

Many Aboriginal people reflected that this time (of the woodlines and the excessive clearing of vegetation) had a strong influence on the availability of water given by the *jila/pimera*, who often became angry about the noise and destruction of the natural landscape and emptied the water holes.

Commentary about the environmental impact of the Pipeline is still discussed by the general community, with many noting that the Scheme would never be built today. Former Water Corporation General Manager, Robert Hammond, observed that the relative affordability of Scheme water reduced incentives for agriculture and industry to find alternative sources of water, and many traditional water farming practices such as windmills and bores are no longer used today by farmers within proximity of the Pipeline.

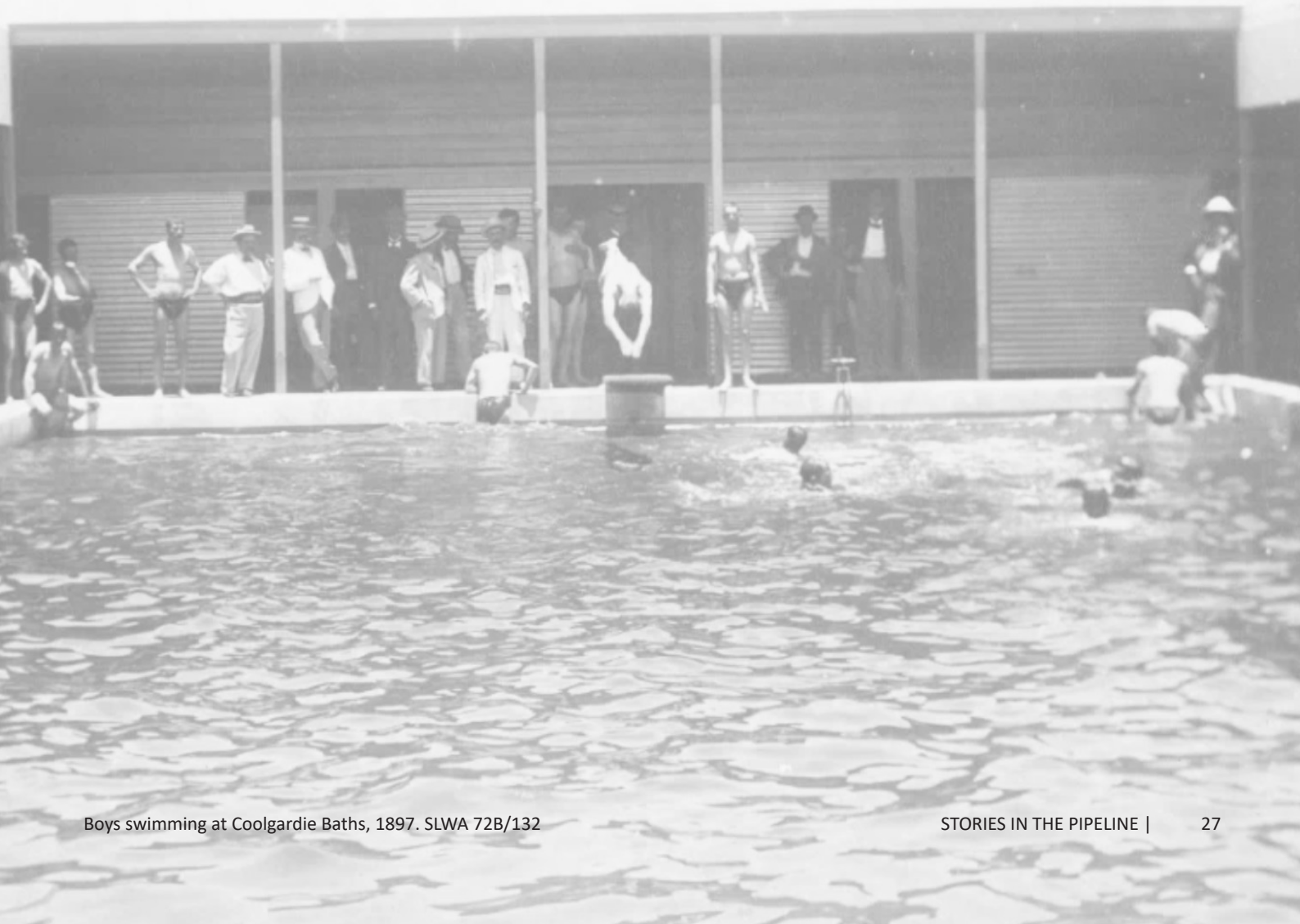
Water was not only a valuable resource for drinking and mining. In the hot dry climates of the Central Wheatbelt and the Eastern Goldfields, it was also highly valued as a recreational resource. In 1897 Kalgoorlie established its first community swimming pool, filled with salt water pumped from a nearby mine. This was later replaced with the Lord Forrest Swimming Pool in 1938, which was filled with Scheme water. Coolgardie took a different approach as noted by Kalgoorlie newspaper, *The Sun*, in March 1904:

*Silverthorne's Dam - A little to the south of the extreme west end of Forrest Street. Therein males of all ages, sorts, shapes, and sizes are making a practice of bathing in a wholly nude condition, regardless of the fact that they can be seen.*¹⁸



Girls swimming at Coolgardie Baths, 1906. SLWA 006793D

Swimming in dams and other make-shift swimming arrangements were not without their risks however, several drownings were recorded at Silverthorne's Dam.¹⁹ In the subsequent decades, local governments along the main conduit of the Pipeline as well as those serviced by the secondary conduits, spent considerable sums constructing community swimming pools, partly to increase recreational amenity to service the growing towns, as well as to address public safety and the inherent risks of swimming in dams. Purpose-built swimming pools allowed proper swimming lessons to be made available to inland-based children, many of whom did not otherwise regularly experience opportunities to swim. We will never know just how many lives were saved in this way, but in one incident alone at Bruce Rock in the 1930s, three drowned in a farm dam. Scheme water continues to supply public swimming pools in those towns serviced by the Goldfields Water Supply Scheme, and many communities today still express the value these facilities bring to their lifestyle in regional Western Australia.

