make a lot of sense.' A Taiwanese friend who had attended the meeting nodded at her.



At the end of the shift Frankie phoned Clem, walking around her house, agitated. 'I don't know how I said it. At first I heard my voice hit the wall, sounded like a custard tart. Thrown with intent, but bound to crash and dribble once it met the impenetrable force of Cawling. It's not so much my words, but my ideas that I struggle to find words for. I feel like I'm finding out about this place.'

'Keep going. Don't give up. They clapped, didn't they?' Clem waited for Frankie's reply, which was clearly still brewing. 'Good old Speechmakers. Aren't you glad you did that course?'

'Sure but it's nothing now. Despite what I see as important, my ideas are squashed by a stronger limitation. I'm up against long-held beliefs that groundwater will be available forever, that it's a rightful resource to be taken and used by humans. They don't want to really consider its place, its use, its meaning for life in a wider ecology. Kasha won't be shifted by my words. He wants to sell the stuff.' Frankie felt chastened, powerless. Deeper than this a simmering, brewing rage.



A week later, in a side room at the community hall, Frankie met with supporters who had responded to her notice in *The Echo*. Twelve people gathered, some strangers, most knowing something about each other's lives, in the way that country towns form a web around their inhabitants. Betty and Lizard sat together. Ariet and her daughter, Maddie Meadows, had brought biscuits. They were mulling over the options for how to lodge an objection against Kasha's application to the council for a planning permit for his subdivision: a community demonstration, a street march, perhaps a public meeting. The conversation wavered around Frankie's suggestion to get legal representation, but bounced away because it all seemed too costly and complicated.

'We have to be smart about what we plan. Make a statement to council.' Frankie threw out ideas, hopeful that they would catch, find a place to germinate.

'How about firecrackers?' Maddie smirked.

'Under Kasha's rig.' A uni student chipped in. He was a son of a potato farmer, wanting to get under his parents' skin, not wanting to return to the farm. Some guffawed.

'No, we have to be more subtle than that. If we're worried about lack of water, possible contamination of the aquifers, recharge to the river sucked dry, what actions can represent that?' Ariet was ever practical.

'Resistance has gotta be clever. Like the activists who tie themselves in tree canopies to stop loggers, the plastic bottled-water mob,' Betty added.

'We need to do something fresh. Excuse the pun.' Lizard avoided a bump from Betty's elbow, and continued. 'In Bhopal, in 1984, Union Carbide had a leak of toxic chemicals from their gas plant that contaminated groundwater for miles, and for decades. Indian women demonstrated in the street, trying to get the company to take responsibility for cleaning up of the mess they'd created.' Lizard could tell a tale like syrup. Everyone listened to Lizard. Some had not been born in the 1980s when this environmental disaster occurred. He continued, confident of their attention.

'Women were worried about damage to their unborn babies. So they carried urine samples through the streets to the local hospital, demanding that they be tested for the chemicals that may be damaging their unborn babies. They were worried

about giving birth to babies with defects.' Lizard stopped to clear his throat. People squirmed in their chairs, looked at their feet.

'Nothing wrong with birth defects, of course,' Betty glared at Lizard.

Frankie broke the awkwardness.

'My chromosomal differences are not defects, folks. My mother loved me for who I am, not the shape of my body.'

'Yeh, com'on, let's keep on target. Frankie's here with the best of us. We need a water plan. If Kasha gets the go ahead, we'll be stuffed.'

The group breathed out, Maddie filed her nails, nervous.

'Yeh, we gotta plan for water sustainability. Where's the toilet around here?'

'No, come on, get real, we've got to be creative.'

A silence dropped into the room, no one quite sure as to how to think like this, how far they would go. Some scribbled on pads, some stared out the window. Frankie swung her legs, scuffed the floor with worn out soles.

Frankie started the conversation again. 'So far it's not so much the contamination of aquifers around here, just the water table going down.'

'It hasn't reached here yet from NSW, the Pilliga fracking fields.'

'What's happening on the Liverpool Plains?'

'It's in the gun. Prime food producing land. About to be stuffed by a set of rules that don't apply in the twenty-first century, in a time when water scarcity is ...'

'What about the polluted aquifers around airports. Where they spray that white foam, PFass, or something toxic, everywhere.'

'We know all this. That's different aquifers, different catchments. What are we going to do now, here in Cawling?' Ariet tapped her note pad with her pen.

'Water is not ever in one place. How can we show it, represent it? How it moves, always becoming something else. Snow, fog, oceans, rain.'

'There are too many situations, where water means different things.'

'Groundwater is not only not readily available around here, it's invisible.'

'But because it's not seen, and silent, doesn't mean it's not powerful.'

'Yeh. Just turn off the water mains for a day and you'll hear people squeal.'

The conversation spun and trickled. They finally decided to get signatures on a petition to council stating their objections, to attend council meetings where Kasha's application would be discussed, and to meet again. They chose some slogans for placards that they'd hold up out the front of council, a colour theme, blue.

As a sense of purpose mushroomed, Maddie Meadows asked, 'What will we call ourselves?'

The uni student came up with the name they all agreed to. Save Our Groundwater, SOG for short. Frankie said she'd ring the local TV station to try to get them at the council meeting for coverage. They'd try to get a speaker, an expert. Each went their way, part-unsure, part-glad to have something to do, part sceptical that anything they could do would make a difference.

As Frankie finished packing away chairs and closing the room, Lois emerged from the *Echo* office.

'Sorry I missed the meeting. Had to write the editorial. How'd you go?' she asked, optimistic.

'Not bad. Can we put a notice in *The Echo* about a petition?'

'Sure. Petition. Is that it?' Lois asked.

'It's something.' Frankie suddenly felt small, innocuous, ineffective.

'Sure, love. It's a good start.' Lois moved to put her hand on Frankie's shoulder. But Frankie shrugged her off.

'Sometimes I want to put a bomb under Kasha's rig.' Frankie flushed.

'Understandable. Eco-terrorism is gathering momentum. People block coal trains, tie themselves to trees.' Lois took a deep breath, seemed to grow tall and emanate light. She sometimes floored Frankie with her capacity to show a new angle, to reveal a part of herself that was unimaginable.

'Would you?' Frankie asked.

Lois walked away, towards the front of the community hall, holding her head high.

'Lois, when will a call to violence be stronger or more urgent than non-violent protest?' Frankie called after her.

Lois was ready for the hard questions, sighed, pushed back her hair. 'Perhaps it depends on frustration levels, the types of resource an agitator can draw on. I think of the ANC - South Africa, in the 1970s, and 1980s. They split. Some chose to target damage to physical things. People inevitably got hurt. Some chose diplomacy. Mandela was caught in the middle. He came through.'

'Violence gets attention, but does it change anything?' Frankie's brow furrowed.

'There are those who use words. Words, words, words.' Lois flourished her hands, the soft skin of her upper arms waving like pendulous flags.

'Words seem so slow.' Frankie paused, fiddled with her car keys. 'Activists who chain themselves to train lines, to trains, to steel gates. Those who put their bodies on the line. That's courage. I'll never be able to do that.'

'Some add the peaceful presence of their bodies. Bodily protests. Imagine that girl who climbed a tree to protect the forest in Tasmania. Stayed there on a platform for over 300 days. See how that affects your body. You come to love your tree.' Lois chuckled.

'What can I do for an aquifer?' Frankie mused. 'What will it do for itself?'

'There'll be lots of strategies, dear. We all have different strengths to add to the cause. You are igniting things, and that's useful.' This time Frankie let Lois hold her arm over her shoulder as they walked onto the street.

Frankie drove home, filled Carol's water trough from the back of her ute, sat on the verandah, waiting for the moon to rise.

## **Nine: PERMEABILITY**

Kasha had returned from a drilling job out of town for a university research project. They wanted another monitoring bore higher in the catchment to compare data sets. They were sticklers for his records, wanted to see the cores he brought to the surface, fussed and fiddled with folders and mini-computers, while he pulled the levers, guided the drill head to new, deeper places. He was glad to be home.

He parked his rig down in his back paddock, planning to sink the rods a little deeper on his own bore. Got to be ready for selling off these blocks. He'll tell them, there'll be plenty of water here.

He sat on a sagging director's chair, warming his feet in the dying radiation of coals from his campfire. He'd decided to sleep under the stars. He was part annoyed to be out in his own paddock protecting his rig, he'd heard rumours in the pub. Opposition was growing. Darkness crept inwards, circling him, dulling the crimson reflection of fire glow on his skin. Frogs called in the grasses, he wondered at how they survived, laid their foamy eggs. He remembered collecting tadpoles in jars when he was a boy. He couldn't count the numbers of frogs he had squashed under the heel of his boot, caught in the sludge excavated by his bore-rig, little more than pulp. As light faded he settled into his swag. Part of him liked to lie close to the earth, feel night air on his skin and to lose himself in the eternity of stars as he waited for sleep. He closed his eyes. Suddenly he felt a cold soft slap on his face, suction-cupped hands clasping at his brow, a push of tiny feet against his lips. He leapt up, shrieked, grabbed at the creature, flung it away into the grasses. He wiped at his face repeatedly, trying to wipe off the feeling of cold slime on his skin. A frog croaked loudly, nearby.

'Shut the fuck up.' He settled again in his swag.

An hour later he lay snoring on his back, mouth open, his arms pillowing his head. Again the frog landed, splat on his face, this time full-bellied across his mouth. He sprang upright, batting at his face, bellowed. The feeling of the frog on his lips and teeth had him spitting into the dust. He stomped around the fire in his socks, nearly stepping in the remains of hot coals, hoping to squash his attacker. Again he lay in his swag, his pulse racing. Moist night air settled around his neck. Twice more throughout the night the frog lurched itself onto Kasha's leathery skin, to be flung away in a barrage of expletives. Kasha finally left his swag and slept the last hours before dawn in the cab of his truck, uncomfortable across the hand-brake. The frog sang out a rhythmic, strong rasping call, as if beating a battle drum, the sound of victory, calling now for its territory, calling for a mate.

As dawn unfolded, the frog crept under a log near Kasha's discarded swag into its burrow, clearing dirt and grit from the mouth of its home with delicate sweeps of strong hind legs.



Over the following weeks Frankie felt pulled between opposing forces. Sometimes she walked tall, high as she could, swung her hair, lifted her chin. A confident ego demanded attention. Her photo in the local newspapers, online, advertised the SOG petition and the coming council meeting where objections would be heard. She wondered how they got there. Fuelled by the thought that people were looking at her image, reading her words, she preened. Then in other moments, she was overwhelmed by an inclination to hide, wanted only to be invisible. She slunk about her errands in Cawling and Broadville, hooded, hoping to be indistinguishable in the street. She yearned to drift unseen, like a log rolling in the base of a river, bumping boulders, taking life's knocks invisibly. Her head bowed, her shoulders rounded, not meeting anyone's glance. Invisible, camouflaged like a mottled-brown frog under a stone. But the feel of people's eyes on her lingered. The scale of all she had embarked on became overbearing. Without momentum, she became a target. Criticism bit hard into her skin. Then unbidden, the cocktail of adrenalin and self-confidence returned, a roller coaster of heights and slithering depths.



She drove into town to find Lois and see if she could talk things through. Lois's car was outside the community hall. She found Lois tidying the kitchen.

'When will it settle?' Frankie asked Lois.

'Don't know, love. Keep in mind, love, this is a small pond.' Lois stirred her tea.

'Small cesspool more like it.' Frankie avoided Lois's inference that she was feeling the bumps of other big fish in a small space. She swung her legs under the chair, agitated.

'Seems anyone who takes on a public voice has to battle with who they really are, whose voice they're speaking with.' Lois continued to put plates away in orderly stacks.

'It's mine isn't it? I want it to be me speaking, when I'm at the podium and when I just want to buy a litre of milk.'

'It's always you, Frankie. You're just growing new bits of yourself, getting to know new qualities inside yourself. Some of it has to be performance.'

'Shit, I don't know if I can do this.'

'You are. You will. I can see it coming together.'

'How?'

'Can't tell you the details. I can just see that you'll be alright in the end.'

'Hope you're right.' Frankie folded the last of the tea towels from the stack of clean washing. Lois placed them in the kitchen drawer ready for the next hall function.

Betty arrived with the hall's tablecloths that she had washed, ironed and folded. Lizard sauntered in after her.

'Thought I might find you here. I brought a drink.' He flourished a brown paper bag holding a bottle.

The four friends dragged chairs out to the back porch of the hall, set them so that they all faced the west. Lizard unscrewed the lid from the sherry bottle and

poured liberally into four coffee mugs that were held out to him. Betty held two, one for herself, one for Lizard. They sipped, they sat in silence.

A flock of white-winged coughts foraged, black cassocks and red eyes, white tips to their wings exposed as they lifted over the fence to chuff and chortle over seeds and insects. They moved together like a group of clucking priests on a breezy Sunday, heads down, packed together, clutching at their vestments. They flew away shrieking, as the friends moved to refill their drinks. The sun nudged a blood-red horizon and a few straggling cockatoos screamed as they flapped past, rushing and swerving. Long low light illuminated yellow halos around their wings.

‘Ain’t it grand.’ Lizard smacked his lips. Breaking the long silence. The others nodded, still in reverie.

Betty sipped her sherry. Her voice was soft at first, her curls cushioned around her cheeks. Frankie leant towards her to hear.

‘The world has lost the gods and goddesses of the underworld, lost the mysteries. Belief in science, the crawl towards materialism, crass, relentless. Individuals all. Humans believe that they’re the height of existence.’ She paused for another sip. ‘Perhaps a humbler tilt towards powers outside ourselves, and far greater, might sit us in our place.’ Her friends leant back as one as she continued. ‘We might listen and observe the world around us, and beyond.’ She cupped the mug as if it might be a chalice, a prayerful gesture. ‘Prayers have great impact.’ She sighed out, puffing her lips in soufflé softness.

‘No way I’m praying for nothing.’ Lizard broke the spell of Betty’s words.

‘Go on, Lizard. You know reverence,’ Lois murmured. Frankie watched them circle each other’s differences.

‘Maybe when I’m out by a river I could feel something.’ Lizard conceded.

‘That’s just what I mean, more people ought to get back to nature.’ Lois bottomed the mug, holding it upside down, hopeful.

Betty tapped Lizard’s knee and he looked at her hand as if he never wanted her to move from his side. Betty snatched her hand back and cupped her mug of sherry.

‘It’s not as simple as that, is it?’ Frankie asked. ‘Like, if everyone went to sit beside the river, even if it’s dry and not much more than a string of muddy pools, the countryside would soon be littered with more people and cars and junk, the riverbanks would cave in.’

‘You think everyone is going to leave their comfort zone to meditate on nature?’ Lizard asked.

‘There are just too many people.’ Lois stated. ‘The Chinese had the idea. Copped flack for their One Child thing.’

‘There’s even too many people in Cawling, Betty whispered.

‘Too right, too many for the amount of water we’ve got.’ Lois said, then added. ‘Unless you’re Kasha.’

‘Maybe a few world catastrophes will thin us out.’ Lizard croaked, almost hopeful.

‘Heading that way.’ Betty shook her head.

‘Let’s just concentrate on the groundwater.’ Frankie sighed.

‘OK. What’s next? Kasha’s licence for the quantity of water he wants was approved by the water authority,’ Lois reported.

‘That’s a set back,’ Lizard growled.

‘But council hasn’t given approval for the boring works yet, nor the planning permit for his subdivision. We think he may have started to drill on his land already. The neighbours objections are lodged. If we get enough signatures on the SOG petition, council has to hear our objections. Do we go to VCAT? You know that tribunal that decides on civil, or Council disputes. It’s legal.’ Lois remained ever on task.

‘Whose got the money for that?’ Lizard rasped his hands across his chin.

‘I want to learn more about it. Who approved the license, who owns the water? If we’re going to argue to stop Kasha’s development, we have to question the groundwater licence,’ Frankie said.

‘And stop the Council permit,’ Lois added.

‘So, go gettem, gal.’ Lizard clapped Frankie on the back.



Helen surreptitiously helped set up the meeting between Frankie and her boss, Colin Fitts, from the regional water authority, an arm of the State government. His was the name at the bottom of the permission for Kasha to take two hundred and forty megalitres of groundwater per annum from a new bore at the base of his development. Frankie saw the permit in the mound of papers in Kasha’s Planning Permit application, which was available for public scrutiny at the council offices. She’d gulped. Ten megalitres per block, ten Olympic swimming pools every year. That’s a lot of water, she mused. Who knows what the recharge will be in the many dry years predicted. More draw-down was inevitable. The mathematics of the extent of impact on neighbouring bores was virtually incalculable. Helen had offered to look at the figures, but explained that there were too many unregistered stock and domestic bores in the district, so old they did not appear on her database. No-one knew the extraction rates, even of the bores they knew about.

Frankie pulled up at the offices of the Central Goldfields Water Authority, on the edge of Broadville, a clutch of portables perched behind a red-brick fence. Unlike Helen’s cubicle, Colin Fitts’ office had glass panelled walls, and an air conditioner hissed cool air.

‘What’s the basis for getting a permit for withdrawing groundwater?’ Frankie asked outright. Colin pushed his glasses back from the end of his nose and looked at Frankie’s face across his bare desk.

‘We look at the management plan for the region, see how much groundwater is designated as available. Permissible Consumptive Volumes. It’s all calculated. If the water is unallocated to licences, and it’s a valid commercial project, the applicant gets the licence. Simple. Just maths from our end.’

‘Nothing to do with effects, impacts.’

‘We don’t ,’ he coughed, ‘can’t measure them all, you know. Depends if you’re talking about Take and Use licences, or Stock and Domestic.’

‘No analysis of groundwater dependent ecosystems in the catchment?’ Frankie leant forward on her chair, stared through Colin’s black-rimmed frames at his bleak blue eyes.

‘That’s not our department.’ Colin shifted in his chair. ‘You have to speak to Environments for that sort of thing.’

‘Environments, where?’

‘Look, dear, in this region there are thousands of Take and Use licences, water trades, commercial extractions, farmers. Every year. About thirty-five thousand mega-litres of groundwater are licensed for extraction in the mid-Linden tier zone alone. We don’t see much impact from Mr Duff’s application.’

‘Isn’t it too close to the river? It could affect surface flows, liminal ecosystems.’ Frankie felt her knees jiggling, her jaw tightening.

‘We crunch the numbers here. It’s all based on the management plans.’ Colin Fitts’ lips tightened, he stared at Frankie as if willing her to leave his office, to stop this interruption to his daily work.

‘When were they written? Who wrote them? Do they try to take account of climate change? Geology says...’ she corrected herself, ‘research says no one knows the full impact of climate change on our local aquifers yet.’ Frankie fired questions at the man who shrank in his seat, twiddled with his pen.

‘Mr Duff’s licence application is valid under current rules of the Authority.’ Colin stood, a blood vessel pulsing at his temple. He fiddled with his tie.

Frankie saw that the interview was over. She tipped forward off the chair and walked from the office, fuming, flabbergasted.

She strutted straight to Helen’s office to debrief, to vent her growing disillusionment and chagrin at Collin Fitts’ seemingly impassable obstruction.

‘Yes, it’s true.’ Helen tried to placate Frankie, offered her a drink from the staff room water cooler.

‘It’s ridiculous. How do you survive working for bureaucracy?’

‘I like the security. I like what I can do for accuracy. I can hold companies to account for polluting aquifers.’

‘Is it true that each region has a groundwater management plan?’

‘Yep. Mostly out of date now. During the millennial drought the federal government was frightened about the lack of water planning, abolished the old Water Commission, and set up the National Water Initiative. Dams and bores were drying up everywhere. One small section of the national water thing was the establishment of regional groundwater management plans. It gave a bunch of hydrologists a job.’

‘But do they mean anything?’

‘Yes and no.’ Helen leant back in her chair, which creaked as it reached the limit of its extension.

Frankie groaned. ‘Always yes and no. Isn’t there anything definitive in this?’

‘There’s one thing you might be interested in. If, as you say, SOG wants to object to Kasha’s planning application.’ Helen folded her arms behind her head, revealing armpits, white-skinned and hairy. Frankie dared not be expectant. Nodded.

‘There’s a section of the Water Act that says that authorities have to consult with relevant cultural groups in the development of water plans.’

‘Yes. So?’

‘It means that national law says that Indigenous people should be consulted in the use of water. They have this thing about cultural waters, traditional customs and stuff to do with their water.’

Frankie sat forward. ‘So, does that mean that Kasha’s application for that mother of a bore needs the nod from the local Aboriginal group, before council can give the planning permit the go ahead?’

‘Well, sort of. The Catchment Management Authority and Council are supposed to consult, but in most cases they don’t. They just don’t know how or where to talk to Indigenous groups. It’s a part of the Act that slides by unnoticed.’ Helen half grinned. ‘Look, I’m no expert, but I know a guy who specialises in water law. He’s got a lot to do with Aboriginal groups too.’ Helen flicked through her top

drawer and brought out a business card, turned it to peer at both sides. ‘Bruce Landy, nice guy. Give him a ring.’ She held the card towards Frankie.

‘That’s amazing.’ Frankie stood up, took the card from Helen and collected her bag. ‘So there’s a slim chance that the local Koori group, Yaluk Coop, isn’t it, could have a say in this? Just what Kasha wants.’

Frankie stood at the doorway, beaming. ‘Thanks, Helen. You let out information as slow as an aquifer seeps through sandstone. Mighty slow.’

‘You’re welcome.’ Helen smiled as Frankie strode out, her hair flying.



Brass plaques were screwed to the sandstone wall at each gate. City traffic beeped and groaned. Frankie peered at each plaque; law firms, dentists’ and surgeons’ names were engraved, old letters turning green in the crevices. She checked the address on the card from Helen, looked up and down the leafy street. On a steel gate that led to a basement she saw a painted sign, small, unpretentious. ‘Environmental Law, Land Matters.’ In slender script, a name. Bruce Landy. Frankie walked down the stairway into the cool, below street-level entrance, knocked on thick glass on an enormous oak doorway. No reply. She turned a large ceramic door handle, pushed the door, which scraped on worn lino. Through an archway a small hallway led to an open back door, through which the smell of clove cigarettes and garbage wafted. Frankie closed the front door, wondered which of the entrances along the passage way would belong to Bruce Landy.

A figure appeared in silhouette in the back doorway, carrying a bin, a cigarette hanging from his hand. Frankie could see he had hunched shoulders and large ears, which, as he approached appeared to glow with the light behind them. Frankie coughed.

‘Yes. Not today. No we don’t need anything today thanks, dear.’ The man looked past Frankie and headed towards the closest doorway, struggling to open it with the bin in his hands.

‘Not selling anything. I have an appointment with Bruce Landy. Which is his office?’ Frankie said, shrugging. The man looked at his watch, shook his head.

‘Sorry, dear. Where does time go?’ He beckoned Frankie to follow as he disappeared into the room.

Frankie stood at the doorway of a tight-packed, messy office, wondering where to sit. Bruce Landy dropped the bin beside a cluttered desk, moved a pile of files from a chair to the floor. He gestured for Frankie to take a seat, took one last drag of the Kretec cigarette and stubbed it on the sides of the bin. He was a thin man in his early sixties, with thin straight hair slapped to his scalp. He wore a narrow belt, which crumpled his suit pants at the waist. His green-striped shirt had a yellowing collar, with the top button opened and his tie askew. A jacket hung over the back of his office chair, on the shoulder a creamy-coloured wig dangled. As he stepped behind his desk to take a seat, Frankie noticed he wore socks and sandals, worn and down-at-heel. Rows of books with gold-embossed dates on each spine leaned haphazardly on shelves behind him, and again Frankie noticed that his wide flung ears appeared to glow, pink in the dusty room.

‘So you want to know about water laws. Says it on your email here.’ He tapped at the keyboard to bring it to life.

‘Good morning. Yes, my name is Frances Pankhurst, Frankie, and I was wanting to know about...’

‘Yes, I looked you up. *Cawling Echo*. Your petition gets a few mentions.’ His hands flicked across the keyboard. ‘I brought up a few cases you might be interested in. You studying law?’

‘No, science. I want to understand groundwater. Who owns it? Who has the right to use it?’

‘What’s your motive?’ Bruce seemed to peck his questions at Frankie, like a magpie might peck for worms, head cocked momentarily then shooting a strong beak into the soil. Frankie didn’t feel threatened by this quick-thinking, paddle-eared man, rather she warmed to his eccentricities and trusted the kind corners to his mouth that twitched into half-smiles between sentences.

‘My horse died of thirst. The bore stopped working. Never has before. We think the local water boring contractor has stitched up something illegal.’



‘Must be Kasha Duff.’ Bruce looked around the room as if expecting Kasha to enter the cramped space at any moment. Frankie glanced over her shoulder too.

‘How did you know?’ She sat forward on her chair.

‘Aren’t too many boring contractors in Victoria. I’ve had to ask to see his log books a few times. Part of my job, when someone says they’re not happy with the bore water. Never met the man.’

‘Who knows what he’d send you. It won’t be what he actually bored.’ Frankie said, swinging her feet under her chair. ‘That’s what my dad always reckoned.’

‘Ah. Yes. Lennie Pankhurst.’ Bruce raised his eyes to recall a detail from his memory, plucking information from filing-system records stored in his brain.

Frankie’s eyes opened wide. ‘You knew my father?’

‘Probably more than twenty years ago, his name came up in a case. Kasha Duff was involved too.’ Bruce tapped his cigarette on the desk. ‘Nice guy, if I recall. Water diviner. But not relevant. The judge wouldn’t accept his evidence.’

‘What case? When?’ Frankie closed her mouth and got out her notebook.

‘1972. Case about costs. Depths of a bore on a potato farm. Duff got away with it. Now, what did you want to know?’

‘What’s the law on who can take water from underground? Who owns it?’

Bruce grimaced, licked his brown-stained teeth. ‘It’s not simple, Frankie.’

‘Nothing about hydrogeology is.’

‘Water law is about as opaque as,’ Bruce paused, looking for an analogy.

‘Bottom of a dam,’ Frankie suggested.

‘Less contained, changes more often, more complex.’

‘Sludge of the Amazon, slow moving.’ Frankie threw in.

‘Yes, but maybe more obscure, more fragmented.’ Bruce wiped his forehead, flattening his hair.

‘How about like a chain of ponds, you know like, when a river just about dries up and all that’s left is a chain of pools along its course, often fed by groundwater.’

‘Yes, that’s more like it. You only get to see little bits. The rest is underground. Water law in Australia has a long history. It’s built on a culture of water management. It’s an engineering culture. Not so much a rights-based culture, or based on who needs it. The law has less concern with how water is used. It’s more to do with how it’s made accessible, how you sell it. We had citizen engineers and technical people in the nation building stages, building these laws. The Victorian Water Act harks back to the late nineteenth-century. It was all about potable supply. How can we get to the water.’ Bruce leant back in his chair, almost put his sandals on the desk, then thought better of it and sat forward. Frankie was scribbling notes. Bruce continued.

‘Constitutionally, groundwater is a State responsibility. The constitution assigns ownership of groundwater to the Crown.’

‘And every State has different laws?’ Frankie asked.

‘You got it. In Victoria it’s the Water Act of 1989 regulates groundwater. But there are a raft of amendments and different threads to it.’ Bruce picked up his coffee mug and looked into it, hopeful. He continued talking, quickly, jabbing at the air as he made points.

‘The Crown provides access to groundwater, through a whole range of rights. There are two main types of water rights, or licences, that give entitlements and allocations. There’s the right to take and use, with a licence issued under section 51 and 52 of the Act. These are usually high volume, industrial licences. And you also need a permit or licence for the works - the actual construction of the bore. Section 61, I think.’ He hesitated, unusually uncertain for a moment.

‘So where do Stock and Domestic bores fit in? That’s the most common, isn’t it?’

Bruce nodded, impressed. He licked his teeth, rubbed his ear so that one now glowed crimson, the other ochre. Frankie watched them change colours, like a chameleon in the changing light of day.

‘How about a coffee?’ Bruce stood, shuffled around a pile of folders on the floor and led Frankie down the hallway to a tiny kitchen with a sink overflowing with dirty cups, plates and pots. He rinsed and filled an espresso pot with coffee and water, sat it on the stovetop, clicked at the gas. He did all this with the quick dexterity of a bird, all automatic. He chose two mugs, splashed water over them, shook them out. Spooned three spoons of sugar into one and glanced at Frankie.

‘Just one, please.’

Bruce shrugged. Frankie knew there would be no milk.

While he waited for the coffee to boil, Bruce continued.

‘Stock and Domestic bores sit out sideways. Funny things. Unregulated.’

‘Yer, that’s what dad told me.’

‘Historically, Stock and Domestic rights were imported from old private, riparian rights, where landholders had the right to take water from bores for use on their own properties, for their own private use. It’s been kept as an anomaly to the rest of the water legislation. Mostly we don’t know about all the old S&Ds.’ The coffee pot spluttered, Bruce watched it, silently for a while. Frankie could see that his mind rarely stopped. He judged the coffee made, poured two black, stirred them both with a spoon fished from the sink. He carried them both back to his office, sat them on his desk. Frankie followed and sat again, perched on the edge of her chair. Bruce continued, as without the break.

‘There is a provision for proximity to streams, you are not to sensibly diminish downstream flow, and a person can cross crown land for access to water on their property.’ They both sipped the steaming coffee. ‘Is this getting too complicated. For a scientist?’ Bruce’s eyes creased at the sides, he half smiled.

‘I’m still with you. But who are the controlling bodies?’

‘It all depends. You might need private rights for access. You might need Council planning approval. Depends on the nature of the bore and the intended use. If its for commercial use, and for Duff it will be commercial, the water authorities are responsible for groundwater licences. There are seven water regions in Victoria. In your area Central Goldfields Water Authority are the flow managers - of rivers and groundwater usage. If there are environmental impacts predicted from the

physical bore construction works, local Councils will refer the planning applications to the Department of Environment, Water and whatever else its current name is.'

'Yes, I met the water authority guy. Fitts. His hands are tied it seemed. Issues the licences, collects the fees, and then they're supposed to police the extraction.' Frankie shrugged.

'They follow their rules. They give out permits, licences for quantities. If there's a dispute, sometimes I get to try to interpret whether they correctly followed the rules and common law processes. Mostly it's about competing reports from hydrogeologists. Councils are supposed to look at the permit applications to do the actual on site boring works. What's the impact on neighbours, things like that.'

'What do you know about Indigenous people's rights to water? Is it waterways and groundwater? Is it true that they should be consulted when people apply for water licences?' Frankie took up her notebook again.

'Yes, and well, mostly. There is a legal obligation to take account of Indigenous rights. They have rights to have access to cultural waters, through the Traditional Owners Settlement Act, and in the National Water Act. But, and it's always a big but. This obligation is rarely met. In the federal Water Act, it's like an umbrella statement, there are two main priorities - meeting critical human needs for water and secondly environmental needs. Indigenous people get lost in it all. The water authorities don't really know how to communicate with Aboriginal groups. There's not a lot written down.'

'I've got a friend who's involved with the local Aboriginal group.' Frankie said, thinking of Wade.

'Ask them if they've got a Natural Resources Plan, or a Cultural Heritage Management Plan. A document that states their intentions on how their Country can be accessed. It probably has reference to a whole lot of places, scar trees that have to be preserved, rock quarries and tool making workshops, sacred places. All the natural places that they want preserved. It might say something about water. Ask.' Bruce looked at his watch and drained his coffee.

'Thanks for all this. Thanks. Could I contact you with more questions?' Frankie stood quickly.

‘Yes, sorry, but I’ve got another meeting. I’m working with an indigenous group from up in New South Wales, about the Murray Darling basin. They’re trying to get acknowledgment of cultural waters along the Murray. Working towards a Water Trust, a water resource planning instrument. Good mob of people. Makes so much sense.’ Bruce stood and gathered an armful of folders from his desk and beside him on the floor.

‘Yes, great. Thanks.’ Frankie held open the office door and followed Bruce up the hallway.

‘Help me with the door, will you?’ Bruce nudged at a doorway with his hip. Frankie opened the door to a small meeting room with a round table, surrounded by chairs. Bruce dropped the pile of folders on the table and extended his hand to Frankie. ‘Good to meet any of Lennie Pankhurst’s kin. Email me anytime with any other questions.’

Frankie climbed the stairs back towards the busy street, hissing now with coastal rain. She passed five people on their way down to Bruce’s office. One wheeled a small carry case, bumping it down the steps. They nodded at Frankie, she nodded in reply.

Later that day, back at Cawling, Frankie prepared for work, keen to talk with Wade. In the canteen at supper break, they huddled around a corner table, away from others. Frankie explained much of what she’d learned from Bruce, particularly about the fact that there are many instances where Aboriginal people are not consulted on water planning schemes.

‘So, what’s unusual about that? Often seems to happen. Koori interests are bundled up as environmental needs, secondary, hidden. We’re seen as the environment, as if we’re not human, as if our cultural needs don’t exist.’

‘Has Yaluk Coop got a ?’ She paused, to remember her notes from her meeting with Bruce. ‘CHMP? That’s what Bruce said we have to find out.’

‘Of course we have. Cultural Heritage Management Plan. We were one of the first groups in the State to articulate this stuff. It’s part of the Recognition and

Settlement Agreement. Gives us rights, to do cultural stuff on public lands. State forests, and a couple of National parks. Those of us left around here, some of us know our connections to this place.’ Wade kicked at the table leg, lowered his head.

‘Bruce said it would show special places, might even talk about water.’ Frankie persisted, bypassing his resilience, his grief.

‘Yes, it does. It recognises the waterways, that they’re sick and not being looked after properly. All the rivers around here have been pumped for irrigation, too much fishing, polluted by fertiliser chemicals and town sewerage. We want them to be looked after, maybe just to be left alone to heal. We want them to be the lifeblood they always used to be, not trickling scabs.’ Wade’s voice rose, his eyes flashed. Frankie had never seen him express so much.

‘Shit, that’s amazing. You know all about it.’

‘Of course I do. That’s why I want to help you. That underground water is just as special in our stories too, you know. When we think of water management, we always start with the groundwater. It’s the basis to water security.’

‘So did you know that Council and the water authority is supposed to consult with the local Aboriginal groups in making water plans, in giving planning permits for things that affect local waterways. That means, for example, Kasha’s application. You guys could have a say in all this.’

‘Yeh, sort of. But they don’t give us mob notice till the last minute, or not at all. Look, I’ll ask the people from the Co-op what they know about it. I’ve told them about Kasha’s application.’ Wade looked at Frankie, his eyes glistening, his top lip gleaming with sweat.



She drove home intending to finish an assignment, but ended up being drawn to descend the well. She needed to think. She followed the now well-worn path through the bush, climbed down the ladder. Frankie’s entanglements with water felt more and more crucial to her state of being. She felt its presence in her anatomy, in her eyeballs as viscous fluids, in her blood, warmed and reddened, in the interstitial materials of her flesh. Water in her cells, her veins, her lymph system, her bones,

like groundwater, liquid moving within solid, liquids filling interstices. Water entangled in the networks of blood vessels and nerves, portage through her whole systems. She stayed deep in the well, embraced by earth. She watched stars creep across the sky, heard the screech of nightjars, the chattering growls of possums.



A lawyer rang, asked her to call into his office to talk about her inheritance. Lois drove with her to Broadville, chatting incessantly. They parked outside the lawyer's offices.

'I'll just be gone a moment. You'll be right. Ask questions if you're unsure.' Lois clucked and strutted off to collect new glasses from the optometrist. Frankie pushed the heavy gate, walked up a rose-lined path. A familiar, crusty pair of boots made her look up. Kasha Duff stood before her on the pathway, a bundle of papers clutched in his claw-like hands. They stared at each other as a pair of duelling dogs might face off, tense, wary of the damage that might come from tearing at each other's throats. They both stepped aside, then back. Frankie broke the silence.

'Don't think that you'll be getting away with this.'

Kasha tapped at the folders in his arms. 'I'll dig for as much water as I need, missy.'

'Always scratching.' Frankie shook her head. 'Don't you know the water table's dropping.'

'What's your beef, girl? I'm just doing my job. This project's gunna go ahead.' Again he tapped at the folders under his arm, his stubbled top lip twisted.

'This isn't the time or place, Kasha. Let me pass.'

'You can't tell me I can't dig holes, that I can't take the water beneath my land. You and your bloody SOG. SOG alright. Just like you're bloody father.'

Frankie felt like she'd been punched, tried to walk past Kasha. 'Over my dead body,' she growled at him. 'You won't get away with it.'

‘Lenny still feeding you lines, is he? Trying to stop me all his bleeding life.’

‘You bastard.’ Frankie strode towards the office doors, turned for a parting shot. ‘This is intergenerational now. Don’t think I’ll let up on you.’

Kasha gaped, turned away, tripped. He twisted his ankle on the edge of the pathway, his arms flew out to save his fall. Papers fluttered onto the pavement, whisked on a small gust amongst the late roses. He scuttled to collect them, pecking frantically to catch fly-away pages.

The lawyer’s office was lined with law books, like Bruce Landy’s, only tidy. The lawyer confirmed that the house at Cawling and the ninety-nine year lease on the riverside cabin were hers. They’d found Lennie and Claire’s will, written over twenty years ago. Lennie would never have thought about making a will, probably didn’t remember Claire making him sign the piece of paper to start with. Transfers into Frankie’s name were nearly done. She wondered what owning property might mean for her. Lois and Frankie returned to Cawling.

‘All good, love?’ Lois was polishing her new glasses.

‘Yes, It’s straightforward, they said. Ownership. Don’t know how we can own something that was never ours.’

‘Takes time for the paperwork.’

‘Paperwork?’ Frankie was concentrating on the road.

‘I saw Kasha’s truck in town.’ Lois glanced at Frankie.

‘I bumped into him.’

‘And?’ Lois waited.

‘I think he’s a gonner.’ Frankie pulled her hair over her neck and bit her lip.

‘That’s good, love.’ Lois was unusually quiet for the rest of the journey.



## Ten: POROSITY

A pale and cloudless sky beat down heat that made even the eucalypts squint and shrink under its fierceness. For Frankie in the well, the circle of light above sizzled bright, radiant. In her contemplations she kept her gaze downward, or at best she looked at the nothing black of the walls in front of her. Her tongue was dry on the roof of her mouth. She had pulled the ladder down to its shortest length, had huddled through a long night, emptied her thoughts into the earthen walls, let them soak away. Staying within the earth, she felt country breathe through dusk into night, from dark until the break of day. Groundwater moved towards her, seeped closer through microscopic porosity. It too breathed, a swell and retreat, under the influence of the moon. She saw grey light turn to golden, she heard the dawn chorus. Hungry, thirsty, she stayed in the dank dark space, digging space. She yearned for the aquifer's heartbeat, she reached beyond the water in her cells, to deeper, earthly flows. Her body was stiff and aching, her throat pulsed, moisture seeped through her skin.

Frankie heard the crackling of footsteps on dry ground before she heard their whispers approaching. Talking in hushed tones as people do in cathedrals, when they turn towards the altar and voices go quiet, while awe escalates at the immensity of human endeavours in the name of a god.

‘It’s over this way.’ Wade’s voice verged towards a shout.

‘She didn’t go home last night. She has to be here. She’s been coming here for weeks.’ Clem’s voice squeaked.

‘She’ll be safe, won’t she?’ Lois needed reassurance.

‘Are you sure she’s in there?’ Lizard sounded subdued.

Frankie crouched in the centre of her hole and looked up. Through the glare the silhouettes of four heads, dark silhouettes against the sky, seemed nearly to touch.

‘You there, Frankie?’ Clem called.

Frankie let out an imitation of a croak, loud and piercing.

‘Frankie.’ ‘Frances.’ ‘Froggie Pankhurst.’ They all spoke at once, blurting the frustration she caused them to feel when she dug herself into a situation and wouldn’t be shifted. They couldn’t see her squatting, her hands on the cool floor of the well. Cool, closed, her lips pulled tight in the dim light.

They stood at the mouth of the well, as if they might have been passing a prayerbook, pronouncing wisdoms they thought she may not have considered. Lizard went first. He coughed to clear his throat and she could hear the deep rattle of phlegm catch as his words tumbled into the hole.

‘We all know water’s important, love. You know better than most how we live under its reign. Water has its own energy, its own life forces, and yes, we should look out for it, read it. Like your dad, reading water has been my life’s work, and you know as well as anyone how I detest those who are water illiterate.’ He spat away from the well, and they all knew who he was thinking of. ‘Putting free flowing water into pipes and drains has ruined creeks and rivers. Mostly it’s ruined the way surface veins interact with the underground water. Life-blood, love. You know it. As if water stops in the bottom of a river.’ He paused and settled his feet, may even have sat down as his skinny legs must have been tired from walking through the bush to the mineshaft. ‘It’s all well and good, love, to look to the forces of nature for your inspiration, for its patterns and rhythms, but for god-sakes, love, you are not a frog and you’ll friggin’ die in that well if there’s a storm out on the hills, and the water comes in down there through the Linden’s lead. It’s not just an old mine shaft, it’ll carry water when the shallow leads flow.’

Frankie let out a defiant cackle, maniacal, like a Perron’s Tree frog, harsh and persistent. Guttural creaks, primordial mimicry, she was steeped in her own animality. She felt the fragility of frogs.

Clem spoke next.

‘Look, Frankie. This is ridiculous. The SOG meeting is only two days away. You have to speak. We could just bring another ladder and come down and get you. I’m not against wrestling you out. Remember, like we used to wrestle as kids.’ Her voice changed from frustrated to sweetly reminiscent. ‘Come on, Froggie.’ Frankie could hear the battle in her voice. ‘OK, I’ll try logic, you know, sweet logic. You being down a well will not change anything, you pretending to be a frog will not change anything. We need you up here, Frankie, on the hard hot earth, brave and inspiring. Frankie, this is not about science or politics, this is about you being you, the best you can be. Come on, Frankie. You know I believe in you. Someone has to speak for groundwater and you’re the best. You can’t do it from down a stinking cold well.’ Frankie heard her turn around in annoyance at throwing her words down a well, not knowing that every word had splashed on Frankie’s head and seeped a little into her being. Frankie closed her eyes and shifted to lean her back against the wall.

Next Lois stepped to the edge of the well. Frankie caught a waft of her perfume, lavender calm, on a slow downward spiral of air.

‘Frances Pankhurst, I’ve not known you as long as these fine people, but I’ve come to love you like a mother would.’ Lois paused to let the power of her statement sink deeply. ‘It is my duty then to tell you some important information, and to trust that you will make something good of it. You are on the path to a good education, you have a good head on your shoulders. Yes, you have strong shoulders.’ Frankie heard Lizard and Clem shuffle and cough. Lois continued, her voice authoritative, clear. Her sentences made sense, simple and clear. ‘There’s wisdom in the words you utter. A politics too.’ Lois paused, she may have lifted her arm to wipe sweat from her brow, as a waft of her underarms dropped around Frankie. Frankie looked up to smell the air.

‘Or write.’ Clem added, close on Lois’s side.

‘Frankie, when a person wants to say something for justice’s sake, for the sake of a thing that can’t speak for itself, you have to speak, or write, in simple sentences. I’ve told you this before. Straight out, words that mean something for the everyday person to read, listen to, be moved by. I’m here to remind you that words are not just about information, they’re about how they can move a person to

think something new. More importantly to feel something that shakes them from complacency. Words can do that, Frankie. They can make you cry.’ The air was all but still, the whip and crack of a wattle bird broke the silence.

They stepped back, stopped asking anything, left their missives in the hole for Frankie to consider. New footsteps approached on the tinder, muffled voices made Frankie cock her head to listen. Three bodies moved away, leaving one more person to speak.

‘Frankie, it’s me, Wade.’ Frankie stood up and leaned against the ladder. ‘Can you hear me, Frankie?’

She made a small chip of sound, like the sharp knock of a carpenter frog.

‘That’s better. We have to know who we’re speaking with. If we don’t listen, we’ll never know. There’s a story I didn’t get to tell you yet. Story from my Hunter Valley mob. My mother’s relatives told me when I was a little kid. Everyone knows this one.’ Frankie heard Wade settle himself, probably cross-legged, sitting at the mouth of the hole. He began his story.

‘Long time ago now, there was a snake travelling the country making things, making mountains and streams and leaving seeds of animals to grow up behind. One of these animals became a frog, a giant frog, so large that it could leap over the ocean. It was really hot at this time and the frog got really really thirsty. That giant frog licked his lips and hopped to some water and drank and drank. First that frog drank from a little stream, then a river, then the lakes and then finally the oceans started looking like they would disappear into his big wide mouth. Plants wilted and the bottoms of the lakes were all cracked and dry. Fish flapped and gasped air and died. So all the other animals became really really thirsty, and really worried, because that giant frog was looking very silent and greedy. Wise wombat suggested they should make the frog laugh to spill out the water. So all the animals started to do things to make that frog laugh. The kookaburra cackled, the kangaroo flicked her ears, the wombat wobbled, the koala yawned, and the little cricket did somersaults. Finally when the big old eel slid out from the mud and tied itself in knots and changed colours, the frog gave a chuckle. All the animals did their things together. The frog burst out laughing and all the water came gushing out of its enormous mouth and filled the streams and rivers and lakes again. Some say there

was a flood too back then. That might be the end of the story, but for some, the frog should be punished for being so greedy in the first place. If you look at some rocks and stones you can see the shape of a frog, because this greedy frog, Tiddilick, was changed into a stone.’ Wade stood and stretched. ‘This story is told all over the place in different ways. In books even. Came to me from my Aunty, visiting from up the Hunter Valley way. But that’s all I’ve got to tell you.’ He jumped back when a voice shot from the hole.

‘Thanks.’ Frankie had climbed silently to the top of the ladder. ‘Hang on, let me get this straight. I’m not being greedy am I?’ She looked at her friends’ feet and legs.

‘Hell no. Well maybe a little self-indulgent.’

‘I just wanted somewhere to think.’

The other three joined Wade at the mouth of the well, looked down at Frankie’s head and torso emerging from the shadows. She started talking like they’d all been gathered around a fireplace late into the night, cupping whiskey in their hands, sipping on it for lubrication. In the dry outside air her voice flicked off the eucalypts leaves so even the crickets were momentarily silenced.

‘You go on a journey, on a quest, if you like, for something. Sometimes you think you know what you’re searching for and the different ways you can find it. Then the paths become all tangled in a mesh and you don’t even know if you’re looking for the right thing anymore. And that might even be good, because, when you’re captured, in that trap of not knowing what you’re looking for, not knowing anything, you get to see and hear things. Sometimes when I’m down here I imagine that a stone might talk.’ Frankie stopped and looked up at the sky, past her four friends who clasped hands or buttons or shirt sleeves, not daring to interrupt.

‘So what about my goal, my quest? Is it lost in navel gazing, imagining I can know now-ness, know just a little about the water that makes me. All I wanted was to be able to speak. To say a few words in a public arena, words that might have a good effect. That’s not too much to ask. But in learning about speech the cells in my voicebox changed. The air I speak into is a little warmer. When I realised I needed some time to think about what I was saying, this cool dark place seemed

as good a place as ever. A croak sounded better than any string of words I tried to make up. The frogs know what's happening.'

'You got plenty of good words, love. Come on out.' Lizard held out his hand.

'Don't pull me out. I'll come on my own.' Frankie climbed back to the bottom of the well and extended the ladder so that it reached into the daylight like buck teeth. She climbed slowly to the surface. Four sets of arms took her in their strength and lifted her the last bit so that they ended up placing her on the ground.

'For god's sake, don't carry me.' She wriggled free, stood arms akimbo glaring. They all stepped back as one, till Wade chuckled first, then Clem, then Lois and finally Lizard hacked out a guffaw. Frankie cracked and joined them in peels of laughter that rolled in and out of her limbs and stomach and chest. Tears ran down their cheeks and Lizard sobbed and then Frankie cried too and laughed at once, with tears and snot and choking. They all huddled, arms on shoulders as the subsidence settled, wiping wet cheeks with their hands. Finally, they hugged in silence.

'Glad to have you back, love.'

'There's a meeting to be had. SOG,' Frankie growled.

'Steady up. How about a plan.' Lois was straightening her dress and flattening down her hair that Clem and Wade, either side had messed in the huddle.

'Yeh, the meeting. Frankie talking,' Wade said.

'We're all in this together. Groundwater is big, enormous. So big that the idea is lost because we can't see it, can't feel it on our skin till it's too late. Seems to me that frogs are closer to it than us.' Frankie sighed.

'Go the frogs.' Wade held his fist high.

'Go Froggie.' Lizard grinned, his stubble pulled out sideways, his yellow teeth wet with saliva.

Frankie straightened her shirt, blew her nose on a large green handkerchief. Wade pulled her ladder to the surface.

‘All right, Frances Pankhurst.’ Clem held her arm around her friend’s shoulder.

‘Better be Frances sometimes.’

Five figures walked through the bush toward Frankie’s house. The midday sun cast a silver sheen through the grey trunks. Clem and Wade carried the ladder between them, Frankie walked between Lizard and Lois, feeling settled, like a deep still pond filled her.



Back in Frankie’s kitchen Lois and Wade made soup for lunch. Clem and Lizard sat on the veranda talking about giving up smoking. Frankie took a hot shower, came into the kitchen ruddy and cleaned, smelling of soap. Around the kitchen table, sipping soup from deep bowls, the conversation leapt back to familiar themes.

Lizard’s voice creaked, ‘When water moves it makes its own energy. How else does it fling a trout up a stream, against gravity?’

‘Doesn’t the fish flip its own tail?’ Wade was warming to Lizard.

‘We could copy the technology of water flow, rather than destroy it. It’s all in the natural world, you know.’

‘But, Mr. Green.’ Clem had a flash of memory of when she’d first stuck her seven-year-old head in his sparsely-filled and often mouldy refrigerator. ‘There is no nature any more. Not the way you mean it, out there separate from us.’ Clem had in mind even the microbes that she peered at in microscopes at her work.

‘Do you mean we can’t draw it any more, write poems about the natural world?’ Lois was looking worried, stirring her soup to cool it.

‘I could say that as fast as science says it knows something, more unanswered questions pop up.’

‘This is the way we think about things, isn’t it?’ Frankie was getting the feeling that she wanted to fly back down to the bottom of the well, to consider these ideas. She swung her legs under the table. ‘It’s the things that are bigger than us, or

smaller. Physics and astronomy and stuff, finding the forces between universes, within atoms.'

'I could have told them that forces are things. We are all energy, affected by energies around us.' Lizard stared at the table.

'Woo woo. Now you're verging on hippy, Mr. Green.'

'We're energy and water, aren't we?' Wade added.

'Yes, son. Always water.' Lizard clapped him on the back and looked into his glass, clearly wishing that it held more than a dribble of cheap wine. It was all that Frankie had in the cupboard.

'This is not helping us solve the loss of groundwater in Cawling district.' Lois tapped her spoon on her bowl.

'No, you're right. So the problem is the water table dropping, due to Kasha's new bore, that he hasn't even got permission to drill yet.' Frankie shook her head.

'Same old, same old...' Lizard growled.

'So here it's not groundwater pollution,' Clem checked.

'Nope. That story has been told. Is still being told. Worldwide,' Frankie added.

'Fracking hell. It's hell for farmers up on the Liverpool Plains, Pilliga Scrub, people living around airports.' Lizard hacked.

'You know governments employ hydrogeologists nowadays to monitor pollution. Petrol spills around service stations, septic tank leakages, toxic stuff from dry-cleaners, fire retardants, industrial paints. Flushed down drains. As if it goes away, away where?' Frankie said.

'Helen would say she has an impact in her job.' Clem jumped to the defence of their friend. 'At least she makes them worried that they'll get caught, get a hefty fine.'

'Nothing's hefty enough if you ruin thousands of years of water in an aquifer.' Frankie blew on her soup.

'So it's about loss, is it?' Lois tried to bring them back to task.



‘Yes, loss, gone, caput, vanished.’ Lizard held his hands open as if a magician had just disappeared a bunch of flowers, and was next looking to pull a rabbit from a hat.

‘More like a death.’ Wade’s voice had the timbre of the deep strings of a double bass. Resonant.

‘Could say we’re in the anger stage,’ Lois sprouted an explanation.

‘This is not a stage that’s going away.’ Frankie’s throat tightened. Plunged beyond pools of grieving, through the sting of distress, past crusted years of self-protection, simmering, raw. She swung her legs, clenched her spoon in her fist.

‘As if anyone would accept the death of groundwater.’ Clem cocked her head, puzzled.

‘That’s as stupid as accepting your own death.’ Lizard tipped the dregs of his glass into his mouth.

‘What’s wrong with that. We’re all going to die.’ Lois paused. ‘In fact, I’m glad to know that I’m going to pass out one day and not wake up.’ Lois looked to the ceiling as if an angel may be there waiting to tap her on the shoulder

‘Great, you lot.’ Frankie grumbled. ‘But we’re alive for now, god dammit. This is about life, the present. The present that Dad hasn’t got anymore. And Bob. Thank you Kasha Duff.’ They all stopped drinking their soup, as the name bounced around the room, conjuring old and fresh hurts.

‘And future generations, after we’re gone,’ Wade added.

‘Believe it or not, this is not about getting Kasha Duff. Up the Duff, god how he used to gloat.’ Lizard’s eyes narrowed as long-held sufferance of Kasha harrowed through him.

‘Yeh, yeh. It’s about groundwater, not Kasha.’ Frankie was reluctant to let go of her inherited animosity.

‘But shouldn’t he take responsibility for his actions?’ Wade asked.

‘Yes and no, love.’ Lois looked kindly at Wade. ‘He’s just part of a bigger system, trying to make a buck.’

‘That’s the problem. Too much interest in the buck.’ Frankie shook her head.

‘Groundwater is big, right. Everywhere it seems, but nowhere,’ Clem said.

‘Don’t anyone say, like god.’ Lois glared.

‘Yes and no. It’s inner and outer, upper and lower. Life and death.’ Wade collected the bowls.

They all looked at him as he carried them to the sink. Like a stream run dry on the surface, there was nothing else that anyone present wanted to say. It was all thoughts below the coverings. They sat in quiet contemplation for a few minutes. Frankie swung her legs. Wade whistled in the kitchen.

‘By the way, love, Cyril Parks told me he has a horse to give away. A buddy for Carol.’ Lois broke the reveries.

‘Four legs?’ Lizard asked.

‘And kind, he reckons.’ Lois ignored Lizard, continued to explain that Cyril had a bunch of aged Whalers he’d bred, needed to move them on since he’d had his first scare with cancer. He’d drop off the gelding next week if Frankie agreed.

‘Sure. Thanks. Hopefully I can keep up the water for two.’

‘I’ll help,’ Wade offered from the doorway.

‘Thanks.’ Frankie knew that Whalers were a tough breed, survivors from the Lighthouse stories. ‘Carol will like some company.’

Lois, Lizard, Wade and Clem said their goodnights, drove away, their cars leaving behind a pillow of dust that took minutes to settle.

Frankie stood on the veranda, heard Carol give a soft nicker. ‘I can feel the power of aquifers beneath my feet.’ Frankie whispered the unlikely sentence in her mouth. No one was there to hear the repeats. ‘Power of aquifers beneath my feet.’ She breathed deeply. ‘Power of aquifers, beneath my feet.’ The repetition brought familiarity, power of aquifers in her blood, in her bones. Minerals seeped, water’s electrons moved through magnetic earth, created a trickle, a wave. A pulse so faint it barely reached the surface. Some hearts feel these distant beats of deep earth, some can read them.

She breathed deeply. Was she really a diviner? Hell, it's all hokus pokus, she could hear them all say. If only Lennie was still around to tell her what it all meant. What would Lizard say? She imagined his bulbous eyes turning in his unmoving skull, his nod, hopeful approval.



'It's sort of like a sort of bi-polar thing. One moment people love the bush, then they hate it, frightened like hell of the quiet.' Lois set out scones and the makings for a cup of tea from her basket. She and Frankie sat in the *Echo* office, at a freshly cleared bench. The weekly mail out was completed, deliveries done. Lois continued, slowly shaking her head.

'So, people can hold ambiguous and even contradictory feelings about nature and the bush, simultaneously,' Frankie mused.

'They may love their nature documentaries, but hate camping.' Lois arranged two cups on matching saucers. 'Problem is when some turn contradictions into destruction. If they've got tools in their hands.'

'They'll use them,' Frankie finished the sentence.

'Take for example an axe, a bulldozer.' Lois ruffled her curls.

'A bore drilling rig, a gun.' Frankie swung her legs.

'Yes, some accumulate the tools.' Steam rose from the freshly poured tea.

'Tomorrow's the Council meeting, hearing all the objections. The petition worked. Looks like it could be a good turn out. What'll I say?' Frankie stood abruptly, was worried she'd never get her sentences sorted out. The Save Our Groundwater group had collected signatures on a petition objecting to Kasha's development. They'd raised objections to his application for the permits to construct the infrastructure on the bore site. The suggestions that Kasha had already started pumping were laid out to the engineers of the Broadville Council. SOG prepared for what was billed as a mediation meeting. An opportunity for councillors to hear both sides of the case. Details of the meeting were posted in the *Cawling Echo*, and taped on shop windows and notice boards around the town.

Melody Blayne, the Council Planning Officer, had approached a representative from the regional water authority, Colin Fitts, to speak, but he had declined. He hadn't been able to explain to her how the water authority was both the gatekeeper and the poacher. They simply stick to the guidelines; he had given his standard response. Melody had learned about the job of the water authority to issue licences. More licences meant their survival.

The SOG group had tried to find a hydrogeologist to speak on their behalf, but Helen Mack couldn't go public, and couldn't recommend anyone with local knowledge. In the end they had all looked to Frankie to give an overview of the problems with Cawling's diminishing groundwater and her conclusion that draw-down from Kasha's pre-emptive bore for his development was the problem. Save Our Groundwater intended to get as many to the meeting as possible. Kasha Duff was doing his own talking up about private rights down at the pub. The meeting was brewing in Cawling's corridors.

Haggling for space at the back of Frankie's mind was the conversation she'd had with the new Indian doctor in Broadville. Lois had suggested she have a check up, after the night in the well. The doctor had told her something new about Turner Syndrome.

'You didn't know that a heart condition is not unusual?'

'No. Have I got a faulty heart?'

'I cannot say. Your blood pressure is high and I hear a small sound. I would like to order tests.'

'I thought I'd had every test imaginable when I was a child.'

'I will check your records. Then book you for a cardiac test.'

'Keep me posted. But not before next week.' Frankie was flooded with the weight of all she had to do. Why hadn't Lennie ever explained that this might be a possibility? Oversight? Probably didn't know. She'd recently had a couple of dizzy spells, feeling so exhausted she had to sit down. Perhaps it was the pressure of the past few weeks, the prospect of speaking up for Save Our Groundwater.

'We'll fine tune your speech later. Did the doctor say anything?' Lois had the instinct of a drone zeroing in on target.

‘Take it easy for a few days. That’s all.’ Frankie shook her head.

Lois peered at Frankie’s face, searching out what she was withholding, but drew nothing from her. She sighed, let it go.

‘OK, what is it you want to say to this Cawling mob?’ Lois arranged some sheets of paper on the table in front of her, took up a pen.

Frankie’s mind stayed for a moment with the doctor, her kind eyes, her perception. Frankie would test her so-called faulty heart valves, make the lump of muscle pump to the limit. What were her limits?

‘I don’t want to be known or seen as my condition. I am me, with my 45 chromosomes, it doesn’t make me any less.’

Lois put down the pen and sat back, inviting Frankie to continue with a nod.

‘Let’s get this speech done.’ Frankie flipped pages of her notebook.

‘All right. Come on then.’ Lois put the conversation aside. They lowered their heads and started etching out sentences about how the town was dribbling to a close as fast as the groundwater was burying itself, descending to its deepest reaches.

‘Do you think I should mention drawn-down, the cone of depression? Sciencey, technical stuff?’ Frankie asked

‘Not too much science. Some key facts. Keep it broad. We’re trying to preserve diversity.’ Lois wiped her spoon around the jam bowl, sucked it.

‘Diversity. I only see the effects of monoculture around this place. Same crops, year’s in, year’s out. Kill anything that’s threatening or different. Insecticides, weed control. Same animals pounding the earth, waiting for their death sentence.’ Frankie dipped her finger in the remaining cream, continued talking with her laden digit in the air. ‘Even the forests around here are burned to within an inch of their lives. “Controlled burns” they call them.’ She raised her eyebrows, tapped her pen on the table.

‘Keep on the topic. For the moment this is about groundwater.’ Lois paused, then lurched to another thought. ‘This is also about integrity. It’s doing what’s right when you know no one is watching.’

‘Except you are speaking about it, publicly.’ Frankie grimaced.

‘When no one knows the cost on you of what you’re doing?’ Lois licked jam from her spoon.

‘Don’t want this meeting to get out of control.’ Frankie swung her legs more vigorously under her chair.

‘Integrity. It’s about doing the best you can for the cause. Your cause, the things you believe are important. Regardless of the cost.’ Lois looked into her teacup, hopeful of another last sip.

‘Gotta fly. Got a shift tonight.’ Frankie cut short the possibility of resuming the conversation about her visit to the doctor, headed for the door.

‘See you at the hall, an hour before starting.’ Lois called to Frankie’s back.



The following morning Frankie and Clem met on the edge of the Linden River to walk, to talk. Frankie was about half way through writing her speech, needed a break to keep her thoughts fresh. Clem arrived in a rush. She sat on the edge of her car seat, changing her shoes.

‘Let’s go, don’t dawdle. Got this meeting this arvo,’ Frankie said.

‘Predictable,’ Clem muttered, linking her elbow in Frankie’s.

‘You know too much about me.’

‘Never.’

‘I’ve got something to tell you.’ Frankie felt a prickle of nervousness up her neck, knew that Clem would see the blush of pink and wouldn’t let her go till she heard what was on Frankie’s mind.

‘You’ve been kinda secretive recently. Down the well, and that.’

‘Hard to say.’

‘Take your time.’ They walked in familiar step, Clem’s longer strides shortened to fit with Frankie’s. Their hips bumped on each stride.

‘Lois insisted we tell the police about the meeting. In case there’s trouble. They said keep off the roads. As if we intend disturbing the peace. We’re trying to make the peace.’

‘So what’s really bugging you?’

Frankie’s brain blistered, tangled by imaginings of angry hecklers, and loud voices that seemed to multiply like mushroom clouds. She pushed aside talking about the doctor’s visit. Distracted herself with chants, to shake the thoughts from her head.

‘Save Our Groundwater.’

‘Leave it in the ground.’

‘Where do we want it?’

‘In the ground,’ Clem answered the call. They walked through long grasses. ‘Don’t worry, you’re not doing anything illegal in talking to a meeting that’s arranged by Council,’ Clem assured her.

Frankie led Clem along the riverbank, noticing that the cumbungie was dead, brown reedy stalks rustling in the breeze. A flock of indistinguishable honeyeaters swept past, disappeared into the river red gum canopy. Water holes were empty. Dried boulders, bleached and blotched, lay like fallen soldiers, unburied, forlorn. They walked along the dry-riverbed, where water used to flow. Passed mounded remnants of previous floods, memories of raging torrents hung in trees. They’d walked along this river in its various forms all their lives, a deep familiarity seeped between them. They came to a bend where sand merged to black mud. An enormous red-gum trunk lay where it had fallen decades ago, its exposed roots splayed like the legs of dead animals were littered with grasses, smaller logs and river debris. They sat on the log, gazed into the empty waterhole.

‘It seems so weak. Like it’s not enough.’ Frankie pulled her hair forward over her neck.

‘You’ve got to start with people.’ Clem twiddled the dry bark between them.

‘I’d rather start with groundwater. I wish it could speak for itself.’

‘People are doing the wrecking, it’s people who have to take the action.’

‘Yep. Sure. It’s a human legal system, it’s humans who need to recognise the rights of environmental actors. Every part. The trees, the rivers, the mountains. The aquifers. We have to give them rights to exist.’ Frankie tested ideas.

‘That’s why we’re having these meetings, rallies, right?’ Clem sounded punchy.

‘I have to do something.’

Saturday afternoon flamed hot and gusty. Ariet, Lois, Lizard, Betty and Frankie were in the kitchen of the community hall setting up the Save Our Groundwater spread for the meeting. At Lois’s insistence they had prepared a hefty afternoon tea, scones, sandwiches and biscuits. She firmly believed that not only would the offer of a country spread help assure a good turn-up, but that the prospect of sharing food and drink after what could be a fiery exchange of views would help the discussion continue till it naturally abated, rather than being inflamed by a shortened ending.

‘You can’t swear too much with a mouthful of scone,’ Lois said while they were setting out the tables.

‘Wanna bet?’ Lizard stole a cupcake from under plastic and put it whole into his mouth. He muttered an expletive, spraying crumbs. Betty scowled and pointed him towards a broom.

They’d prepared, made numerous phone calls, assigned roles. The Councillors arrived, white shirts and shiny shoes, and set up their table at the front of the hall. As they set out the chairs, trestle tables and the makings of the afternoon tea, Lois started talking to anyone who was within earshot.

‘All the activists have grey hair these days. They’re all over seventy, did their time on the streets, and are still keen to comment on things they don’t like.’ Ariet and Frankie carefully split open warm scones, smelling their sweet buttery dough.

‘The fifty year olds are too busy working to top up their superannuation, forty year olds are raising families, the thirty year olds are making babies and the twenties are making money and travelling. It’s up to us oldies.’ Ariet continued to talk while she filled sugar bowls.



‘We can get a few forty year olds to committee meetings, but they don’t do much else,’ Lizard Green added. Frankie watched his Adam’s apple bob, a buoy on a choppy sea. He rubbed his turkey-red neck as if trying to settle the turbulence that arose when his thoughts bubbled over into words.

‘Most don’t know the meaning of the word activism.’ Lois added. She proceeded to recollect pulsating streets of objectors during the moratorium marches, prams being pushed along behind enormous banners.

‘That’s nothing,’ Lizard interjected. ‘I had to push our own pram along the footpath while my dear ex-wife ranted with the crowds of feminists demanding abortion rights.’ Everyone looked up, never having imagined that Lizard had been married to anyone, let alone a flag-bearing feminist. ‘Those were the days,’ he mused, ‘when a march really meant something.’

‘Do they even count the numbers these days?’ Frankie asked.

‘More likely counting the clicks, numbers of people who click a box on their computer screen. Sign a cyber-petition.’ Lois tipped cream into a bowl and whisked briskly for it to thicken.

‘Clicktivism, isn’t it,’ Frankie arranged the scones on a plate.

‘Slacktivism I’ve heard it called,’ Lois said, wiping her brow, and resumed beating the cream.

Betty Winsome was flapping out the tablecloths onto the trestles, pulling them straight at the corners. She weighed in to the discussion through the serving hatch.

‘None of us can afford to be only beautiful souls. We aren’t so close to nature that we can ignore or wash our hands of the corruption going on around us. Some dream boats just want to enjoy the walk in the bush, without getting their hands dirty.’

‘Go, Betty,’ Ariet said, balancing a pile of saucers, carrying them to the trestles.

‘Some are tested and found wanting. They give in. Some challenges expose the areas we don’t want to know about ourselves.’ Lois looked towards Frankie.

‘Anytime and any place - we can resist. Find our greater human capacities.’ Lizard said, just as he dropped a large aluminium tea pot, the clatter echoed, the lid spun across the floor.

‘Go and help Wade fix the banner.’ Betty ordered Lizard out into the main hall.

Cawling could be a furnace of unexpressed anger. Emotions flowed between boredom and rage, or plain out apathy. From the kitchen, Frankie watched people saunter into the hall, some with determined looks on their faces, others not expecting anything to change, others not wanting change at all. Any small glitch that upset usual expectations might escalate for a flash into more than it was, then fade, or simmer till it was dragged out in some future debate. Doggedness led to complacency in the way people spoke to each other. Creeping blindness to the changes happening around them was disguised in arrogance. When some moved elsewhere, crippled by the drought or slaughtered by banks, remaining residents fell into the trap of whinging about the bleeding losses to their township, about things being out of control and always someone else’s fault. For others, uncertainty percolated behind conversations in the street. The meeting brought together a cauldron of ingredients.

In the quiet of the kitchen, Kasha’s dog’s stomach rumbled. She had crept in there as the crowds built up around the front. Perhaps she’d gnawed on a rotten bone or chewed on too much grass to ease something gastronomical. She sounded like a broken squeezebox, with air escaping the bellows, no melody left on the keys. Diabolical farts. She eyed off the afternoon tea but didn’t raise a paw to touch it.

Frankie and Lois moved to the front row at the community hall. The faded photo of the Queen hung on the cream-painted wall, the varnished honour roll glistened golden lists of names of young men from the district who had died in various wars. The SOG banner leant on the wall, drooped lazily from its pins, defying the energy that went into painting the bright blue letters. Frankie listened to people coming in behind her. She glanced around, seats were filling fast. Clem and Wade sat either side of Lizard Green. Helen and Kim leant together on the edge of their chairs. Farmers held their hats on their laps. Workers from the factory, Don

and Clive, Pam, the bookkeeper, Bev, the crop-grower, and several familiar faces from the pub. At the back of the hall Kasha Duff stood with his hat pulled low. Bernard bobbed beside him. Frankie scanned the room, imagining for a second that she might see Lennie's face, come to hear her. Typical she thought, comes and goes.

The crowd stopped scraping chairs on the wooden floor, let out a few last coughs, hushed as the local Councillor, Susan Sheridan, stood at the mic, tapping its end as if she was giving it heart resuscitation. The room fell quiet. Melody Blayne straightened the pile of folders in front of her on the desk, prepared to take the minutes of the meeting.

'Hullo and thanks for coming out this afternoon. Some of you know your bores are running dry, bores that have always filled with seasonal rains. Most of us know that the drought is the worst we've had. Some want this town to grow. Others are worried about the consequences.' Councillor Sheridan paused.

'We've had droughts before, and they'll come again,' a voice creaked from the back of the room.

Sheridan continued. 'This meeting is about an application from Mr. Duff for a licence to pump groundwater for a housing development.'

'It's about how we keep our town alive,' a voice from the crowd interjected.

'How we keep the water in our river,' someone else called out.

'You need to tell your local council what you want in terms of new developments, use of our resources. Groundwater. Council has received a petition, and objections to the planning permit by Mr Kevin Duff...'

'Call him Kasha. Cashed up Kasha,' a shrill voice echoed.

'Tell us why our tanks are dry,' another voice called.

Councillor Sheridan ignored the remarks and went on to describe Kasha's application for the permit to drill for water for the twenty-five block development. The water authority had approved the quantities of water that Kasha had applied for, and now Council was considering the community objections, and whether to proceed with the planing permit, the licence for the works. The Council engineer sat sweating at the table, head down, taking notes.

‘I believe that Frankie Pankhurst has been nominated by the objectors, Save Our Groundwater, to speak, to summarise the material detriment that objectors may experience if the permit to drill is approved. You might remember ...’ Councillor Sheridan was cut off by a call from the crowd; a thin man in a hat cried out, ‘Let her speak. What has Lennie Pankhurst’s girl got to say?’

Frankie had endured the introduction with a flushed, lowered face. She stood, took the mic from Councillor Sheridan, holding her speech, began reading, then left off the page, letting words flow.

‘Last December my Dad died, then his horse died of thirst. Made me want to know why. I’m a beginner at this groundwater stuff, but there’s something important going on. Aquifers around here are fairly short, kinda narrow, mostly fed by a deep lead, from an ancient river bed, about sixty metres below the current surface. It’s fed from the high lands, north of here. There’s a lot of geology in the sixty million years that it took for the aquifers around here to form. Some of them come from ...’

‘Get to the point. We know our land, we know how deep we drill,’ a farmer called.

‘Draw-down is like when the longest straw in a cup gets all the drink. Leaves the shorter straws stranded. Around here, it’s not just new deep bores being drilled, it’s the principle of people taking too much water for individual profit, without a concern for the effects.’

A farmer stood, spoke out. ‘I use my groundwater for my potatoes. You going to stop me doing that?’

‘Are you one of those bureaucrats, politicians? You wanna steal my water,’ another farmer called across the room.

Sheridan stood, held her arm aloft. ‘There’ll be time for questions at the end.’

Frankie continued.

‘But it’s not just water, it’s lots of things. We could take a wider view. Water and energy are connected. Our loss of groundwater is probably connected to a lot of things, including global warming. So we might do more than just think about

saving our groundwater. Though this is pretty important around here. Everything you do makes a difference.’ She paused and looked at the bunch of faces looking at her.

‘Get on your computers. Click on campaigns, there are plenty of petitions and groups to join. Sign our petition tonight.’ She pointed to the back of the room. ‘But for me I prefer action with real people. Who will put up their hands to go out to meetings, even on cold winter nights to organise projects that benefit our whole district. Who has the capacity for that?’ Frankie challenged the crowd. They sat silent.

‘Water and energy are connected,’ she repeated. She paused, looked at her notes, folded them and put them in her pocket.

‘I want to encourage you to take a chance, the chance of acting not just for yourselves, but for this community. Start by talking to your neighbours. There’s a lot we can do, a lot we must do. Continue revegetation works, create habitats, alongside farming. If you can afford it, buy some solar panels, put in a grey-water recycling system. If you’re really brave, install a dry toilet, they don’t stink, really.’

‘Whose shit don’t stink?’ Another strident voice sparked a ripple of laughs and mutterings crossed the room.

‘All these small actions will add up. Don’t think you are in this alone.’ Frankie knew her face was red, her throat blotched and her voice wobbling with emotion. Speaking out was not acting, in the sense of an actor acting out a role, creating a shell around who they really were. She remembered Lois saying that audiences recognise empty words. Speaking out was not just about the words that came from her mouth, but about her being. Suddenly she knew what Lennie had meant when he said, ‘Go to the source’. She could only hope that the audience heard her authenticity.

She continued slowly, nervously, turned to the heart of her message.

‘We live in Cawling not just because it’s cheap. I live here not just because I was born here. My connections are to the natural things that make this environment. Nothing compared to fifty thousand years of occupation. Our job is not only to speak up for nature, on behalf of various creatures, or elements, such as the wind or water. It’s speaking for itself. We have to listen to what nature is saying

to us, in all its cacophony of ways. It's under stress. We might try to render in words what we see and experience around us: the air, rocks, fire and water. This is not just talking about the weather. We must shout out the importance of what we know. Science tells us what is failing - the effects of global warming.' She paused for breath, saw Lois nodding, she kept on.

'What's all this got to do with groundwater?' Another wave of impatience flared.

'She's trying to steal your groundwater.' Sounded like Kasha Duff's voice, gravelly, determined.

'What's this got to do with groundwater? Well may you ask. Excuse the pun.' Frankie paused, someone giggled, others dug elbows into their neighbours' sides. 'It's not me who's stealing it. Unfortunately mostly we don't see groundwater, it's invisible, unless you're a hydrogeologist.' Frankie nodded at Helen, who beamed encouragement at her.

'It doesn't take much to know that we are running out of water.' She paused and cleared her throat.

'What you going to do? What are we meant to do?' Another heckling voice.

'Our essential connections, particularly to water, that stuff that makes us, must surely make us want to speak out, for the sake of preservation. For all of us. And by us, I mean everything - starting here with water. Think of the river. Pretty quickly I think of the plants and animals, calling to us in so many voices.' Here Frankie stopped as she knew her propensity to move onto the remarkable nature of frogs would lose some of her audience. Not all could relate to the juicy, permeable zone occupied by amphibians. 'There's a planning permit application before Council for a housing development down on Quencher's Road, near the river. It will use close on two hundred megalitres of water every year. Water that's already spoken for, by the river and by those of us who already rely on that water for domestic bores. I urge you to sign the petition to council, to refuse the licence for the new bore, refuse the twenty-five new houses.'

Restlessness trickled through the hall. Speaking truly from the soul, where mind, heart and spirit flared, might not have worked. Lois had said that in a supportive crowd a heckler who had not heard the truth from a trustworthy speaker

would be howled down. If fakery or ego were discerned, outrage would run like wildfire through the crowd, insults would fly fast.

‘If we listen out for what the aquifers are saying, we’ll all know what to do. They’re receding fast. Seems to me they’re saying, leave us alone, let us heal. Thanks.’

Helen and Kim started the applause, which spread like fireworks, crackling on and on. Frankie Pankhurst, once the source of derision, now the audience looked at her with admiration. Not as Claire had once cherished her, but in collective, nourishing respect. Relief merged with exhaustion, the powerlessness of entreaty. Frankie’s words ignited ideas, so that the audience found new energy, like a rainforest regenerates from fire, buds sprouting in verdant shades of reds and golds. She had spoken truly, well-informed and honest. She had won them over.

Councillor Sheridan took the mic and invited Kasha Duff to speak on behalf of his application. He strutted to the front, took the microphone and turned to the crowd, like a cockerel turns to an intruder.

‘If you don’t want progress, go home and die. It’s all inevitable.’

‘Who wins, Kasha?’ Don called from the crowd.

‘You sure won’t. You can’t stop progress.’ He handed the mic back and swaggered to his place.

Councillor Sheridan summed up, and invited everyone for supper. It worked. Frankie looked through the crowd to see Kasha walking out. Bernard bobbed, not knowing whether to stay or leave. Small glows of determination warmed the chests and cheeks of Cawling’s hardest nuts. Over tea and scones, Frankie had her back slapped, her hand shaken. She kept saying, it was not up to her, they were all in it together.



‘Are sacred places attached to dead people?’ Frankie asked. She sat on the riverbank with Wade. Around them tall grassy stalks of Phalaris dotted with golden

seedheads wavered, cupped them in nests. High above, river red gums reached toward the hard blue sky.

Wade scratched at his stubble. ‘Yes, and no. Really long time ago, creation stories, and that. Ancestors everywhere. They’re not dead.’ He paused, pulled a Phalaris stalk to his mouth. ‘We can make a place sacred by the work we do.’ He paused. Frankie lifted her shoulders, puzzled. Wade continued. ‘The work, that’s the listening, the watching, the storying that makes our connection to Country.’ He gazed into a far away space. ‘It’s not just the work, it’s being on Country for long times.’

‘Long times?’

‘Twenty minutes with your eyes closed in the bush can be a long time. Close your eyes, listen.’

Frankie closed her eyes, felt her torso sway like it was being pulled by slow centrifugal forces.

‘It’s inside work, deep down, beneath. It’s not all about sweat and grunt.’ Wade’s voice moved from lyrical to punchy. Frankie blinked to attention. His eyes glistened, pain and passion merged. ‘And you were great at the meeting.’

‘I’ll never know like you know.’ Frankie leant back into the grass nest. ‘What about all the things I didn’t say at the meeting. Forgot to mention lots of stuff.’

‘You can know what you like. You can know this place. You sure know groundwater.’ He plucked another stalk, examined it.

‘I’m trying, but it all takes so long. I can’t stroll along the riverbank all day, thinking about how the water moves underground, how it gets from pool to pool up here at the surface. I gotta work, got assignments to hand in. I’m trying to organise this opposition to Kasha’s drilling. It’s like taking a load of frogs on a holiday, in a wheelbarrow. They keep jumping out.’ She waved her hand to indicate her frustrations in one sweep. ‘And I still miss Dad.’

‘We’re all only here a short time.’ Wade pushed his jaw forward, challenging Frankie.

‘Time, time, time.’ She shook her head.



‘Yep, better take the time for important things. You gotta choose the things you put your time into.’ Wade lay back on the matted grass. The burr of cicadas drilled, a sacred kingfisher perched, hunting from a limb over the water hole. Frankie lay watching the sky, now an endless vaporised blue. Wade continued.

‘I know some stories can be shared, like. My Aunty told me some versions of our old lore, she said she got the story from her grandmother. She said she could tell it around here. She told me, like, Country is like Mother. You always look after your mother.’ Wade paused, sighed and continued. ‘They reckon that rainbow serpent looped from the underground to the surface, made mountains, left strings of isolated pools along the river valleys. It left behind pools and places where fish and frogs, and probably Clem’s little micro-things took refuge in dry times.’ Wade recounted. ‘Rainbow serpent laid lots of eggs and stuff, in each pool. The eggs slept for many years, waiting, waiting for the next flooding rains. Then those pools filled, overflowed into the stream, carried with them the seeds of new life, spreading fish and fertilised eggs into the waterways. Plenty of food then. Need those pools for the next dry spell.’ Wade’s shoulders loosened, in the telling of stories his voice rippled.

‘Conservationists are trying to make sure that these groundwater dependent ecosystems aren’t wrecked by stock. Pumping from aquifers that sustain remnant pools, even miles away, is supposed to be monitored by government water authorities.’ Frankie rolled over in the grass, cupped her chin in her hands, sighed. ‘They finally worked out what Aboriginal people have known for thousands of years.’ Frankie mused. She had read that hydrogeologists had only recently studied refuge pools, rare dormant ecologies in ephemeral creeks and rivers, reliant on the water table to sustain them.

Wade nodded.

‘I was just trying to say that we need to change the ways we think, our core beliefs. We are not separate.’ Frankie felt her throat tighten as she remembered the meeting.

Wade remained silent.

‘You know this stuff. It’s just, like, we need to learn. What does it mean to exist with the world, not against it?’