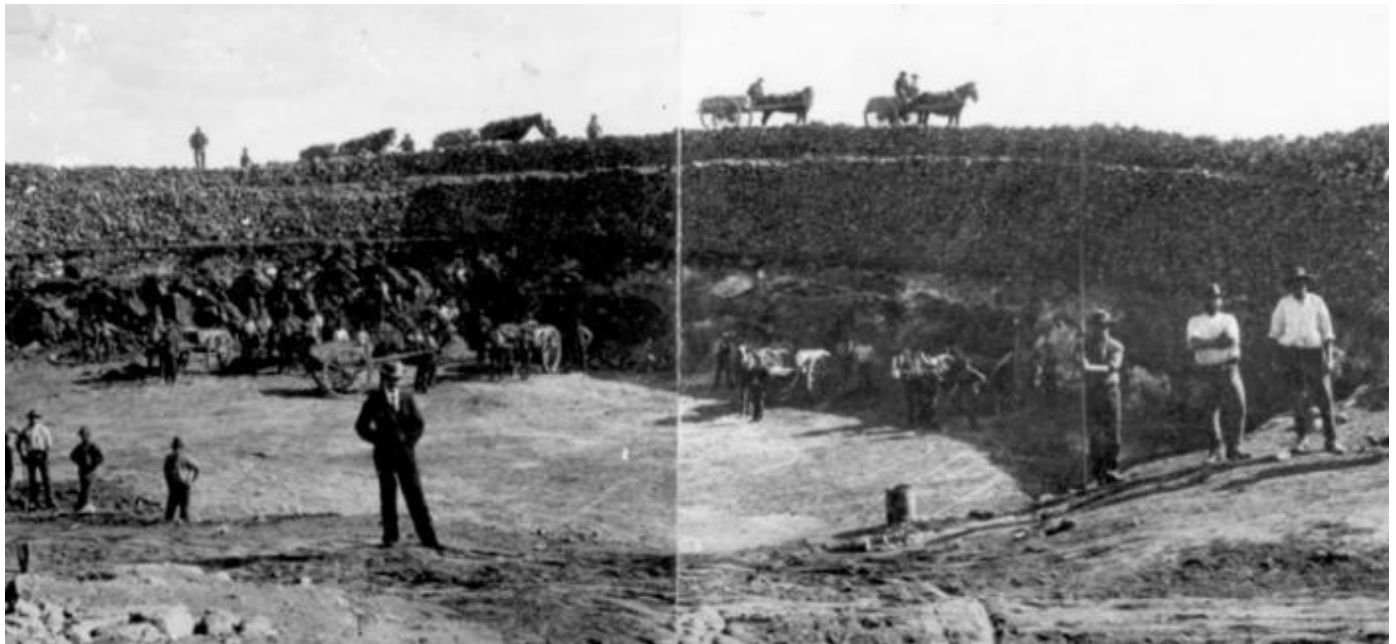


Construction of the Goldfields Water Supply Scheme

The construction of the Goldfields Water Supply Scheme from 1896 until 1903 was a direct response to the increasing demand for fresh water in the burgeoning Goldfields region, and although originally designed only to extend the conduit to Coolgardie, the rapid expansion of Kalgoorlie as the hub of the Eastern Goldfields, and the extension of the Government Railway to Kalgoorlie by 1897, determined the eventual terminus at Mt Charlotte.

The Scheme itself was visionary in scope and breadth and made legends of several men who were directly associated with its development, specifically Premier Sir John Forrest and Engineer-in-Chief, CY O'Connor. Their enduring legacy tends to focus on the engineering feats achieved in developing a plan to pump water through a pipeline extending 556 kilometres from the relatively high rainfall area of the Darling Scarp eastward to Kalgoorlie, raising water to an effective "head" of 824 metres over the length of the conduit. Forrest convinced the Parliament of Western Australia to take out a loan of £2.5M to finance the project, which at the time, was equal to the annual budget for the Swan River Colony.²⁰ Nothing like this had ever been done before anywhere in the world.

CY O'Connor decided to divide the pipeline into eight sections. It would start at a dam on the Helena River, Mundaring Weir, and would take approximately 330 miles of pipe carrying water to eight pumping stations.²¹ Construction of the Goldfields Water Supply Scheme began in 1898 and took five years to complete. Over the course of construction, O'Connor faced extreme criticism, including personal attacks from politicians and the press claiming the project was too ambitious and would be impossible to complete. Critics called the pipeline the 'Scheme of Madness'.