‘Yep, takes a while to learn. We’ve had the time. You guys been a bit distracted by the wrong things for the last few hundred years, machines and stuff.’ Wade chewed on the grass stalk.

‘Now it’s computers. Distraction personified.’

‘*Don’t look at the light!*’ Wade mimicked the line from the *Bug’s Life* movie, his voice lifted to a falsetto.

‘Wanna catch a frog?’ Frankie asked. Frogs called, bass lines to the cricket sopranos, a symphony.

‘Sure, why not?’ Wade crept to the dry riverbed. Frankie followed. They perched, silent. Amphibious throats filled the summer air with vibrations. His calling, her silent approach. Frogs singing, surging, repeating their desires. The sounds entered Frankie, she listened to their love songs, the immediacy and yearning.

‘Got one,’ Wade called, held his cupped hand towards her.

Holding a frog in her hands she felt the tender suction of balloon-fingered toes, the damp cool belly skin, the taught musculature of legs ready to leap. She saw the pulsating throat, a pulse and breath, strong gulps of life. She was on a journey towards being more baffled, towards not knowing what she thought she once knew. Time and patience to develop a relationship with place, to acquire knowledge, to understand rhythms and quirks of place, seemed unattainable. Connection to groundwater may take a lifetime, she thought, not just because it is almost an unknowable place, but because its metaphoric voices speak in innumerable tones. Below them, aquifers spread, changed and moved in their own ways, like inkblots on textured paper. Slime slipped between Frankie and frog, permeable, osmotic. Psychic skins, sticky skins. Their skins sensed the fluff and substance of emotions, enclosed internal places where feelings circled, outside in, inside out. She leaned down and opened her hands. The frog leapt from her palm.



Lois was the first to know and spread the word. Council had approved Kasha’s application. The objections had not held ground. She rallied SOG members and

together they agreed to fight on. They would appeal the council permit at the Victorian Civil and Administrative Affairs Tribunal. They held cake stalls and the choir did a special fundraising concert. Half the community were in full flight, the other half bunkered down to watch the show. Kasha stayed away from the pub.

## Eleven: GRAVITATIONAL

Surrounded by empty coffee cups and crumb-covered plates, Frankie swotted late into many nights to catch up on course notes, to knock over final assessment tasks, and prepare for the exams. Wade took the train with her to the city. He had family business to see to, he'd explained. She let his evasiveness slip.

'Good luck.' Wade tucked his bag under his arm and disappeared into the crowds at the station.

Frankie found her way to the university examination centre, an imposing hall on the city campus. Desks and chairs in solemn rows, pungent smells of nervousness emanated from students as they shuffled papers and scratched pens. She completed the tests in a daze-like focus, where all that had happened over the past year was pushed outside the cloud of brain activity required for regurgitating facts. She drew an imaginary line around her desk, huddled down, to direct her attention to the details of biochemistry and subterranean solute flows, the impacts of climate change on ecological systems of Australian landscapes and some tight short answers on the difficulties of pollution remediation in contaminated aquifers. Frankie crawled towards the end of her science degree in a state of exhaustion, but with a sweet satisfaction that folded inside her, like slow-poured honey.



Kingsley Hull threatened that he couldn't hold her job at the factory. Clem sat beside her, egging her on when she phoned 'the Hulk' to tell him she wouldn't be returning to the Invisible Pig.

‘Best phone call I’ve made in months.’ Frankie felt a weight lift. ‘No more shifts at the Pig. Can’t believe it.’

‘You deserve that moment,’ Clem said.



A fortnight after her last exam, the claim to Victorian Civil and Administrative Affairs Tribunal loomed. SOG had raised just enough funds to go to VCAT on two counts: revoke the take and use licence for Kasha’s bore and object to his application to Council to construct the bore site for twenty-fives houses. Evidence that he’d already started pumping was impossible to confirm. They aimed to halt his plans to extract more water.

Bruce Landy had helped them prepare the case, stood with them on the first day of the hearing. Lois spoke on behalf of the group, listing problems of water shortages for the community, arguing, with some coaching and data from Helen and Frankie, that increasing groundwater extraction was not sustainable and would rob too many bores of the district. Clem provided her with the names of unique stygofauna that lived in the liminal zones of the river and in sub-surface soils. Microfauna that acted like krill in the ocean as the foundation to ecosystem health. Frankie remembered how Lois’s knee jiggled as she sat through the hearing. They had listened to Colin Fitts from the water authority repeat the arguments about complying with the local groundwater management plan. Bruce Landy leapt to the podium, questioned the currency of the plan, pointing out that the ten-year-old data did not include consideration of new information on the effects of climate change. At the end of the day a representative from the local council argued that the advantages of new ratepayers in the district outweighed all else, and that they were entitled to follow the water authority’s recommendation. If there really was enough water, Frankie mused. It would be two weeks before the results of the VCAT claim would be announced.



After the case, Clem, Wade and Frankie drove to Lennie's old cabin by the river. Three weeks at the hut would be a chance to unwind, to go fishing, talk. The shack lay dark and uncared for at the end of the bumpy track. The riverbank gaped raw, layered sedimentation, and brought back memories of Lennie teetering on the edge. Familiar terrain, the verandah. The doorway squealed on rusty hinges as Frankie edged into the one-room den. Clem and Wade bustled with boxes of food. Frankie pushed open windows, and ran mucky water through the taps till they trickled clear into the sink. The tank had held and was full.

They made an outside fireplace, to re-burn the place where Frankie had incinerated Lennie's old mattress.

'It needs a cleaner fire, something to smoke him to a better place.' Wade pushed some stones around the pile of ash. Clem picked off the remnants of wire springs and dropped them near Lennie's bottle-filled barrels for removal. They collected sticks and branches and set the first fire. They stood in silence beside crackling flames, listened to the sounds of the river. Frankie soaked up the river's equanimity, its deeper flows, and made a space for Lennie at the fire. She found herself blinking away tears.

'So tired, the rims of my eyelids burn,' she muttered. Tears spilled, cooled her cheeks.

'You miss a moment, you gain a moment. You cry.' Clem put her arms around Frankie's shoulders.

'We cry for good reason. For relief.' Wade poked at the fire with a stick. Sparks shot high.

She watched them float and vanish against the canopy's silhouette. 'Not to flood us, not to empty our souls of water. Nor to empty us of impetus.' Salt dried on Frankie's skin as the flames leapt.

'Maybe we cry to clear the way forward.' Clem added. They stood in silence watching the flames subside to glowing coals.

'Tears mark a passage, like a river through a landscape – from mountains, through valleys, across plains, to meet the ocean, at last.' Wade's voice jumped Frankie from her reverie.

‘You nailed it,’ she said, thinking to herself, but unable to say. We don’t cry for consolation. To be consoled implies a kindness coming from the outside. We cry to open the floodgates, to release forces from beneath crusted surfaces, from below our skin-deep egos. We cry from the inside.

They unloaded the three swags they’d strapped to the roof of the car and carried them into the one-roomed space, laying them on packing pallets that Wade had found stacked behind the cabin.

After three days Wade returned to Broadville for a job interview on a landscape restoration team. He’d decided to resign from the factory too and phoned the Hulk to say he would not be returning, whether he got the new job or not.

‘Good luck.’ Frankie and Clem waved him off.

‘Don’t forget to come and get us,’ Clem called.

‘I’ll be back in a week.’

Frankie needed time at the cabin to settle Lennie’s ghost, to give attention to his spirit. Clem had time off, the friend who stayed.

A shroud of solitude settled, just Frankie and the river now, and Clem. Together they planted Frankie’s presence in the space. Being there was both bliss and vacancy. On long walks Frankie talked to herself, to the river. She read novels, prepared simple meals, walked new tracks. They lounged on the veranda, often for half a day. Frankie practised observation, listening to the rustle of leaves, the calls of birds, and the frogs’ chorus. Pobblebonk and Banjos duelled with Barking Marsh Frogs and Bibrons’ Toadlets. There were miracles to behold.

Days of meandering walks and nights of long sleeps and finally the river reached her. Frankie started to understand why Lennie had camped here so often. His long silences may not have been the disconnect with his daughter that she’d imagined. More likely he was in an internal space, lulled to self-reflection and quiet by the passing swirls, the sway and power of river and red gums. Soon these murmurings seeped in to germinate seeds of composure, calm assurance.

She wrote in her journal.

*We all are body. We all are bone, all are earth itself. We are water. Well actually 70%, if you believe in averages.*

*Tears - Brine and minerals from our blood and bones brought to the surface. From deep quiet places they rise. They expose us, bring us to a tipping point. There is no other direction than the way forward. Tears mark the journeys of invisible pains, bring hidden, inside tortures to the air, to sit sweetly on our cheeks. We let them flow, we let them carry us to new places. New places where we can speak, where silent interiors no longer swallow our utterances.*

*Why do we cry, when the earth itself is crumbling under our ignorance, our knowledge, our selfishness, our irresponsibility? Why we cry - where do I start?*

*Physics tells us about diffraction in time and space. It explains that as a wave can separate as it passes through two slots, to be in two places at once, actions can occur simultaneously. So too is time bendable. We're not so certain of anything these days. So the same with words. They can mean everything and nothing. Language doesn't describe a fixed outside, but wobbles between two spaces, meaning one thing and then another, and progressing over time between insides and outsides, constructing changeable worlds. Words fill the spaces we allow them. Slippery as water, flowing with gravity, meeting time in brief interstitial interludes. Words, words, words.*

*I learn, I can raise my consciousness, as Lois calls it. I continue learning how to communicate with a hostile, ambivalent world. I will not be dependent on shaky ideas. I will not be a drudge to other people's opinions.*

Some days she spoke to herself, she held imagined conversations with aquifers. She sensed them seeping below the river, deep beneath the surface.

‘Deep, dark, slow, infinitesimally slow. We are liquid beneath earth’s surface, fluid-filled, saturating spaces, sometimes slurry. We flow through subterranean sands, gravels, between stones. Through sandstone we seep, slower than sleep. Deep, dark, underground dark.’ She squatted at the base of a gnarled



eucalypt, shredded bark fragments around her feet. She spoke her poem into the soil, through the sediments, to where the water flows.

‘Your movement is like my own, a narrative through landscape’s time. You are language when you move. You tell a story of deep time, of ageless motion though fissures and faults. It is our conversation, our murmurings, our sighs. I have to be still long enough to hear you.’

Later, as she watched the river pass, ‘We seep. Your life in the underworld, mine in an over-world. We weep.’ She felt as one with subterranean realms, as a body of water, a water-filled skin.

She walked further than ever through the forest. Without her journal to write on she announced to whichever presence might hear. ‘I could construe a tale, write something down, as if it’s real. You are real. You are more than language can construct. You speak to me. I hear your voices and tremble. I have only sound waves uttered warily from my throat. You have greater forces to convey your message. I am tied to the urge to utter words, to scratch them on a page. I am an addict to words. This is not how we converse. We are sensual together, delectable, smelly.’

She imagined hearing bodies of water make their own replies. ‘You drain us. Let us be.’

She rested from collecting firewood, spoke again into the cathedral-like bush chamber. ‘My yearning for conversation with you tires me. My heart races, stills. Races. Stills. Flags on a mast on a windy day, I am tattered, scattered. Do you feel the wind?’

‘We are fading. Let us be.’ She spoke the imagined reply.

‘Don’t go.’

Clem was out walking. Frankie had finished preparing the lunch and waited on the edge of the river. Her voice flew clearly over the flow, as did the swallows dipping and arcing. ‘I am in danger of having made you an object, seen you as submissive. I know you are more than that, not just for human consumption. I present you, I represent you. I have failed and I will die knowing that you may not have been heard.’



Later that evening, by candlelight, she wrote in her journal.

*So few know your magnificence. In this far from ideal body, I write. Who writes you, beyond your own expressions. Your own flow is your own story, your own narration of your enormous forces, your lubricating tectonics, your viscosity. You flow. My breath comes lightly. I feel the pelting of a heart on its last notes. I reach for you. I sleep.*



When Wade returned, grinning, Clem met him at the car. Frankie followed. They were both ready to talk to another human being.

‘Did you get the job?’

‘Yep, start on Monday. Six of us, and a coordinator. She seems nice. Fencing, planting trees and that shit.’

‘Good on you.’

‘Lois said to give you this.’ Wade held out a printed page. Frankie snatched it to peruse her university results. She’d given Lois her password, permission to go online.

‘Phew, that’s done.’ She folded the page and tucked it into her back pocket.

‘Don’t crease it,’ Clem protested.

‘I saw all those ‘Ds. Distinctions, right?’ Wade punched her arm. ‘Hey, you didn’t hear about Kasha?’ He carried a box of food and clean linen into the cabin, a present from Betty.

‘Anything about the VCAT outcome?’ Frankie called after him.

‘First things first.’



It seemed so long ago since SOG had contested Kasha's groundwater licence, his development. Neither Frankie nor Clem, nor even Lois, had any idea that the Yaluk community had also requested to present information to the VCAT hearing the following day.

'There's quite a bit I couldn't tell you. But it's out now.' Wade shuffled a stone with the toe of his boot. 'Bruce Landy helped us too.'

'What do you mean?' Clem edged in.

'Yaluk Cooperative also contested Kasha's license. Different grounds. Different day.' Wade went on to describe how he and three Elders had spoken at the tribunal. Frankie knew straight away how each would have spoken quietly of generational connections to Country. Wade described the day, how he felt as if ancestral voices seeped through the wood-lined walls, filled the air with story, with potency. He said he was fearful at first, their voices wavered, but their spirits lifted them, fed by strong currents, so that they each spoke with gravitational solemnity. Frankie and Clem egged him on.

"Please explain exactly what are your cultural links to groundwater." Wade imitated the voice of the pink face that had peered over rimless glasses. Clem smirked.

"You could call it dinosaur water, your, honour, and you wouldn't be too far wrong. Some of this groundwater that you wash in was laid on the surface when dinosaurs were around. It seeped fathoms and flowed thousands of kilometres. This old water is connected to long time past times, to awe-inspiring epochs. Even our old stories guess at them. We drink this water and drink time." Wade breathed out, letting go the speech he'd rehearsed for the hearing. 'Only took an hour.'

'So, why didn't you tell us?' Frankie fiddled with a plait of grass she'd made, found in her pocket.

'Couldn't. Bruce reckoned that the legislation was too untested. And it had to be Yaluk voice, no interruptions.'

'So, have you got the result?' Clem was impatient.

Wade dug into his backpack, handed over a report. They poured over the words, gasping, shaking their heads, turning pages, then back again.

‘It says the licence is revoked.’ Clem’s voice squeaked. ‘Let me check, did I get this right?’ She turned the pages again to re-read sections.

‘Revoked. That means we won, right?’

‘Holy shit, yes. We won. I don’t believe it.’

‘How? Why? Everyone thought that VCAT just made sure the rules were followed, that the licensing process was correct.’

‘Hang on, it’s talking about this clause in the legislation that says that Koori people have to be consulted.’

‘I know that. But were they listened to?’ Frankie felt her voice almost croak.

Wade was nodding.

‘Yes, look. “Based on the evidence of representatives from Yaluk Wurung Cooperative, Ms. Doreen Bandler, Mrs. Maude Birch, Mr. Robert Scott and Mr Wade Keane”, it says.’ Clem read.

‘Give that to me. You didn’t tell me you were speaking.’ Frankie snatched the VCAT report from Clem and read aloud. ““There is sufficient evidence that occupancy and cultural heritage of the Yaluk Wurung peoples has been continuously maintained.” And look, they have a “Recognition and Settlement Agreement with the State Government in relation to public lands of the district.” Frankie looked at Wade, shaking her head. ‘This is fantastic.’ She read on. ““The waterways and associated groundwater reserves are considered to be within the terms of the agreement, and therefore require agreement of the Yaluk Cooperative Council for commercial usage. The case presented by Mr. Duff to use groundwater for commercial gain was seen as contrary to the requirement to maintain cultural heritage of groundwater and local waterways.”” Frankie gaped.

‘How did that happen?’ Clem took the report back and perused the pages.

‘It says...’

‘I don’t care what it says. We won. The aquifer is safe from Duff.’ Frankie punched the air, slapped high fives with Clem and Wade. ‘Yes!’

Throughout the day Wade went on to describe how without water, Kasha’s plans ran dry, beached. He’d tilted, like a schooner cast on a shore, hauled up and

stranded. Wade described the talk in the local pub. They all knew how Kasha would have thrashed and cursed, struck out at the dog.



Kasha's anger crusted under the cockroach-like carapace that he wore like a shroud. His face reddened, his cranky, wiry hands clenched tight. He watched Cawling people silently slide away from him in the street, often with a sneer or a preen, no longer intimidated. Though he felt like a rooster crouching in the dust, he wouldn't let himself fold into despair. He pecked for opportunities on his keyboard, as he had all his life pecked deeply into the crust. Now he haggled for a chance, a slim hope. He caught a flight to Brisbane, uncomfortable in the tight squash of travellers. He carried a slim case under his arm, peered from the taxi window at palms and unimaginable greenery. He sat at a back table in a dim-lit, down-at-heel pizza restaurant. Two Chinese men joined him, opened laptops, tapped at spreadsheets. Kasha had listed his rig for sale on the internet, and had been surprised how quickly the call came in.

They were engineers with a large corporation planning to mine coal in Central Queensland. They wanted their own bore rig. They wanted water for the cluster of dongas they intended to build for their band of Fly In Fly Out workers. They huddled over copies of contracts. Kasha crowing about what a good machine it was. The buyers watched him closely, nodding. They offered good money. Kasha signed up, puffed air from his cheeks as he let go of the tools of his life's work. He shuffled outside, light, emptied, finished. He had sold himself with his rig, agreeing to work for the company. Wages. Anything would be better than a return to Cawling, than a life without his machinery. At first he floated, then he sank, leaden and lost, wanting to find a remnant to clutch. He hung from a bar, then staggered back to his motel. He was the first to move into an echoing portable cabin west of Mount Isa where red dust coated every surface.



‘Kasha drilled for a week.’ Wade narrated events to Frankie and Clem. ‘The mast of his rig was hit by a freak thunderstorm, late in the wet. His hand must have been clasped on the controls when the lightning struck,’ Wade elaborated. ‘The shock must of shook him like a rag, threw him into the sand.’ Frankie felt her eyes widen, Clem gasped.

‘He died not knowing what hit him.’ Wade paused, recalling how fast word reached Cawling of his death.

As Frankie heard the story from Wade, the day petered, moisture softened the air, light lingered, careless of the soft nostalgic turn. The news sunk in. There was something porous about autumn and memories. Frankie imagined the ways watery recollections would have people of Cawling less brittle, more prone to stop and chat. In rare moments, unseen things inspired reverence. The most potent connections were often invisible. The conscious and the unconscious, the inner and the outer, the seen and the unseen, each with immeasurable power to affect lives. The three friends stood around the fireplace and leaked stories, dripping memories.

Later, ‘You been OK?’ Wade asked.

Clem was in the cabin preparing the fresh food he’d brought.

‘Sure. Good thinking time.’

‘You making any plans?’ Wade looked worried.

‘A few. Dunno.’

‘Anything else?’ he ventured. Wade stoked the fire to radiate heat.

‘I wondered if being absent from the cause, being silent, is the start of collusion. Am I giving in, or just taking a break?’ Frankie remembered her time in the well.

‘Thought you’d learned that you couldn’t be an activist on you own,’ Clem half-scolded. She carried potatoes to place in the coals.

Frankie tried to explain how she was worried that nothing would come from her idleness. She couldn’t condone rest when there was still so much to be done. She had tried to convince herself that in a frog-like life there was no shame in

bending low, squatting in the damp places at the edge of the river, waiting for the right time for leaping up for more light.

‘Frog is your sign, we call it moiety.’ Wade looked to the sky. Frankie knew that Bunjil, the wedge-tailed- eagle was the moiety for his Country. He also had some red-tailed, black cockatoo in there, from a grandmother’s line, from up over the Murray River.

‘What would be your clan, Clem?’

‘Preying Mantis. Long limbed and ferocious.’

Frankie leapt, a small clumsy jump, Clem raised her hands, fingers extended, Wade spread his arms like wings. They laughed and hooted, stomped around the fire.

Later as they scooped steaming potato from blackened shells, Frankie announced. ‘I’ve been thinking about the Mound Springs. South Australia. They’re drying up. Thought I’d like to find out more, see them before they disappear.’

‘Yer. I know. I’ve got a cousin works up that way, in the National Park.’ Wade blew over the spud.

‘Great Artesian Basin is in strife...’

‘Yer. I know.’

‘Maybe Clem, you could come with us. To the Mound Springs. I need a new project.’

Clem nodded.

The following day, they returned to Cawling, driving slowly into the town, past dark algae stains in the empty holes on the Linden River.

‘It’s dry this year,’ Frankie commented.

‘Every year, it seems.’ Wade leaned out the window. Frankie smelled the parched air. They all knew that the Murray needed its tributaries, that with the Linden running low, less water would reach the Murray.

‘Can’t go anywhere now without thinking about the water beneath my feet.’  
Frankie sighed.

‘SOMS, then.’ Clem braked as a magpie swooped in front of the car.

‘What?’

‘Save our Mound Springs.’ Wade grinned.

‘There’s always something to work on.’ They pulled up outside Siggy’s.  
‘Better save our own springs first.’

Lois was in the cafe and greeted them warmly. She beamed accolades at Frankie for her exam results. They settled down for drinks.

‘Did you know Kasha’s ashes were flown back here. We helped Joan scatter them at the bottom of his block, some went into the Linden river.’ Lois went on to explain how Joan would inherit Kasha’s land and was already in the process of converting it to vegetable gardens. ‘She’s going to sort out the correct permits and entitlement for limited extraction. She’s going to use the bore that Kasha started, only going to draw minimal amounts in hot summers, she says.’ Lois wiped sweat from her top lip.

‘Thick flood-fed topsoils. Good vegetable land.’ Clem said.

‘She told me that Spud and Slinky follow her to the garden plot, watch and wait while she tends her garden.’ Lois half-smiled.

‘Good for her.’ Frankie swung her legs under the table.



After a month exploring the Mound Springs of South Australia with Clem, Wade and Frankie returned to Cawling. Inland gibber plains and low-lying salt pans had stretched her visions of waterless landscapes. Far horizons and open skies hid water lines, underground routes and aquifers that sustained life in remote outback Country. Back in Cawling, her senses tuned, she felt the forces of the interior, her interior, beneath the surface places. Sustained by water. Frankie began looking for work using her science degree. She sat on her veranda, watching two horses scratch



each other's back. She pulled out her father's divining sticks, rubbed them on her jeans, looked to where the spring used to flow.



Dissertation

**Storying with Groundwater**

## CHAPTER 1: THE WATER CYCLE

### Groundwater in Climate Change Fiction

Groundwater is a rare player in Australian fiction. This thesis explores the problems and processes a climate fiction writer engages with, through storying, to understand and express groundwater's invisibility, its potency and its contemporary vulnerability. Climate fiction, Anthropocene fiction or, the shorthand term *cli-fi*, is a literary genre that tells stories of the causes and effects of climate change and global warming. Climate fiction has tended to avoid realist depictions of climate change, more often being written as futurist, dystopian or science fiction (Trexler 2015, pp. 223-5). It is difficult to narrate impacts of climate change over large timeframes as direct 'experience' (Segal 2017). Finding ways to understand and tell stories about global environmental change engages the senses, the corporeal, as well as wide-scale scientific and political thought (Thomashow 2002). Human engagements with the impacts of global warming are being examined in a burgeoning body of fiction and non-fiction (Brooker 2018; Sussex, 2018; Ghosh, 2016; Fetherston 2016; Trexler, 2015; Chakrabarty, 2009). This thesis inquires into groundwater's performances in Australian literature, giving subterranean water, sometimes known as bore water, a voice at a critical time. I use the term thesis to include both elements of my research – the creative writing component, 'Why We Cry', and this dissertation.

My considerations of groundwater as plumbing, subterranean, moving, cycling, fluid matter, and its complicity with human lives, draws upon Karen Barad's ideas about mattering (Barad 2017). She argues that 'material-discursive phenomena are constituted through each other, each in specifically entangled ways.

... The very stuff of the world is a matter of politics' (Barad 2017, p. G117). Making a story of the mattering of groundwater led me through the science, the politics and the affects of this *hyperobject*, this enormous acting body of water (Morton 2013). Throughout this dissertation I expand on Timothy Morton's concept of the hyperobject, which provided mostly useful deliberations of large, viscous, non-local bodies of matter.

I have constantly negotiated the performativity of the writing act. I faced the risks of slippage, being drawn into dualisms by framing natural entities through a cultural lens. Creative writers who embark on the convoluted journey of writing climate fiction, who imagine scenarios based on scientific facts, who make juxtapositions between present day global and local events, and who interweave ordinary lives with widespread environmental catastrophes, will find resonance in the three intertwining streams interrogated in the processes of 'storying with groundwater'. The need for close attention to first, how writers and scholars come to know of the material entities they are storying with, second, how they resolve the politics of representing them so as to enable the performances of their more-than-human character/s to be understood, and third, how they navigate the raft of emotions and affects that the writing process evokes, are the three interlinked percepts from my research that I claim are usefully plaited into climate fiction writing and scholarship.

By storying I mean 'making and remaking meaning through stories' (Phillips and Bunda 2018 pg 7). While Phillips and Bunda (2018) focus on the power of oral traditions of telling Indigenous stories as a process to make meaning of Aboriginal worlds, in this PhD project it is through the unfolding processes of writing-reading-writing that groundwater's viscosity, the stickiness of groundwater's enmeshments with me, with multiple frogs and micro-organisms and stygofauna, with forests and clouds, with future readers, becomes something more than imaginary. Though humans may not usually see groundwater in its geological porous places, it is something real. Its reality reveals its potency through storying lively imaginings. However, it is how humans come to be affected by such worlding of groundwater's presence that potentially gives rise to agential politics, to

capacities for meaningful actions, which remain significant underlying forces to contemporary climate fiction.

Climate change refers to long-term meteorological patterns. Day-to-day or short-term, locally-experienced weather events are not usefully separated from broader notions of climate change, argue Neimanis & Hamilton (2018). In a similar way that the nature/culture dualism has been critiqued, weather's intra-actional relationship with longer term climate patterns opens potentialities for storying. Despite growing threats of severe water scarcity, or flooding, due to climate change, groundwater has not yet found strong fictional representation, expression or distinct voice in Australian literature. Climate fiction is a fast-growing genre internationally, with a slower uptake in Australian literature (Trexler 2015, p. 8).<sup>1</sup> Adam Trexler argues that, 'To date nearly all Anthropocene fiction addresses the historical tension between the existence of catastrophic global warming and the failed obligation to act. ... [It] offer[s] a medium to explain, predict, implore, and lament' (Trexler 2015, p. 9). Through my fictional manuscript, I add the option that climate fiction might also inspire hope and agency, as the narrative reveals the emergence of an activist, and the resilience of an Indigenous community fighting for recognition of its rights to cultural connections to waterways. This thesis focuses attention on the thinking behind and the writing strategies for climate fiction writers in an age when tipping points towards ecocide are escalating (Chakrabarty 2009; Cohen, Colebrook & Miller 2016; Hamilton 2017). It also ascribes potency to groundwater as the subject of the writing.

Storying with groundwater means weaving the various threads of human and non-human lives with groundwater in many different textures and flows. Chen, MacLeod and Neimanis (2013a) provide the foundation for 'thinking with water', explaining how the entanglements with water's lively materiality provide the essential 'with' that also underpins my research. Storying with groundwater implies that something is being narrated within the complexities of human enmeshments

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1. The terms climate fiction and Anthropocene fiction are used interchangeably in this thesis, though Trexler chooses the term *Anthropocene fiction* to reflect the human intervention in changes to the world's climate and geology (Trexler, 2015, 1-2).

with this illusive subterranean water body. Storying is ‘lively and emergent’, making descriptions of distinct storying processes that gesture towards the interactional intricacies involved a similarly revealing process (Phillips and Bunda 2018, p. 73). Storying also means writing slowly and ethically, writing to witness the damages humans are causing, as well as writing for hope and tenacity of both humans and more-than-human entities (Rigby 2009; Rose 2013). How groundwater might be known and how it is affected by humans, as well as how groundwater creates affects in all its enmeshments, was the underlying force to my writing the fictional world in ‘Why We Cry’.

The complexity of climate change is shown in the many scientific specialisations, sometimes known as knowledge silos – including geology, climatology, hydrogeology, oceanography, atmospheric chemistry, and glaciology – each contributing understandings to the mosaic-like picture of causes and effects of global warming. This thesis affirms Michael Segal’s argument that affective climate fiction can provide bridges between the ‘laboratories’ of science and the wider public (Segal 2017). Segal suggests that inviting science into messy conversations in the realms of culture or politics is a necessary step in this bridge-making (Segal 2017, p. 127). Many predict that groundwater will play an essential role in humans’ adaptations to climate change (Brodie, Lawrie & Commander 2012). Writing ‘with’, or storying evocatively around the ideas of groundwater’s subterranean presence was founded on the notion that groundwater is only partially predictable. Mathematical representations and modelling of groundwater belie its incalculability. Subterranean groundwater’s invisibility to human eyes challenges how it might be expressed within the limits of human imaginings. Its depletion through unsustainable extraction, and its pollution with human debris and wastes evoke its vulnerability. Groundwater moves, it rises and descends with the moon, it follows gravity, it responds to geological forces. I attempted to make meanings of groundwater’s watery qualities without being limited to so-called objective descriptions of it as a place. This research aims to progress climate change conversations between fiction writers and creative writing scholars about the interchange between science and groundwater in climate fiction.

My creative and scholarly research brings together two distinct fields of inquiry. As a creative writer I engage with contemporary social, political and cultural ideas that underpin relationships between literature and hydrogeology, the science of groundwater. At the same time the scholarly research explores ways that knowing and representing groundwater's invisible materiality might be expressed through affective, realist climate fiction.

Writing in the Anthropocene means registering that nature and culture are not hermetically sealed from each other, and acknowledging the long-term material effects of human activities on the planet. Proliferating human contributions towards climate change, and perceptions of the effects and affects of global warming, have prompted the emerging genre, climate fiction, or Anthropocene fiction (Bradley 2017; Trexler 2015). The Anthropocene is the recently named geological period that acknowledges current anthropogenic impacts on global geologies and geographies (Hamilton 2017; Trexler 2015). I use the term Anthropocene in this thesis despite valid propositions that the term is in its twilight, even as it has only recently been coined (Cohen, Colebrook & Miller 2016). Assuming a universal logic of anthropos – as the singular agent of geological change – would appear to undermine my intent to ascribe agential capacity to non-human entities such as groundwater. In addition, as Claire Colebrook points out, the term Anthropocene has the implication of re-asserting the dominance of humankind, forgoing the diversity of human responsibilities, as well as de-politicising the responsibility of 'our' ecological animality (Cohen, Colebrook & Miller 2016; Colebrook 2012). I use the term Anthropocene cautiously, understanding that any narrative about global warming written with political intent should not ascribe singular causes of climate change (Cohen, Colebrook & Miller 2016). I also place this research in a framework that seeks to increase readers' sense of agency and capacity to respond; to be respons-able as the human beings we are to the murmurings of matter, to the sensible and the insensible (Barad 2012; Colebrook 2012; Haraway 2016). 'Why We Cry' explores the effects and affects of anthropogenic stress on aquifers, connecting human actions with groundwater's responses.

Groundwater's place in the global water cycle is immense. Only in recent years has the scientific hydrological community understood the range of connections between global groundwater reserves and the broader actions of the water cycle (Ladson 2008; Leap 1999). At either a continental level or at the smaller scale of landscape catchments, *water balance* is the term that reflects the changes in water held in storage (e.g., lakes, rivers, aquifers) due to changes in inputs and outputs (Ladson 2008, pp. 5-6). As droughts increase and water storages are only intermittently replenished, groundwater storage in Australia is increasingly under scrutiny (Brodie, Lawrie & Commander 2012; Ladson 2008). Increasing water use due to population increases and escalating demands for water from agriculture in particular, threaten groundwater's place in the water cycle (Ladson 2008, p. 286). As climate change smears weather patterns into new, unexpected extremes, groundwater too is being pushed to the brink, pumped to its limits. That this scenario is largely unrecognised in Australian literature prompted me to explore literary expressions of groundwater's circumstances and possible trajectories.

Through the creative writing experimentation that gave rise to various expressions of groundwater's meaning, my iterative writing and researching processes revealed the potency of the cycling and repetitions between creative and critical writing processes that form the foundation to this thesis (Harper 2013; Sempert & Batty 2017; Webb 2015). I discuss this writing process further in Chapter Two.

The various ways that climate change discourse influences how humans make meaning of our world and ourselves are still relatively unexplored (Baucom & Omelsky 2017). My research suggests that while the contributions of meaning-making through fictional work that features groundwater may be partial and emerging, such a narrative provides a significant inroad to understanding human and more-than-human intra-relationality in the Anthropocene. My research makes a small incursion into the problems and considerations of fictional representations of non-living entities in the more-than-human world, exploring fictional impressions of groundwater's responses to climate change. It is not just that it is



water – it is the qualities and affects that groundwater assumes by being underground, slow-moving and invisible that fuel its expressions in ‘Why We Cry’.

Giving attention to matter and mattering means I join scholars who consider human and non-human intra-relationality as primary, rather than oppositional (Braidotti 2013; Deleuze & Guattari 1988; Haraway 2016). Seeing and writing ‘with’ the subjectivity of matter or things at the forefront is an important ethic to writing in the Anthropocene (Chen, MacLeod & Neimanis 2013; Ingold 2011; Iovino & Oppermann 2012; Massumi 2001; Neimanis 2017). Meaning can be derived from things. Groundwater’s vulnerability in response to climate change indicated to me the importance of exploring an aesthetic portrayal of this otherwise unseen player in global human and environmental enmeshments (Novicky, Kasperek & Uhlik 2010). In Chapter Four I discuss how climate fiction writers might not only know about, but also create narrative meaning from the very large ‘things’ that comprise the relational, globally warming world.

I navigate the tensions of being a human writer-scholar within the posthuman perspective I explore in this thesis, which aims to reduce the centrality of a human positioning. I acknowledge the long list of social and cultural trappings and influencing factors that seep into the research in my scholarly and creative writing, such as being female, a mother, middle class, white, educated, lesbian, Australian, feminist, sister, friend, and so on. Such factors contribute to the substrate that underlies my writing in the early twenty-first century, but do not determine the outcomes of my endeavours when I give emphasis to the fragmentary nature of my humanity, and the mutual and relational connections I live amidst (Rose 2013, pp. 3-4). I am, by my human presence, part of the ‘unmaking’, which is how Deborah Bird Rose describes the fragmentation of late modernist thinking, writing and acting (2013). Writing in the Anthropocene calls for listening and thinking slowly and ethically, in ways that witness and expose certainties that may be flawed, and beliefs that have destructive consequences (Rigby 2009; Rose 2013). I acknowledge from the outset the underlying range of social and political influences and the aspirational perspectives embedded in my creative and scholarly

endeavours, as well as my enmeshment in the watery spheres I am investigating (Neimanis 2013).

Consistent with posthumanist perspectives that question the pre-eminence of mankind, feminist perspectives influenced my approach to writing and reading climate fiction. The protagonist in 'Why We Cry', Frankie Pankhurst, not only bears the name of a foundational suffragette and activist, but she is also characterised by a strong independence and an interest in social justice. I have been inspired by many eco-feminists who have explored women's relationships to the natural world (Alaimo 2012; Carson 1962, Re-print 2002; Grosz 2008; Haraway 1988; Neimanis 2017; Plumwood 1993; Rose 1996; Salleh 2018; Stevens, Varney & Tait 2018). I explore the effects of these writers on my work in more detail in Chapters Three and Four.

The burgeoning literature in animal studies, and the literary potential for expressing improved human relationships with animals by considering the ways we think and communicate with them, influenced my depictions of the animals in 'Why We Cry' (Armstrong 2008; Calarco 2008). My consideration of Frankie's interest and connection with frogs, and Kasha Duff's querulous relationship with his dog and cat, Spud and Slinky, were a means to show a small blurring of the traditional Cartesian divide between humans and animals (Armstrong 2008). Frogs are a prime indicator of habitat changes due to climate change and urbanisation (Beudel 2018; Wilson et al. 2013). Reconceptualising animals in fiction so that they are not only mirrors to human characterisations, but also become a means for showing the material influences between human and non-human animals, underpinned my fictional portrayals of the non-human animals (Armstrong 2008, p. 3). 'Why We Cry' unsettles the notion of frogs as passive parts of the environment, disconnected, background to the human-centred world (Plumwood 2009). The depictions of frogs in the manuscript makes a nuanced gesture to highlight the notion of the events of climate change being the pot of heating water, in which humans remain paralysed and unable to take action (Rand 2014). In contrast, Frankie Pankhurst's journey towards finding an activist voice in her community comprises an alternative story to the paralysed, boiled-frog version of humanity.

Thinking about the waters beneath my feet took me in four directions in this PhD. Firstly, I had to work out what groundwater is, and how it moves. Secondly, I explored some of the many ways humans and wider non-human ecologies use groundwater. For many people water is viewed as capital, a resource to be mined. The different values ascribed by humans to groundwater opened possibilities to understand the variability and complexity of groundwater in narrative (Jarvis, 2014; Gibbs 2006). This ‘storying’ aspect of groundwater’s usage contributes to the narrative potency of groundwater, as it uncovers some of the conflicts that provide fodder for climate fiction writing.

Thirdly and concurrently, examination of posthuman and non-representational thinkers and cultural theorists, in particular material ecocritics, provided the epistemological foundation to how I might understand my subject. These excavations are discussed in Chapters Two and Four.

Fourthly, and again in the cyclic, conjunctive way of the water cycle, I explored literature to see how poets and writers have given meaning and voice to this marginal, seemingly silent entity, this underground place. A writer reads to improve their own work (Boulter 2007; Brien 2006; Prose 2012). I selected specific works of fiction and poems to illustrate the role of literature in making groundwater visible and engaging an affective response in readers. The influences of these particular works of literature on my own writing is discussed further in Chapter Two and throughout this dissertation.

My growing understandings of aquifers as potent underground entities enabled me to explore meaning and metaphor in their presence and absence. My encounters and experiences of reading landscapes for signs of groundwater, and my learning of the science, politics and history of groundwater extraction in Australia, have influenced the ways I made meaning in the creative work. As a scholar of the creative writing process, it is the effect and the affect of my readings, both of my own work and others, that underpins my writing, perhaps as an aquifer underpins the ecology of landscapes.

## 1.1 Research Question and Aims

### **How might contemporary climate fiction give expressions to groundwater?**

This question is the outcome of the refining processes of numerous considerations throughout the project. My original research question explored, within the context of drought and climate change, various expressions of dissenting voices, female activist voices, and groundwater. Over time, through the spiralling processes of writing the climate fiction, ‘Why We Cry’, and thinking about the impacts of current epistemological perspectives, it was groundwater that seeped and bubbled to the surface. The process of arriving at this research question lay in granting priority to the expressive capacities of a more-than-human entity through the novel form. This focus led me to unpack and examine the problems of writing climate fiction within the dilemmas of representation and fiction’s powers for performativity.

The primary aim of my research is to contribute innovative new knowledge to the field of creative writing by two main endeavours. Firstly, I present a body of contemporary Australian climate fiction in the form of novelistic writing, which addresses several subsidiary problems for climate fiction writers that stem from the focus question:

- a. How might climate fiction writers express through storying the vulnerability and resilience of groundwater under the effects of climate change?
- b. How might scientific knowledge about the effects of global warming on groundwater find enunciation in an affective narrative form, without being didactic?
- c. How might climate fiction writers give performative expression to the agential capacities of non-human beings and entities that we may be forced to imagine, particularly groundwater and frogs?
- d. What dilemmas face climate fiction writers who walk the line between representation or mimesis, sometimes expressed as old

Nature Writing (Buell, Heise & Thornber 2011), and a more performative approach to making stories?

Secondly, this thesis articulates the relationships between my creative writing processes and non-representational, posthuman thought because groundwater, as the object of my inquiry, is the kind of thing that tends to avoid its direct representation in literary discourse. Non-representational theory has many permutations. In this research I attempt to eclectically synthesise the sciences with philosophy, the arts and humanities, in ways that cultivate understandings of the more-than-human, the more-than-textual, through events, practices and assemblages of everyday possibilities (Abrams 1997; Vannini 2015). Non-representational research emphasises ‘the fleeting, viscous, lively, embodied, material, more-than-human, precognitive, non-discursive dimensions of spatially and temporally complex lifeworlds’ (Vannini 2015, p. 318). With such breadth of scope, this approach to research and thinking appeared to suit the fluidity and immensity of groundwater. Under this broad umbrella, new materialism’s perspectives propose an understanding of the world that asserts that all entities and processes, including human beings, are made of matter, along with material and physical forces (Barrett, Estelle & Bolt 2013; Bennett 2010). My work to envisage fictional expressions of groundwater probes Timothy Morton’s concept of a hyperobject (Morton 2013) and engages with discussions of matter, at a time when planetary matters are becoming more perilous. The ways that writers may know and perform expressions of groundwater are discussed further in the findings of my research in Chapter Four.

Another aim I bring to this study is for readers of the fictional work to be moved to consider current threats to ecologically sustainable groundwater flows. Finding ways to articulate the affective interconnections between surface water, cellular water and groundwater became increasingly important to me. The complexities of groundwater mining – where groundwater is extracted at rates known to be beyond capacity for recharge of aquifers – needed a place in the narrative. Also the effects of groundwater pollution – recognising that how we deal

with industrial and agricultural wastes at the surface has implications for groundwater into the far distant future – appeared to warrant attention.

My research contributes fresh considerations to how climate fiction writing merges usually disparate bodies of knowledge – the science of hydrogeology, material ecocriticism, posthumanism and non-representation, and realism in climate fiction. I have based my creative processes on a range of critical and creative thinkers, and later in this dissertation examine in particular the influences of key fiction writers and poets who have considered groundwater and its affective possibilities. In an Australian creative writing research context, this dissertation is not so much an ‘appendage’ to the creative work, as the bedrock to my creative writing practice (Krauth 2011). My fictional narrative seeps through the ground of the dissertation, telling a story of groundwater, illustrating the outcomes of my research process. As scholarly research, strong integration between the creative work and the dissertation is essential. I aim to enmesh groundwater’s narrative ‘textuality’ to make a new contribution to the creative writing field, showing how groundwater can be read, and how it becomes storied matter (Iovino and Oppermann 2014, pp. 6-7). I discuss the place of these aims and viewpoints further throughout this thesis, but wish to acknowledge from the outset my scholarly and ‘writerly’ aspirations and perspectives.

In this thesis I analyse problems around how a fiction writer comes to express the agency of an inanimate entity such as groundwater, and propose possible interventions for creative writers who seek to contribute to the growing genre of climate fiction. I also explore questions around how a fiction writer comes to express dissenting human voices, expressions of human agency that run against the grain of popular opinion, voices that may lead to social or environmental change in the fictional world.

Throughout my inquiry I explore ways to express the science and mathematics of groundwater, without the encumbrances of didacticism. By didactic writing I mean writing that is overly instructive, moralising or proselytising. Novel

writing that clumsily adds the weight and limits of the author's intentions may suffer the problems of becoming instructional, or heavy-handed. I use the term 'encumbrances' because, like Sontag, I see such heavy-handedness as a constraint to the aesthetic of affective writing (Sontag 2007). It is also an insult to the reader. An overload of information detracts from the possibilities for a subtle, feather-light conveyance of knowledge and politics through affective narrative. At the same time, writing climate fiction comes with the requirement to explain long-term, global phenomena, coupled with local consequences of planetary climate change. I acknowledge the generative tension that I navigate within a scholarly PhD between my endeavours to avoid didacticism in the creative work, 'Why We Cry', and the direct knowledge claims I make in this dissertation.

Climate fiction writers are generally motivated to make a difference to environmental debates and contribute to environmental activists' agendas (Trexler 2015). In the same way that eco-critics seek to have political impact in their analysis of literature, so climate fiction writers aspire to contribute to both knowledge and politics of climate change (Baucom & Omelsky 2017; Buell 2005; Trexler 2015). This thesis explores how a climate fiction writer might express a heart and politics of social change, in ways that engage readers affectively, while avoiding didacticism. My creative writing may verge at times towards the polemic, as controversial arguments about responses to climate change abound. I searched for an ethical and political basis for my literary efforts, one that would contribute to a more socially just and sustainable world in some small ways. It was through reading my own work as I wrote that I made discerning judgments about a balance between the polemical, the political, the informative, and heavy-handed didacticism. As I discuss in Chapter Four, readers of the novel will bring their own interpretations to the decisions I made.

The relation between the dissertation and the fictional narrative, 'Why We Cry', can be partially explained by using the analogy of the braiding and unbraiding of a river as it spreads into several branches, then converges in new streams and finally, near its delta, meets the ocean. The water's flow continues towards the sea, though different streams are formed, at times a series of anabranches, forming their

owns path before re-entering the main river course and resuming the direction of the course of the river. This analogy describes what has been called plaiting or braiding of a dissertation and creative writing work (Brien 2006; Krauth 2011). My thesis shows the integration of the two forms of writing. The claims I make are derived from the ways that each form reinforces and supports the ideas of the other. The narrative I present forms the larger course of the river, fed by groundwater sources, and comprises the major part of the thesis. The plaiting of small excerpts from relevant scenes from ‘Why We Cry’ into the dissertation is done in order to demonstrate how the creative writing process has merged with theoretical and scientific considerations at various times of the research. Chapter Two, the methodology section of this dissertation, here called ‘The Water Table’, and Chapter Three, titled ‘Groundwater Flow’, discuss in more depth how the various forms of writing sit in relation to each other.

The narrative, ‘Why We Cry’, is set in an impoverished, fictional rural township, Cawling, in the midst of a prolonged drought. The central human protagonist, Frankie Pankhurst, nicknamed Frankie or Froggy, is a woman in her thirties with Turner Syndrome. Characteristics of this chromosomal disorder, which occurs only in girls, include webbing of the neck, short stature and infertility. She works in a smallgoods factory and has a particular sensitivity to water and a love of frogs. As frogs are an indicator species of the health of water systems and local environmental ecosystems (Beudel 2018; Wilson et al. 2013), so an analogy is drawn with Frankie’s efforts to alert her community to the implications of loss of water supply as local aquifers diminish. Her battlefronts include her efforts to preserve local groundwater supplies, speaking up against the actions of a local bore driller, Kasha Duff, and his plans for a housing development. The fictional hydrogeologist, Helen Mack, teaches Frankie the science of hydrogeology and outlines some aspects of the worldwide problems of drawdown and over-extraction (Van der Gun 2012). In addition to exploring how Frankie finds a public, activist’s voice, the narrative probes relationships between the local Indigenous community and their cultural connections to waterways and groundwater. Indigenous resilience in the fight for preservation of cultural rights is shown through the character Wade



Keane. Bruce Landy is the fictional character who navigates Frankie's interactions with Australian planning regulations and aspects of water law. My fictional story represents groundwater at times in elegiac tones, like those of a lament, evoking mournful feelings. It is also interspersed with humour, the hopeful emergence of springs in unexpected places. I aim for the reader to learn about the threats facing groundwater through population pressures, mining, agriculture and industry.

Climate change demands new ways of knowing and relating to the earth, new ways of understanding groundwater, particularly when water scarcity is becoming critical in some parts of Australia (Cathcart 2009). My fictional manuscript utilises the power of narrative form to 'wrench' readers into new spaces without drawing attention to 'political or literary influences' (Dooley 2010, p. 3). The story aims to create parallel narratives, interweaving groundwater's agential expressions with protagonist Frankie Pankhurst's journey towards becoming a water activist. The more Frankie understands groundwater, the more readers too may feel affected by its presence. The aim of my research, through my fictional endeavours and this dissertation, is to explore how climate fiction can reveal both human and non-human responses to groundwater's potency and vulnerability.

## 1.2 Why Climate Fiction, Why Now?

In asking 'Why climate fiction?' I probe the problems of representing the quotidian impacts of groundwater's large-scale and long-term responses to global warming in novel form. It is difficult to find narrative limits to the expression of climate change's broad and multiple effects (Segal 2017). 'Why We Cry' interrogates how the literary genre of climate fiction merges the features of narration – including ordering of plot, dramatising characters, establishment of settings and timeframes – to the large-scale and widely dispersed nature of global warming.

The realist novelist purports to produce an 'authentic account of the actual experiences of individuals' (Watt 1957). I do not here enter the long debates about what constitutes realism, and realist versus modernist literature, acknowledging that definitions of realism are almost impossible to pin down (Morris 2003). I draw on

Morris's definition of literary realist style as 'writing that is based upon an implicit or explicit assumption that it is possible to communicate about a non-textual reality beyond the writing' (Morris 2003, p. 6). Despite the criticism that verisimilitude in transcriptions of actuality does not necessarily produce a work of truth or literary value, realism has persisted as a broad style of novel writing (Morris 2003, pp. 4-6). From as early as the Greek novels analysed by Mikhail Bakhtin, there are no 'pure forms' in the history of the novel, rather 'intense engagement with everyday experience' that pushes the genre into incessant processes of hybridisation (Bakhtin 1981, p. 12). Women writers, such as Aphra Benn (1640–1689) and Lady Mary Wroth (1586–1652) writing in a realist style in the seventeenth century were first to adopt a style of novel writing that blurred fact and fiction, and could be considered 'mothers of the novel', despite the conventional turn to Cervantes, Defoe, and Fielding as the early 'fathers' of the novel in the eighteenth century (Spender 1986). Realist fiction's traditions, building originally from the Enlightenment thinking that stemmed from the burgeoning trust in objective scientific knowledges of the eighteenth and nineteenth centuries, faced critiques from feminists, modernists and postmodernists for daring to assume fidelity to not-knowable truths (Morris 2003) and for assuming patriarchal discourses in science as universal (Irigaray 1985). As Watt (1957), Bakhtin (1981), Morris (2003), Mulhall (2009) and Vermeulen (2015) also point out, the history of the literary novel does not unfold neatly. Rather, the various conventions for conveying meaningful impressions of human and non-human experiences in fictional narratives have overlapped and interjected on each other for centuries.

In this context, a combination of the effects of global warming presents the impetus to expand forms of climate fiction writing so that it may continue to push the conventions of fiction writing through the 'materialist turn', meaning the growing conversations across disciplines from science and the humanities which analyse non-anthropocentric approaches to language and reality (Iovino and Oppermann 2014, p. 2). My processes of writing climate fiction did not shuck the anthropocentric bias of human thought, even as I attempted to emphasize the value of thinking beneath the surface, and of understanding more fully the inherent values

of groundwater as a vital ecological entity (Katz 2000). I accepted that a realist style of writing illuminates, rather than copies reality (Felski 2008). As a novel writer I imposed an order – a plot, a passage of time, a sequence of events. I described a world, and a drama of interactions between the players in the tale (Felski 2008; Mulhall 2009; Tredinnick 2005, p. 28). I also wrote to progress a story of enmeshments between human and non-human entities.

The potency of stories was my initial rationale for choosing a fictional form for the creative work in this thesis (Bird 2013; Dillard 1982; Dillard 1982a; Sontag 2007). Through the writing practice and further research the principles and processes of storying emerged as generative forces to my novel writing practice (Phillips and Bunda 2018). The task of the novelist is to harness the power of stories to communicate between the past and the future, to find meaning in the world, and to deepen or perhaps oppose common understandings of humanity's fate (Brophy 2003; Sontag 2007, p. 231). This thesis argues that the narrative form of climate fiction that embodies and embeds characters in time and space enables politics and aesthetics to merge through affective storying.

I use the terms 'story', 'storytelling', 'narrative' and 'narration' to imply the use of language (here in written form) to configure plots that embed and embody human and non-human characters (Mulhall 2009). However, I draw attention to significant distinctions: storytelling implies that the narrator is telling a pre-existing story, crafting the impression that the events happen within the time frame of the telling; narration or narrative implies a process of inquiry into the elements of story (Phillips and Bunda 2018, p. 5). Storying as research method has a strong tradition in Indigenous art making and research, and forms a significant strategy of resistance to white colonial perspectives (Todd 2016; Phillips and Bunda 2018, pp. 4-8). Storying gives attention to the relational ways of meaning making (Phillips and Bunda 2018, pp. 56-61). The five principles of storying that Phillips and Bunda (2018) 'gather' in relation to researching Aboriginal experience are: '1. storying nourishes thought, body and soul; 2. storying claims voice in the silenced margins; 3. storying is embodied, relational meaning making; 4. storying intersects the past and present as living oral archives; and 5. storying enacts collective ownership and

authorship' (Phillips and Bunda 2018, p. 45). I acknowledge that these aspects of Indigenous storying as research processes can only partially be translated by me as a white settler writing climate fiction because of my limits of understanding Indigenous contexts. Phillips and Bunda's claim that storying 'is inquiry, is theorising, is sharing/presenting of research' underpinned my method of storying with groundwater, as I sought to give expression to groundwater's many ways of becoming known (2018, p. 5). This thesis gestures towards the notion of storying, because of its nuanced potential to speak to the ontological challenge of groundwater's performativity in narrative form.

Contrary to Tredinnick's suggestion that fiction and lyric forms are different, I approached the creative work as both narrative and lyric – not either/or as suggested by Tredinnick (2005, p. 29). Narrative writing need not be robbed of texture and rhythm in its telling of the meaning of a tale. In a similar way that Coetzee's *Elizabeth Costello* expresses the impetus for the fiction writer to narrate, I am summonsed by the invisible to be its 'secretary' (Coetzee 2004, p. 210). Groundwater's social and political invisibility, as much as its material invisibility, summonsed me to dramatise it through climate fiction. I wrote to produce a portrayal of the various possibilities, perceptions and expressions of groundwater's effects and affects that would engage a wide readership, rather than utilising features of speculative, dystopian or science fiction writing genres (Boulter 2007, pp. 77-8). This was because of my interest to bring readers closer to a sense of political agency in the here and now, rather than the prevalent Australian political insouciance towards climate change challenges (Rigby 2011, pp. 67-68). A combination of narrative and lyric storying underpins groundwater's place in the narrative.

Fiction is a fabrication of play and character, event and plot, meaning the narrative form asks readers to enter imaginary worlds. Tredinnick says that 'in the contract ... made between the writer and the reader – that the reader must not take the novel as deficient of anything actual [and] is what sets fiction apart from other genres of literature' (2005, p. 32). The novel is not limited to the role of witness of what is. It fabricates a world, it 'allegorises and comments on the real world' (Tredinnick 2005, p. 32). In a similar vein Annie Dillard says that fiction presents

‘a heightened simulacrum of our recognisable world in order to present it shaped and analysed’ (Dillard 1982a, p. 73). These attributes of realist narrative fiction enabled me to investigate how realism in climate fiction both limits and expands the expressions of material non-human entities.

In the same breath, literature’s value as a tool to understand our relationship with the world is its very difference from the world (Felski 2008; Wood 2008). Even as climate fiction incorporates scientific knowledge, claiming accuracy in what may be labelled realist narratives, it is not mimetic, and is not beholden to criteria of fidelity or singular truthfulness (Felski 2008; Mulhall 2009). Literature that aims to present knowledge, set in a narrative frame, must acknowledge its limits, its partiality. The singular importance of narrative ‘as a staple of our cultural grammar, an indispensable means of connecting persons, things and coordinates of space and time’ created the impetus to making a storyline that shows the intra-actions between humans and groundwater (Felski 2008, p. 85). As a feminist scholar and writer, I acknowledge, as does Felski (noting Ricoeur’s similar positioning), that the ‘interaction between social structures and human agency, remain deeply beholden to the logic of narrative’ (Felski 2008, p. 85). It is through storying with groundwater, telling an emotive story of its impacts on everyday lives, that connections with larger environmental issues may be made.

Rather than being caught in the juncture between the ‘incommensurability of other worlds’, assuming that there can be no common language between science and literature, between distinct local realities, I pursued the notion that realist fiction can be the currency that draws attention away from a strictly empirical epistemology towards another way of thinking about knowledge (Morris 2003, pp. 145-6). I wrote climate fiction, following Morris’s argument that the shared material world exists beyond textuality, and that the ‘division of language functions between the discourses of science and literature’ are not insurmountable (Morris 2003, pp. 154). Climate fiction has the capacity to convey knowledges that bridge the rhetoric of empirical sciences and the stories of human interactions with the world. In Chapter Four I explore how ‘Why We Cry’ nests a current-day narrative

within the prickly embrace of both a realist style of climate fiction and a non-representative viewpoint.

I join scholars who ask questions about ‘whether or not the form we are adopting for our purposes is the best kind of vehicle to do the job about what it is we want to say’ (Rendle-Short 2015, p. 93). Is climate fiction the most effective form of creative writing to explore human expressions of groundwater’s presence and influence, and its vulnerability to the incursions of humans? The presence, the grandeur, and the intricate enmeshments of the minuscule, are frequently described through non-fiction forms (Ghosh 2016). Other forms of literature are also open to reciprocity between text and ideas pertaining to ecologies of environments – poetry, the lyric essay, film scripts, documentary, speculative and science fictions, to name some possibilities.

Two poets, Wystan H. Auden and Banjo Paterson, who have made expressions of groundwater reminded me that fiction is not the only form to explore groundwater’s potency. Auden’s poem ‘In Praise of Limestone’ is one example of a poetic work that evokes the love of land and a young body through an appreciation of underground water (Auden 1948). The poem starts evocatively:

If it form the one landscape that we, the inconstant ones,  
Are consistently homesick for, this is chiefly  
Because it dissolves in water. Mark these rounded slopes  
With their surface fragrance of thyme and, beneath,  
A secret system of caves and conduits; hear the springs  
That spurt out everywhere with a chuckle,  
Each filling a private pool for its fish and carving  
Its own little ravine whose cliffs entertain  
The butterfly and the lizard ...

Auden’s words interplay love and loss, yearning and reprieve in ways I aspire to apply to fictional form. The poem, as poetry often is, is centred in a present, a moment in time and space, that builds from metaphor towards sensual appreciation. I have not written ‘Why We Cry’ in present tense, but build the fictional world with aspirations of such sensorial evocation.

Banjo Paterson’s poem ‘Song of the Artesian Water’ (Patterson 1896) is another example of a poetic work that gives groundwater a place in literature, from

the perspective of white settlers. We hear its sibilance, we smell its emergence from deep devilish places, as Paterson recounts the story of its discovery.

Sinking down, deeper down,  
Oh, we're going deeper down:  
And it's time they heard us knocking on the roof of Satan's  
dwellin';  
But we'll get artesian water if we caved the roof of hell in.  
Oh! we'll get artesian water deeper down ...

A Canadian well-borer, JS Loughhead, had been employed in 1886 by Queensland grazier Simon Fraser to seek out artesian waters. The steam engine took weeks to penetrate 512 metres, to release 2.1 million litres of water per day for thirsty cattle (Cathcart 2009, p. 173). Loughhead was not 'the canny Scot' that Patterson refers to, but his legacy of drilling for and releasing artesian waters across marginal grazing land began what resulted in an ongoing agricultural reliance on subterranean water (Cathcart 2009). Patterson captures the settlers' desperation to find groundwater in ways that hinted at the hungriness I ascribed to my antagonist, Kasha Duff. It is the storying in Patterson's poem that gives it reach.

Responding to the current imperative to write climate fiction, this thesis asserts the importance of localised dissent at a time when science and environmental activism together forecast important strategies for species survival (Hamilton 2017). In my fiction writing, and through analysis of other fiction writers explored later in this dissertation, I propose how 'storying' through fiction writing might express the necessary urgency for action on climate change in an era where profligate consumerism and population growth continue to have devastating consequences for the environment (Bradley 2017; Hamilton 2017). Knowledge of global warming and its effects do not appear to be achieving sufficient traction for change (Baucom & Omelsky 2017). Climate fiction is one means of giving voice to immediate environmental concerns about the loss of groundwater reserves. This thesis draws attention to the contemporaneity of human failures to take significant actions, in spite of long-held scientific evidence and knowledge of the problems connected with global warming. It is not only the urgency of the impacts of climate change on

groundwater that are of interest; it is groundwater's scale and invisibility, that it cannot be directly experienced in the manner that we may experience a flood, storm and tempest, that puts it in need of narration, now.

Literature is also proposed as a possible strategy for social change (Amin & Thrift 2013; Rooney 2009). It is one of several forms of political arts orientated towards not only social justice and distributive equality (the traditional aims of Left politics), but also towards a politics that responds to many aspects of contemporary human experiences, including climate change (Amin & Thrift 2013, pp. 189-93). A politics that responds to global capitalisation, market economies, the technological reconfiguration of human lives and climate change includes a range of strategies beyond the scope of this thesis. The importance of literature, however, to imbue a power to political conviction, inspired my research (Amin & Thrift 2013). Gillian Dooley argues that, as a writer, I can have no predetermined political objectives, that I am in the hands of my characters and my readers, to some extent emptied of intent or desire (Dooley 2010). However, as a climate fiction writer I take responsibility for my underpinning political intent, for my explorations of the political context into which I write, and work for the storying to express human enmeshments with more-than-human entities. An affective environmental politics, where art and literature aim not for pre-determined political solutions, but for political interventions that acknowledge an 'earthly' politics that understands the world as 'an assemblage of heterogeneous threads' underlies my approach to climate fiction (Amin & Thrift 2013, p. 73). This viewpoint places my efforts towards politically affective climate fiction as part of a wider political intervention that seeks to hear and respond to the voices of non-human actors. My fiction writing builds on Amin and Thrift's aspirations 'to claim a language of future longing and belonging ...', and their claims about the influence of 'affective politics' (Amin & Thrift 2013, p. 109). I propose the capacity of narrative fiction to speak for diverse actants, and to inspire hope that human and non-human actants can cohere in life-sustaining, rather than destructive entanglements.

The paradoxical gap between knowing of an impending crisis and having an ability to act to prevent it, is perhaps to do with the chasm between knowledge



and beliefs (Baucom & Omelsky 2017). Whether human inaction on climate change is based on the disjuncture between what humans might know about climate change and how we feel about possible responses is debatable. A range of cultural, political and economic factors work against effective human responses to escalating climate-driven catastrophes (Rand 2014). My fiction writing explores possible human responses to the loss of groundwater from human intervention and drought. I limit my analysis in this dissertation to the ways that making stories, storying, through knowledge and affect, has the potential to contribute to human relationality with subterranean places. In Chapter Four I draw together ideas about how fiction can cross the chasm of knowledge and affect. What we might come to know about the material effects of global warming on groundwater, and how humans might be affected by storying these contemporary circumstances, I argue, is an important task for climate fiction to address.

Practicing ‘response-ability’ entails acknowledging human interferences, and considering how we deal with the inheritances of our actions (Haraway 2016). The tension in the posthuman turn is that humans are ‘disappearing’ (no longer the central actors) at the same time as we are most needed to act with response-ability for the damage we have created. Haraway gives emphasis to our kinship relations to other worldly critters, and also to our relations with deep earthly matter. In storying with groundwater, Haraway’s injunction to write stories that counter the anthro- of the Anthropocene is significant. Making places for stories in what she calls the Chthulucene (cthulhu is from the Greek *khthon*, which means earth) enabled the merging of human and more-than-human reciprocities. In scholarly research towards ecocritical analysis an interdisciplinary approach where sciences, epistemologies and the humanities engage collaboratively is called upon by the demands of climate change (Baucom & Omelsky 2017; Cohen, Colebrook & Miller 2016). It is into this intersection between ecofeminist thinking, epistemologies of material worlds, and the limits of science that scholarly foundation to the storying with groundwater takes shape. Storying in the context of this thesis may be seen as convergent with the processes of writing stories in the scholarly world of environmental humanities, where stories of worldly events and places are utilised

to illustrate broader theoretical positionings. I take the science, the economics and the legal context of groundwater extraction to elaborate both the fictional and the scholarly elements of this thesis. Aboriginal storying, as proposed by Phillips and Bunda root stories and storying with Country, with places and from these stories cultural meaning is made (2018, p. 43). My development of strategies for storying groundwater through climate fiction builds from these scholarly and cultural storytelling traditions to etch the voice of groundwater within climate fiction.

In the 1960s, Rachel Carson's *Silent Spring* (1962) lamented human hubris and lost landscapes, and spurred political outrage at the poisoning of landscapes and the health threats posed by agricultural use of the pesticide DDT.<sup>2</sup> This chemical was banned in USA in 1972 as one of the first actions of the North American Environmental Protection Agency (PANNA 2015). Despite scientific knowledge, many beliefs about the use of insecticides for food production have not changed significantly. Carson's part-fable, part-polemic was influential in founding the environment movement and changes in legislation. Its hybrid non-fictional form illustrates the capacity of this genre to bridge scientific knowledge with public opinion. Over time the ensuing community-based politics have been effective, despite the tendencies of governments worldwide to continue to sideline effective environmental law and policies. I write climate fiction with the awareness that my novel has the potential to increase knowledge, but that the chasm from knowledge, through affect and belief, to political action is enormous.

My research was perhaps similar to that required in creative non-fiction writing, which brings together and in some ways blurs fact and fiction (Gerard 2018; Walker 2013). It is often journalists who mediate between science knowledge and public discussion of climate change (Baucom & Omelsky 2017, p. 9). However my decision to explore ways that groundwater might be expressed in fiction rested on fiction's potency to unearth, reveal and link thoughts and emotions of human characters and non-human entities. I also grasp onto the potential for powerfully

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2. It is beyond the realms of this thesis to attempt to mention the many forms of literature that have put the natural world, and human connections to it, at the forefront. Rachel Carson's *Silent Spring* (1962) is a forerunner of a plethora of examples.

written climate fiction to reach a wide readership. I wrote a style of climate fiction based on the notion that the conventions of reading realist fiction are more accessible to a wide range of readers than those of some non-realist forms of writing. Experimental writing, or perhaps some science fiction or dystopian writing for example may be accessible to readers initiated to this form or style of writing. Such styles of writing might mitigate against a wide readership. Some readers, I realise may find a realist style of fiction unengaging. I have aimed to express groundwater's potency, its complexity, its vulnerability in ways that might influence readers' consideration of not just their knowledge about groundwater, but also their responses, actions and agency towards vulnerable environmental entities.

Water is regularly an agent in political contests, through the connections between water, cultural actions and life (Hawkins 2011; Neimanis 2017; Strang 2013; Jarvis 2014). In her analysis of bottled water, Gay Hawkins argues that water's symbolic potency is disturbed by the economic processes of bottling, yet that the bottle itself has a 'performative agency [that may] prompt political questions about the relations between water, sociality, and life' (Hawkins 2011, pp. 2001-2). My research ascribes aquifers with the capacity to invoke important political questions. There is a politics to the relations between groundwater, sociality and life, when one considers the numerous ways that groundwater sources are being polluted, wasted and over-extracted or mined. Groundwater is often used in the bottled water industry, in many circumstances to the detriment of groundwater dependent ecosystems in the wider environment, as well as local communities of groundwater users (White & Nelson 2018). In these contested water sites, groundwater is predominantly represented through scientific or economic reports that take various approaches to quantifying its features. The fictional world in 'Why We Cry' utilises a literary, narrative approach, which aims to lead readers through a fictionalised contemporary world to knowledge and affect. The 'performative agency' of aquifers creates an opening, which prompts readers towards political questions about the relationality of water to sustainable lives, their own and others'.

Separating cultural expressions and the physical experience of climate has contributed to a ‘narrative vacuum’ (Segal 2017). Writers have tended to fill this void with primarily utopian or dystopian narratives, even if they are at odds with each other (Segal 2017, p. 123). Segal argues that the gap between utopian and dystopian narrative types invites the reading public into a stalled debate between extremes, or oppositional positions, and can lead readers to avoid the much-needed cultural advancement of climate change stories (Segal 2017, p. 126). I chose to write climate fiction in a broadly realist style because it has the potential to lessen the narrative vacuum, and at the same time maintain a sense of hope, as distinct from utopian aspirations. I wrote the manuscript to invoke the possible potentialities of a hope that recognises and enables actions on an existing, present reality, towards an achievable future (Brown et al. 2002, pp. 200-201).

The new stories that could be added to the climate fiction genre, Segal suggests, are ‘scientific narratives’, stories that teach more than facts and processes. Science stories, according to Segal,

convey a worldview of skeptical empiricism and indefinite revision, show us how to negotiate the boundary between our rational and emotional selves, teach us to suspend judgment and consider all the possibilities, and remind us that a belief in the objective truth is a deep kind of optimism with massive dividends. (Segal 2017, p. 123)

Social scientists have shown that science communicators ‘often assume that a lack of information and understanding explains lack of public concern and engagement, and that therefore more information and explanation is needed to move people to action’ (Segal 2017, p. 127). Facts alone will not move people. It is the narratives around facts that are often missing. It was into this gap that I wrote a scientifically accurate narrative, yet one that questions objective and measurable truth, and one with a distinct agenda to generate affective engagement in the text between characters, and between characters and non-human entities. It is a knife-edge task when groundwater as subject, as actant, in many instances elides words.

In this context, I realised the slipperiness of my subject, an entity that cannot be seen, and that operates over enormous timeframes. As with many forms of water

flow, my work encountered barriers and limitations. I next explain some of the boundaries I met and also constructed around the research.

### 1.3 Aquitards: Limits and Boundaries to the Research

Underground, aquitards are the confining layers of non-porous rock, or sometimes clay, which limit flows of groundwater, holding them at a certain depth, or within a bound region (Fitts 2013, p. 124). The degrees of restriction in various aquitards changes over time and over distances. For example, a basalt layer may restrict water flow, until a small fissure, or chemical reaction in the rock pores, allows minute seepages, or new flows. These are known as leaky aquitards (Fitts 2013, pp. 324-6). Using this analogy my work as a fiction writer met boundaries and limitations, which changed over time. The limits of, or boundaries to my research include a range of issues; some I chose not to address, and some were things that I simply acknowledged as beyond the scope of the research.

Literary activism in Australia has had a role as an agent of change, but within the limits of this thesis I do not analyse in depth the connections between climate fiction writing and political actions in the real world (Rooney 2009). As a writer who aims to advocate for social change, the outcomes of my endeavours remain uncertain. Could my creative practice as a climate fiction writer become a potential intervention for social change? I acknowledge that aiming to bring about social change as a creative writer is an immeasurable aspiration. Whether readers of 'Why We Cry' change the way they think about and relate to groundwater is not able to be discerned within the limits of this research. Julie Sedivy argues that 'When an author expresses deep confidence in a reader and creates a space in which the reader can, from the depths of her own social imagination, lower her consciousness into the body and experiences of another, the effect can be transformational' (Sedivy 2017). I may not know who reads or listens to my story, nor what effects or affects the fictional work creates. The potential of a fictional dissenting voice in literature to effect real life environmental activism is difficult to empirically measure. Brigid Rooney argues that in white Australia there is a long

tradition of mutually sustained connections between ‘literary culture and nation building’ (Rooney 2009, p. 183). She postulates that ‘from the interaction between words and the world, a difference can be made’ (Rooney 2009, p. 194). Beyond her praise of literary activists and their work, Rooney nevertheless provides no definitive evidence for her claims of the public influence of fiction writers’ ideas in politics, in culture, in nation building. I may seek to write with dissent, to shine a light on one small effect of climate change, but I’ll never really know the effects of my work on readers’ thoughts or actions, nor the way the story affects them emotionally.

Despite this uncertainty, as a climate fiction writer my aim for affect across a wide readership remains significant. The potential that readers may laugh and cry, may experience a sense of lament or sorrow at environmental losses, and/or be moved to consider groundwater differently as a result of reading the novel, remains an integral aim of the novel. My work progressed from the foundation viewpoint that ‘It is in the reader that the text comes to life’ (Iser 1978, p. 19). The extensive literature on how the experience of reading enables readers to understand things and feel emotion is beyond the scope of this research. Nevertheless I am empowered as a writer by the potency of affect that reading is known to impart, through imagery, through narrative, through language (Iser 1978; Trexler 2015, p. 71). Analogies between groundwater’s sub-surface materiality and the below the surface emotions of readers remain speculative. While I may not know the affects or the effects on a readership of writing climate fiction, I wrote within the limits of knowing that my creative work would partially increase understanding of groundwater, and uncertainly unsettle readers by imbuing a growing sense of the agency of humans and non-humans in their shared locations (Hinton 2014).

My research is defined by an Australian context in the narrative work. While the problems of over-extraction and pollution of aquifers are worldwide, I chose to limit the exploration to a localised, regional Australian setting – with the aspiration that this knowledge could be generalised to other scenarios. The groundwater underlying one of the driest continents has a long and fraught story to tell of its increasing and seemingly unnoticed fragility. As part of the research I undertook a

field trip to the mound springs of South Australia as a way to experience first hand the emergence of ancient groundwater culminating its journey from Queensland towards South Australia through the Great Artesian Basin. These experiences led to passing references to mound springs in the narrative, and to a deepening sense of the timeliness of my writing. Groundwater's usage is often unregulated by laws of the land. Access to groundwater in Australia and in many other scenarios is often a source of conflict between those who want unrestricted rights to a scarce resource, often for financial rewards, and those who seek preservation of groundwater reserves for wider community, cultural and environmental use. The people in my story are perhaps stereotypically Australian, but I aim for them to display characteristics and dilemmas that could be understood by people anywhere.

The research draws together only some aspects of the large body of hydrogeological sciences to explore human encounters with groundwater. Scant mention is made of the complex arena of social and political dimensions of groundwater management and governance (Jarvis 2014; Michael et al. 2011). 'Why We Cry' raises concerns about the way groundwater licences are issued in the fictional world. In reality, groundwater management plans are often based on old data (Jarvis 2014; Michael et al. 2011). Calculations of groundwater's flows using recharge rates of the past to make predictions of the future groundwater reserves could be problematic when the transience of aquifers is not considered (Currell, Gleeson & Dalhouse 2016; Novicky, Kasperek & Uhlik 2010). However, this research does not have the scope to investigate the complex history of water governance, law and policy in Australia.<sup>3</sup> The novel makes only fleeting gestures to the way current licensing practices are derived from the legal and historic context of white settlers' uses of groundwater.

I next discuss the methodological framework for my creative practice research. How I constructed epistemological foundations to my investigations of writing climate fiction *with* groundwater frames the conjunctions of science and literature as addressed in this research.

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3. Lin Crase (2008) provides a concise summary of the challenges and changes in water law and policy in Australia.





## **CHAPTER 2: THE WATER TABLE**

### **Methodological Foundations**

My methodological approach, known as practice-led research, is how I laid out the framework for my investigation. It was through this initial thinking that I first engaged with groundwater. I met the water table, the uppermost level of saturated rock or subsurface material, the top layer of an unconfined aquifer (Fitts 2013, pp. 124-8). The water table is where a water borer may first meet pumpable flows of underground groundwater.

My creative writing practice, which leads the research design, has resulted in a body of fiction writing towards a novel, 'Why We Cry'. The version of 'Why We Cry' presented here as part of this thesis (approx. 63,000 words), is an abridged version of a longer, novel length version of the story (approx. 85,000 words), which will be presented to publishers. Many scenes were condensed or deleted in the editing process to maintain the focus on the research question. At the same time the broad narrative arc of the story was maintained.

Three kinds of writing comprise this creative writing PhD. The practice-led research has entailed framing the body of fiction with the underpinning scholarly context to the creative work. From these two kinds of writing, I then add the third, which are my reflections on both the creative and theoretical writing processes. These three kinds of writing are occasionally interwoven within a single paragraph or section, at other times they are clearly differentiated. I make claims towards creative writing scholarship from the interweaving of these three forms of writing. Through analysis of the novelistic writing processes towards 'Why We Cry', I explore and illustrate how the practice of creative writing addresses my research

question. My fictional portrayal of social responses to water scarcity in an impoverished rural Australian community, and my expression of groundwater's performativity, alongside a story of environmental activism, make conscious contributions to the ways that climate fiction writers might make expressions of important environmental concerns.

In my explorations of the processes of storying, my research investigates how meaning is made in climate fiction, how humans come to know about and ascribe meaning to groundwater. My creative writing research practice began with writing and responded in a cyclic manner with my critical response to my learning from the writing practice (Harper 2013). For example, as I wrote the story and learnt foundations to the science of hydrogeology, the indeterminacy of groundwater became evident. This led me to reading philosophy of indeterminate entities, such as Jane Bennett's *Vibrant Matter: A Political Ecology of Things* (2010), which led me back to the novel writing process with a new critical appraisal of how I was attempting to convey ideas about groundwater.

With its relatively recent emergence in academia, creative writing research continues to find its terms and trajectory (Borgdorff 2012; Brien 2006; Krauth 2011; Krauth & Brady 2006; Webb & Brien 2011; Whitehead 2013).<sup>4</sup> As Webb and Brien suggest, creative writing research entails wrangling with a 'two-headed creature', one that invokes both the poetics and the philosophy, the art and the reason, to create new knowledge (Webb & Brien 2011, p. 210). Webb and Brien trace the 'ancient quarrel' between poetry and philosophy in the context of practice-led research and argue that the creative work 'is not an argument, but a way of seeing: still, it does incorporate a hypothesis about experiential reality' (Webb & Brien 2011, p. 192). It is in the interplay between my creative writing and philosophical ideas that I am able to hypothesise, or make claims from my experiences of writing and reading. In my research, the materiality of underground water furnishes my imaginative

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4. This dissertation does not reiterate the historical debates about how practice-led research contributes new knowledge. This is adequately covered by Borgdorff (2005), Krauth (2011) and Webb and Brien (2011) who give an overview of the history of the debate of art practice-as-research, or practice-led research (and the range of other terms used), in European, Scandinavian, USA and Australian academic circles predominantly since the 1990s.

‘seeing’ of the story, ‘Why We Cry’. At the same time, the critical discussion in this dissertation does not aim to either justify or interpret the creative work (Arnold 2012). Rather this dissertation shows how I osmotically enmeshed my creative work with its many sources, its multiple influences. How groundwater might find expression within the problems of place-making and representation underpins the claims I make in this thesis.

Creative writing researchers have called the wrangle within scholarly creative writing processes many various things: ‘strange loops and tornadoes’ (Boyd 2009), ‘nomadic emergence’ (Whitehead 2013). Harper (2013) calls it ‘responsive critical understanding’, and suggests that the key is the ‘fluidity of the relationship between creative work and critical response’ (Harper 2013, p. 285). Lasky utilises the concept of ‘poetics’ to articulate the hinge or relationships within the ‘trptych of practice-led research’ (2013, pp. 21-22). Poetics, Lasky argues, involves reflexive consideration of the many influences within the other two ‘wings’ of the triptych: research for the creative work on one side and the critical and theoretical inputs and outcomes on the other (2013, pp. 20-21). Lasky’s model appears to pay less attention to the two-way process, whereby ‘poetic’ reflections on the creative work and the scholarly inputs enhance both these writing forms. In these ways creative writing research opens possibilities for multiple interactions and influences between my background research for the content of my creative climate fiction (science of groundwater and hydrogeology, water politics and water management), as well as the creative writing process itself feeding the development of new critical knowledge and new research ideas (Arnold 2012; Holloway 2013; Kroll 2013).

Creative writers undertake background research, sometimes called secondary research, towards their novel, poem, essay or play by using a combination of literary theory, theoretical readings of other writers’ works, perhaps garnering scientific fact and constantly making observations of human experience; the list is very long (Smith & Dean 2009, p. 4). The primary research, according to Smith and Dean, is in the creation of the artefact within the institutional research context. The new knowledge that can be gleaned about a topic from the creative

artefact occurs through what they call the ‘iterative creative web’ (Smith & Dean 2009). Using Borgdorff’s term ‘research in the arts’, I cannot assume any separation or disjunction between myself as scholarly researcher and as creative writer (Borgdorff 2011). Nor is there an essential difference between myself as a writer and a reader. It has been my experience that creative impulses and correlations between reflection and imagination apply to both the formal academic writing and the creative fiction writing for this thesis. Throughout this project, it has become clear to me that I am at one and the same time a researcher, a practitioner of creative writing, and a scholar of creative writing.

My reflections throughout the research process have influenced my creative practice in at times indiscernible ways. I am located within a cultural context where my situatedness within the realm of my past experiences influences my aesthetic vision. When I add to this the inspirations from numerous other scholarly and theoretical writers, as well as a range of fiction writers, I realise that my creative and critical writing emerges from broad foundations.

In the early stages of my research I planned to explore different ways to express the nature and actions of water activists and groundwater. I called the spiralling interactions between my creative writing practice and my critical theoretical research, which included reading, observing, reflecting and thinking, *oscillating absorption*. I started this research process under the same reductive misunderstanding as expressed by Donna Lee Brien, in presuming that my research as a creative writer-as-researcher was merely ‘the physical act of inscribing words on paper’ and included the ‘drafting and redrafting until the final manuscript was arrived at’ (Brien 2006, p. 54). As a scholarly researcher, however, my writing became more than this, and included observing and articulating the processes by which I ‘absorb’ the various influences on my writing. My writing for this project crossed the three domains of fictional writing, theoretical writing and my reflections and claims from the creative and critical works. Through *oscillating absorption* between these writing forms, expressions of groundwater’s presence emerged as the primary subject of the research.