What an undertaking! 'Croakers' (the common contemporary term for those who failed to catch the vision and attacked the whole idea)²² in plenty doubted the wisdom of the scheme, noting that few goldfields in Western Australia persisted for more than a few years and questioned whether Kalgoorlie would still be there when the water arrived:

It was the height of madness to mortgage our future by imposing the debt of two and a half million pounds upon our small community for the one particular work. - GT Simpson, MLA, 26 July 1988.



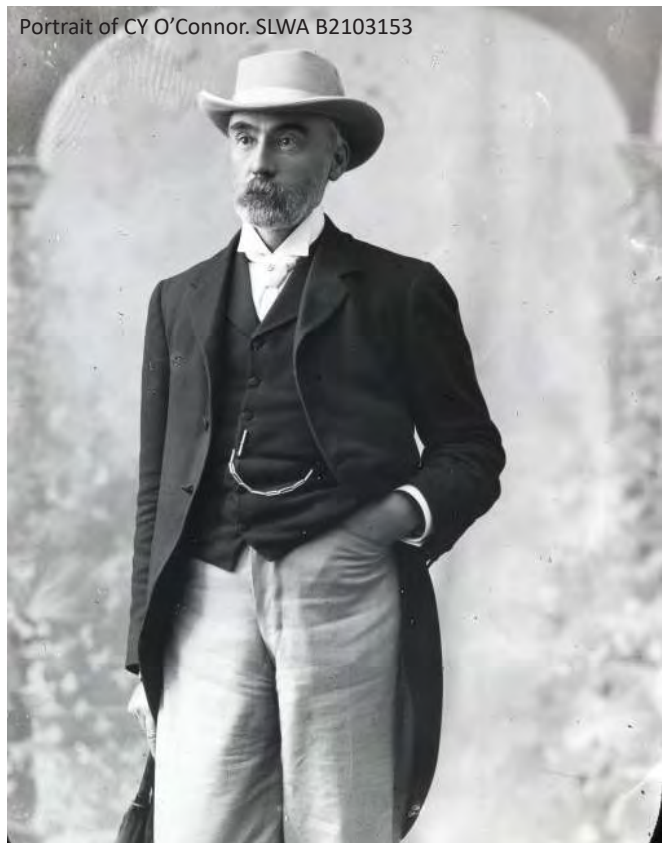
It is interesting to note that from the time that water flowed into Mt Charlotte reservoir in Kalgoorlie to the present day, many Western Australians cherish stories that link their families in a great variety of ways to the Pipeline, and what would become the most iconic engineering scheme in the State's history:

Not only had they obtained the victory over the opponents of the scheme, but they had won a greater fight and a greater battle – they had conquered the great forces of Nature. – Sir John Forrest at the opening of the Scheme at Mundaring, 22 January 1903.

Descendants of CY O'Connor still take great pride in their personal association with the Scheme, and the Pipeline has special meaning for many former Public Works Department, Goldfields Water Supply and Water Corporation employees and their descendants.

An interesting story told by Nathaniel White (Nat) Harper, then manager of the Robinson Goldmine in 1895, repeated by his descendants and Pipeline history enthusiasts to the present day, demonstrates the continued pride and fascination with the Scheme, and the desire for association with its eventual success. As their story goes, during a banquet held at Kanowna in 1895, Harper met the Premier, John Forrest, along with Engineers Jonathan Bray and John Woolcock. The men discussed at length Harper's ambitious and innovative proposal to pump water from the Avon River at Northam to the Eastern Goldfields. Until his death in 1954 Harper endeavoured to gain recognition for his part in the Goldfields Water Supply Scheme. Eventually the matter was brought to a head when in 1952 the then Premier, Sir Ross McLarty, invited three highly experienced Western Australian historians in Professor Ross Alexander, Dr FK Crowley, and JD Legge to look into the ongoing claim. Their report noted that while Harper commanded the respect and close attention of Forrest, credit 'may not safely be given to any one individual'. Harper may have been influential to a degree, but he was only one of a number of such men.

Once the incredibly ambitious Scheme proved successful, it entered into Western Australian folklore and, as in all great stories, heroes were created in the minds of the public. By



Workers with tripod and winch, lowering pipe near Bandedee. SLWA BA1528/23

far the best known of these is Charles Yelverton O'Connor, the gifted and far-sighted engineer who became Western Australia's first Engineer-in-Chief. Generations of Western Australians have grown up learning about his engineering skill, vision and determination to achieve the impossible. The tragic suicide of CY O'Connor in 1902, just a year before the Scheme's completion, is deeply embedded in the public memory, and West Australian's still speak with fondness for this man who worked so hard but could not withstand the media campaign that accused him and his colleagues of corruption and extravagance in the construction of the pipeline.

In the beginning, there were some who saw villains as well as heroes. As with any highly ambitious and innovative scheme, there were those who had genuine doubts about the wisdom of the undertaking. Highly personal attacks made on the professional competence and personal integrity of O'Connor made by the owner of the *Sunday Times*, FCB Vosper, contribute further to the longstanding legacy of the Scheme. Vosper relentlessly and without any justification pursued O'Connor:

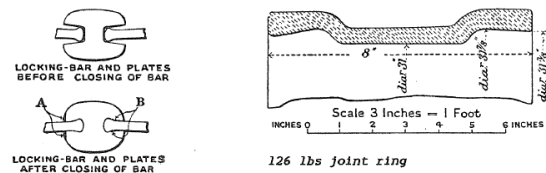
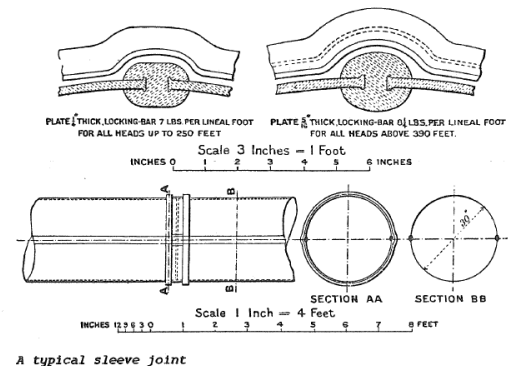
*He has absolutely flourished on 'palm grease'...if he is not immensely rich there is some mystery somewhere.*²³

A Royal Commission in 1902 found that one of the Schemes' engineers, Thomas Cowley Hodgson, had participated in 'improper acts' but that O'Connor was beyond reproach in all matters. Over time, even the charges made against the likes of Hodgson, O'Connor's deputy, for his apparent conflict of interest in locating the No. 3 Pump Station in Cunderdin, where he owned farming land, have softened. It is acknowledged that the Royal Commission's proceedings were deliberately staged to incriminate Hodgson unfairly for the events leading up to O'Connor's suicide.²⁴

It is very sad that CY O'Connor died but everyday I see the pipeline it reminds me of his story
- Tenneill, Yr G, West Northam P.S.



Construction camp workers, Goldfields Water Supply Scheme, c1902. SLWA BA1471/4



Mephan Ferguson's innovative locking-bar pipe

A Goldfields Pipeline engineer – Jul Martin Egeberg [1863-1949]

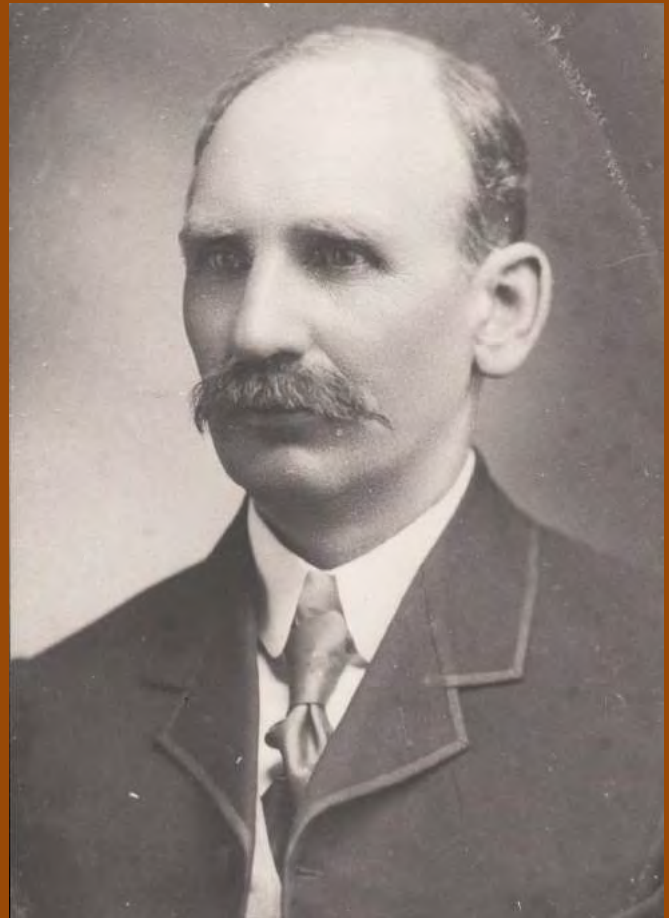
Submitted by Margie Lundy

My great grandfather, Jul Egeberg, was the first Engineer-in-Charge of the No. 3 Pump Station in Cunderdin, holding this position for over 30 years. As a young man, Jul left the family farm in Norway in the mid 1880s and arrived in Melbourne from San Francisco, via the goldfields of North America's prospecting heydays in search of elusive riches in Australia.

He was a mechanical engineer who found, not gold, but work and an Australian wife, Annie Maria Thomas [1866-1951], who he married in 1889. In 1897 he became an Australian citizen.

Working on building sites around Melbourne as a labourer and crane operator he was also later connected with the building of a tunnel under the Yarra River. Early in the twentieth century, he was an engineer at Mildura Water Supply West (Victoria) where he received an appointment to the new Goldfields Water Supply in Western Australia. He headed west with his wife and four young children. Jul was in charge of the working plant in the laying of the big mains, and when this was completed, he was on the Simpson's staff when they managed the No.3 Pump Station for a year of testing. When this was completed he became Engineer-in-Chief until his retirement in 1934. His latter days were spent at his home in Queens Park (Perth) keeping himself busy with a big house and garden and family.

A civic-minded citizen, with the strong support of his wife Annie Maria, amongst many positions he held in the community during those years included as a Justice of the Peace, honorary Secretary of the Hospital Board as well as the Public Agricultural Hall, a prominent Freemason, a guarantor of the Anglican Church and Vice President of the Football Club. Before electricity became available, he used to light the gas lights in the town. Egeberg Street in Cunderdin is named in his honour.