The interlinked processes of my research included Brien's 'second type of reading', where reading for a writer-reader becomes a 'speculative and imaginative' activity (Brien 2006, p. 56). In Chapter Four of this dissertation I discuss the affects of reading my own fictional work, the ways that my reading may open possibilities for others to become affected by the story I have written. As a fiction writer my 'observational reading of life' also affects how I collect material for my writing (Brien 2006, p. 55). Brien describes a bowerbird-like process of collecting information from numerous sources (Brien 2006, p. 55). For me it appears like an 'absorption' process, not dissimilar to osmosis, where liquids flow through a semi-permeable membrane from places of low to high concentration, aiming for balance. In this analogy ideas move between saturation points across a membrane, which could be seen as all the encumbrances that I bring to the writing process. My brain and intellectual perspectives, my heart and its propensity for emotion, my experiences coloured by a veil of memories, my own osmotic cells are all part of the writing process. My political aspirations also come into play. This metaphor of porosity arose when I considered the relationship between the future published novel, 'Why We Cry', and the contexts of its reception by unknown readers. The multitudes of contexts of its being read at some time in the future mean that the porosity becomes unimaginably leaky. The claims I make through my PhD inquiry do not try to encapsulate such leaky terrain. Nevertheless, I acknowledge the interplay of writing and my own reading in this research.

As a creative writing researcher my climate fiction writing builds from personal insights and experiences. As an example of how my personal experiences may have influenced one aspect of the novel, I recall in 2004 being cajoled to stand for a local rural council election. During the pre-election campaign period I found myself speaking in candidate meetings to local residents about my beliefs and aspirations for the district. My memories of this experience sat behind my descriptions of Frankie's speaking at the fictional Cawling meetings. Similarly, my writing drew upon memories of my childhood fascination with the mysteries of water divining, which possibly came from watching a mostly-forgotten cowboy and western television program with a snippet of a scene of a crusty, dusty water diviner

under a battered hat. Or was it a memory of week-long visits to childhood friends from farming families where we played games as water diviners and at night tried in vain to make the soap lather in the bore-water baths to remove the dirt from our fruitless digging?

At times the distinction between my creative writing and my expositions around theoretical understandings are blurred. I tell a story, and in doing so unearth claims about how to consider the voices of groundwater in climate fiction. Entanglements between art practice and art research are so close as to at times appear contrived (Borgdorff 2011, p. 45). In writing about groundwater I test out possible answers to my research question about ways to give voice to this inanimate entity. This has involved writing into the spaces of new knowledge, seeing my creative research as ‘a site of radical experimentation’ (Krauth 2011, p. 11). Similarly, Barrett and Bolt argue that the ‘generative capacity of creative arts research is derived from the subjective, emergent and interdisciplinary approaches’ (Barrett, E. & Bolt 2010, p. 3). The outcomes of creative practice-led research, the creative works themselves, are unpredictable.

My mutually engaged interrogations of creative writing practice, my exposition of the theoretical perspectives that give rise to hyperobjects (Morton 2013), and my learning about the science of hydrogeology, together make this a unique multi-disciplinary project within creative writing studies. Multi-disciplinary research is one of the features of creative writing research (Kroll 2013). Rather than a deductive process, my work progressed by induction; not knowing the outcome of my creative work was normal (Webb & Brien 2011, p. 195). This thesis illustrates how the new knowledge I have explored is not only about how the science of groundwater can be disseminated in a fictional form. It is about how the thinking about inanimate entities is situated in the current philosophical discussions about human relationships to ‘matter’. Matter matters in addressing the real problems of global warming (Barad 2015). It became difficult to comprehend groundwater as a fixed entity, because it is virtually impossible for groundwater to be delimited in space and time. Hydrogeologists’ descriptions are always provisional, groundwater’s transience is its norm (Currell, Gleeson & Dalhouse 2016). Thus, as

will be further discussed in Chapter Four, understanding the viscosity and non-locality of groundwater as a hyperobject became useful in my inquiry. The boundaries between this critical exegesis and my fictional writing blurred and melded as each form of research influenced the other.

Experimental or plaited texts are a common form of creative writing research thesis in Australia (Krauth 2011; Sempert & Batty 2017). ‘Why We Cry’ was not written as an avant-garde, post-modern or linguistically rule-stretching form (Mitchell 2015). It is experimental in that it explores groundwater’s metaphorical potency, its invisibility and its scale, in relation to the lives of humans by focusing on the affects of material indeterminacy. Some feminist writers have privileged experimental writing as a response to post-structuralist concerns with the materiality of the body and language, considering such writing a significant form for creating radical meaning, or a means towards social change (Lever 2011, p. 11). Whether women’s writing (experimental and avant-garde writing in particular) can be considered subversive, a way to change patriarchal norms, is always debatable, as each writer’s intent and voice will have its own trajectory, its own potency for impact (Mitchell 2015). In her examination of selected Australian feminist, realist texts, Susan Lever (2011) questions the view that realist fiction risks engaging with the conservative agendas of western literature, refuting suggestions that realist depictions maintain perceptions of patriarchal controls. ‘Why We Cry’ is my exploration of dissent and subversion, pushing against the silencing of women and against the assumptions that places or inanimate things do not have a capacity to tell stories, to act on and influence not only human lives but the material world in which they are enmeshed.<sup>5</sup> The politics of women’s ‘voice’ remains potent. Feminist, realist novels not only have a long tradition, but remain necessary and important as ways to influence knowledge and thinking (Lever 2011, pp. 146-7). Unlike much speculative or futuristic climate fiction, ‘Why We Cry’ was consciously written into a feminist, realist tradition, overlaying a posthuman

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5. Feminist classics that laid foundations to a gendered politics of speech and established feminists’ capacities to speak out include, for example, Mary Daly’s *Gyn/Ecology* (1979), Dale Spender’s *Man Made Language* (1980) and *Mothers of the Novel* (1986) and Audre Lorde’s *Sister Outsider* (1984). The #MeToo movement is a recent expression of women seeking to be heard.

perspective to explore how expressions of the other-than and more-than-human become vital in climate fiction. My decision to contribute a story to the field of Australian climate fiction entailed experimenting with how the fictional work is enmeshed with the scholarly ideas expounded in this dissertation.

Creative practice research involves reflecting on the creative thinking that results in a fictional work, and integrating this usually unarticulated knowledge with the craft ‘wisdom’ of my writing (Carter 2015). This intellectual work usually goes ‘missing in translation’ during the process of making works of art (Carter in Webb, 2011, p. 187). It also risks the criticism that my reflections on my writing are only based on my individual thoughts and feelings, rather than making an innovative contribution to existing knowledge (Batty & Holebrook 2017). Later in this dissertation I discuss the ways that feedback from selected readers of the drafts of the manuscript, ‘Why We Cry’ impacted on the creative writing process, and affected how I thought about the story. I make transparent the knowledge-making work of my creative writing because, as Webb and Brien argue, the quarrel between poetics and rationality still holds ground (Webb & Brien 2011, p. 192). ‘Embodied and material thinking must be “translated” if it is to be useful within the more silent, less tangibly gestural practice of writing’ (Webb & Brien 2011, p. 193). My aim is for my creative work and exegetical writing to each ‘translate’ the other, perhaps osmotically. Throughout this thesis I explore both the process of the writing and the theoretical context to which the creative work contributes.

Literature’s job is to make commentary and reflection on human endeavours and foibles (Attridge 2015; Dillard 1982a; Felski 2008). It also has a role in producing knowledge ‘that will be of use in the creation of a more ethical, more democratically organised and more sustainable society’ (Webb & Brien 2011, p. 200). My research remains an open undertaking, seeking the deliberate articulation of unfinished thinking about and through my creative and critical writing (Borgdorff 2011, p. 46). My reflective and narrative fiction writing investigate the ‘epistemological ammunition’ (Whitehead 2013, p. 96) of knowledge-making through artistic practice. My creative work and my dissertation are both acknowledged as emergent, but contributing new knowledge towards the ways



climate fiction writers might think about and relate to the more-than-human world. My creative work aims to engage readers in a world where groundwater matters, where it is treated respectfully and sustainably. My scholarly considerations of the implications of my creative writing form the bedrock to the remaining chapters of this dissertation.

I next expand on the epistemological and ontological underpinnings to my thinking and writing about how climate fiction might give voice to groundwater. I locate my research within a body of both theoretical writers and fiction writers that influenced the direction of my creative writing and the themes of this dissertation.

## 2.1 Epistemological and Ontological Underpinnings – Gaps in the Water Cycle

Cultural theorists who write to understand human relationships to matter and more-than-human entities underpin this research. I particularly draw upon the thinking of material ecocriticism, posthumanism and non-representationalism, and eco-feminism (Iovino and Oppermann 2014; Braidotti 2013; Vanninni 2015; Barad 2007; Bennett 2010; Plumwood 2007). The thesis engages with the broad confines of material ecocriticism, which considers that ‘the world’s material phenomena are knots in a vast network of agencies, which can be “read” and interpreted as forming narratives, stories’ (Iovino and Oppermann 2014). I join fiction writers and critical scholars seeking to facilitate stronger, more ethical, more inclusive, and more politically affective relationships between humans and the more-than-human world. In this section I expand particularly upon the epistemological literature from which and into which my research flows, identifying the small but unique contribution that it seeks to make to theorising creative writing.

Drawing on ideas broadly derived from material ecocriticism opened the possibility of examining how my writing, and the work of other climate fiction writers, interacts with non-human entities – in my case, the material nature and forces of groundwater – ‘both *in* texts and *as* text’ (Iovino and Oppermann 2014, p. 6). ‘Reading’ and writing groundwater as matter – in contrast to groundwater as a

place – enabled me, theoretically at least, to establish groundwater’s resilience as well as its fragility. This thesis builds from such foundations to explore ways to voice or ‘represent’ the material reality and literary potency of the hyperobject, the extra-large, moving matter of groundwater. Coole and Frost argue that we have perhaps lost sight of matter itself, and its capacities, not just of being, but of acting in a material world (2010, p. 3). At the same time, new scientific understandings, from quantum physics to biological and environmental knowledge, open questions about the nature of matter and human beings’ relations to the slippery slide of what constitutes a material world (Barad 2007). Considering a material ecocritical point of view highlights the ways matter can act; that is, how things like groundwater can exercise agency (Iovino and Oppermann 2014, p.2-3). However, paradoxically, we know of such agency always through the human interventions of observations, imaginations, experiences and text (Iovino and Oppermann 2014, 3-4). My research puts into a narrative form this intervention in a way that acknowledges the performativity of the language I use (Barad 2008; Cohen 2014).

New materialist feminism aims to redress the limitations of postmodern feminism, which focused on the discursive over the material, separating language, discourse and culture from positivist perceptions of objective reality (Alaimo & Hekman 2008, pp. 3-5). The effects of gendered power relations through language and discourse influenced how I gave voice to human and more-than-human characters (Haraway 1988; Irigaray 2002). Through this research I became interested in reconceptualising the material aspects of groundwater, acknowledging the intra-actions and agency of the material, watery world, rather than seeing it only as a construct of language (Braidotti 2013; Neimanis 2017). A feminist approach to writing with groundwater recognises the risk of ascribing female qualities to the natural world (Stevens, Tait & Varney 2018a). An example in the geological realm of reducing and essentialising femaleness, as in the terms ‘mother earth’ or ‘mother nature’, occurs in Ursula Le Guin’s essay ‘A Very Warm Mountain’ (2006). Here she describes the Mount Helen volcano blasts in 1980, at first recounting reports used by print and radio media journalists to describe the eruption (Le Guin 2006). She interweaves ‘factual’ descriptions of mud-balls, ash and darkness with her own

experiences at the time. She ends by evoking the volcanic blasting of Mount Helen in terms of her own characteristics as a fiery woman. The mountain's changes from the grace and stability of being dressed as a woman, with cloud-like hat and scarf, or breast-like, to something out of control, appear linked to Le Guin's own aspirations. She disagrees with describing the mountain's rapid change as a desiccating cancerous form, blown to pieces, preferring to see her as a raging, farting, screaming woman, alive and healthy still. This was tempting; ascribing female characteristics to groundwater may have been a way to politicise its presence. However, as Annette Kolodny's critique of the 'land-as-woman' metaphor points out, such thinking and expressions lay behind exploitation and aggression towards both women and environments (Kolodny in Glotfelty 1996, p. xxix).

I decided not to directly impute gender to groundwater, focusing more upon groundwater's broad earthly relationships, its powers, its responses to abuse, without a gendered referent. Paradoxically, anthropomorphising 'nature' can be argued as way to increase human interest to protect it (Le 2017; Plumwood 2008, 2009; Bennett 2010, p. 98). I sought to ascribe the metaphoric potency of groundwater as posthuman matter by weaving together the science of hydrogeology with a critical eco-feminist approach to the writing (Stevens, Tait & Varney 2018a). I was wary that metaphors might once again place groundwater as the backdrop to human endeavours, or tie the work to gendered, anthropocentric positioning. As Cheryl Glotfelty asks in her landmark ecocritical text; how do metaphors for the natural world influence the way we think about and treat it? (Glotfelty 1996; Neiman 2018). Evoking the parallels between groundwater and human interiority gestures towards the value of caring for self and environmental waters in the manner that Freya Matthews invokes in her concept of 'ecological self' (Matthews 1991; 1995). Writing a story with groundwater as a protagonist meant understanding and expressing its ecological forces in relation to the human characters.

Influenced by the posthuman turn, and its affinities with feminist thought, I examined how climate fiction might be able to de-centre the human subject and focus on atomic or molecular non-human systems, and the material agency of

things, more than conceptions of power and emancipatory ideals. Feminists such as Donna Haraway and Karen Barad have argued that humans, non-humans, technology and natural agents all jointly interact to mutually construct matter (Alaimo & Hekman 2008, pp. 5-6; Barad 2012; Haraway 2016). Material feminism opens potential for an ethics based on the material consequences of human interactions. From this viewpoint, embodied, situated actions are based on material phenomena. Political consequences are seen as scripted onto human and non-human bodies (Alaimo & Hekman 2008). Material feminism nests under the broad eco-feminist umbrella, enabling an environmental politics that takes account of environmental sciences, and places this knowledge about the natural world, not as mere background, but as a material actor in the realms of science and politics (Rigby 2018; Stevens, Tait & Varney 2018a). By beginning with materials, unexpected social and political alliances are possible (Alaimo, 2012; Barad, 2008; Braidotti, 2013; Haraway, 2016). My research for both 'Why We Cry' and this dissertation aims to expand an eco-feminist, materialist ethics and politics to climate fiction writing.

I view groundwater's matter, its beingness, in the ontological mode of 'becoming', and examine its processes of 'becoming', meaning the transitory differentials between its states of being, rather than its solidity or static state of being (Deleuze & Guattari 1988). Building on this line of thought, Karen Barad (2015) explains new conceptions of how electrons behave in matter, as opened up by quantum physics and quantum field theory. She draws comparisons between new ways of understanding matter and new ways that artists can know and create meaning in their work (Barad 2015). As Barad states; 'Ontological indeterminacy, a radical openness, an infinity of possibilities, is at the core of mattering' (Barad 2015, p. 401). Human and non-human matter is perceived as being materialised through intra-action, and subject to the same ways of becoming and being. The ontology of all matter can, in this way of thinking, be conceived in a similar way. This breaks the previously dominant pattern that holds humans as souled and sentient, separate from the non-human world and able to control and dominate it (Coole & Frost 2010, p. 8). With this in mind my aim to find expressions of

groundwater was bolstered, as I imagined its beingness, its wateriness, on a continuum with not only the human fictional protagonists, but also in intra-action with me, the author (Chen, MacLeod & Neimanis 2013; Barad 2008).

Timothy Morton's concept of the *hyperobject* gave me a way to scaffold my efforts to give voice to groundwater in climate fiction. Morton's five characteristics of hyperobjects provided a way to think about groundwater's hidden scale, its relationships and movements in ways that seemed to invite its fictional treatment in a novelistic universe (Morton 2013). I expand on these five characteristics in Chapter Four, where the findings from the writing practice are analysed in more detail. I interweave Morton's notion of hyperobject with hydrogeological facts and ideas about groundwater. There is no epistemological escape from ontological density, says Morton (2013a, p. 40). Groundwater is indeed something enormous that we know exists, but more importantly, its reality, its molecular composition, makes it close to being us. Throughout the writing process I developed a stronger sense of how groundwater, and the more generalised non-human, is part of me, within me, not just adjacent to me. I have expanded an imaginary vision, to paraphrase Deborah Bird Rose, of how groundwater makes us human (Rose 2000).

When I thought with groundwater as a hyperobject I was also unable to indulge in anthropocentrism. Knowing about groundwater meant I must be connected to all its rhetoric, all its expressions. Like Morton, I accepted that I will always have a tendency to anthropomorphise my expressions of groundwater, whatever words I use, because I am human. In my fictional writing, however, I flout the sin of anthropomorphism, as Val Plumwood suggests, because by 'sinning' we are more able to develop an ecological sensibility that connects us beyond our human limitations (Plumwood 2009). Accepting the human lens of creative writing became a 'heuristic strategy' to reduce the ethical and textual distance between my human characters and the waters beneath their feet (Iovino and Oppermann 2014, p. 8). Thinking of groundwater as a hyperobject became part of the way that I as a fiction writer could understand and write about its responses to climate change in a globally warming world (Morton 2013a). The concept gave me a way of thinking and designing the role and activities of groundwater in the novel.

Massumi extolls the perspective illuminated by Gilles Deleuze and Felix Guattari, that we can know the world through its expressions (Massumi 2001, p. xvii). Similarly Jane Bennett, in *Vibrant Matter*, argues for the agential potency of ‘things’ (2010). Bennett stops short in providing solutions to the problems of her move from environmentalism to vital materialism, revealing the chasm remaining between ideas and real world actions (Bennett 2010, pp. 121-2). The tension of writing about ‘nature’ and ‘things’ from a monist, enmeshed emplacement in the world lies in the humanness of the writing process. Writing with the agential potency of groundwater and frogs in mind opened possibilities of writing in ways that subverted and exposed the dominant, human ‘I’ of the Anthropocene, but didn’t let me escape the traditional pulls of human-centredness. I remained cautious in finding resonances between the ‘many conative actants swarming and competing with each other’ for a voice (Bennett 2010, p. 122). Finding and giving expression to unruly actants and agential entities and beings from the non-human realm, particularly groundwater and frogs, underpinned my writing. Writing from the entanglements of anthropocentric language, into posthuman perspectives, meant finding ways to know and feel my enmeshments with groundwater. Later in this thesis I discuss how metaphor became a strategy for exploring the stories of groundwater’s materiality.

If ‘forces, energies and intensities’ are the language in materialist viewpoints, I asked what are the effects of such forces on the representations or expressions I give to groundwater and to the human characters who experience it in their lives (Coole & Frost 2010, p. 13). It was the self-organising properties of groundwater that I sought to express in a creative form. Guattari’s ‘ethico-political articulations – *ecosophy* – between the three ecological registers (the environment, social relations and human subjectivity)’ gave another perspective to dealing with threats and transformations on planet earth and provided another avenue into my writing practice (Guattari 2000, p. 28). The political and agential qualities of matter emerge not only through giving attention and subjectivity to matter, but through caring for things, building a capacity to feel care for the natural world (Herbrechter

& Callus 2008). I explored different ways of giving attention to groundwater, and different ways of caring for it through ‘Why We Cry’.

Rather than perceiving groundwater as discrete, inert and measurable, a new materialist approach applies a non-static ontology that perceives the ‘excess, force, vitality, relationality and differences that renders matter active, self-creative, productive, unpredictable’ (Coole & Frost 2010, p. 9). The narrative potential in this view of matter meant challenging the view that stories come from humans. Rather the story had to emanate from the interrelated agencies of both the humans and the non-humans (Iovino and Oppermann 2014). The capacity for groundwater to ‘speak’, either through the characters’ observations of the effects of its actions, or by expressing its own volition, came from an ontological understanding of groundwater as mattered and agential. For example in ‘Why We Cry’, readers learn of groundwater’s corrosion of irrigation pipes, its movements, its withdrawal from ecosystems. The lowering water table is responsible for the death of the protagonist’s horse, an inciting event in the manuscript. Groundwater’s intra-relationality seeps steadily through the narrative, showing its affective force.

Throughout my research I questioned the epistemological preliminaries to my project, facing the risks that they were flawed, that my findings might lack validity or originality (Whitehead 2013). Both Whitehead (2013) and Webb and Brien (2011) prompted me to embrace this possibility of failure in the creative work, as a forerunner to innovation. Contrary to Webb and Brien (2011), however, who suggest that the struggle with epistemology happens at the outset, I have tussled with the epistemological issues from the start and all along the way – throughout the process of writing both the creative fiction ‘Why We Cry’ and this dissertation. In the uncertainty of experimentation in my writing practice I have stepped into unknown places. I have lingered at times ‘at a point of analysis’ (Webb & Brien 2011, p. 194), but have mostly flowed, with the watery currents of my research – often in the dark – towards making a work of climate fiction that might lead to new knowledge about writing with groundwater, and by extension to writing climate fiction more broadly. The writing process was aimed to elucidate possibilities for writing about fragile, enormous hyperobjects, in the context of global warming. In

the processes of making the content of the fictional world in ‘Why We Cry’, I have opened up questions about how humans can understand groundwater’s immensity, and the impacts of groundwater in people’s lives. Through charting groundwater’s expressions in a narrative and discursive form, I explore new territory, not conclusively, nor better than other writers, but in ways that have not been seen by other writers (Kundera in Webb & Brien 2011, p. 195).

Influenced by these epistemological perspectives, my creative work aims to avoid dualisms. Instead, it paints pictures in grey subterranean zones. My research aims not to solve the mind/matter conundrums, but to use principles articulated as ‘transversal practices’ (Barad 2015) to examine the way we view non-living entities – in particular groundwater. It is not just that it is water – it is the qualities groundwater assumes by being ancient, underground and ever-forming that fuel its narrative expressions in ‘Why We Cry’. I delve more deeply into the ‘ways of knowing groundwater’ in Chapter Four where I discuss what findings emerged from my practice-led research. I next turn to the ways that various works of fiction have influenced the writing practice in this research.

## 2.2 Fictional Influences

Groundwater is an ancient source of life across many countries and continents, referred to rarely or obliquely in contemporary Australian literature. My creative practice research builds on the shoulders of Australian fiction writers who explore the particular effects of climate change through their fiction. For example Alice Robinson’s *Anchor Point* (2015), Anson Cameron’s *The Last Pulse* (2014), James Bradley’s *Clade*, (2015), and Mireille Juchau’s *The World Without Us* (2015). This list is not exhaustive, but merely indicative of the Australian texts that are responding to the events of global warming (Fetherston 2016). I also looked for novels which make reference to groundwater, but found that fictional representations of the misuse of groundwater sources are not common. Examples of Australian literature that make brief mention of groundwater include Randolph Stow’s *Tourmaline* (1991), Elizabeth Jolley’s *The Well* (1986), Mark Tredinnicks’



*Blue Plateau* (2009) and Sally Abbott's *Closing Down* (2017). This general absence of groundwater in Australian literature indicates the importance of expanding the literary voice of the underground ecotones, the places where groundwater meets other surfaces – human and non-human skins, habitats, ecosystems, the air.

I focus briefly here on five Australian novels that specifically engage with problems of degradation of water supply and how human characters respond: Elizabeth Jolley's *The Well* (1986), Thea Astley's *Drylands* (1999), Alice Robinson's *Anchor Point* (2015), Anson Cameron's *The Last Pulse* (2014) and Randolph Stow's *Tourmaline* (1991). I have chosen these novels, as well as several other relevant works of fiction, to briefly illustrate their influence on my creative practice, in particular to analyse the ways these writers ravel and unravel the tangles between human characters and their agential, material, non-human, subterranean accomplices.

Subtly showing the presence of groundwater, Elizabeth Jolley's *The Well* (1986) has two sentences linking groundwater to the well around which her story hovers.

In the distance she saw the line of trees which, her father always said, must thrive on an underground water supply, and which marked the furthest end of what used to be her property and where the dog-leg was. Seeing the trees even though they were a long way off reassured her (Jolley 1986, p. 146).

The well in the backyard of the rural homestead is where Jolley's protagonists, Hester and Katherine, dump the body of the ambiguous creature/human, and from where the young and vulnerable Katherine hears voices of the supposedly dead creature/man. The well carries overtones of fear of death. Groundwater is presented indirectly through its evidence at the surface, and as both a source of life and death. Jolley does not articulate the connection between the reassuring tree line, nourished by groundwater, and the well in the house's yard. This common dissociation of groundwater from its source, and from its effects at the surface is what my writing aims to address.

In my considerations of how to present multiple human characters in a small drought-stricken community, Thea Astley's *Drylands* (1999) provided a useful

example of varying the point of view. This novel follows the protagonist Janet Deakin's observations of the decline of the dusty rural township, aptly named Drylands, till she too passes on her newsagency business to join the exodus. In her sharp portrayal of drought, Astley writes,

The town, as a town, was being out-manoeuvred by weather. As simple as that. Drought. Dying stock. A hard sky across which clouds massed, hovered, then rolled away to the coast. The small smatterings of rain were as offensive as spit (Astley 1999, p. 287).

While Astley does not directly address the links between climate change and increasing prospects of drought, the way she paints a community's response to the hardships of drought is what became a useful contribution to my research. She describes various characters' experiences of leaving Drylands in first and third person point of view, building up layers of understanding of the effects of a dying community. Astley's self-reflective paint-strokes of her protagonist as a novel writer also gave me a model for considering how to situate the author as a self-conscious writer into the fictional work. This linked with my aim of questioning the place of the author, in relation to readers, which I explore in a later section of this dissertation.

Thinking about how to convey Indigenous and settler connections to land led me to Alice Robinson's novel *Anchor Point* (2015), which spans forty-four years, tracing protagonist Laura's life, in particular her relationship to her parents' property. My decisions for Frankie Pankhurst to return to her familial property at Cawling follows Robinson's portrayal of generational familial connections to land, and hints at the colonial assumptions of ownership that underpin Australia's white occupation of land. Robinson's descriptions of Laura's friendship with Joseph, the Indigenous character, who asks her for access to the land for his people, show an example of the poignancy and tensions of Aboriginal loss of custodianship over Country, written by a white Australian writer. The narrative shows the effects of complex arrays of weather and climatic processes, and moves from tree felling in the 1980s, through storms and fire, to land revegetation projects in the 1990s, and ends with suggestions of an apocalyptic fire in the near future, 2018. The surviving canoe tree near the house remains the evidence of long-held indigenous connection

to the land. Robinson's portrayal of intergenerational avoidance of Indigenous custodianship influenced my decisions to portray Aboriginal grief in my fiction writing (Robinson 2012). Her descriptions of drought and subsequent fires suggest the severity of the effects of global warming, but maintained these elements as background in the published narrative. In contrast, I aimed to foreground the forces of groundwater.

The actions of a flooding river underpin Anson Cameron's novel *The Last Pulse* (2014). Cameron's portrayal of feelings of desperation of an unlikely water activist also influenced my thinking about my story. This is a rollicking tale of man who takes individually motivated, drastic action to address the loss of flow from the Darling River, through the Murray River to his orchards in South Australia. Bombing a dam on a huge cotton property in Queensland (a thinly disguised Cubby Station) to release the last possible pulse of water flow down the Darling River through to South Australia, is a clear portrayal of a contemporary water activist in Australian fiction. My writing in 'Why We Cry' is different to Cameron's work, because of my creative focus on two key themes: first, while I draw from Cameron's descriptions of the tragedy of failing river systems, my writing gives expression to groundwater's withdrawal as opposed Cameron's focus on surface, river waters. Second, my writing explores the process of a female water activist finding her capacity to speak out, to lead her community, rather than Cameron's story of a man's individual decisions and action. Cameron's protagonist, Merv Rossiter, bereaved from the suicide of his wife, rides the wave of released water down the rivers in a stolen boat, accompanied by his young daughter, an Aboriginal boy and a politician. A captive audience. Like Cameron, my work threads Indigenous viewpoints and political dilemmas of water management, and has an undercurrent of grief. Frankie Pankhurst's engagement with her community, despite her initial feeling of being marginalised by her unusual appearance, is an important distinction between my writing and Cameron's, who bestows hero status on Merv Rossiter. The pulse of the river is strong in this novel, and inspired me to experiment with ways to show the pulses of groundwater.

My depictions of water divining and the mysterious processes of finding subterranean water through feelings in the hands, sticks or wires were influenced by my reading of Randolph Stow's *Tourmaline* (1991). Stow's protagonist, Michael Random, is said to be a water diviner, and is ascribed mystical qualities by the residents of the dusty, drought-stricken mining township, Tourmaline. He finds gold instead of water, and takes on Christ-like qualities as he leads spiritual rituals in the remnants of a falling down church. I decided to depict the mystery (or hoax) of water divining in 'Why We Cry' in an unresolved way, with reference to ideas of belief, and spiritual need, as implied by Stow. Stow's depictions of Tourmaline's residents, their various attitudes to water divining, their experiences of dry conditions and water scarcity, illustrated how to weave the voices of diverse characters with the flavours of desert-like settings through a novel. First published in 1963, Stow's novel places a raft of characters in apocalyptic circumstances. The final scene depicts a dust storm. The narrator walks 'into the thick red wind' and nearly drowned in the dust as the bell in the disused church tolls (Stow 1991, p. 251). Stow showed me that 'matter', whether it be dust or gold or water can permeate a narrative, get under the skin of characters and readers alike.

Another Australian text that influenced my thinking about how to portray the agency of groundwater was Mark Tredinnick's *The Blue Plateau: A Landscape Memoir* (2009), which is written in the style, as he calls it, of creative non-fiction, as 'a musical arrangement of passionate facts' (Tredinnick 2009, p. 266). This evocative rendering of areas in the Blue Mountains, through tales of generations of mostly white inhabitants and his own experiences of place, inspired my work, particularly in the way he applies brushstrokes, each sentence layering ideas and events, observations and reflections. Tredinnick finds expressions of place, albeit the surfaces and lights and seasons of the landscape, through poetic and fragmentary instances that gradually builds not just a narrative, not just a history, not just a long prose memoir. Tredinnick's example urged me to 'paint' expressions of groundwater, and the people who abuse it or care for it. With a consideration of the aesthetic of Tredinnick's 'landscape memoir' and his efforts to give a character's voice to the landscape features of the Blue Mountains, near Katoomba, NSW, I too

gave voice to groundwater in ‘Why We Cry’. My fictional writing does not directly challenge the novel’s traditional form, as it portrays characters interacting, and it has an evolving plot and a clear sense of time and place (Wood 2008). Tredinnick’s writing style, his musicality and rhythms, were the more significant influences on my writing.

As the writing of ‘Why We Cry’ progressed it became clear that the Indigenous character, Wade Keane, would have an important role to play. From the outset I wanted Wade to be depicted positively and respectfully, not without flaws and uncertainties, but as a character who shares Frankie’s interests to preserve sustainable groundwater flows. I turned to the work of Australian Indigenous novelists Melissa Lucashenko (2013), Kim Scott (2011, 2017) and Tony Birch (2011, 2015) for a context in which to raise Indigenous peoples’ knowledge and connection to land and water, and the effects of climate change on Aboriginal people. Each of these fiction writers inspired and influenced my decisions about how ‘Why We Cry’ could present a strong and authentic Aboriginal character. As Indigenous writers these authors are able to write Aboriginal characters in ways that are not accessible to me as a white writer. I discuss this in greater depth in Chapter Three. Tony Birch references the scope of ‘slow violence’ to Indigenous communities from climate change and seeks a change in mindset that acknowledges the importance of ‘connection’ rather than ‘unity’ in efforts to enable meaningful interactions and actions on climate change between Indigenous and non-Indigenous people in Australia (2016). This influenced how I aimed to describe the relationship between my fictional characters, particularly Frankie and Wade. Their connections and shared interest in sustainable groundwater come from different perspectives, but enable them to forge a strong friendship.

I turn now to five non-Australian novels that present various incursions into my research question. Barbara Kingsolvers’s novel *Flight Behaviour* (2012) is an example of a work of fiction that addresses an impact of climate change in a realist style. The overall scarcity of realist climate fiction made this text important (Trexler

2015, pp. 225-30).<sup>6</sup> Kingsolver's protagonist, Dellarobia, has an almost spiritual experience in discovering the massed monarch butterflies on her family property. She questions the scientists, activists and naturalists coming to observe and in their different ways attempt to protect the stranded colony of monarch butterflies. The rare butterflies are at risk of habit loss from her family's plan for deforestation of the mountainside where the butterflies have nested. Like Kingsolver in *Flight Behavior* (2012) I aim to complicate the stereotypical portrayals of scientists, activists and climate deniers in order to emphasise the diversity of characterisation, and to enrich the breadth of possible relationships between people, as well as between characters and groundwater.

By portraying Frankie as a working woman, I potentially locate the working poor as the carriers of the cost of global warming, which it could be argued is primarily instigated by the middle class and wealthy owners of industry (Alexander et al. 2011). In Kingsolver's tale 'the effects of climate change are disproportionately borne by those who cannot afford them' (Trexler 2015, p. 228). Paradoxically, Kingsolver suggests that their economic niche leads some low income people to deny climate change. In contrast to Kingsolver, and Trexler's analysis of *Flight Behaviour*, in my climate fiction, poverty, rurality, and lack of formal education does not necessarily lead to climate change denial. I demonstrate through the conversations in the pub and through Frankie's engagement with the Cawling community that this is not an automatic link.

Frankie Pankhurst's means of engaging politically with her community are not necessarily new; she learns that a united front is stronger than individualised effort. Similarly to Kingsolver's *Flight Behavior*, where local economic hardship is the force behind the ecologically hazardous proposed logging, 'Why We Cry' shows how Kasha's motivation for groundwater extraction is economically driven. Escalating global carbon emissions and loss of habitat through deforestation are the

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6. Trexler examines only three novels he considers as realist climate fiction: Kingsolver's *Flight Behaviour*; Jonathon Franzen's *Freedom* (2010), which depicts contemporary economic and social justice concern in USA; and Robert Edric's *Salvage* (2011), which is set 100 years into the future. For reasons of relevance and focus I did not read the latter two novels and will not discuss them here.

significant cause of species extinction explored by Kingsolver. Loss of aquifers and groundwater dependent ecosystems are the ecological disasters unravelled in ‘Why We Cry’.

At the end of Kingsolver’s novel, Delarobia decides to study science as her form of involvement in the climate change dilemmas she has discovered. In this novel, science and scientists are placed as ‘hero’ figures. The ‘objectivity’ of science, while portending to be value-free, is presented as having high moral values attached, particularly under the pretension of lepidopterist (specialist in the study of butterflies and moths) Ovid Brown’s humility (Sleigh 2011, p. 127). In my novel however Frankie is already engaged in learning the science of hydrogeology and uses this knowledge to engage with others – community members, water bureaucrats, and local council members. I wanted to build from Kingsolver’s positioning of her protagonist as new to science. My protagonist is a character who works with her wider community as her knowledge about groundwater grows. Kingsolver reinforced for me the potency of a contemporary, every-day story and influenced me to maintain this style and the third-person narrative viewpoint. My purpose in my research is to question how fiction can know and represent the material world in broader ways than science alone does.

Alongside the politics of Frankie’s journey towards water activism, ‘Why We Cry’ attempts to create a platform of imaginative dialogism and affective connection with not just the ideas of groundwater as a place, but with its current ‘performance’, its situation, its vulnerability. These ideas were seeded as I read and re-read Kingsolver. One key scene I returned to frequently was the moment in one of Delarobia’s conversations with Dr Ovid Byron where he explains that if the monarch butterflies die on Delarobia’s family block of forest over winter, they will not survive as a species. Delarobia’s reply is not ‘words of science’, ‘but it was a truth she could feel. The forest of flame that had lifted her from despair, the migratory pulse that had rocked in the arms of a continent for all time: these fell like stones in her heart’ (Kingsolver 2012, pp. 315-16). I can still feel the knocking in my chest when I read this again. The potency of affect remains important in my reading and rereading of Kingsolver and in the other novels I now mention.

I looked for a novel where groundwater has a prominent place in the narrative, showing its influence on human and non-human lives. France's limestone country was the source of Marcel Pagnol's novel, *The Water of the Hills* (1962), a two-part saga of Jean de Florette and his daughter, Manon of the Springs. It tells the tale of deception and greed for groundwater. Jean de Florette's neighbour, Ugolin, the novel's antagonist, secretly blocks Jean de Florette's spring with concrete, with a view to forcing Jean away from the desired limestone land he'd inherited from his mother. Groundwater's value and effect has front and centre stage as Ugolin's plan unfolds. Without the spring Jean works himself to the grave, devastated by his failure to produce food on his arid plot. Through Manon's discovery of the blocked spring and its re-emergence years later, Ugolin's deceit is revealed. Pagnol describes the limestone springs in terms of their use for his human characters, as a scarce resource, with devastating impacts in its absence. This novel is one of relatively few fictional narratives depicting groundwater's vital role in intergenerational community relations. Readers hear its tinkling and gushes through caves and springs, and the deadly tones when the spring water is lost. I wanted to give groundwater a similar presence in my manuscript.

Doris Lessing's *Mara and Dann* (1999) provided a comparison text that illustrated to me the potency of combining affect, ecology and voice in fiction. Doris Lessing's mastery of narrative voice and descriptions of thirst affected me as a reader, providing impetus to my efforts to induce similar kinds of non-cognitive responses in readers of my novel. *Mara and Dann* (1999) is a futuristic novel, speculating human responses through the observations of two young siblings as they journey across a drought-stricken continent. Reading this text early in the research confirmed my decision to write contemporary climate fiction, placing protagonists in current circumstances where they face challenges to find ways to deal with threats to water supply.

An example of an intergenerational narrative reflecting on the environmental effects of tree felling, and indirectly on climate changes over a long timeframe, is Annie Proulx's novel *Barkskins* (Proulx 2016). In a large, sweeping tale of generation after generation's persistent clearing of north American forests,



Proulx lets historic storytelling reveal how great swathes of the North American continent were all but cleared of trees. The narrative potency for writers to engage with longer-term contributors to global warming is evident. In my research, in contrast to Proulx, I chose to portray a localised story, over a short timeframe, in order to emphasise the immediate affects of groundwater's movements as a result of both drought and human actions. I also wanted the story to invoke the long-term geological and climatological processes that effect groundwater flows.

A text that greatly influenced a particular thread of scenes in 'Why We Cry' was Haruki Murakami's *Wind-up Bird Chronicle* (2003). Reading this novel directly led me to consider placing my protagonist down a well in several key scenes. This action became a critical means for me to bring the feeling of groundwater close to Frankie, and provided a place where her dreams and internal thoughts revealed connections to affective memories and elements of groundwater's ubiquitous sensate potency. Rather than Murakami's at times illusory and surreal style, I remained committed to a realist style of fiction, because of the materiality of global warming problems and contemporary threats to groundwater. I have gained much, however from Murakami's considerations of mood, in particular the way he describes his protagonist, Toru Okado, spending time in a well. For example, about half way through Murakami's novel, Toru is stuck for several days in the complete blackness of the well, someone having mysteriously removed his rope ladder. Murakami describes Toru's 'fragmentary memories' arriving in silence, 'like water slowly filling an underground cavern', a somewhat prophetic indicator of later events (Murakami 2003, p. 266). Murakami goes on to describe Toru's annoyance at a seemingly trivial memory turning to anger and then rage that blots out his hunger and fear at being imprisoned in the well. The first scene where my protagonist, Frankie Pankhurst, spends time in the mineshaft, is an unplanned occurrence for her, as she attempts to rescue a dog. With no knowledge that rescue may be coming, her memories and feelings are intensely fearful. The second and subsequent visits to the mineshaft are Frankie's conscious decisions to 'go to the source', to go 'beneath the surface', to become closer to the underground sources of groundwater, as her recently deceased father had regularly

suggested she do. There are many abandoned mineshafts in the bush around Central Victoria where the story is set. I once had the experience of rescuing my dog from a deep dank hole. I spent a few uncomfortable hours stuck in the dark with the dog, until a nearby neighbourly resident in a pink chenille dressing gown, who had loaned me the ladder that was too short, recruited some young helpers to pull us both out. I remember the rope burns on my hands and waist. I remember waiting for help, the musty smells, the light above me. I drew on these memories of my trapped feelings, and my memories of the intensity induced by Murakami's well scenes, in my descriptions of Frankie's experiences in the mineshaft. While it is difficult to tell in Murakami's portrayal whether some of Toru Okado's dream-like experiences in the well are real or illusory, Frankie's reflections, though at times oneiric, are part of her journey towards understanding herself, and her capacity to speak out about groundwater. The blurring of what Frankie has learned about the science of groundwater, as had I the author, with my memories of underground experiences, opened the writing process in creating these scenes.

The decisions I made about how to develop 'Why We Cry' were derived from how the above-mentioned authors constructed their fictional worlds: how they portrayed communities and drought, built narrative tension, developed authentic characters, maintained their rhythmic patterns and point of view, and most particularly how they created affective tones. I mention only the main influential texts here. The affect of the texts I mention above on me as a reader fuelled my curiosity about not only how affect can be created in a novel, but what residue is left for me as a writer-reader-writer from these affective experiences. Where a text has not affected me, has not engendered impulsive feeling responses, it is perhaps the cognitive or conative elements of the narrative fiction that have prevailed. The decisions and considerations in my writing practice about how to bring together knowledge, representation and affect in this thesis were strengthened by my awareness as a reader and a writer of the journeying between the head and the heart that is involved in fiction writing, both my own writing and the writing of other authors. The affective dimensions of 'Why We Cry' emerge from both the factual

and the emotive aspects of human interactions with groundwater, as well as the pathways between these knowledge-based and affective elements.

My creative task was to witness, to pay attention and hear the possibilities for metaphor and analogies, the story-making qualities of groundwater. As a researcher, my scholarly task was to find meaning in these processes, meaning that is contextualised by the raft of critical thinking and analysis of other fictional works. As a scholar I make knowledge claims about writing practices, in my case the ways that writing climate fiction about groundwater needs to take account of knowledge, representation and affect. The epistemology and methodological framework outlined in this chapter, coupled with my analysis of other narrative endeavours, provide the springboard from which my research findings can now be rendered. I next discuss in more detail the decision-making and iterative writing practices I employed throughout the research.

## CHAPTER 3: GROUNDWATER FLOW

### Decisions in the Writing Process

This chapter explores a range of possible interventions to the problems of writing climate fiction, acknowledging both the facts and the indeterminacies of science in the Anthropocene. Of the innumerable decisions made by a climate fiction writer here I mention just four key aspects to my writing practice: dealing with the provisional nature and uncertainties of hydrogeological knowledge; finding a narrative structure to the fiction; exploring the way to find the point of view and narrating voice for the novel; and how I responded to reader feedback in the writing process. In writing the fictional manuscript the subtle array of geological, chemical and hydraulic forces that influence how water seeps through rock coalesced with literary theory, inspiration from other fiction writers, as well as with my own experiences, to form the cocktail of influences to how I might know and make a story with groundwater.

Through this research I have a sense of the palimpsest in the tasks of storying groundwater. Palimpsest comes from the Greek *palimpsēstos*, meaning scraped again. In geology, the term palimpsest refers to a rock surface with features that indicate geological processes from different ages. Writing ‘Why We Cry’ has involved layering over time new and old threads of the narrative, alongside the science and water management processes I was learning. The text was ever developing, always changing as words and sections were erased to make room for other text. The writing developed alongside the thinking about what groundwater means in different contexts, and how these different meanings might be expressed. Throughout the period of this research, community knowledge about global

warming was changing fast. Urgency about the consequences of climate change amplified over the timeframe of the research (Hamilton 2017; White & Nelson 2018). I was writing into a transforming time and topic.

The creative writing research processes encompassed explorations of not only my non-human subject (groundwater), but also my writerly decisions of structure, point of view and characterisation. The processes I discovered in writing *with* groundwater are enmeshed in each of these elements of writing climate fiction. I start by outlining the relationship between the hydrological science I was learning and the considerations I made as a creative writer and scholar in making the creative work and this dissertation.

### 3.1 Science Knowledge – Darcy’s Law

Scientific understandings of groundwater have been crucial to how I know this fluid and fragile ‘character’ of my creative fiction. In her list of proposals for authors of Anthropocene fiction, Lucy Sussex suggests that writers embrace science, ‘take joy from the efforts of scientists, and learn from them’ (Sussex 2018). The science of hydrogeology and rudimentary knowledge about the legislative arena and engineering of groundwater gave me a foothold in creating my story. Each of these fields of knowledge is constantly developing in response to climate change. I studied how aquifers form and flow, and the increasingly important relationship between hydrogeology and groundwater ecology (Humphreys 2008). The more science I learned, the more I was able to thread this ‘behaviour’ of groundwater into the narrative.

The holy triumvirate of hydrogeology consists indisputably of the three components – rock, space and water. After that, uncertainty and debate over meanings, definitions and concepts begin. Groundwater moves incredibly slowly through the minuscule pores in sandstone, drains through hairline fractures in basalts, seeps and drips through dissolved fissures in limestone. In some areas it follows the sandy pathways of ancient rivers, called deep leads, long since buried by hundreds of metres of rock and soils. Groundwater’s flows are mesh-like and

are determined by many features of deep geology through which the water flows (Fitts 2013).

Groundwater flow can be measured mathematically by applying the elements of Darcy's Law, a foundational calculation used by hydrogeologists to gain understanding of groundwater's subterranean movements. Henri Darcy was a Frenchman from Dijon, who in 1856 devised the mathematical formula to describe the rate of flow of water through a sandy substrate. This was part of his work as an engineer to ensure a groundwater supply for Dijon. In its simplest form the formula states that water flow ( $Q$ ) equals a calculation of permeability of the sand or rock ( $K$ ), times gravitational head ( $I$ ), times the area through which the water moves ( $A$ ).  $Q=KIA$ . There are then numerous complicating factors that may be given a numerical value – such as variations in hydraulic conductivity of different rock types, the velocity of water flow over various distances, and of course the fact that water moves in multi-dimensional plumes (Fitts 2013, pp. 47-51). Mathematical formulae to capture the hydrological drivers to groundwater's transience, particularly to trace aquifers' variable response times to changes in the water balance due to human instigated land use, sea-level changes or drought and floods, involves complex modelling of a range of factors including time, climate cycles and geological variations over large areas (Currell, Gleeson & Dalhouse 2016).

I mention Darcy's Law and the modelling of groundwater flows not because I seek to apply mathematical formulae to describe my decisions in the novel writing process. Unlike hydrogeologists who utilise Darcy's Law to make predictions of water's flows, I did not attempt to forecast the direction of the story, nor its reception by readers. However, as I explain in the next sections, my writing processes involved probing of the elements of fiction writing, deciding on narrative structure, point of view and characterisation, as I considered ways to give expression to groundwater's flows.

In central Victoria where the narrative 'Why We Cry' is set, groundwater occurs in five main aquifer types: Ordovician sedimentary bedrock; granite; gravelly deep leads; basalt; and in shallow alluvial aquifers. Deep leads in this region are unconsolidated sands and gravels of ancestral streams buried

approximately sixty or more metres beneath ancient basalt flows from around twenty million years ago (Goulburn-Murray Water 2013). Learning about the geology of the district and how it affects groundwater flows was an important step in the writing process.

My writing practice was informed by conversations with several hydrogeologists, a water lawyer, a herpetologist (an expert in amphibians and reptiles), environmental activists, and other novelists. I read research papers and generic groundwater texts, aiming to ensure accuracy in scientific ‘facts’ about groundwater (Fitts 2013; Ladson 2008). Presenting credible science about groundwater is not only for my peace of mind, but is also a requirement for an author to garner readers’ trust in my ‘accuracy’ (Webb & Brien 2011, p. 197). Hilary Mantel discusses this point of fidelity in her fiction, in relation to maintaining authenticity to known facts in historical fiction, in the 2017 Reith Lecture series (Mantel 2017). I ensured that this thesis and creative work is based on what is currently accepted, though still debated knowledge within hydrogeology. I aimed to give readers confidence in the author’s fidelity to science. My writing as research tests interpretations of hydrogeological facts in a creatively fictional space. I had two hydrogeologists read a draft of the fiction to confirm that the hydrogeology was correct. I have tried to find ‘harmonies and synergies’ in my writing, combining fact and fiction to make new narrative and scholarly connections about the ‘wider implications and applications’ of this research (Webb & Brien 2011, p. 199). Scientific papers often acknowledge that many of these hydrogeological ‘facts’ are blurred and estimated (Jarvis 2014). It has become my task in this research to illustrate both the necessity for science and the incumbent questioning of how scientific knowledge both helps and hinders the development of meaning.

I also learned rudimentary aspects of Australian water management law and policy, a contentious, complex and shifting body of legislation and regulation, which is different in each State, and has various requirements within the Commonwealth’s *Water Act 2007*, and its subsequent amendments. The National Water Initiative, which emerged from the abolished National Water Commission in 2004-5, introduced reforms to Australian water law following the millennial

drought of 2000-2010, attempting to improve national consistency in sustainable surface water and groundwater management (White and Nelson 2018). Buying and selling water were given new rules. Water access remained contested as water was considered both a commodity and as an essential requirement of specific environments. Accessing groundwater in Victoria requires a licence to construct a bore under the Victorian State government's *Water Act* 1989. Understanding, at least rudimentarily, the legislative context of how policy makers, farmers and property developers have used and mined groundwater as if it is an endless resource, enhanced the writing process. Mining groundwater is where it is extracted from slow-flowing aquifers that will never be replenished. My interest to convey an accurate depiction of groundwater licensing processes was as strong as my interest to convey legitimate science. I ensured this accuracy by having a water lawyer read my draft fictional work, and he guided me through the legal processes of water licence appeals.

The fictional universe I create in the manuscript, 'Why We Cry' enmeshes a close relationship between what hydrogeologists currently know about groundwater, and the social and environmental context in which the fictional human actors play out the story. My characterisation of Frankie focuses on her internal and external conflicts and the emotions generated by her actions in the face of loss of groundwater supply. Her journey towards environmental activism was a consistent thread in the writing process. Her learnings about groundwater mirrored mine.

I acknowledge that in writing fiction there is always the possibility of 'simulacra, dissimulation, lie and perjury' (Derrida in Webb & Brien 2011, p. 198). However, as Hillary Mantel explains, fidelity to historical fact enriches the affect of her Tudor novels (Mantel 2017). She argues that historical fiction that explores the thoughts and feelings of characters can enrich understanding of human endeavours in history. Similarly, 'Why We Cry' brings to a reader's attention the conflicts that arise when science facts are explored in fiction from various characters' perspectives.

The shared ground between scientific facts and literature include: reliance on language; the use of subjective representations to present knowledge to readers;



the importance of passionate curiosity as a motivation for intensive inquiry; and the regular dialogue that occurs between science and literature (Sleigh 2011). Sociological and historical studies of scientific knowledge have shown that facts are not independent of their representation (Latour & Woolgar 1986; Sleigh 2011, p. 16). The study of a story's form, a narratological approach, illustrates the means by which science's facts might be imbedded in a narrative (Sleigh 2011, p. 18). The avenues I have used to embed knowledge about groundwater and the impacts of climate change on groundwater through fictional narrative include decisions about genre, narrative structure and point of view.

Within the limits of this thesis I do not analyse the historical study of the relationship between scientific knowledge and literature. This is handled well by Sleigh (2011). Various responses to scientific knowledge, such as trust or disbelief, have influenced how literature has portrayed knowledge. Writing climate fiction in the twenty-first century shifts the focus of the work to readers' responses, to their 'interpretive responsibility' for how the science and the narrative form will have impact (Sleigh 2011, p. 21). As Sleigh so neatly sums up, 'Literature is how we decide what matters to us, and what matters will determine nothing less than the future of science' (Sleigh 2011, p. 24). My fictional writing brings to light one aspect of climate science, hydrogeology, as an avenue into understanding anthropogenic responses to extraction of groundwater.

### 3.2 Narrative Structure

In early drafts, the plot followed a linear movement, driven at first by thoughts of what-happened-next. After about eighteen months of drafting scenes, I realised that the narrative structure was not working, themes were becoming muddled and the plot did not give scope for adequate exploration of the research question.

The rough first draft of the story suffered from too many irrelevant complexities, such as a plan by blow-in ecoterrorists to bomb Kasha's rig that resulted in the death of the minor character Bernard Blandthorne. I edited and re-drafted the work according to a classic quest plot structure (Booker 2004). The

quest was a plaiting of two parallel themes: Frankie's goal to find her voice as a water activist, and groundwater's emergent presence as a potent force. I all but removed reference to eco-terrorism, other than Frankie raising it as a question in a conversation with her friend and mentor, Lois Menkle.

The structure of a classic quest narrative, according to Christopher Booker (2004), has the protagonist facing various ordeals after they commence their search for their goal. Significantly, on ostensibly reaching the goal, the protagonist becomes frustrated as a new series of obstacles become evident and they must face one final test to secure what they come to recognise as the previously unknown foundational aim of their quest or search (Booker 2004, pp. 69-83). The narrative thread was strengthened so as to illustrate Frankie's journey towards an understanding of groundwater, and her efforts towards protecting sustainable groundwater reserves in her district. The aim was initially to chart the quest that Frankie embarks upon, from the inciting events, namely Frankie coming to terms with the death of her father and seeking to understand why her father's horse died. Her 'quest' was firstly to find a public voice, a capacity to speak out. In the process she learns about the science of groundwater, she questions her inherited identity as the daughter of a water diviner, and she engages her community to oppose Kasha Duff's housing development plans. The final stage of the classic quest plot involves a reversal from dark to light, from unseen to seen (Booker 2004). The heroine/hero finally finds the true meaning of their quest. A deeper answer emerges than their initial quest, problem or question.

This fictional structure suited Frankie Pankhurst's heroine's journey, from silence to agency as a successful water activist. Facing adversity, pitting herself against Kasha's housing development plan, and coming to terms with the death of her father, she finds her greater goal to be her commitment to her connections to the natural world (Murdoch 1990). Frankie develops as a character from her silence about groundwater's perilous state, to being able to express her views in public, and able to influence community forums. Frankie was on a journey to find something more important than her voice in her community, and her capacity to speak out for groundwater. She came to understand her enmeshments with groundwater, her

connectedness to her community. Discussions in the Cawling pub about various characters' perceptions of their rights, or the necessity, or the damages of extracting excessive groundwater reveal the plethora of opinions that Frankie deals with. From participating in local actions, her understanding of global matters of groundwater's vulnerability evolved.

The overall quest structure also gave me a fictional form within which to develop groundwater's many and various expressions. Parallel to Frankie's changes, the tones of groundwater itself gradually amplify throughout the novel. Considerations of groundwater's presence during Frankie's times in the mineshaft, and finally her imaginings of groundwater's vicinity around the Murray river in the final scenes, was how I chose to reveal the growing inter-relationship of groundwater.

Cul-de-sacs, dead ends and false starts meant that I often changed the course of the narrative. For example, deciding where the story begins led me to try several opening scenes. I finally decided on a scene between Frankie and her father, Lennie, at his cabin by the Murray River, because it opened up possibilities for establishing a key relationship that revealed the significance of aquifers to the story. Lennie's death also became a stepping off point for Frankie, as she took up her search for both her identity and for her role in the long-held feud with Kasha Duff. It also gave the chance to set up the narrative for a reiterative return, at the end of the story when Frankie, Wade and Clem return to Lennie's cabin. The cyclic nature of surface and subterranean water flows is evoked; life flows on, as does the river. The structure of the novel is, importantly, organised so as to show the growing presence of groundwater and its significance in human and non-human lives.

Within this overall structure, Frankie's changing relationship to groundwater emerged. This kernel of the story is represented through the steady revealing of the attributes of both groundwater and Frankie. Her search for identity as a water activist builds from both the sense of propinquity to, and her memories of conflict with, her father, Lennie, the water diviner. From early in the novel, Frankie questions the veracity of the divining process, but wonders whether she holds the divining capacity. At the same time, this search for resolution is placed in

tension with what she is learning of the facts and uncertainties of hydrogeology, and her respect for Helen, the hydrogeologist.

I needed to articulate how Frankie's relationship with groundwater prompts her capacity to speak out for its preservation, and the maintenance of generous (not just adequate), environmental flows. I decided not to include expositions on the problems of groundwater pollution as a major issue in the narrative. This has already been explored in the film *Erin Brockovich* (Soderbergh 2000). While there are many Australian instances where pollution of aquifers is problematic, I decided to limit the arc of the story to threatened access to groundwater, as this risk to groundwater supply is directly related to the juxtaposition of effects of global warming and population growth. In my efforts to bridge science knowledge through fiction writing, I focused the narrative so as to increase the potency of affect. I make only passing reference in the manuscript, for example, to problems with groundwater pollution from fracking for coal seam gases, which has been in the public eye through the work of the Lock the Gate Alliance (Hepburn 2012).<sup>7</sup> Similarly, worldwide problem of groundwater pollution around airports from the chemical in fire retardants, the foams called PFAS (poly-flouroalkyl substances) could be a novel in itself, and receives only passing reference in my fictional writing.<sup>8</sup>

I deliberated long and hard with the ending scenes, summarising events into a tight form for the purposes of this shortened narrative that is submitted with the dissertation.<sup>9</sup> I wanted a story of hope, where groundwater's potency prevails and where the heroine, despite obstacles, achieves her goal. Frankie steps forward from her success in Cawling towards the possibilities of continued activism. Understanding her inherent consonance with subterranean water became Frankie's final challenge, which once achieved leads to the what's-the-next-battle ending to the fictional work. She becomes aware that as a connected human being the fight

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7. Despite Australia's national agreement, legislation to protect groundwater from coal seam gas is still determined by State-based environmental laws. <http://www.lockthegate.org.au/>

8. For example, recent media coverage of groundwater pollution around Melbourne Airport follows a spate of journalism revealing this problem (Brooks, 2018).

9. As previously mentioned, the fictional work, *Why We Cry*, was edited to an approximate word count of 63,000 words to meet the requirements of scholarly examination as part of a PhD.

goes on, that there are always environmental struggles to be fought. Wade Keane and the Yaluk Cooperative's ultimate success in the Victorian Civil and Administrative Tribunal (VCAT) claim, illustrates the importance of hearing Aboriginal viewpoints, to broaden political impacts.

Frankie's imaginary conversations with aquifers in her solitary walks around the riverside cabin aimed to conclude the fictional work with the sense of the enmeshment that Frankie felt with subterranean waters, her awareness of their co-mingling. However, groundwater's place in this trajectory also needed to be concluded. Groundwater's endurance was depicted through two narrative gestures. Groundwater's lament continues quietly through hints of the failing Mound Springs of South Australia. These unique spring water emergences of the Great Artesian Basin have been damaged by stock, and reduced in water flow as extraction from the Great Artesian Basin escalates many hundreds of kilometres away (Keppel et al. 2011). Frankie's interest to work towards preservation of Mound Springs provides an aspirational conclusion to the story. Groundwater's capacity to, in some cases, resume flows over time, is indicated in the end of the novel by the character Joan's vegetable gardens being irrigated with groundwater. Joan inherited Kasha Duff's property and shows a measured and sustainable way to utilise the bore that Kasha had illegally started. Groundwater's endurance and capacity to move underground in different ways was an important means I chose to structure the end of the novel.

Frankie's quest initially to speak out against groundwater theft, and ultimately her discovery of deep connection to subterranean waters, was the mechanism I chose to reveal groundwater's metaphorical significance and its otherwise hidden presence in human and non-human lives.

### 3.3 Point of View: Narrating Voice

Early in my research I considered my process for finding a distinct narrative voice for the proposed fictional writing. The narrative initially attempted to chart Frankie Pankhurst's challenges in finding a public, activist's voice, but the drafting and re-

writing also became about the process by which I discovered the voices of not just the raft of human characters in the story, but through them the ‘tones’ of groundwater. My explorations through reading and drafting, re-reading and re-drafting, led to ‘a further series of research problems’ (Brien 2006, p. 57). These included explorations of the narrative style and tones of the story that nested within a broadly posthumanist perspective. More specifically, who would be the narrator? Which narrative perspective would best meet the demands of my research question? Writing fiction with posthumanist leanings had many challenges in terms of finding narratorial voice.

Distinctions became essential between, firstly, point of view – what we see; secondly, narrative voice – what we hear; and thirdly, focalisation, which is how Gerard Genette describes the different ways that the narrators’ perspectives and voice are expressed, (Boulter 2007; Genette 1980). About half way through writing the novel I faced difficult decisions about point of view. At the same time I was searching for the through line to the quest structure in the story. Who would convey this narrative thread with richness, insight and perception? I questioned who should tell the story, who would be the fictive narrator, and what would be the most effective and affective narrating instance (Genette 1980, p. 214). Genette expounds on the complexity of a narrating situation, the tight webbing of ‘the narrating act, its protagonists, its spatial-temporal determinations, its relationship to other narrating situations’ (Genette 1980, p. 215). The temporality of the narrating is always essentially inherent in the novel, more so than the narrating place, or where the narrator is placed (Bakhtin 1981; Genette 1980). It wasn’t simply whether the story would be written in past or present tense. I became aware of what Bakhtin called the polyphonic perspectives within narratorial voice; the interplays between my authorial inferences, or interruptions, and the characters on the page (Bakhtin 1981). I needed to understand point of view (who sees) and voice (who speaks) to fully understand the potentiality of finding fictive and affective expressions for groundwater. My experiments with narrating voice and point of view hinged around which endeavour would most affectively enable the fictional work to address my research aims, and to invoke the question of groundwater’s agency.

In the process of exploring the tones for my creative work, one of the drafting techniques I practiced was to copy sections of text from other fiction writers – to type excerpts of their words so that I might ‘hear’ their voice, tones and rhythms. This took me deeply into small segments of other writers’ attempts to build the sensorial world of their fiction and helped me develop my own tone of voice for the ‘Why We Cry’ narrative. This self-conscious process of searching for my authorial voice for this story ran the risk of repressing a naturalness of tone (Boulter 2007, pp. 62-3). The process of editing and re-editing drafts of each section of my creative fiction gradually refined the tones and rhythms of my writing, but more importantly, according to Boulter, entailed relinquishing the ‘infernal self-commentary’, silencing my own authorial voice, to enable the reader to hear the fictional voices of my characters more clearly (Boulter 2007, p. 63). This was one of the strategies I clung to in my aim to avoid didacticism in the work. I was ever wary of the trap of authorial heavy-handedness. In the process of writing the fiction, among the polyphony of possible voices, remnants of my authorial tones inevitably remain.

I started early drafts of the fiction with a notion of the value of Bakhtin’s ideas on heteroglossia, which meant an acknowledgment of the multiple, heterogeneous stylistic forms of speech and voice in a novel (Bakhtin 1981, pp. 260-61). Bakhtin’s notion of heteroglossia fed an early idea of expressing multiple viewpoints about groundwater through different characters’ expressions of groundwater’s presence. Deborah Bird Rose speaks of a form of heteroglossia in expressions of water through different parts of Australian life. She writes that;

In Australia, water has many voices; there is heteroglossia to the max: the butterflies, the women who dance them and the men who sing them; pelicans who arrive in the tens of thousands, and the people who sing their stories. All creatures, from frogs to birds to crayfish and brightly shining flowers sing up or announce their presence, testifying both to themselves and to the water that brought them forth. Water’s entwined and multifarious voices are iridescent with presence and connectivity (Rose 2014, p. 442).

It was this interpretation of heteroglossia that I sought to explore in ‘Why We Cry’. However the polyphony was tempered by the realist style I wanted to use

in the novel. Conveying the material potency of groundwater through climate fiction is further discussed in Chapter Four.

Throughout the research and writing of ‘Why We Cry’, I tried different ways to convey expressions of groundwater, seeking ways to subvert the dominant, human ‘I’ of the Anthropocene. I sought to disrupt the predominant narratorial ‘voice’ which has silenced women and agential beings from the non-human realm (Coole & Frost 2010, p. 9). Was it enough to create a female protagonist, who speaks for, or with, groundwater? I had to ask myself whether this writing decision continues a pre-occupation with anthropocentrism in ways that reduces human capacity to relate to and dialogue respectfully with ecosystems and non-human species (Rawlings 2016, p. 300). The influences of a posthumanist perspective, which no longer places the human subject at the centre of and separate from the world around, are explored in Chapter Four.

In my experimenting with writing to find an affective narratorial voice, a parallel process emerged to do with the voice(s) that might best express the presence, the agency, the affect of groundwater. I use the plural because I found that as various humans spoke in their various ways about groundwater, they were composing a plethora of expressions and understandings of groundwater’s impacts – almost choir-like. Helen, the hydrogeologist, expressed a scientific view; Kasha Duff, expressed a viewpoint about individual rights to and ownership of water as a resource; Bruce Landy, the water lawyer, provided the legal perspective to the narration; Wade Keane added the Aboriginal understandings of groundwater. Together these different perspectives comprise a set of voices about groundwater that connect and collide in the novel. In Chapter Four, where I consider the ways that humans might know groundwater, I discuss the problems and effects of anthropocentrism in writing fiction that emerge from this centrality of human perspectives.

I trialled writing chapters in the first person, singular, present tense, from the protagonist, Frankie’s perspective. In early drafts I experimented with different focalisations. I tried to be Frankie Pankhurst to write in her voice – first-person, past-tense narrator – for example, I went, I drank, I spoke, I cried. I wrote many



scenes in third-person, present-tense, closely from Frankie's perspective, and some through Kasha Duff's eyes. I wrote about Frankie Pankhurst as if a third-person omniscient narrator is observing her and other characters from the outside – for example, she/they did this and that, she/they thought, she/they felt. (Boulter 2007). As I went through the process of editing and organising previously written scenes, Frankie's internal voice emerged. I gradually gained authorial feel for Frankie's story, for her as the narrator. I inhabited Frankie's world, created the worlds she inhabited and brought these places and feeling worlds to textual expression on the page (Boulter 2007). I settled on Frankie as the fictive narrator for major parts of the narration, showing and telling the reader the events in the third-person, but close to her interior world. This narrative point of view is sometimes referred to as third-person-limited (Boulter 2007, p. 153). The third-person-limited narration creates some emotional distance between the reader and the character, but not as much as the attempts of an objective third-person omniscient narrator (Boulter 2007, p. 154).

Whether Frankie's interests and goals were the same as my authorial aspirations, or whether she had her own views, became a question I explored as Frankie's point of view emerged. Frankie became a conduit for expression of some ideas that I sought to express, yet at the same time she developed her own opinions, her own ways of being in the world that are markedly different to mine. I do not live with Turner Syndrome, nor was my father a welder and a drunk. Frankie's experiences of living with Turner Syndrome and with a loving but neglectful father, was the way I chose to emphasise her differences and her challenges in finding a political voice, and her place in her community. In drafting the novel, Frankie's views increasingly led the story; she had a voice of her own. I chose to give Frankie a first-person voice through her journal entries, so that proximity to her thoughts and feelings about groundwater could be expressed in a manner that punctuated the third-person narration. Writing some of Frankie's thoughts and experiences in the first person restricted the narration to her point of view in these journal entries.

Through these writing strategies, expressions of groundwater's presence emerged. Water is part of Frankie's interior world. It appeared fitting that both Frankie's voice and groundwater's expressions, come from a sense of the interior,

a feeling place. In the next chapter I discuss the ways a climate fiction writer may utilise affect.

As I previously mentioned in section 2.2, choosing the third-person-limited point of view, reminded me of the work of Haruki Murakami, in *The Wind-Up Bird Chronicle* (2003), where he so finely creates interiority of mood in the protagonist, Toru Okada, particularly in his descriptions of Toru's time in the well. Similarly, Kingsolver writes *Flight Behaviour* in third-person past-tense, which is predominantly close to Delarobia's viewpoint. An affective story can be told from this point of view. My decision to write in the third-person-limited point of view was partially influenced by my writing-reading-writing processes. Seeing the world through Frankie's eyes had a potent affective impact on me as a first reader of the work. I laughed and cried at her experiences, and came to trust that other readers may have similar responses. I expand on this important finding of my research in Chapter Four.

In the early drafting process I wrote whole sections where groundwater itself spoke initially in first person, then in first-person-plural; groundwater became 'we'. This attempt was influenced by Les Murray's poem 'The Cows on Killing Day' where he writes of the slaughter of a cow from the viewpoint of her herd: his line 'all me makes the roar' put me, the reader, alongside the voice of the herd (Falconer 2016). This proximity appealed to me. Orhan Pamuk's expression of the colour red, written in the first person voice in his novel *My Name Is Red* (Pamuk 1998) was another influential text in my consideration of how to give voice to this more-than-human entity in my fictional writing. The sections in Pamuk's novel where the narratorial voice obliquely implies the richness of colour in Turkish works of art – taking the reader into the heart of redness – inspired me to seek to take my readers into the heart, and indeed the soul, of subterranean watery realms.

Gradually I found clearer ways to address the research question, while meeting the standard features of fiction writing such as character development, plot, setting and place, and making decisions on the chronology of events (Bird 2013; Boulter 2007; Dillard 1982a; Forster 1949). Narrative fiction usually holds a point

of dramatic conflict, or a seam of tension that binds the story in a forward motion (Boulter 2007).

Another decision I made throughout the writing process was to write from Kasha Duff's narratorial perspective for some scenes. This decision was based on the aspiration to enhance the story's tension through emphasising the differences between Kasha's and Frankie's points of view. I could have perhaps chosen to sit upon the shoulders or see through the eyes of various other characters, to exaggerate the different tones of beliefs and attitudes towards groundwater. In 'Why We Cry' the conflict is represented at the surface layer as between two characters – Frankie Pankhurst and Kasha Duff. Underlying their conflict are their different views on the depletion of natural resources, in particular groundwater. Frankie comes to believe that unmonitored use of groundwater comes at a massive environmental and human cost. This is in opposition to the idea expressed by Kasha that exploitation of a resource till it runs out is a human right and is acceptable, regardless of wider, possibly unknown or not-considered costs. I was wary of didacticism in how each of these characters aired their opinions, and attempted to convey the uncertainties that they each felt. My choice to give the narrative point of view primarily to Frankie, and in shorter sections to Kasha, I felt would focus the reader's attention on their conflict about groundwater. From Frankie's point of view, through her communications with her friends, we see a range of perspectives about groundwater use that remain limited to her focalisation. These decisions aimed to confine the narrative, to retain clarity in ways that the narrative addresses the research question. The plumes of possibility were ever complex.

One of the ways that groundwater can be given expression is as a legal entity, with political presence. This idea fuelled the scenes in 'Why We Cry' where Frankie imagines that groundwater may gain legal voice. Bruno Latour (2017) is concerned that representative democracy has insufficient concern for elements of the natural world – that politics is unable to act for preservation of environmental scapegoats, in the sense that they take the consequences of human greed and interference with no recourse. Politics has generally failed to respond quickly enough to the effects

of global warming, so that catastrophic events continue to unfold and escalate. New spokespersons to speak in real parliaments on behalf of environmental concerns are necessary (Chakrabarty 2009). Concerns for the constitutional fit of environmental entities have been partly addressed in several international examples. The Wanganui River in New Zealand and the Ganga and Yamuna Rivers in India have been ascribed the legal status of personhood (O'Donnell, 2017). In Ecuador and Bolivia nature's rights are enshrined through the constitution (Tanasescu 2017). Latour's call for science and politics to be drawn together, for experts to be part of law-making in ways that go beyond 'protecting individual liberty and fostering material prosperity', remains highly relevant (Whiteside, 2013, 203). As a climate fiction writer I drew upon the politics of Latourian thinking to find ways to express groundwater's political enmeshments. Hearing the conjoint expressions of groundwater's place in science and the law was limited in writing a novel in an Australian context, because water management law and policy here perceives groundwater as resource. Frankie's calls for a legal voice for groundwater could only be aspirational.

One of the tensions for me as both a fiction writer and a scholar was how to know groundwater myself and then how to express its vulnerability and potency through a fictional world. Its silence in most ecological debates often left me feeling that I had a 'protagonist', groundwater, who was reluctant to be heard, reluctant to find its place in the story. All the while, I was exploring different expressions for groundwater's agency and enmeshments. I use the plural here to imply the potential for various readings and 'hearings' of the narrative. As I found ways to give expression to underground waters, the transient nature of groundwater's existence prevailed.

The processes a writer goes through to find, discover, create or imagine authentic voices in a story is, according to Booker, similar to how a writer resolves the tension between the separation and connection of their conscious ego and their unconscious instinct (Booker 2004, p. 543). Cooperation of the persona (the outer public personality) and the anima (the soulful, or inner life) in the characters, as well as coherence in the places, the objects, the moods that writers imagine,

indicates the steps a writer goes through to develop an authenticity of voice, argues Booker (2004). The metaphorical conjunctions between Frankie's inner journey towards courage and connection, and groundwater's subterranean movements and impacts, were how I attempted to express authenticity in the story.

Bakhtin's view that a novel is necessarily 'double-voiced' and built on 'dialogism', where meaning comes from the context of the discourse, exposes the oppressions between public and private experiences for women (Bauer & McKinstry 1991). Through the circumstances of the characters in 'Why We Cry', I asked what happens when public and personal actions collide. Bauer and McKinstry (1991) argue that Bakhtin's concept of dialogism is a useful strategy for feminist novelists, because it brings what Bakhtin calls the 'authoritative voice', often assumed to be limited to the masculine, public voice, into dialogue with 'internally persuasive language', of women (Bauer & McKinstry 1991, pp. 2-4). Human and non-human characters in 'Why We Cry' create a polyphony of perspectives, another feminist strategy that recognises the many forms of oppression of women and articulations of women's strengths. Polyphonic voices of both humans and non-human entities provided a framework for the construction of the novel in this research. There is no singly correct 'voice' to tell a story; it is from the social heteroglossia of possibilities that the narrative emerged (Bakhtin 1981; Boulter 2007, p. 67). My decisions to draw parallel paths between Frankie's emergence as a character, and expressions of groundwater as both vulnerable and potent, remain partial and always open to readers' interpretations.

In my experiments with point of view and narrator's perspective, the limits of language in conveying meaning emerged (Brien 2006). I expand upon this point at greater length in Chapter Four, but for now mention briefly its connotations in relation to the decisions I made about narratorial voice. Maurice Blanchot led me to question the intrusions of an author, the voice speaking in the background, prompting characters and events with authority or complacency (Blanchot 1999, p. 460). He warns me of 'an authoritarian or complacent "I" still anchored in life and barging in without restraint' (1999). Blanchot says that 'the novelist is a person who refuses to say "I", but delegates that power to other people,' those 'little egos' who

speak for us (Blanchot 1999, p. 461). As a writer I go to the places where ‘all meaning and all lack of meaning is neutralised beforehand’ (Blanchot 1999, p. 459). My experience of the novel-writing process was indeed the diminution of the writer’s ego, as language struggled with its limitations, as my expressions of the tale became those of other beings and entities. According to Blanchot (1999), the quieter my authorial voice, the more clearly ‘characters’ – human and non-human – speak. The experiments and decisions I made in finding narrative point of view led me to consider the grounds on which the decisions were made on the voice, the points of view, the tones of dissent, the moods, in ‘Why We Cry’.

In various drafts, exploring perspectives from different narrator/s, I have come to understand the limits of language in conveying what the limits of our comprehensions might mean. In particular, in relation to affect and emotion, Pieter Vermeulen (2015) encapsulates ‘the restless interplay’ between writing of emotions and the ‘affects that inevitably escape them’ (Vermeulen 2015, pg. 9). I may consciously seek to engage readers though conveying fictional characters’ emotions, but the affect of my writing remains unruly, and beyond my comprehension and control. I discuss this in more detail in the next chapter.

Several writers speak of the difficulties with the novel genre as a form of ecological narrative, noting the problems of portraying the enormous inter-relational features of ecologically diverse and declining environments (Bradley 2017; Kostkowska 2013; Segal 2017; Trexler 2015). The shifting contexts of climate change both foreground and fragment my expressions of groundwater’s presence and affects. A disruption to a human-centred narrative form, by giving expression to ecological forces without proselytising, meant acknowledging my hegemonic authorial position. I aimed to disrupt the idea that women and material entities can and should be silenced (Kostkowska 2013). In writing a manuscript that gives expression to a collection of various relationships with groundwater, I attempted to blur the lines between beginnings and endings of the human lives and the ‘environment’, particularly groundwater. ‘Why We Cry’ explores how a fictional narratives might ‘model desirable ecological relationships and values indispensable to environmental change’ (Kostkowska 2013, pg. 4). At the same time

I approached my fiction writing wary of its inconclusiveness, its partiality, whatever point of view or voice I created. Bakhtin reminds us that: ‘since the novel is aware of the impossibility of full meaning, presence, it is free to exploit such a lack to its own hybridising purposes’ (Bakhtin 1981, p. xxxiii). It is as such a hybrid that ‘Why We Cry’ shoulders its task to embed and embody humans and more-than-humans in closely-knit situations (Kostkowska 2013; Abrams 1997).

The urge to write with groundwater’s voice continued to press to the surface, even after I had expunged the segments of groundwater’s ‘dialogue’ in first-person plural prose from the draft of the novel. Groundwater’s characteristics and effects were instead illuminated through Frankie’s dreams, or through conversations between characters – say, people at the pub, or between Frankie and Helen the hydrogeologist. I was drawn towards expressing Frankie’s ‘conversations’ with groundwater, in the manner that Angela Rawlings describes ‘conversations’ as metaphors for mutuality in human-to-landscape encounters (2016). A shared language comes from sensual materiality; that is, humans and more-than-humans are deemed to be capable of reading and writing the signs of the ‘semiosphere’ (Rawlings 2016, p. 268). However, groundwater gives few opportunities for sensual observations when it dwells underground. It is an imaginary conversation I have. Groundwater’s voice would come to me in sentences, scribbled on bedside booklets put there for the sake of not losing the semiconscious gems that arise from sleeplessness.

*As if I could talk. But if, if I could, it would be in deep growly grumbles, with solemn sibilance joining syllables. Lower tones than anything man-made, no explosive rumble can match the profundity of my breathless groans. The chasms in the depth of a lion’s call across the Mara, over grasslands as wide as the sky, might start to meet my calls. We are on the move, unsettled, on the prowl. We flow.*

Beyond these sentences about imaginary sounds, what does the middle-of-the-night author try to do with these inspirations? What am I trying to express in these nightly invocations of groundwater’s inarticulate sonnets – or is it somniferous in-articulation? Where would these voices end, stay, become inscribed in the novel I was writing? Through writing the novel I came to understand that I

am unable to fully represent the tones of groundwater as if they are possible, in the way that Nigel Thrift, and more vigorously Phillip Vannini, describe the impossibility of accurately representing the diversity of life-worlds (Thrift 2008; Vannini 2015). As a fiction writer I aim towards shining a light on what would otherwise not be considered (Boulter 2007; Dillard 1982a; Wood 2008). Writing a novel featuring groundwater meant considering a wide range of narrating options in relation to point of view and voice. The decisions I made were based on my interest to explore ways to express voices of a more-than-human entity, groundwater, so that the mutual performances between me as author and groundwater as subject of the inquiry were acknowledged. In a simple narrative style, to select limited-third-person, past-tense seemed constraining, as if I was again caught in the trap of failure in my effort to represent an outside entity (Vannini 2015). However, I stayed with this decision as I became more comfortable with my non-representational stance as a researcher, knowing that my task was more to illustrate the elusiveness of groundwater through the performativity of writing its unknowability, and to convey its relationality and affect, than to doggedly portray its characteristics (Vannini 2015, p. 16). I accept that my attempts in my fiction writing, 'Why We Cry' remain only one small step in a project larger than the scope of this dissertation.

Throughout the research process I presented discussions of my research in progress at several conferences, with a view to sharing the knowledge I was exploring.<sup>10</sup> I published scholarly papers which explored various aspects of my research in *Fusion Journal* (Charles Sturt University) and pending in *Animal Studies Journal* (University of Wollongong) and in *Mosaic Journal*, a literature journal from University of Manitoba, Canada. I saw these activities as part of the research process, refining and sharing my analysis of the role of fiction in expressing various aspects of groundwater's affect, its influence, its ways of being. I explore each of these findings further in this dissertation. Again, as for Brien, the more I wrote, edited, re-wrote, read, re-wrote, and spoke about my work, and wrote

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10. Land Dialogues Conference, Charles Sturt University; Great Writing Conference, London; and H2O Life and Death Conference at Adelaide University.



again, the more it became increasingly difficult to discern what part of the process was research and what was creative practice (Brien 2006, p. 58).