Nowadays, many of the innovators who worked on the Scheme are better remembered for their contribution to the overall success of the project, and their names and inventions are showcased in the various pump station museums along the pipeline. These include Mephan Ferguson, inventor of the locking-bar pipe; James Couston, inventor of the caulking machine; and engineers Norman Fernie and Reg Keating, proponents of the 1930s scheme to lift and relay the pipeline above the ground to combat corrosion issues. The simple genius of each of their designs, as well as the clever design of the conduit and pump stations by CY O'Connor are the focus of many displays enjoyed by visitors to Pump Station No. 1 (Mundaring) and Pump Station No. 3 (Cunderdin), and are highly valued for their educational, historical and cultural heritage interest. Similarly, biographical information about many of these identities is now shared and documented, and their legacy is celebrated.²⁵

The construction of the Goldfields Water Supply Scheme was itself a significant feat of resourcefulness, skill and perseverance and there is still considerable community pride in the efforts of workers employed in the construction and raising of the reservoirs and weir, the laying of the original Mundaring to Kalgoorlie conduit, the 1933 raising of the conduit, and the construction of the pump stations and associated townsites. For the families and descendants of these workers, their participation in the Scheme has often become part of the family folklore and pride, allowing the pipeline to have special meanings to people across multiple generations. From the outset Forrest envisaged the pipeline serving farms and farming towns along its length, as well as people and mines on the Goldfields. This view was not always shared by those on the Goldfields who saw themselves as having first priority over what would be a limited flow, as demonstrated by an indignant letter to the *Kalgoorlie Miner* in February 1903 a short time after the water reached the town. The writer, worried the Northam farmers would empty the Mundaring weir, complained:

*Sir John Forrest's friends in the Northam district have received a sufficient supply for the purpose of irrigating their farms and orchards*²⁶

In fact, the town of Northam also suffered terribly from typhoid and the lack of water—no one had ever seriously suggested that farms would be 'irrigated'. Kalgoorlie's share of the water was quite safe.



Mephan Ferguson's steelworks employees at Falkirk.
SLWA BA1528/29

Employment and Life on the Pipeline

Once the Goldfields Water Supply Scheme was completed, the operational phase of the pipeline began in earnest and an entire workforce was established to operate the series of eight pump stations and to maintain the conduit. Small towns were established at each pump station, many of which, such as Yerbillion (No.5), Ghooli (No.6), Gilgai (No.7) and Dedari (No.8), only populated by Scheme staff and their families. In some places, larger towns were established around the pump stations, such as in Merredin, where the local school was built between the pump station and the town. Each pump station was supported by worker housing, typically free-standing homes for engineers and their families, as well as barracks for single men. Gardens, playgrounds and community facilities were established to support everyday life. Workers wives and children did their best to make do in these remote locations, often at some distance from the Government rail line or the Great Eastern Highway (which was established in the 1890s to connect Perth and Kalgoorlie).

Life at the pump station is still an enduring memory for many people who were employed by the Goldfields Water Supply and their families. Still today there are former workers, engineers, their wives and children who reminisce about this unique lifestyle and the impact it has on their family folklore. Often, the water supply workers were employed at more than one pump station over the course of their career, providing an even better understanding of life on the pipeline:

My dad spent his entire working life on the pump stations. He began at No.7, where I was born, moved to No.2 and finished his working life at No. 3 in Cunderdin. I'm still involved with the pipeline and have been for the last 20 years. – Bill Cutler

Interestingly, many of the families working at different Pump Stations were connected by blood or by marriage, as sons followed fathers into the water supply industry and daughters married workers 'further up' or 'further down the line':

My mum grew up on the pipeline, first at Mundaring, and then at Cunderdin...my cousin, Rose Burse, lived at Pump Station No. 7 for many years. – Max Wishaw

Although many of these former settlements are now ghost towns, the memories and stories of everyday life are still alive for many people, and the connections with the pump stations and the pipeline are held with great affection.

Particularly in the early years, isolation was a major factor in the lives of maintenance workers and those manning the pumps along the line, often situated a long and difficult journey from the nearest town. At Gilgai, Pump Station No. 7, the gradient was too steep for the train to stop, so deliveries for the workers and their families were simply thrown out on the run (Bethlyne, Mundaring). Length runners (those who monitored the pipe) lived along the pipeline track in small communities of two or three houses, a lonely existence. However, their descendants today tend to recall the era without rancour or blame, noting the strong relationships formed by people in such close-knit and isolated communities.

As the 1930s dawned, it became apparent that the pipeline required major maintenance. The pipes were reconditioned or replaced during the 1930s and 40s to overcome corrosion problems. They were lined with concrete, placed above ground and the lead-packed joints were replaced with welded joints. Several sections of the pipe (totaling 64 km) were temporarily replaced with wood-stave pipes made of karri, which were used for 30 years.²⁷

The Great Depression struck hard in Western Australia, over 16 000 unemployed people received sustenance payments or meal vouchers the end of 1931. By 1933, 60 per cent of these men were placed onto projects such as pipeline maintenance. Soon there were about 400 sustenance men,

Life at No. 2 Pump Station

Submitted by Beryl Rhodes

The settlement at No.2 Pump Station consisted of 4 semi-detached houses and 5 detached houses that housed the workers and their families. These homes were built of corrugated iron and they had high ceilings, each generally with three bedrooms, a large lounge room with an open fire place, a large kitchen with a woodstove for cooking and a bathroom that ran off the kitchen, with a toilet outside.

Generally the workers were engineers, stokers and greasers and they all worked shift work to keep the Pumps running 24hrs a day. Day shift was 8am-4pm, afternoon shift was 4pm-12am and then night shift was 12am-8am.

The stokers would fill the engine with 6ft long logs of jarrah to keep the steam at a constant level. My father, Fred Reeves, was a greaser on the No. 2 Pump Station until 1956 when it was decommissioned and the system became electrified. There was enough power to pump the water from the No. 1 Pump Station at Mundaring Weir to No. 3 in Cunderdin without needing No. 2 anymore.

I was born in 1934 as one of four girls - Joan and Mavis were older, and unfortunately my twin sister, Margaret, died when we were both only 5 months old. There were quite a few children round the same age as my sisters and they had to go to the Mundaring Weir Primary School, which was quite a long distance to walk. The School only went to Grade 7 and the older children had to travel by bike (6 miles) to the Mundaring Train Station and then via train to Midland Junction to go to high school. We had trains that would service the Mundaring Weir area on Wednesdays, Saturdays and Sundays and there were other sidings on that line that don't exist anymore, such as Wanyl, O'Connor (No.2 Pump Station), Portagabrra Forestry Settlement and Cardamorda (the Weir).

We were a close-knit community and families would help each other when needed. We did not have all the amenities we have today – no electricity, no refrigerator, no vacuum cleaners or washing machines as there was no electricity to power them. But we were content and happy and we made our own fun.

Our family eventually relocated to Mundaring so that schooling was easier for my sister Mavis and I. Dad decided that it would be best if he rode his bike to work at the No. 2 Pump Station instead of living onsite, but we continued to visit the families there. During the school holidays I would spend time with Mrs Gladys Baker (who was my Godmother) as her husband Bob was still actively working on the Pump Station. When it closed, he was transferred to No. 5. They were like family to us.



To pump or not to pump...

Dearest Lorna,

Well here I am, hard at work pumping water etc. I am now in a better position to let you know some more concerning the job and living conditions etc.

I am not sure whether I have made a move for the better or not, considering all the circumstances, anyhow I will describe all that I know up to date, and if you think we would be better off at Pemberton or what your idea is, of things I would like you to let me know immediately, send a wire if necessary and let me know your decision promptly so that I can get in touch with Pemberton.

In the first place there is certainly nothing wrong with the job here in this station, except for the fact that it is apt to become very monotonous watching the pumps for 8 hours. We start at 8am-4pm. There is no lunch hour, I have to cut some sandwiches and eat them on the job as we cannot leave the engines. There are 3 shifts and they pump 24 hours, namely 8am-4pm, 4pm-midnight and from midnight-8am again. I finished work on Tuesday at 4pm and started again at midnight to 8am this morning. I'm afraid I'm not used to these unearthly starting hours. At this time of year they stop pumping on a Saturday lunch time, but in the summer months they work 7 days a week. The fellows say they make extra cash but they are never off the job, that wouldn't be too good for you honey girl; if you were on your own all the time, would it? I was saying I was getting married shortly and they told me it was almost a certainty that I would be stationed at No. 8 as there is a vacancy for a married man there; a relief man is there now. If we decide to stick, you must prepare yourself for a very lonely life by all accounts.

No one is ever satisfied it seems, the men here say they would leave if they could find something better, the trouble is they have been so long on the pumps that they know nothing else now. That is the decision I would have to make also because after I learnt the running and repairs on this job there is nothing new coming in, consequently I will slip back in my trade....

...Oh dear!! This batching business is terrible. Half the time I can't be bothered cooking meals. By the time I come home and light the fire and nut out the menu, it is about 9pm before I finish tea. Then I have to get up at 6am to make breakfast by 8am and cut my lunch. I don't think I shall see another week out with my own cooking. You see it is too far to go to the Hotel over 2 miles and the road is terrible at present. On Monday there were 10 cars and 1 Metro bus bogged in one patch of the road. I was very lucky I got through without trouble...

I am in a terrible pickle wondering what to do for the best, now same old thing again. Well darling, let me know what you think as soon as possible, maybe this job is not our mark I don't know. One thing I do know, however I do wish you were with me. I am very lonely here, living in a 5 roomed house on my own. They are not bad houses, bungalow style with a verandah all round the outside walls are corrugated iron, lined inside with wood. There are built-in cupboards in the dining room and bedrooms, pantry, bathroom inside and wash up sink in the kitchen fitted with tap. The house is high up on a hill side dug into the hill in fact. To read the top of the yard it is necessary to climb steps about as far as your back gate...

...So much for this talk of woe, I hope you are all right and have recovered from your ailments by now. Give my kindest regards to the family. Hoping to see you very soon.

Ever yours, Bill.

Quarryman & Maintenance Worker – William O'Brien

Submitted by Merri Namestnik

My great grandfather, Will O'Brien was a wages employee of the Goldfields Water Supply for 30 years and started working on the Pipeline project as early as 1898. Will first started working as a quarryman at Mundaring Weir, and lived with his wife Chrissy and their children in a tent at the workers' camp there until at least 1903. Around 1910 Will was transferred to Bakers Hill and he and his family lived there for approximately 8 years before being transferred to Northam. In Northam, Will was provided with a Water Supply House and lived there until he retired in 1928 from ill health.