In the process of writing I have questioned my right to speak for an entity such as groundwater. What conflict of ethics do I meet as a fiction writer who gives voice to a range of human and non-human characters, voices that are not my own? I join an ongoing conversation on these dilemmas – an exchange that may be broken off and started again at a later time, a conversation that marks a passage within a longer-term creative trajectory (Carter 2015, p. 7). At the same time I take responsibility for my endeavours, for the political intent that drives the work. For me, writing self-conscious climate fiction in the Anthropocene cannot be ‘idle chatter’; I locate myself as ‘eco-prophetic witness’ to the potency of loss of groundwater, not only to disclose consequences of ecocidal human activities, but to find the means of expressions for our ongoing connectivity to groundwater’s potency (Rigby 2009, 2015). The narrative points of view of all my human and non-human characters contribute to these polyphonous possibilities.

### 3.4 Reader Feedback in the Writing Process

My decisions in the writing process to portray a protagonist with Turner Syndrome, and a key Aboriginal character, meant I was writing characters beyond my immediate experience. These human characters had the task of performing the inherent purpose in this research, which was to inform and empower future readers towards their own sense of agency and perhaps even action, through an empathetic understanding of groundwater. I did not want to ‘bang the reader over the head’ with political views about sustainability and activism. The research explored ‘a rhetoric of emotions as an authorial device’ as I aimed increasingly to establish a relationship between the fictional characters and the reader (Pence 2004, p. 274). I use the term ‘the reader’ on the understanding that each reader will come to any work of fiction with their own contexts, understandings and aspirations.

An important part of the writing process entailed seeking feedback from sensitivity readers. This enabled me to ascertain possible impacts of ‘Why We Cry’

and to respond to several key aspects of the narrative. A hydrogeologist confirmed the accuracy of the science; a water lawyer assisted me to clarify the legal processes portrayed by the character Bruce Landy; an Aboriginal reader guided my portrayal of Wade Keane, helping me understand the importance of how he speaks ‘on Country’, and how his familial and community relations impact his cultural connections; a person with Turner Syndrome gave me feedback on my portrayal of the experiences of living with the condition. Taking responsibility for how to incorporate feedback from early readers was an important part of the writing decisions I made about the human characters in the story.

I asked myself regularly, ‘why does Frankie live with Turner Syndrome’? It is not a condition I live with. I risked failing in portraying something beyond my experience. That though is the risk of fiction (Bird 2013; Brophy 2003; Dooley 2010). From the outset, I didn’t want to write a middle-class, educated, articulate protagonist because I wanted to emphasise the difficulty of the protagonist’s journey towards finding her public voice. My decision to give Frankie the particular features of Turner Syndrome meant she was not easily stereotyped. She had her own unique pathway. Her physical characteristics, which meant she was nicknamed Froggie, allowed me to emphasise the play between human and non-human animals. That both she and Kasha Duff are infertile, for different reasons, drew a connection with water loss. Water is often a symbol of fertility and to have two infertile characters struggling in different ways about water loss allowed a symbolic reference to the potency of water (Archer 2008; Neimanis 2013).

How to give expression to an Indigenous voice was a significant challenge. To write about human relationships to groundwater in an Australian context meant including an Indigenous viewpoint. To not convey any Indigenous characters or viewpoints remained for me the greater sin of omission, which I veered away from. As a white, middle-class woman the decision to portray a young male Indigenous character was fraught with the susceptibility of white privilege, and/or ignorance (Sheldon-Collins & Heiss 2014). It is not my place to present the direct voice, or

even a close third-person voice, of an Indigenous character (Leane 2018).<sup>11</sup> Even as readers see Wade through Frankie's eyes, I risk telling somebody else's story (Wright 2016). My aim was to write authentically and respectfully, without being patronising or falling into a myriad of colonial traps, the greatest being my own misinformation and unrecognised racism. As a privileged white occupant of this country I have respectfully learned what I can of Aboriginal understandings, recognising at the same time that a major part of my task as a writer is to acknowledge and bear witness to the 'grief, anxiety and turmoil close to the surface' of much Aboriginal experience (Pearson & Morris 2017). What would be the most appropriate ways to write 'meaningful, believable and (hopefully) empowering Indigenous characters', to avoid tokenism (Sheldon-Collins & Heiss 2014)? Wade Keane, the Indigenous character who becomes a close friend and confidant to Frankie Pankhurst, embodied for me an important viewpoint, one that positively influenced the novel's expressions of groundwater's potency.

My nervousness to 'get it right', as Anita Heiss says, was almost paralysing (Sheldon-Collins & Heiss 2014). I initially looked to established Indigenous fiction and non-fiction authors for models of how to approach the task of writing a fictional Indigenous character and Aboriginal relationships to groundwater (Birch 2015, 2016; Lucashenko 2013; Moggridge 2010; Scott 2017; Wright 2013). However, copying Aboriginality was clearly not my prerogative. My specific authorial perspective made it important for me to look towards other white writers' depictions of Aboriginality. I had to let Wade Keane speak his own story, his own connections to groundwater.

I was conscious of following the lead being powerfully expressed in Australian Aboriginal literature, which asks creative expression of Aboriginality to refer to proper protocols, and to enter into respectful exchange with Indigenous community members (Wheeler 2013). I researched the local Indigenous organisation, the Dja Dja Wurung Clans Aboriginal Corporation online, and

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11. In an interview with Jeanine Leane, she referred to her conversation with Melissa Lucashenko at the 2018 Emerging Writers' Conference event 'Re-Writing Country' where this point was raised. <http://www.emergingwritersfestival.org.au/event/rewriting-country/>

contacted them for permission to represent the fictional cooperative with an Aboriginal word from this region. To this end, through the processes of completing relevant forms, I obtained permission to use an Indigenous word, *yaluk* for the name of the fictional organisation in the novel – Yaluk Cooperative. The word *yaluk* means creek or river. I found several publicly accessible, relevant Indigenous stories that Wade could narrate, even though they did not come directly from his Country. White writers' appropriation of Indigenous culture through the use of Indigenous words and stories has been a problem that takes away Aboriginal ownership of their own sovereignty and resistance (Wright 2016, pp. 60-1). I was wary of this risk, and consulted with Aboriginal sensitivity readers in my efforts to 'get it right'.

I requested help in finding Indigenous readers of the draft novel from the Dja Dja Wurung Clans Aboriginal Corporation, from Jimbeyer Boondjhil Indigenous Student Services at La Trobe University, and from Indigenous academic, Jeanine Leane. I knew that I needed at least one sensitivity reader from the Indigenous community to ensure that I had written respectfully and legitimately about what might be Wade's experience. Feedback from these readers included using correct names for characters' clans, and ensuring that the Tiddilick story could be told on Dja Dja Wurung Country, as has been incorporated into the creative fiction. 'Why We Cry' is not directly about a reconciliation process between Indigenous and white settlers, but I acknowledge that the narrative sits within this wider framework of recognition and reconciliation that eludes much of the relationship between First Nation and settler Australians (Pearson & Morris 2017).

My decision to describe Wade Keane and the Yaluk Cooperative as the instigators of the victory in the fictionalised Victorian Civil and Administrative Tribunal (VCAT) case, stealing the success from Frankie and Lois and the Save Our Groundwater members, came from my interest to depict an example of Indigenous voices being heard. Following Tony Birch's thoughts, and other Indigenous writers, there could not be unity of perspective, rather the connections between Frankie and Wade contributed to the successful actions of these characters (Birch 2016; Sheldon-Collins & Heiss 2014). The Yaluk Cooperative's successful appeal to

VCAT to revoke Kasha Duff's groundwater licence is a victory yet to be enacted in the real world. It is a victory I imagine, and hope for in future contests. As a white woman, writing an Indigenous experience in the story was fraught. The risks of appropriation were heavy on my shoulders. At a time when Indigenous sensitivity to not being heard in public debates is for good reason palpably strong it was important to me to enable groundwater's voice to be heard through a strong and resilient Aboriginal presence in the story.<sup>12</sup>

This chapter has outlined some of the writing processes that emerged from my decisions to write climate fiction. Not every aspect of the process is explicated. The analogy of the limits to Darcy's Law, the idea that water flow can only in part be represented mathematically remains pertinent. The long-term effects of the Anthropocene are still unravelling towards an unknown future, where the possibilities and decisions to be taken are partially out of human hands. Clive Hamilton (2017) argues that the enormous planetary or Earth system forces of the Anthropocene, and I include the actions of groundwater in these planetary forces, have the potential to determine human moral development. For survival the human species will be required to practice greater moral and social responsibility than ever, rather than greed (Hamilton 2017). By facing the potential loss of their community through the loss of groundwater, most of the human characters in 'Why We Cry' made the choice to hear what Hamilton calls 'the gift of scientific understanding' (Hamilton 2017, p. 151). Through structuring the fictional writing to illustrate the human, the more-than-human and the community agency that can emerge from the threat of water loss, and exercising a narrative voice that enabled an expression of the enmeshment of human and non-human lives, some elements of the immeasurable stream of the writing process are exposed. From this point I next turn to discuss in more detail the more deep-seated considerations, the underlying

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12. Indigenous Australians were invited to make comment on Constitutional recognition and representatives from across the land and composed the Uluru Statement from the Heart. It was ignored by the Turnbull government in October 2017, marking another example of the silencing of Indigenous voice (Grattan, 2017).

findings of this thesis: ways of knowing and representing groundwater, and ways of writing affect in climate fiction.

## CHAPTER 4: SPRINGS

### Emergences from the Writing Practice

Having outlined the methodology and theoretical underpinnings to my investigations, and scrutinised selected aspects of the writing process, I now give detailed attention to three main propositions I found through the fiction writing and the scholarly research process. Springs are where groundwater emerges, sometimes known as liquid gold, or Adam's ale, where the water seeps, bubbles or spouts to the surface under artesian pressure. This chapter examines what has emerged from my research, or where findings come to the surface. It is divided into three main sections:

1. Ways of knowing groundwater in the Anthropocene - Flux;
2. Ways of storying groundwater: from place and nature writing to non-representation in posthuman climate fiction - Permeability; and
3. Ways of writing affect in climate fiction - Porosity.

These three emergences are necessarily interrelated. Conceptualising the ways groundwater has impacts and affects is embedded in how humans might know and represent such a body of matter. I investigate how groundwater as a hyperobject might be performed through fictional narrative. This chapter analyses how a writer might come to know and make affective meaning of subterranean waters within the context of anthropogenic climate change.

'Why We Cry' joins the proliferating voices of climate fiction writers seeking to put into narrative form the effects and affects of global warming, and the subsequent array of ecological and meteorological disasters (Fetherston 2016; Sussex 2018; Trexler 2015). I write this thesis with questions about how to write

stories *with* subjects that are viscous, non-local, invisible and intra-active, yet understood extensively through science. Groundwater is a material entity, a real thing, occupying subterranean places that harbour many ways to understand its meanings and representations. In this chapter I interrogate ways that storying affect with groundwater has the potential to express groundwater's agential capacities. I discuss the well-spring of ideas that comprise my findings, the discoveries from which I claim the affective storying potential that is produced in this creative practice research.

#### 4.1 Ways of Knowing Groundwater in the Anthropocene – Flux

In this section I analyse the challenges of a climate fiction writer's relation to scientific knowledge. I use the term *ways of knowing* to mean how climate fiction writers might know of the 'things' they are writing of, as well as what might become known through the writing. Through my writing practice an understanding of 'matter' through the use of words illustrates how people and things are tangled and embedded (Felski 2008, p. 86). What epistemological shifts do climate fiction writers need to make as we think about responses to scientific knowledge about global warming? Science has often been the topic of literature, and writers increasingly turn to science for knowledge (Segal 2017; Sleight 2011). At the same time, the stories we create contribute to knowledge (Sleight 2011, pp. 4-5). My writing explores how embedding facts and expressing an author's witnessing of features of the world into narrative are compatible endeavours (Sleight 2011, p. 18). Fiction writers may have problems with the claims of certainty in the science of climate change (Baucom & Omelsky 2017; Buell 2001). However, in the same breath, climate fiction needs science to make credible descriptions of the world (Segal 2017; Trexler 2015). It is also argued that climate scientists need the arts, as a way to widen perceptions and knowledges of the effects and the affects of climate change (Baucom & Omelsky 2017; Sleight 2011; Thomashow 2002). The productive relationship between climate change sciences and climate fiction is particularly important in the current context of escalating effects of climate change.



How the science of hydrogeology stands up to the task of storying groundwater is explored in this context.

‘Why We Cry’ and this dissertation occupies the zone between literature and science with the aim of showing the important relationship between these forms of presenting knowledge (Sleigh 2011). In one breath I draw upon scientific knowledge about groundwater, and then in the next my fiction is critical of science’s claims for overarching knowledge (Buell, Heise & Thornber 2011, p. 422). I rely on the knowledge of hydrogeologists to re-present features of groundwater for readers. At the same time I have written characters who are sceptical of the role of science and engineering in the creation of groundwater’s vulnerable plight.

How a writer expresses knowledge about their subject is affected both by the impinging resistances of material realities and by the diverse cultural fluctuations in how literature makes sense of the world (Felski 2008, p. 86). ‘Why We Cry’ aims to present knowledge in ways that build the affective responses of readers. Through building empathy and connectivity with groundwater’s intra-activities with multiple surrounding entities, including humans, ‘Why We Cry’ aims to show how scientific knowledge and literary knowledge not only co-exist, but together build potentially mutually reinforcing understandings of groundwater’s potency and vulnerability.

Knowing the facts and the uncertainty of groundwater science meant exploring ways to include groundwater’s forces and actions in narrative form. What ideas about groundwater could build its narrative authority? Reading hydrogeology texts and journal articles, and conversations with practicing hydrogeologists, meant a steep learning curve about scientific knowledge of groundwater. Hydrogeologists make many graphical and pictorial representations of groundwater based on data collected from monitoring groundwater flows through physical bores and from geological modelling. They use mathematical formulas to develop models of groundwater’s volumes, locations and flows. They produce ubiquitous line drawings. Figure 1, below, is one of numerous cross-sections of landscapes, representing the movement of water from the surface, through unsaturated zones to

zones of saturation in sub-surface aquifers. How we ‘represent’ things influences what we might know about them.

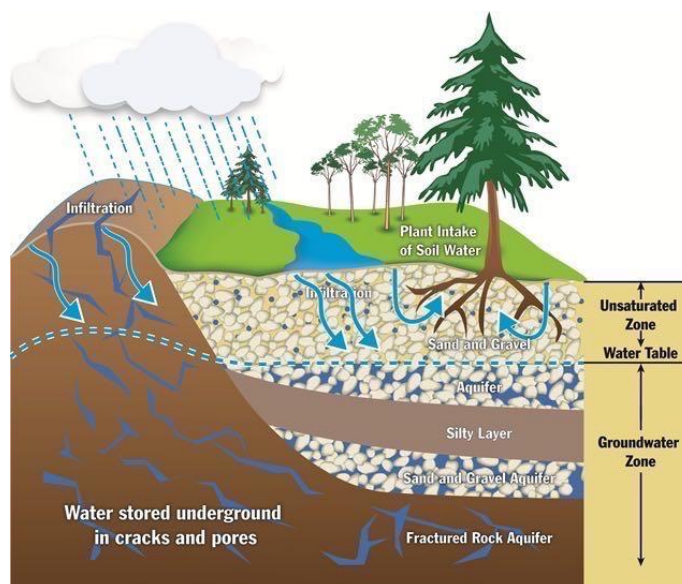


Figure 1: Landscape cross-section, surface waters and groundwater zone (from Natural Resources Canada: <https://microbewiki.kenyon.edu/index.php/Groundwater>)

Hydrogeological representations of groundwater as finite bodies of water, such as in Figure 1, are founded on discourses of the Enlightenment and a Cartesian, binary way of thinking, which assumes that through empirical science, humans can know an objective, outside world. Such representations imply that groundwater is comprised of confined and manageable zones, as if their capacity to sustain stygofauna, and carry nutrients and pollutants at great depths, can be sketched with lines. In comparison, in storying with groundwater the uncertainties and partiality of what I may express are blurrier than lines on paper.

Modernity’s and science’s confidence in a Cartesian way of knowing a world exterior to human beings’ perspectives, and the assumption that it can be measured and objectively described, has been unsettled by feminist and posthumanist critiques. Critical viewpoints initially argued for the power of language to construct reality. Feminists added that language was inherently controlled by patriarchy, meaning that language is itself steeped in structures and

practices that privilege men and masculinity (Irigaray 2002; Irigaray & Oberle 1985). Feminists have continued to question how knowledge is created. Feminist explorations of the posthuman turn provide a view of human–nonhuman relations that takes account of gender and female agency (Braidotti 2013). Feminist materialism has illuminated the materiality and relationality of the human body and the natural world (Alaimo & Hekman 2008; Coole & Frost 2010; Neimanis 2013). Second-wave eco-feminists had previously argued to have the material world taken seriously, as well as illuminating the discriminating, misogynist elements of patriarchal culture. Within binary approaches to nature/culture, women were often associated with the natural world, another ‘thing’ for men to control, and over which to exercise mastery. In writing a strong female protagonist, I was wary of the problems in essentialising women’s experience, of assuming that women belong more naturally to ‘nature’. I wanted to portray Frankie’s connections to frogs and groundwater in ways that did not maintain women’s separation from cultural privilege. Leaning heavily on the strong tradition of Australian eco-feminist thinking, my writing of ‘Why We Cry’ was illuminated by several key feminist principles: linking global issues with local ecologies, expounding the personal as political, and shifting from a gender-blind posthumanism to an acknowledgement of my protagonist’s contribution as a feminist activist (Rigby 2018; Stevens, Varney & Tait 2018). Taking the posthuman turn did not mean ignoring the effects of gender in Frankie’s learning about groundwater.

As Bruno Latour and Steve Woolgar’s study *Laboratory Life* (1986) illustrates, the distinction between the social study of scientific method and the study of science knowledge, or the objects of the study, is important (Latour & Woolgar 1986, p. 277). Through my work of fiction I did not have the scope to question in depth the ‘craft character of science’, though characters in the novel take up themes from this wider debate and present them to the reader (Latour & Woolgar 1986, p. 277). For example, Frankie’s conversations with Helen Mack, the hydrogeologist, in Chapter Eight, turn from matters of hydrogeology to questions of the philosophy of knowledge. Frankie wants to understand how science can claim to know things without adding the contextual aspects of human and non-

human experiences. The issue is not resolved. Helen sticks to science, Frankie continues to learn the obfuscations of knowledge silos. Hydrogeological knowledge opened a doorway to give voice to the fictionalised hydrogeologist, Helen Mack, in the story, and gave her verifiable information to convey. It supported my mission to write about groundwater accurately, as closely as is currently known in science. Some readers are happy to glean facts, others will question them (Latour & Woolgar 1986, p. 283). The monster of fallibility is always applicable, even in the most rigorous of scientific processes, and in the processes of writing literature (Coetzee 2004; Latour & Woolgar 1986). How readers come to see, hear or sense in any way the world's expressions becomes the affective way of knowing that I explored in my fiction writing.

I continued to learn aspects of groundwater's chemistry, biology, flow and ecological context throughout the writing process. It was not only the language of hydrogeology that populated my work. Chemistry taught me that water is not simply H<sub>2</sub>O in stasis. There are H<sub>2</sub> molecules and separate hydrogen and oxygen atoms floating, merging, becoming H<sub>2</sub>O, splitting, and becoming H<sub>2</sub>O again. Water is itself 'matter' constantly in the state of becoming. In my storying with groundwater, I came to perceive how groundwater becomes the fluid interstitial space, the go-between. My writing attempted to question didactic representation of groundwater's movements. Art, music and writing may attempt to be imitative, but not necessarily usefully so, argue Deleuze and Guattari (1988). Rhizomatic becoming was a way to view groundwater in its various international states (Deleuze & Guattari 1988, pp. 300-5). Groundwater is always in a state of becoming – becoming itself in an aquifer or becoming another part of the water cycle as it moves, either infinitesimally slowly through sandstones, or with force through large crevices and caves. When groundwater emerges at the surface it may eventually evaporate, to form clouds, and eventually rain back upon the earth's surface and perhaps percolate deeply back into an aquifer. Shifting away from the idea that writing realist fiction is necessarily imitative or mimetic influenced the ways I could tackle writing about something I could not see nor touch. In this way, becoming, or enabling a line of written expression to become something else in the

mind of the reader, is what inspired the writing process. I aimed for my writing to become, to deterritorialise or shift meaning in contexts (Deleuze & Guattari 1988; Heise 2008).

Groundwater became the ‘between’: between itself and me, the writer, and the reader. Groundwater is the connective fluid between space and geological matter. As atomic matter, two hydrogens bound to and unbound from oxygen atoms, plus all the salts and minerals it captures and contains, moves and deposits, water is becoming. When it is written in narrative form, likewise it is always between and becoming (Bogue 2010). Groundwater reserves are rarely static, rather they are constantly somewhere between recharge and discharge, always becoming something different as they come under the forces of gravity, move to lower places, influenced by the forces of geological pressures and the chemistry of the rocks through which they move. Groundwater is a place of flux – taking several meanings of the word. It is liquidity, fluidity. It is change and permutation. It is flow and movement.

The water table fluctuates as various forms of recharge (the seeping of rain or water from lakes, creeks and rivers into aquifers) interact with the plethora of discharge activities, such as natural springs, movement of groundwater back into lakes, creeks and rivers, and the various man-made devices for pumping water from aquifers. Flux in formal hydrogeology is a unit of measure revealed by Darcy’s Law – the flow of water in a unit of area, measured in distance over time. Flux, sometimes known as hydraulic conductivity, is more than the rate of flow, because it takes account of the volume of the area through which the flow occurs, and the effects of time, gravity, and hydraulic head or pressure on the flow (Fitts 2013, pp. 49-52). In my research I considered flux, the ways that groundwater is in constant three-dimensional movement in relation to its surroundings, as an analogy to the writing process. Analysing questions about the nature of matter and human beings’ relations to the slippery slide of what constitutes ‘things’ in the material, globally warming world helped me understand that we can know the world through its expressions (Massumi 2001). Ideas around ‘becoming’ guided my decisions to express groundwater as a hyperobject.

#### 4.1.1 Understanding Groundwater as a Posthuman Hyperobject

Questions of how to make knowledge in the Anthropocene, and thinking about the meaning of the multiple effects of climate change, has been an interdisciplinary concern over recent decades, bringing together material sciences with the humanities and social sciences (Baucom & Omelsky 2017). Thinkers and writers under various banners, including new materialism, posthumanism, and throughout a long genealogy of feminist studies, have critiqued the limits of binary, gender-blind and human-centred thinking. Multidisciplinarity has chipped at Western thought's bondage to Cartesian dualisms with debateable effects. The destructive trajectory of environmental damage wrought by the effects of industrialisation, capitalism and subsequent carbon emissions fuelling global warming have affected efforts to think with ethical and political agendas (Buell 2005; Chakrabarty 2009). In this context, I next consider how understandings of large and invisible bodies of matter contributed to my attempts as a climate fiction writer to create knowledge. Later, I apply these ideas to the debates about what constitutes realism in fictional writing and how affects and emotions emerge from what we know.

Groundwater may at first be invisible to humans, but it is real, it is matter, with significant consequence. My fiction aims to portray the material forces of groundwater, and what Jane Bennett calls 'the energy of matter', its vital intensities in action (Bennett 2010, pp. 55-6). The self-organising properties of groundwater are here expressed through a creative form. In 'Why We Cry' the political and agential qualities of groundwater emerged and contributed to the making of its meaning through fictional narrative. While climate change may initially have been an 'unintended consequence of human actions', the 'commonly shared bond of vulnerability', both between humans and non-human species, and between humans and larger environmental entities, became the fodder for my creative writing (Braidotti 2013, p. 111). Neimanis calls attention to how we live as 'bodies in common', as bodies of water with shared futures to negotiate (Neimanis 2017, p. 12). I put characters in places where various negotiations with groundwater, its

meaning and its materiality, become critical. For example, in the scene in Chapter Four where Frankie, Lizard, Betty and Wade talk about groundwater in the break from choir practice, each character flags groundwater's different meanings. The horse Bob's death in the very first chapter illustrates the life and death consequences of groundwater loss. The material meaning and the implicit 'storied matter' of the receding aquifer is established from the outset (Iovino and Oppermann 2014, p. 7).

My efforts to make meaning from groundwater through climate fiction writing were influenced by eco-philosopher Timothy Morton's notion of hyperobject, which gave me a means to think about groundwater's scale, its ecological relationships and movements, and groundwater's responses to anthropogenic climate change. Morton's five characteristics of hyperobjects provided a framework for me to contextualise ideas about groundwater's presence in narrative form (Morton 2013). While hyperobjectivity was a useful concept, I also came to question whether Morton's retention of the term 'object' suited my efforts to blur the oppositional subjectivity/objectivity of groundwater through storying. Nevertheless, the concept of hyperobject enabled me to interrogate groundwater as not merely a fixed 'object', or 'vibrant matter', but as something larger, something with inter-relational entanglements across the globe (Morton 2013).

Morton predominantly applies the concept of hyperobject to understand the realities and ramifications of global warming. I applied the idea of hyperobject as a conceptual tool, as a way of thinking with groundwater in reality, over large time periods. I interwove his notion of hyperobject with ideas about how to make a story with groundwater. Groundwater, as a hyperobject occupies multiple spaces, multiple relationships, with movement over ancient timeframes.

Morton bases the concept of hyperobject on a philosophy that rejects the primacy of human reason over experience. Thinking about hyperobjects starts with an acceptance that any separation between humans and non-humans has been truly dismantled. We are all in the soup together, from minuscule to enormous. Morton's hyperobjects enable a way of thinking that can cope with world-wide phenomena and 'massively distributed entities that can be thought and computed, but not seen

or touched' (Morton 2013a, p. 37). Morton argues that by thinking outside the human, 'every entity renders the real in some sense according to its physical form and structure' (2013a, p. 38). Raindrops to oceans, mice to orangutans, bacteria to viruses, all render their reality with their own agency in the time of global warming, according to Morton. Despite my hesitancy to write of groundwater as a separate 'object', I propose similarly that groundwater's presence can be rendered through fiction by teasing out the five inter-related qualities Morton ascribes to hyperobjects – viscosity, non-locality, temporal undulation, phasing, and finally their interobjectivity.

Considering the viscosity of hyperobjects means considering the stickiness of things, that objects are there in their vital beingness (Bennett 2010). Thinking of the non-locality of groundwater also rings true with the disparate spread of aquifers around the globe. 'Hyperobjects cannot be localized' (Morton 2013a, 40). Morton uses the analogy of swimming in a pool, the 'everywhereness' of the water in the pool in relation to our independent bodies, and how each affects the other. Our bodies produce ripples and diffraction patterns of light in the water, and the water causes our skin to cool, to goose-bump and wrinkle if we stay in long enough (Morton 2013a, pp. 41-2). Similarly, I cannot think of groundwater as one place. It is in many places, an entity without a locale. When hydrogeologists map groundwaters' localities, and draw arrows to represent its movements, it is tempting to forget that these are merely blurry estimations of place. As Frankie says to Helen, 'Subterranean worlds can hardly be expressed in lines'. Like hyperobjects, aquifers 'are shared by numerous entities in a common sensual place' (Morton, 2013, 40-41). I think of people soaking in hot springs, perhaps alongside extraordinary biota. Groundwater might be known as a shared space, 'a vast non-local configuration space' that Morton calls 'the mesh' (Morton 2013a, pp. 40-1). These viscous, non-local qualities of groundwater seeped into my storying.

Groundwater can be perceived as multi-aged. Imagine the first minutes water seeps into saturated sub-soils, and at the same time in deeper realms, the same aquifer may be thousands of years old, having flowed slower than imaginable through sponged crevices. This sits with Morton's notions of temporal undulation,



or molten temporality. ‘Any massive object distorts time-space’ (Morton 2013a, p. 40). Morton also describes hyperobjects as ‘phased’; they seem to come and go, like the seasons, and are partly invisible to humans. They are part of larger structures, multi-dimensional systems. Groundwater heaves under the influence of the moon, flows with the forces of gravity, and is squeezed by geologic pressures through incomprehensible timeframes. Yet, Morton explains, hyperobjects continue to unfold elsewhere, when we look (Morton 2013a, p. 40). Groundwater may emerge with its own volition, its own pressure system, as a spring in one place, and elsewhere the same aquifer will be low and subtle, reluctant to be drawn to the surface, other than with the forces of deep centrifugal pumps. The coming and the going means we humans are unable to see or hear the phasing, the full extent of groundwater’s multidimensionality. We may see small ‘indexes’ of the whole, the index, like the list in the back of a book, indicating the parts of the hyperobject we can focus on. A flock of birds on a wetland swamp may not be just that, but an indexical sign of global warming, an index, cross-referenced to the receding subterranean water below the ducks, and to the water that emerges at another time and place.

Interobjectivity is Morton’s fifth quality of *hyperobjects* (Morton 2013, 2013a). He describes interobjective reality as a sum total of all the ‘footsteps’ of many objects stepping into each other over time; it is therefore necessarily non-local. A dinosaur’s footprint in mud becomes a hole in a rock seen by humans sixty-five million years later, creating a sensuous connection between the dinosaur, the rock and the human, despite their different time-scales (2013a, 41). Thinking of groundwater as hyperobject clarified my considerations of what is meant by object, spaces and time. Understanding hyperobjects as both things and relations, in the process of phasing, where we may see only glimpses of their relational effects, enabled me to think about how language might perform the presence and actions of groundwater in my fiction (Morton 2013, p. 73). I next consider how this way of ascribing meaning to groundwater’s narrative potency negotiates problems of representation. Ecomimesis, or environmental art that wants to have it both ways, ‘to be predictable and mysterious’, to be factual and imaginative at the same time,

raises dilemmas for how climate fiction writers might portray features of climate change (Morton, 2007, pg193). Interrogating the possibilities for storying matter through climate fiction pushed me into posthuman territory.

## 4.2 Ways of Storying Groundwater: From Place and Nature Writing to Non-Representation in Posthuman Climate Fiction – Permeability

Here I examine the politics of representation in fictional expressions of materiality, in particular how big things, or places, or forces, such as groundwater, can be storyed in climate fiction. One of the tasks of the novelist is to reveal the differences between shady reality and shaky attempts at representation (Mulhall 2009). Epistemological critiques of representation in nature writing, including feminist critiques of gender-blind writing, affected my decisions about how to story with groundwater. A representational paradigm in science and literature may face problems in assuming binary separations between nature and culture, body and mind, human and more-than-human, rationality and affect. I explore here how overcoming the limits of mimetic representation led me towards posthuman, non-representational thinkers, and from these ideas to my attempts to convey the enmeshed meanings and narrative potential of groundwater in the human and non-human lives in ‘Why We Cry’.

Water’s flows across and through landscapes are almost always multidimensional. Groundwater moves in not only one, two or three directions, but is pulled by gravity across complex underground plumes that are difficult to decipher, measure, or model. Gravitational, centrifugal and lunar forces pull groundwater in multiple pulses over time in its journeys from highland recharge areas toward lower points in the landscape, through variously permeable rocks and strata. It heads eventually toward the oceans. A myriad of geological and chemical factors determine its spread, the shape of the plume, the rate of movement and flow (Currell, Gleeson & Dalhouse 2016; Dalhouse et al. 2014). In addition to its complex flow patterns, groundwater also holds multiple meanings and influences

in its ecological interactions and more recently in its increasingly potent place in the lives of humans. These features of geological permeability form a backdrop to how I account for the problems of representation I encountered in this research. I argue for a permeable exchange between the parameters of realist fiction and non-representational, posthuman perspectives. Negotiating how to write climate fiction within the context of non-representational thinking had me considering my permeability as a writer, and the myriad of influences seeping into the text.

In my explorations of how to give groundwater fictional expression, I initially explored considerations of place and space. Writing ‘place’ is an essential technique in the world making of novel writing and has been important in Anglophone writing concerned with conservation and climate change (Trexler 2015, p. 75). The ‘place’ of a hyperobject, though, is ever changing. Understanding human enmeshment with the more-than-human through consideration of place appears to be of increasing importance as industrialisation and urbanisation separate humans from ‘natural’ environments. How to express the lamentations of places as a result of anthropogenic damage was an important thread to my writing in ‘Why We Cry’. In this section I explore the problems that emerge when a writer assumes that mimetic representations conflates place in writing about nature.

Although places are not things in any singular sense, they are some kind of entity or occasion; they are not nothing (Auge 1995; Bon 2016). Places are physical, not abstract, and have meaning and value ascribed to them (Buell 2005). Place is ‘inseparable from the concrete region in which it is found’ (Casey, quoted in Buell 2005, p. 63). Place might also be defined by individual emotions and social bonds to a place (Trexler 2015, pp. 75-6). The idea of place being necessarily fixed and stable is undone when place is perceived as time-space configurations made up of many encounters between ‘actants’ (people and things) (Agnew 2011; Massey 1994). Science tells us that groundwater flows are constantly changing over time, affected by the pull of the moon, gravity, recharge rates, and increasingly by unsustainable extraction rates. Rather than a fixed place, groundwater had to be conveyed as interactive and performing over variable time frames.

In finding ways to express the changing nature of groundwater's hyperobjectivity across bio-regions I decided to consider ideas around its invisibility to humans. A place also includes the invisible things gathered there: invisible because, like a bird beyond the next hill or the water moving in the aquifer, it remains out of sight; invisible because, like a microscopic organism, it is too small to make out with the naked eye; invisible because, like the air itself or infrared light, it is imperceptible to our eyes (Tredinnick 2005, p. 15). In 'Why We Cry' the invisibility of groundwater, the imperceptible orogenic folding of the earth's crust, the obscurity of subterranean erosion, sits beside the unseen interplay of atoms within the cells of an old eucalypt that can only survive with its roots connected to underground water, or perhaps the swift flicker of a thornbill that drinks from a remnant pool fed by groundwater. All became part of the invisible places (Carter 1996, pp. 13-4). Wary of the limits of my anthropocentric viewpoint, I exercised 'ecological imagination' to evoke subterranean places otherwise unbeknown to humans (Tredinnick 2005). The invisibility and silence of groundwater meant I included its various subterranean dwelling places in my consciousness (Plumwood 2008). Groundwater became not just a series of places, but as a hyperobject I imagined its links to a wider world, its integrations between local and global effects, its sticky articulations with multiple species and geologic processes. Such complexities of place are part of creating an embedded universe in the fictional world, in which characters, both human and more-than-human, are embodied (Mulhall 2009). Storying 'with', as a strategy for climate fiction writers, resonated with Deborah Bird Rose's notions of 'poetics of fit' and 'arts of flow', which illustrate the communicative interplay of Indigenous stories with movements of peoples and waters (Rose, 2014). Climate fiction writers are asked to put themselves bodily into large and changing places, hyperobjective places, and to story the flows and currents of the interactions. As a non-Indigenous writer this is my challenge.

Space and time have pre-occupied philosophy and science since Aristotle and Plato (Genette 1980; Schaeffer 2010). Immanuel Kant's revelation that we can only know place through our bodies resonated for my writing. 'The most intimate

as well as the most consequential inroad to place is through the body' (Kant in Casey 1997, p. 251). 'To be is to be in place – bodily', or as Casey says, 'at least bodily' (Casey 1997, p. 399). Imagining groundwater as a place instigated my early writing, even though it is not a place I can bodily occupy. I started exploring how I might write subterranean places that give possibilities for showing how bodies and places are related. Luce Irigaray (2002) animates a gendered approach to this ancient question, 'How are body and place related?' She writes female body as place, as cause. 'It will be a place for man and woman to *be* rather than for man alone to *have*' (Irigaray 2002, p. 386). The scenes where Frankie spends time in the mineshaft, which had possibly also been used as a well, became my attempt to fictionalise this bodily and relational writing of place. Despite Frankie's physical proximity to an underground place, her oneiric imaginings of groundwater were the means I employed to give meaning to groundwater, and hint towards their intra-relationality.

Place-based literature and nature writing has historically had a role in providing impetus to link humans to 'the natural world', and provided descriptions of relationships between places and people, at times as a means to identity formation (Buell 2005). Nature writing, even with its problem of external subject, is not only about nature; it is also about the human experience of nature – it is about our awareness of our place in the environment (Tredinnick 2005, p. 25). Nature writers might try to set aside this primacy of humankind, but at the same time paradoxically as writers they remain deeply concerned with expressing their own interiority, their own 'fates' in connection to the places they enter (Tredinnick 2005, p. 25). At first I thought of groundwater as a place – when I considered it in a spring, in the confines of an aquifer, in a place I could imagine. But as a deep subterranean entity moving and ever becoming something else, groundwater as a posthuman hyperobject was no longer place-like, no longer fixed.

American classics include Ralph Waldo Emerson's transcendentalist essay 'Nature' (1836) and *Waldon* (first published 1854) by Henry David Thoreau, which stand as pillars in this genre, serving to focus attention on 'man's' connection to, or indeed the increasing disconnection from, the natural world during the nineteenth

century and early twentieth century. Nature, however it may be defined, has never been silent about human violence at its expense. Nature has always ‘spoken’, made its representations to humans (Carter 2015). What we ‘hear’ is becoming more and more important in the context of global warming. ‘Why We Cry’ places the potency and affective nature of groundwater as the central force to the fiction.

More recent versions of ‘nature writing’ consider many things ‘from nature’s point of view – politics, aesthetics, language, authorship, morality, culture, humanity... It takes an ecological view of all things’ (Tredinnick 2005, p. 25). Yet an ecocritical literature of place in which the ‘Australian geographies sing’ remains rare (Tredinnick 2005, p. 9) for several significant reasons, starting with historical factors.

The history of Australian nature writing is not well known, but has a similar, predominantly masculine trajectory to its American counterpart, with the added blindness to Indigenous presence setting a pattern that persists (Griffiths 2018). The colonial vision of landscape as backdrop to pioneering activities is reflected in much historic Australian nature writing.<sup>13</sup> Much nature writing by white Australians remains problematic as awareness of the tragic theft of and damage to Aboriginal lands and culture remains predominantly unacknowledged (Griffiths 2018; Rose 2005). My fictional expressions of ‘ecological imagination’ were bound to be ‘contingent and uneasy’ because I am associated with the recent white invaders, settlers of this land (Tredinnick 2005, p. 8). Settler understandings of Australian landscapes are inherently unsettled, easily undermined by questions of colonial inheritance (Robinson 2012). Like Tredinnick and Robinson, I am uneasy to claim belonging to Country.

In an Australian context the term *Country* unambiguously includes references to Indigenous peoples’ belonging and inhabitation (Bowman 2015) It

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13. Donald McDonald’s children’s book *Bush Boys Book* and the following series are examples of early Australian nature writing. Elynne Mitchell, of *Silver Brumby* fame, wrote two adult nature books: *Speak to the Earth* (1945) and *Soil and Civilisation* (1946). Both argue for a land ethic in eloquent nostalgia for white settlers’ pioneering spirit, making invisible the long Indigenous ownership of the Upper Murray county where she wrote.

starts with an understanding of Aboriginal stewardship, ‘kinship to place, and practical reverence for a particular geography’ in ways that the term *land* does not (Tredinnick 2005, p. 8). From an Indigenous perspective of Country a silent landscape is implausible, as much Indigenous cultural lore and ancestral beliefs are strongly linked with land and water (Strang 2013, p. 189).<sup>14</sup> Australian Aborigines’ connections to cultural waters are significant in understanding such stewardship (Moggridge 2010). Aboriginal connections to cultural waters are infrequently taken up in Australian fiction, with the exception of Alexis Wright’s two significant novels, *Carpentaria* (2006) and *The Swan Book* (2013), which effusively embody the significance of water. My white-woman imagination, while striving towards an ecological breadth that hears the tones of groundwater, remains limited. My decision to express an Indigenous viewpoint through the Aboriginal character, Wade, was also partial, limited by what I can and can’t know. As I previously mentioned, my task was to read and listen sensitively to portray Indigenous connections to groundwater. Australian climate fiction writers’ efforts to evoke a sense of place must negotiate the vital inclusion of Indigenous connections to and ruptures from traditional custodianship of places.