OVERLEAF: Submitted by Fay Littlely

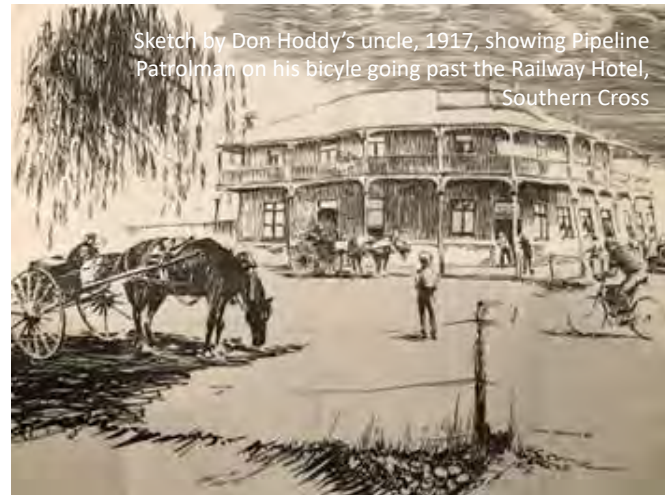
An abridged letter from Fay's father, Bill Peterkin, to her mother, Lorna McCallum, when they were engaged and Bill was working at No. 2 Pump Station. Bill was a Fitter & Turner and had his 2nd Class "Steam Ticket" for operating industrial steam engines. He was trying to decide whether to stick it out at the Pump Station or pursue other opportunities in the Southwest forests at the State Sawmills. The letter is dated August 1937 and by October that year, Bill and Lorna were married and had relocated to Pemberton.

often with their families, camped along the line. Conditions were extremely hard, as foreman Harold Smith stated in an interview with the author of *River of Steel*, Richard Hartley in 2000:

When work started on uncovering the main it was all done by hand by part-time sustenance workers. The majority of these part-time workers were sent out from the metropolitan area, and most of them were unaccustomed to pick and shovel work, I can assure you. They really didn't know which end of the shovel to use, and it used to be torture to a lot of them. There were people from all kinds of work, including musicians and shopworkers, counterjumpers as we called them. Many had never been used to camping or working with a pick and shovel or anything like that. They would be down in a trench, shovelling up over their heads onto the banks. They had to dig right down, right under the pipe to uncover the whole of the pipe. Many of them had no idea of how to make themselves comfortable in a tent as they had no experience of camping.²⁸

Possibly no one would have a closer relationship with the pipeline than the length runner, who was employed to find leaks in the pipeline. In the early days, whilst the pipeline was still buried in a trench, they had to keep an eye out for water bubbling to the surface as they rode their bicycle along their allocated section of track. The bicycles were fitted with a big leather bag which was attached to the frame, loaded up with his plugs, tools and a hammer, as well as a crib bag. Later, once the pipeline was above-ground, the length runners would be known to place marker rocks on top of the pipe to identify leaks for the maintenance welders who followed behind them.²⁹ Don Hoddy from Kalgoorlie recounts the life of the length runner as he remembers it from his childhood:

I remember excursions along the pipeline with the 'pipe patrolman.' He was a Water Supply employee whose job it was to ride the line and check for small leaks and other anomalies. His patch was from Coolgardie down to Moorine Rocks, about 17 miles. He



Sketch by Don Hoddy's uncle, 1917, showing Pipeline Patrolman on his bicycle going past the Railway Hotel, Southern Cross

carried a bag hung from the crossbar of his bike. In it there were wooden wedges, a hammer, a tomahawk and some wire. Small leaks were temporarily repaired by driving a wooden stake into the hole. Sometimes these wedges were prepared on the spot, other times using the material he carried in his bag. Sometimes bits of wire tightened around the pipeline was(sic) used to hold the plug in place until the water swelled the timber. It was an effective temporary repair.

Working on the pipeline was often difficult because of the heat in summer and the cold, wind and rain during winter. The work could be physically challenging and dangerous:

My dad's father worked on the pipeline. He had an important role, coming from the farm. He was a welder and used to line the inside of the pipe with cement...the cement(ing) inside the pipe was done by hand. They were very heavy on manual labour in those times...he always used to tell us which section of pipe he worked on with great pride. – Janine (Kellerberrin)

At night they did link-ins when the pipe was cool to work on. They might have 3 or 4 link-ins per year,

it was always nightshift. This is when they shut off the water while they fixed it. One day Matthew was welding inside the pipe and nearly got stuck in there. They got him out just in time. – Deborah (Northam)

My old man worked as a fitter and turner for the Water Corp all his life. For the last 10 years he was an inspector of the lines. We lived about a block away from the 'water works' in Miles Street in Kal(goorlie) ... the pipe that went out to Ora Banda caused a few problems. It was made of asbestos and would leak. The donkeys looking for water would kick the daylight out of the pipe, busting it up to get to the water. The old man would have to go out and repair it. – Patrick Browner

While those employed in the maintenance crews were men, women played an important role supporting their husbands and fathers in the remote and isolated work. Heather from Cunderdin recalled that the wife of Charles Millea, a length runner during the Depression era:

... used to go along to the camp-sites with her husband to the working camps on the pipeline, which were usually men-only camps, and she would do the cooking.

Other men weren't so lucky, as Daphne (originally Southern Cross, now Cunderdin) noted:

Dad was on call constantly to fix leaks, they would set up camp wherever the problem was. He was sometimes away for long periods of time. Dad told me that he used to cook sometimes in the camp and the men liked his stew.