In traditional nature writing, by attempting to describe nature as something separate to humans, as something ‘over there’, human and non-human separation from pristine places is accentuated rather than abolished (Morton 2007, p. 125). One way that writers might imagine ecology is to accept that nature ‘over there’ does not exist (Morton 2007). Against the ‘false immediacy of ecomimesis’ Morton suggests that an aesthetic dimension, in an ecologically political *noir* form, can undermine how we tell mimetic stories about being involved with natural places (Morton 2007, p. 187). Rather than writing sweet stories of beautiful souls’ connections to nature, Morton suggests that the melancholy of *noir* forms of narration, where the shadows of ecological catastrophe are preserved, can be part of a posthuman writing that enmeshes human responsibility with the catastrophes

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14. One example of Indigenous voices entering the Australian nature writing domain is the collection of stories *Every Hill Got a Story – We Grew Up In Country*, compiled by the Central Land Council, based in Alice Springs, which recounts the lives and connections to land of numerous Central Australian Indigenous families (Bowman, 2015).

we are implicated in. He adds: ‘Instead of whistling in the dark, insisting that we are part of Gaia, why not stay with the darkness’ (Morton 2007, p. 187). This line of thinking, along with Murakami’s *The Wind-Up Bird Chronicle* (2003), influenced my decision to write the scenes where Frankie spends time in the mineshaft. Part of her experience is to literally stay with the dark. These are critical scenes in the novel, indicating Frankie’s journey towards understanding her capacities and her links to groundwater. The decision to convey knowledge about human connectivity to groundwater through Frankie’s experiences in a deep and silent place was part of my exploration of how to merge the work towards non-representation, shifting the story away from the broad daylight of realistic events. I remained committed to a story of hope, as reflected through the quest structure of the narrative. Frankie’s difficult experiences of death, and being in the mineshaft, strengthen her capacity for agency and activism towards preserving the local aquifers. The mineshaft scenes attempt to have the reader feel the proximity of the subterranean rather than think of it as something ‘over there’.

I examined Paul Carter’s ideas of soundscapes in writing about places – where the sounds of the place can be reflected in the style, the tones in the words – to find the metre of the land, to write about Country, and the relationships of people with Country (Carter 1996, 2015). I attempted to write groundwater as dynamic, never still and never finished. Groundwater’s movements are not audible to the human ear, so its imagined tones became expressed through soundscapes of words. Kirsty Gunn’s novel *The Big Music* heralds sound through rhythmic repetitions of words, phrases and scenes, linking words and people to place (Gunn 2012). The musical qualities of this novel suggest the dynamic qualities of the Scottish Highlands: the velocities of the wind, the bleakness of the horizons, the crazed meanderings of a senile old man. In the scenes in the last chapter of ‘Why We Cry’, where Frankie converses with imagined aquifers, the tones are lugubrious, doleful, slow. The words are aiming to evoke groundwater’s lament.

Figuring the concept ‘bodies of water’, Neimanis (2017) draws on Adrienne Rich’s politics of location to construct relations between bodies and places. Bodies of



water, for Neimanis, encapsulate both human and more-than-human bodies and are deeply influenced by place. Neimanis's posthumanist, feminist stance on embodiment provided another point of access to writing fiction that refers to deep bodies of water, invisible bodies of water, waters that intermingle with bodily waters contained in human stories (Neimanis 2017). Climate fiction aims to reveal how human relations with the natural world might be re-figured. It aims to put aside mastery and profit in place of deeper co-constituted respect for common materialities (Trexler 2015). Considering groundwater through this lens opened multiple ways of writing its presence, its affects, its places and performances in the wider environment and in human lives.

I came to acknowledge that both correspondence and dissonance between the material aspects of water, humans and non-humans, and the ideological, are likely in the creation of artistic works, particularly those that claim to create knowledge (Millner 2016). Artistic expression tests 'the ideological assumptions we make about the world as represented by science' (Millner 2016, p. 35). For example, visual artist Maree Kelly has a series of paintings representing her imaginings of surface and groundwater. The following example of her work illustrates the merging between surface and subterranean water. Her paintings present imaginary places in ways that inspired my efforts to present groundwater's presence through fiction.



Figure 2: 'The Water Below'. Painted by Maree Kelly, July 2017. Dimensions 101cm x 101cm.  
Medium: oil, charcoal and oil pastel on canvas. With permission from the artist.

Writing itself creates 'a cognitive separation between the world of the text and the world of ecological systems' (Harrison 2013, p. 1). On this basis, the manuscript 'Why We Cry' does not claim to make a singularly accurate expression of subterranean worlds because, beyond the reality of the text, the reality of a posthuman world is never fixed. Various cultural theorists and philosophers have sought multiple ways to think and to write the world other than through a fixed lens – realities are constituted through 'becoming-with' or 'wording' for Haraway (2016), through 'intra-action' for Barad (2017). For Morton hyperobjects (2013), and for Latour the term *pluriverse*, express the multiple realities that exist over time and across spaces (Latour 2017). With reference to these concepts my writing of 'Why We Cry' attempts an initial exploration of notion that a realistic fictional world of becomings may be forged within a posthuman framework.

Through the writing process I became less concerned with trying to know the physical boundaries of an aquifer's reach and more interested to express groundwater's relational capacities through storying. It wasn't only through science, nor only through being down in the mineshaft that Frankie found meaning in groundwater. Through her interactions with and memories of her father, Lennie, the water diviner, through her learning with Heather the hydrogeologist, and through conversations with Wade, groundwater's presence gained potency. Through expressing Frankie's interiority and her relational encounters with groundwater my aim was that readers might gain a relational connection to groundwater's impacts. Later in this chapter I explore how shifting meanings in the minds of readers creates the affective dimension of writing climate fiction that I aspired towards.

In exploring the problems and politics of representation in nature writing and expressions of place I make only cursory mention of formal language analysis, skirting around Saussurian examination of the ways that the structure and rules of language make meaning. Such examination is beyond the scope of this research. A structuralist critique of realist texts reveals that they either hide or mis-recognise the structure of language that makes up the text, and in most instances realist texts attempt to occlude other possible meanings of the subject than the single experience being presented (Hunter 1984, p. 415). Hunter reminded me that there can be no singular grammatical form of literary representation, and that my efforts to reflect aspects of groundwater's presence are derived from multiple foundations (Hunter 1984, p. 428). As a writer experimenting with how posthuman thinking may merge with writing realist climate fiction, I was testing foundations for expressing groundwater's narrative potency in ways that resonated with Hunter's position that no general account of representation is possible (Hunter 1984, p. 426). A climate fiction writer does not have to make a choice between the false alternatives of seeing narrative fiction as a reproduction of reality, or the view that fiction is a textual construction (Schaeffer 2010, p. 235). The reader, reading the fiction,

imagines the universe created, and makes their own judgements on its plausibility (Schaeffer 2010, pp. 235-6).

Critics of representational place-based writing such as Val Plumwood (2008), Lawrence Buell (2001), Ursula Heise (2008) and Adam Trexler (2015) have argued that writing to celebrate place cannot alone answer global environmental concerns. Plumwood argues that ‘We need to replace loose discourse about “sense of place”, ... by place-based critique, that can make room for the power analysis of an environmental justice perspective’ (Plumwood 2008, p. 140). In finding ways to write about groundwater I remained wary of attaching to characters a ‘cosy’ view of groundwater’s singularity. Rather, I tried to portray its various ways of being as perceived from its various performances. Heise requires writers and filmmakers to draw a bridge between local, regional and global concerns in imagining ‘art’ that represents a ‘de-territorialised’ world – a world connected but disconnected (Heise 2008). The literary novel struggles to register the different global and domestic scales of climate change, and their impacts (Trexler 2015, pp. 77-78). The uncertainties of rendering unfixed, relational entities, such as groundwater, which is not tied to any particular territory, challenged me to express its plurality in multiple ways. Creating possibilities of other possible worlds and experiences remains an important feature of realist writing (Attridge 2015; Felski 2008; Morris 2003). Considering groundwater as a hyperobject was one way that I drew this bridge between a local story, a story of a woman becoming a water activist in her local community, and the wider, regional and indeed worldwide implications of her endeavours.

Within the broad spectrum of a posthuman, new materialist or object-oriented ontology, as distinct from a human-centred way of considering groundwater, I cannot write *about* a hyperobject, I can only attempt to ‘evoke’ hyperobjectivity through groundwater’s multiple presences. Irony becomes more important than ever, argues Morton, as we humans find that we are not separated from a disappearing ‘world’ or ‘environment’. Rather, ironically, we are glued, enmeshed more than ever to the hyperobjects we find ourselves within (Morton 2013, p. 48). To write about an element of nature from which I am not separated,

my efforts to express the more-than-human must therefore be acknowledged as partial and limited (Buell 2001). Rather than a coherent depiction of place, I write incomplete depictions of groundwater, dependent on me, the writer, as settler, imagining groundwater's place and movements.

Traditionally, realist fiction has comprehensible subject matter, a cohesive point of view, and a chronology and ordering of events across plausible timeframes (Morris 2003). Modernist writers such as Virginia Woolf, James Joyce and T.S. Eliot, in comparison, self-consciously and reflexively acknowledge the fiction of novel writing, inviting readers to join them and their characters in questioning the worlds they compose (Morris 2003). Bridging these styles of fiction writing, J.M. Coetzee, through the words of his fictional character Elizabeth Costello, distinguishes between the philosophical discourse about realism and a literary commitment to a realist style of writing (Mulhall 2009, p. 252). In writing climate fiction set in the early twenty-first century, 'Why We Cry' portrays ordinary lives, authentic transformations of relationships between people and places, and a series of everyday interactions that illustrate engagement with the Anthropocene. At the same time 'Why We Cry' gestures towards how human and non-human animals and places might be enmeshed, by portraying the interiority and partiality of the fictional world of Frankie Pankhurst.

As I realised the implausibility of truly 'representing' a large and diffuse subterranean world through mimetic text, the creating of my fictional world started to circle; the text questioned itself (Waugh 1984, p. 5). Metafiction describes fictional writing that 'self-consciously and systematically draws attention to itself as an artefact in order to pose questions about the relationship between fiction and reality' (Waugh 1984, p. 2). Again, J.M. Coetzee's novel *Elizabeth Costello* is exemplary of this self-conscious form of fiction, which, within its own terms, questions the 'reality' it describes and exemplifies (Coetzee 2004; Mulhall 2009). In metafiction the narrator is strongly present, with all their self-proclaimed limits, and the reader is refused the role as passive consumer. Self-consciously creating a fictional world, with human characters embedded in places and narratives, means that readers may question veins of fabulation and the imaginary (Waugh 1984, p.

12). Coetzee's narrator, Elizabeth Costello, has the reader questioning reading and writing, from within her reflections. As she prepares her thoughts for a conference paper, she thinks, 'Specifically, she is no longer sure that people are always improved by what they read. Furthermore she is not sure that writers who venture into the darker territories of the soul always return unscathed' (Coetzee 2004, p. 160). I did not emulate metafictional techniques extensively. The way that I nodded towards a self-reflective narrator, was through Frankie's ruminations in her journal entries. Within the narratorial limits to making meaning, my efforts to give expression to groundwater were assisted by these segments of Frankie's reflections. Through this device I attempted to show how groundwater's textual performances via Frankie's reflections occur in dialogic relation to its environmental reality.

I felt at times that I walked a tightrope between my aspirations to present ordinary things in ordinary people's lives, and the difficulties of expressing the invisible reality of groundwater (Boulter 2007, p. 80). At times in the drafting process elements of imaginary fantasy crept into my fiction writing, as I considered the invisibility and unknowability of underground water. Descriptions of Frankie's dreams verge towards the fantastical. However, the importance of telling a contemporary story, with political implications, continued to steer me towards the day-to-day narratorial tropes of novel writing. The world of groundwater as hyperobject was at the same time leading me on a writer's journey, along a path that merged with a non-representational way of thinking.

With no single relation between language and the world, I came to see the task of writing from within the enmeshments of groundwater, not as one of fidelity or mimetic representation, but through the wider lens that merged ideas of non-representation and hyperobjectivity with the meaning-making of fiction. The movement of things and their agency (two of Nigel Thrift's seven elements of non-representational theory) assisted me in writing not as if I were describing an external reality, but as if two subjects, groundwater and Frankie, were turbulently enmeshed with each other (Thrift 2008, pp. 9-13). As a climate fiction writer I re-presented other worlds of unknowable dimension, not just alongside, but integrally entangled in the everyday world of human and non-human lives.

Metaphor opened possibilities of avoiding a mimetic view of realist fiction writing (Felski 2008, pp. 82-85). Definitions of metaphor abound in controversy, but here I take the simple view that a metaphor asserts a similarity between two or more different things (Barnes & Duncan 1992, p. 10). Writing about geological places, the geologically natural world led me to imaginary places that required metaphor to make meaning from language, to create knowledge. Metaphors or allegories for groundwater, however, became unstuck, slippery and elusive. My challenge became how to write simply, letting simple evocations build an imaginary world for readers.

As a writer I am bound to look to the contexts of words I use for the meaning they may convey. Gaston Bachelard's *The Poetics of Space* turns his, and the reader's ear, eye, and soul towards the ontology of poetic imaginary to explore place through the metaphor of a house, through poetic re-imagining of stairs, passageways, rooms (Bachelard 1994). Writing about groundwater involved many instances of moving from the microscopic to the vast, from the cellular to considerations of immense water bodies. Bachelard's concept of 'intimate immensity' led me to consider ways to transcend 'the contradiction of small and large' (Bachelard 1994 p. 190). Juxtaposing intimacy and immensity assisted me to understand and develop my writing about and with groundwater by bringing together, through poetic imagining, 'the powers of memory, perception and fantasy that criss-cross in all sorts of surprising ways, sounding previously untapped reverberations' (Kearny 1994, p. ix). From Bachelard's exposition on the rapport between imagination and language came the notion that images may 'speak' the emergence of beings. Images may give logos to perception (Kearny 1994). For Bachelard, 'poetics signals a relational dynamic between things,' involving the vital dimensions of 'intimacy, secrecy, desire and repose' (Bachelard 1994 p. 222). The phenomenology of imagination is 'to capture images at their inception. ... To imagine going down into water, wandering in the desert, is to change space – and to change space is to change being' (Bachelard 1994 pp. 221-23).

In another example that influenced my thinking and writing, Bachelard cautions the poet, and I extrapolate to the fiction writer, to beware the adjective

‘ancestral’, because as an adjective the word skips too quickly over the deeply imaginative places it refers to (Bachelard 1994 pp. 187-8). ‘Who knows the temporal dimension of the forest?’ Bachelard asks (1994 p. 189). Who really knows the temporal dimensions of groundwater? Ancestral forests belong in children’s books, imaginatively, he argues. The term ‘ancestral waters’, describing groundwater flows that cover long timeframes, must be used warily, not only because its temporality is unfathomable, but because in an Australian context, reference to Indigenous ancestors is sensitive terrain best handled by an Aboriginal narrator. Bachelard’s ideas and expressions of the intimate spaces of immensity, whether they be forests, oceans or references to vast night skies, infiltrated my daydreaming about groundwater. I could imagine its immensity, dream of its flows through deep time. Choosing words to weave a story from these imaginings, words that sought to convey meanings of vastness and deep time, risked failure. I wrote on. Fiction created possibilities for scenarios where scientific knowledge and artistic, imaginary ideas were merged, melted, bled together with the politics and affects of human activities. My explorations through the creative process of fiction writing blend the knowns of science with the intangibles of human affect, a writer’s haven.

In exploring the potency of analogy and metaphors in fictional writing, I at first experimented with ideas of groundwater as lubricator of ‘mother earth’ – as if the planet is an old dried crone, needing moisture under her skin, in her orifices. Liquids are held internally, till, like sweat on skin, they emerge at the surface. Groundwater could be seen as more like blood and salt in veins, fluids in the lymphatic system, moving to nodes, carrying enzymes and hormones. Groundwater pools beneath the surface in aquifers, like a lymphedema, stretching skin. Oils and gases bubble and squelch through and within layers of the crust. Water occupies such crevices and pores too. Saturation is when all the spaces between the particles of stone and rock are filled, and no air remains. There’s something breathless in that.

In another imaginary of groundwater’s place in the water cycle, I came to see it as part of, but different to, the menstrual cycle – fluids moving from internal



to external. Cleansing. For groundwater there is not an immediate pulse, no beating heart behind its flow, beyond the grand geological breathing of elastic earth and moon. Geological forces which puff volcanoes to the surface with magnitude-defying powers may next pressure permeable rock, till it warps like a gripped sponge. Water flows and steams, hisses and flies in heat. Potential for similes abound in underground contamination plumes. Plume is the word used by hydrogeologists for pollutants spreading by dispersion (mechanical) and diffusion (molecular movement through a fluid). A plume, a feather, a tuft of feathers, a flow of matter, especially of waste material or pollutant, spreading from a source. A plume is an ornament or token of honour. Exploring how a single word, groundwater, can bounce and diffract different meanings was an important part of the research. Could I write groundwater as a metaphor for Frankie's life, for human and non-human sojourns to uncharted places? Finding ways to express groundwater as a metaphor for the interior life of humans, for the waters we are comprised of within our skins, meant traversing the complexity of writing climate fiction that juxtaposes the matter and affect of groundwater.

To raise awareness about groundwater by providing knowledge was a starting point. My writing emerged from the capacity of realist fiction to generate recognition of groundwater's potency and vulnerability, and then with increased knowledge of its behaviours, and shock at its impacts (Felski 2008). I initially focused my efforts in writing groundwater as something to know about, predominantly through the experiences of Frankie, the emergent water activist, and the other human characters. I eventually worked on the slippery stage of embedding and embodying groundwater in the fictional world through less certain ideas about how knowledge about groundwater might be conveyed through the narrative. Shifts between realistic performances of language and ways that non-representation might reveal groundwater as a hyperobject fuelled the progression of the narrative. Expressions of the wider affective connotations of groundwater, its domain, its consumption, its relations, seeped from its metaphoric potency. I aimed to write as if the heroine's experiences could happen to the reader. Mostly, I wanted groundwater itself to affect readers. The importance of an affective politics to the

work of writing climate fiction emerged from the research. I turn now to explore the influences of affect in my approaches to the problems and possible ways to make a story about groundwater.

### 4.3 Ways of Writing Affect in Climate Fiction – Porosity

In this penultimate section the potency of affect and emotion in the writing of climate fiction is analysed. I argue that the significance and potency of emotive writing in climate fiction becomes a means to engage a readership in aspects of global warming that they may otherwise feel disconnected from. Climate fiction, I argue, has an important role to play in breaking traditional dualisms between the rational and the emotive, by integrating cognition with human affective and emotional responses to environments. ‘Why We Cry’ seeks to portray the significant affects of groundwater on human and non-human lives. The salience of affect and emotion in developing an environmental politics in climate fiction is suggested. Writing and reading for affect and emotion became a strategy I explored to address the problems of didacticism or proselytising in climate fiction.

Porosity and groundwater’s subterranean flows provide an analogy for the seeping of emotions from internal places to the exterior. In storying groundwater as an imaginary watery entity I aimed to invoke unpredictable emotions. Readers may experience anything from alarm or fear to a sense of deep quiet in my depictions of groundwater’s potency. Humans are deeply affected by loss or pollution of groundwater. The suicide in 2015 of Queensland farmer George Bender, in response to ten years of pressure from coal seam gas companies to mine his property, and the problems he already faced from lowering of the water table due to mining in the district, illustrates the seriousness of the threats to groundwater supply (Robertson 2015). In another example, the *Four Corners* program presented on ABC television by journalist Linton Besser on 9 October 2017 revealed toxicity of groundwater pollution from fire retardants used around Australian defence force airports. The ensuing emotions of local landholders affected by the pollutants ranged from rage

to despair (Besser 2017). Groundwater performs its far-reaching impacts in these current real-life examples.

As a scholar and an author of climate fiction I understand affect in two main ways. Affect may be seen as the psychobiology of innate, automatic, visceral, bodily responses to outside influences (Gregg & Seigworth 2010, p. 5). Or I might take the viewpoint that locates affect in the enmeshments of complex assemblages between the human and the non-human world, as derived from a Deleuzian ethology of bodily capacities (originally from Spinoza) (Gregg & Seigworth 2010, pp. 5-6). Affects, seen as non-cognitive and non-representational intensities outside of consciousness, can be distinguished from emotions, which retain an interiority and boundedness to individual beings and comes from our cognitive awareness of visceral responses (Weik von Mossner 2014, p. 1; Ahmed 2014; Vermeulen 2015). Distinctions between affect, emotions and feelings emphasise the autonomy of affect and its circulation between human beings and things, rather than its containment solely within human beings (Gregg & Seigworth 2010; Massumi 2010). The instant that we perceive or are cognisant of an affect is the very moment that it becomes a felt emotion (Thrift 2008, p. 117). Writing stories entails attaching meaning to affects, and provides ‘persistent proof’ of our ‘immersion in and among the world’s obstinacies and rhythms’ (Gregg & Seigworth 2010, p. 1). Nigel Thrift encapsulates the resonances or affect of things, describing affect as ‘the means by which bodies are guided along particular paths by things’ (Thrift 2008, p. 117). For the purposes of my climate fiction research I agree with Probyn (2010) and Ahmed (2014) who argue, as did Deleuze, that making distinctions between affect and emotion is not as important as seeing them as ideas, ideas that bring together ‘collisions’ of both body and mind. I argue that in climate fiction, without an engagement with affect and emotion, particularly ideas of threat (Massumi 2010), or fear (Ahmed 2014) and passions in politics (Amin & Thrift 2013), the potency of dissident voices, of both human and more-than-human actants, is diminished. Objects can affect us, including hyperobjects. This thought assisted my explorations of how groundwater, a large amorphous hyperobject, affects me, and through my

writing enables me to open the possibilities of affective and emotive events for readers.

Emotional responses of readers to fictional characters and events can be distinguished from emotive responses to real life experiences (Boruah 1988; Prose 2012). Paradoxically, a reader's empathetic understanding of fictional events, even to the state of tears, illustrates the 'reality' through imagination with which fiction can be endowed (Boruah 1988, p. 215). Storying provides 'places' where a reader can be in pragmatic and emotional relation to other people, events and places (Pence 2004). Experiencing others, other lives, other entities, through fiction, can be emotional (Ahmed 2014; Boruah 1988). Boruah (1988) argues that emotions generated by fiction are not 'fictional emotions', but valid expressions of empathy based on a combination of evaluative beliefs and imagination. In Sarah Ahmed's exploration of the question 'What do emotions do?', discussing emotionality of texts, she argues that emotion is not 'in' the text, but operates as 'effects of the very naming of emotions' (Ahmed 2014, p. 13). Rather than assuming that emotions are in 'materials' or texts, Ahmed suggests that it is more useful to consider what the 'materials' are doing, how they generate effects through emotions (Ahmed 2014, p. 19). This textualising of emotions, finding words and ways to engage readers in the emotions of the narrative, became increasingly important to my research. I wanted readers to feel engaged with the ideas of groundwater's vulnerability and potency. I wanted to move readers emotionally by revealing groundwater's capacity to lead to life and death.

Affect and emotion and their 'relevance to human experience and attitudes to non-human nature have occupied, at best, a marginal place within eco-critical film studies' (Weik von Mossner 2014, p. 1). Weik von Mossner explores the ways that various film genres bring about political activism through affect.<sup>15</sup> While climate fiction's role to invoke affect and emotions is important to me, the potential

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15. Research in the film and media industry examines the effects of climate films in relation to awareness of climate change issues and preparedness to take action as a result of watching various cli-fi films. A summary of some of this work appears in Michael Cielpy's (2014) article in the *New York Times*, 'Participant Index Seeks to Determine Why One Film Spurs Activism, While Others Falter', July 2014. Similar research is not available in relation to readers' responses to fictional or cli-fi literature.

for affect and conscious emotion to invoke political agency in readers remains speculative. Authors don't know whether their fiction increases readers' interests or capacities to make a difference to the worlds they inhabit. Whether narrative fiction has the capacity to build empathy, agency and an ability to take political actions towards social or environmental change is not testable in the context of this project.<sup>16</sup>

The vitality of literature to evoke recognition, enchantment, knowledge and shock is literary critic Rita Felski's means for framing how readers might approach a text (Felski 2008). Considering how knowledge may be acquired, and how emotions might be felt through literature, it became essential for me to read and assess my own writing. By recognition Felski refers to the ways through text that readers can know something of themselves or the world that they may be either familiar with, or a stranger to (Felski 2008, pp. 30-5). I wanted readers to recognise something of the fragility of internal spaces, of the importance of recognising themselves and their emotions through the porous movements of groundwater. As I wrote and learned about hydrogeology, knowing about groundwater came to mean expressing its affective entanglements.

As I thought about affect and experienced a range of feelings in writing emotional scenes in the fictional work, I saw the potential for exploring the Deleuzian enmeshments within the storying of groundwater (Bogue 2010; Deleuze & Guattari 1988). The osmotic movement of water through and across semi-permeable membranes is effected by the chemistry of the fluid solutions on each side of the membrane and the pervious or impervious qualities of the membrane itself. Water wants to balance the concentrations on both sides of the membrane. It wants. My task increasingly became how to write the fictional manuscript with a conjunction of cognition and emotion, illustrating the ways groundwater might affect readers.

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16. Proposals by Kidd and Castano (2013) that reading literary fiction improves reader's capacity for empathy generated considerable debate, which is not taken up here. More usefully their reference to Roland Barthes' (1974) proposal that texts are 'written' by readers, is briefly discussed in this thesis.

Entanglements of humans with groundwater, through our guts and our skins, our livelihoods, our souls and our imaginations, come in many and various ways. Kasha Duff, the antagonist, sees groundwater as his property, as a resource. He sells groundwater for bottling. Betty Winsome knows of groundwater's biblical history. Lenny Pankhurst feels it through his divining sticks. Helen Mack stands firm for science, measuring groundwater's pollution plumes. Each of these characters embeds and embodies affective relations to groundwater's ways of being and adds to the entanglement of readers' affective perceptions. Frankie's feelings preside. It is through her thoughts and experiences that emotional connections are performed in the text.

In 'Why We Cry' I include a brief exploration of human and frog skin to express porosity between human and non-human animals and their shared environments. In the scenes where Frankie holds a frog in her hand and feels its skin on hers, I aimed to portray the affects of interspecies skin touching skin. As Karen Barad asks, how close are we when we touch, particularly when we let fall all pretence to separate the affective from the physics of touch (Barad 2012, pp. 206-209). I aimed to show how movement between skins, the permeability of skins, stretches our imaginings of skins, stretches boundaries, and stretches humans out of a singular focus on ourselves towards a relational point of view. As Ahmed argues, emotional struggles against injustice are not about expressing good or bad feelings. Rather the struggle is about how humans are 'moved by feelings into a different relation to the norms that we wish to contest' (Ahmed 2014, p. 201). 'Why We Cry' aimed to change reader's relations to groundwater through the feelings that emerged through the text.

Through the processes of writing, reading and re-writing 'Why We Cry', groundwater's affects materialised in language. The interplay emerged between what readers know about groundwater and how that knowledge might affect them. I sought, in writing 'Why We Cry', to illuminate the inherent feelings of human enmeshment with groundwater, aiming to induce a range of emotions in readers from humour, anger, shame and fear, to hope. Any of these emotions might lead to tears. There appeared to be no hierarchy within the range of emotions that may be

generated in 'Why We Cry'. Descriptions of emotions flying at the meetings where Frankie spoke to members of the Cawling community aimed to be particularly cauldron-like. In the same way that Deleuze argued that ideas are generative, writing a story that matters, a story that moves readers to new understandings, was the strategy I practiced (Probyn 2010; Vermeulen 2015). Responses lie in the hands of possible future readers.

In the process of writing the fiction, I become my own first reader, in the vein of Iser's ideas of reading as an 'aesthetic response' (Iser 1978). I am the first to consider the affects of the text, initially through my embodied responses. Writing as a creative practice is inherently proximal to the concept and practice of reading; 'indeed writing reduces to be so indistinguishable from the moment of reflection or self-reflection in which I look back at what is now the text... the act of reading can seem to be what produces the writing' (Harrison 2013, p. 3). Meaning-making through affect rests ultimately in the imaginaries of readers, as they 'write' in their own minds what they are reading (Barthes, 1974). The initial instance of this process commences with my first reading. It was my recognition of the bodily affects of my words on me the writer who has become the first reader/writer of the disappeared author's work, that spurred the narration. I wrote without fear that the text I produce is anything other than momentary, insufficient and ultimately in the hands of readers. In the same moment I wrote with heart-stopping trepidation of this very unknown, and under a cloud of shame that 'Why We Cry' may not convey the ideas it has the potential to generate (Probyn 2010, 289). I sought to write honestly, grappling with my own emotions, hoping to engage others in the affects of underground water (Probyn 2010). I applied criteria of aesthetic, ethical and political impact to my reading of my text, in the same way perhaps as an eco-critic may read the text (Buell 2005). In reading my fictional writing I brought a feminist critique of androcentric assumptions. I brought my cognition, as well as my emotional disposition, to the task of reading.

Paradoxical to this notion of myself as a self-conscious reader, Roland Barthes argues that for a fictional work to be effective, and affective, 'the voice loses its origin', the author is gone, my identity as author 'slips away' in the moment

of writing (Barthes 2001, p. 1466). Without my authorial presence in the text my simultaneous reading of the work illustrates the duplicitous, slippery terrain occupied by a climate fiction writer/reader. The duplicity is partially deceptive – as a first reader I attempt to deny or ignore my own authority and intentions, listening for the polyphonic voices from the text. At the same time the affects of reading my writing reverberate bodily. The double-ness implied in the act of writing/reading also refers to the reverberations that permeate between the processes of writing-reading-writing-re-reading. My efforts to make affective narrative from the ephemeral nature of groundwater became beyond my authorial control. The ‘specific explosion of mind, body, place and history’, which comprises the subjective entity of affects, such as shame, fear, anger, became the yardstick with which I read my drafts and explored the relationships between myself, the writer, my textual expressions, the affect, and its effect (Probyn 2014, p. 81).

Throughout the drafting process of ‘Why We Cry’, aiming for readers to feel their own affective engagement, I became aware of my own emotional responses to various scenes. My own responses to the story, coupled with the feedback from my early readers, become an important place of decision-making for how the storying of groundwater evolved. I cried when Frankie farewells her father. I smiled when Frankie possibly found water with her father’s dousing sticks. I punched the air when Wade successfully influences the victory in the VCAT hearing. In the gesture towards Frankie Pankhurst’s authorial voice through her journal entries, she was able to reveal a similar self-awareness as a writer-reader, that readers likewise may recognise. Re-reading her journal she thinks of it as self-absorbed ‘claptrap’. She’s a tough critic of her own writing, as I am of mine.

It is not the text alone, but the range of complex beliefs and sentiments that readers bring to the reading that will determine their aesthetic experience (Felski 2008, pp. 19-20). I will never know the prior perspectives or frameworks that readers may bring to my text, based perhaps on their cultural background, political values and life experiences. Has the reader ever watched a water diviner at work, seen spring water flow from a hillside, walked on the crusted clay of a dry dam?



Neither the meanings, nor the affects of the text I write are inherently fixed. They are negotiated through the relationships of various readers with the text.

The narrative conjunction of knowledge and affect in the fictional world of ‘Why We Cry’ is the strategy I chose to lessen the possibilities of didactic tones. I do not dodge the political responsibility of writing a form of fiction that attempts to move readers to places of new knowledge, to new affective responses to the potency of groundwater in the Australian water crises.

On both epistemological and scientific grounds, I could not attempt to represent aquifers through fixed descriptions. Mimesis, or writing to mirror reality, could be a cul-de-sac to a climate fiction writer’s ecological and political aspirations. My climate fiction writing led me to propose the salience of aesthetic attention to storying. Rather than trying to copy or imitate the places, the ineffable subterranean realms I was exploring, I took heart in Paul Ricoeur’s invitation to recast writing/reading as a re-description, ‘a chain of interpretive processes’ that will ever be constantly mediated through a myriad of values, experiences and beliefs (in Felski 2008, p. 84). As a narrative that aims to unpack and disclose scientific knowledge, and to evoke an affective knowledge of the places and forces of groundwater, ‘Why We Cry’ suggests to readers that things may not need to be as we currently know them. Felski’s approach to reading literature enabled me to confidently read and re-read my own writing, aiming to juxtapose or interweave rationality and affect, knowledge and feelings, as I wrote and re-wrote. Within the pluralities of realist fictional forms I wrote climate fiction that speaks about the experiences of a woman becoming a water activist, and at the same time gives expression to the affective becomings of a hyperobject, groundwater.

## **CHAPTER 5: GROUNDWATER DEPENDENT ECOSYSTEMS**

### **Concluding Remarks**

The scholarship generated in my research crosses two main themes: writing and reading towards climate fiction that embodies a political aesthetic; and ways of storying a present that implies a future where expressions of groundwater's presence resonate widely. Groundwater comes to the surface in springs, soaks, swamps and through the multifarious lives that live enmeshed in groundwater dependent ecosystems (Brodie et al. 2012; Geoscience Australia 2018). Groundwater dependent ecosystems exist in and around isolated waterholes that rely on the slow seep of groundwater through dry times to maintain unique life forms. For example, the Dalhousie guppy living in the tepid waters of the Mound Springs at the sacred site Irrewanyere is found nowhere else on the planet. Irrewanyere is the Indigenous name for the tourist and camping area, otherwise known as Dalhousie Springs, in the northern reaches of South Australia, approximately 500 kilometres south of Alice Springs. Other extremely rare freshwater fish, such as the barred galaxia species survive only in remnant water holes of mountain waterways, reliant on connections to aquifers to maintain water levels. The microbial biodiversity of groundwater dependent ecosystems is an important foundation to larger ecosystems and food chains (Eamus & Froend 2006; Griebler & Lueders 2009; Pain 2005).

Fish and amphibians are the most critically endangered species in freshwater ecosystems in Victoria; many rely on groundwater to maintain habitats in stream and riverbed pools through dry periods (Cresswell 2016). Similarly, the little-known primitive groundwater crustaceans called bathynellids, that are so

small that they live in between grains of sand in freshwater aquifers, are at risk from mining activities and excessive groundwater extraction (Pain 2005). In this final section of the dissertation I liken the emergent new knowledge from my research with the nature of groundwater dependent ecosystems. Where and how do my findings make connections with other scholars and writers? How will my arguments and claims find meaning for new scholarship in the light of day? I discuss what has been learned from my research, so that others can make use of the ideas I have uncovered. As ecosystems spawn diverse life forms, so the knowledge that comes from my research becomes available for other climate fiction writers to draw upon.

Australian public dialogue about groundwater's vulnerability relies on a mixture of science, politics and various literary expressions of its potency and relationality with humans and non-human lives. Australian Government departments are drafting water management plans, climate change strategies and reports about the critical role of groundwater. For example, the *Water for Victoria: Discussion Paper* released by the Victorian Department of Environment, Land, Water and Planning in 2016 names the conundrums of increasing demands on water supply caused by increasing human populations in the context of climate change (Victorian Department of Environment, Water and Planning, 2016). Public debates over contested Murray Darling Basin water plans have been torrid for decades. In these debates water consumption by humans remains the priority despite strong advocacy by environmental groups for increasing environmental flows in major rivers (Finkel & Normile, 2012). Indigenous groups in the Murray Darling are also advocating for water policy that takes account of cultural waters, a concept that is recognised in the Murray Darling Water Plan but largely ignored in a policy context (Davies 2018; Moggridge 2010). In order for groundwater's voices to be represented in public discourse, I have argued that they are usefully mediated through artistic expression, specifically through narrative, fictional discourse. As Sontag argues, the novelist writes amidst the bounds and liberations of the logic of storytelling (Sontag 2007, p. 216). In this thesis, making fictional expressions of groundwater, making meaning from groundwater's performances, indicates the potency of a literary medium for storying knowledge and affect.

In storying groundwater through climate fiction I make a claim for the moral imperative for humans to engage in participative engagements with non-human actants (Haraway 2016; Plumwood 2009; Rose 2013). Reading literature with a politics embedded within the narrative may or may not influence the reader, but the writing itself remains an agent of potential change (Felski 2008; Mulhall 2009). Climate fiction is inherently embedded with a social and moral purpose to inform and affect readers (Bradley 2017; Trexler 2015). ‘Why We Cry’ tells a story of the power of collective human actions as a community works together to overcome the threat of the loss of groundwater. It also narrates the performance of groundwater, portraying its potency through its impacts on human and non-human alike. Frankie’s growing agency as she communicates with subterranean realms shows her enmeshments with groundwater. The actions of the character Wade Keane and the Indigenous Yaluk community, which seal the successful appeal at VCAT that puts a stop to Kasha Duff’s housing development plans, illustrates the potency of Aboriginal connections to cultural Water and the agency in Aboriginal communities. As Latour says, ‘fiction anticipates what we hope to observe soon’ (Latour 2017, p. 255).

Through my explorations of the politics and the aesthetics of climate fiction, ‘Why We Cry’ merges the separation between the acts of writing and the cognition of environmental situatedness (Harrison 2013). I write climate fiction from the viewpoint that this fiction makes new meaning in the world, and creates new knowledges, but at the same time it is embedded in the world it creates. As a human participant enmeshed in the Anthropocene, I construct partial and fragmentary meanings through words. I write with an ear, eye, sense, and imagination of how the world around me makes its own meanings, through its own languages, its own expressions. This project has been about finding textual expressions of groundwater as hyperobject. Taking account of hyper-large geological and ecological viewpoints is an enormous task that climate fiction writers wrangle with. The ways that a realist aesthetic of environmental intra-relations can be expressed through climate fiction are canvassed in ‘Why We Cry’.

Exploring how groundwater acts and is enmeshed in human and non-human lives enabled me to create a form of climate fiction that imagines invisible entities, and to embed this entity in the narrative. Making sense of human and more-than-human agencies across both immediate and geological timeframes meant finding ways to write climate fiction that acknowledges the temporary nature of anthropogenic hegemony (Bradley 2017). Placing human activities in the context of the deep time processes of groundwater required me to acknowledge the ethical and cultural limits to the narrative.

Thinking about groundwater and Indigenous Australians' ways of thinking with water gave this research, within the limits of my white-settler status, a window into extending the storying to cross timeframes and acknowledge enmeshments with Country and cultural Waters (Strang 2013). Indigenous knowledge of ageless connections with lands and waterways, and ways to respectfully communicate with wide kinships, model a form of dialogue that shows responsible entanglements (Rose 2005, 2013). It is this way of knowing and feeling groundwater's potency that I pursued in my fiction.

This thesis explores how climate fiction might give narrative expression to groundwater, aiming to express political and eco-critical views without being didactic. I utilise the features of water in this task.

Water teaches us about an ethics of care and response; about the need for all bodies to be sustained by good water, good nourishments, good words; about patience and resilience; about the way theory, activism and art overlap and blur; about the need to listen to voices that are too often silenced or deemed mere "babble" (Chen, MacLeod & Neimanis 2013, p. 19).

I have attempted to invoke these sentiments by engaging an affective presence in the writing. To write into the present moment is to be truly present, entwined, enmeshed in the 'myriad unfinished configurations of places, times, matters, meanings' (Haraway 2016, p. 1). Through writing the senses of presence that Frankie experienced in the mineshaft, 'Why We Cry' has aimed to combine providing knowledge with enabling affective experiences.

Fiction is about a search for meaning of some sort (Mulhall, 2009). My writing expands the metaphoric meanings ascertained from dwelling on the features

and tones of groundwater. The contexts in which humans bore for and pump groundwater to make it accessible for human and agricultural consumption are changing as technologies allow for deeper and more efficient drilling, as populations increase, and as agricultural demands for irrigated foods increase. Over-extraction of groundwater is a global issue, with lasting environmental impacts in each circumstance. Human interventions are changing the balance of the global water cycle. Finding ways to perceive the global in local events, or a ‘place-based perceptual ecology’, remains an important strategy amid the cataclysmic changes of global warming (Thomashow 2002). Creative writing that attempts to link the global with the local makes the salience of stories about real problems and empowered responses to global warming undeniable.

I have proposed that climate fiction writers could usefully engage with three modes of intervention. First, giving precedence to the hyperobjectivity of the topics of climate fiction and building credible knowledge from science; second, merging strategies from realist fiction with posthuman and non-representational viewpoints; and third, giving emphasis to affective forces and emotion to ensure conjunctions for readers between ideas and feelings. From these three strategies climate fiction enables the power of storying to immerse readers in the material connections between human and more-than-human entities.

The implications for new scholarship from the work I have commenced in this research include applying these three keystone interventions to other hyperobjects, other large bodies of matter that are changing in the Anthropocene. Establishing matter’s enmeshment with humans, merging post-human epistemologies with realist fiction’s parameters, and invoking readers’ emotions through metaphor, are tools for writing climate fiction about hyperobjects that could be applied to many Anthropocene scenarios, from loss of forests, glaciers and icecaps, to the plastics island polluting the Pacific ocean, to ocean acidification and rising sea levels. By considering the epistemological foundations to writing about the enmeshments between humans and the more-than-human world, I claim that climate fiction writers give themselves firm ground to imagine affective stories in the Anthropocene.

I write into a watery future, a time when climate fictions continue to find new and exciting ways to express groundwater's eminence. It's emergence as a deep and evocative voice in politically effective and affective literature is exciting and has many potentialities. This thesis proposes that readers can know and feel the prompts towards personal and political questions about humans' and more-than-humans' becomings through storying with groundwater.

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