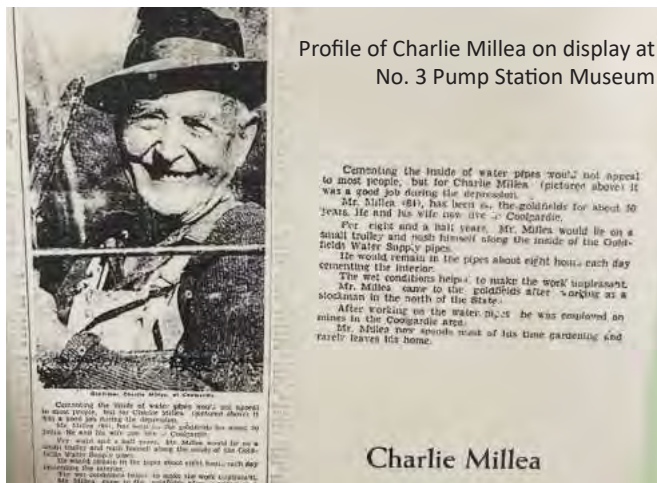
Bethlynn was 21 when she married engineer, Keith, who worked for the Goldfields Water Supply Scheme. Bethlynn and Keith lived at No. 6 Pump Station in Ghooli as well as No. 7 Pump Station in Gilgai. Bethlynn recalls the day-to-day life on the 'line:

...from Ghooli there was a once-a-week shop at Southern Cross. Gilgai only got to shop once a month. In Southern Cross at that time there was one grocery store, one bakery, two banks and a hospital. In the house we lived in, there was only a kerosene fridge. You got fresh meat and ate that while it lasted and then your meat came out of a tin, and there were Bentos Pies. The same went for milk. It was fresh while it lasted and then we drank powdered milk.

Bethlynn's memories also provide great insight into the isolation and everyday life of the engineer's wife:

I'd pack Keith's lunch and send him off to work each shift and then just do what I had to do, you know, the washing and cleaning and cooking...there weren't many people to mix with. The neighbour had five kids which kept her pretty busy. Most of the other people were single men who worked on the railway.

Whilst working maintenance on the pipeline was an important source of employment for many men over many decades, particularly during the Depression and Post-War years, the remote and isolated nature of this work has left many lasting memories of these times of hardship and adversity.




A tale of two Grandfathers

Submitted by Paul Bertola

My maternal grandfather, Len Hardie Hill, worked as the Pipeline inspector between Mt Helena and the Sanatorium (near Wooroloo). He began working on the 'line in the late 1920s after returning from AIF service in WWI. Transportation for work was a very heavy-framed bicycle on which he carried a supply of various tools including spare pipe fittings. These were carried in a heavy leather bag which also included his tucker for the day. His day began with a meter read at the Chidlow Railway Station, this was to determine the daily consumption of water by the steam trains which operated at the time. The reading was forwarded to headquarters in Northam daily by train carriage. Following on, he would then cycle along the line to the Sanatorium on Mondays, Wednesdays and Fridays, whilst on Tuesdays and Thursday he would go to Mt Helena. Len would undertake minor repairs himself using wooden plugs which were driven into the small leaking holes. Major repairs were reported back to Northam, where a maintenance team was stationed. My mother, Alice, would sometimes do the rounds reading the meters in Chidlow with her dad, sometimes accompanying him to his little store on the outskirts of Chidlow where he kept a supply of fittings and some work tools. Len had a nice orange orchard which was watered from the 'line of course, though he was careful not to be seen using excessive amount of water as it wouldn't be a good look for a linesman. Len worked on the Pipeline until he was 65 years old, retiring to his orchard, his chooks and his garden. His replacement didn't take to the bicycle transport at all but rather used a motorized transport.

My paternal grandfather, Giovanni Bertola, also had a connection with the Pipeline. He cut billets of firewood for the Pump's boilers which were steam driven at the time. This was done in the Mundaring, Sawyers Valley area. Unfortunately he was not paid for his work as his employer, one of his countrymen from Italy, deducted a substantial fee for tools and lodging which left poor old grandfather in debt to his employer. This was in the early 1920s. Yes, there were rogues around then. He left the area and went to Southern Cross to clear land instead.



Outs and well
In Caudwell
By reference
Becher, M Newman
G. A. Manning
R Newman
& Sisinigoli
H. J. Payne
J Sisinigoli
Daisy Payne
Mary Littlewood

Charcoal drawing of No. 8 Engine Room by E. K. Harvey, 1964.
Supplied by Dianne Madden

The Pipeline expansion

A number of industries were able to thrive once the reticulated water arrived in Kalgoorlie and the Wheatbelt, particularly those associated with providing fresh produce and meat to local residents through the establishment of market gardens and abattoirs. Market gardens flourished during the gold boom, a sector dominated by Chinese workers, especially as mid-1880s restrictions prevented Asian prospecting. In Kalgoorlie, the Chinese, as well as Italian and Yugoslav immigrants, dominated the market garden industry. Many market gardens were established on the east side of the town, near the racecourse or towards the Coolgardie road, operating until the 1980s. Rich clay soils were excellent for growing tomatoes, zucchini, watermelon, rockmelon and cucumbers etc. In their heyday, there were as many as 33 families growing and residing in the gardens of Somerville, selling their produce to local shops and to keen locals who could pick their own. As former grower Catina Borromei noted:

There's nothing you can't grow here in the Goldfields, but the water restrictions have made it harder to grow large amounts...back then you had to have a bit of everything 'cause nothing comes from anywhere else.

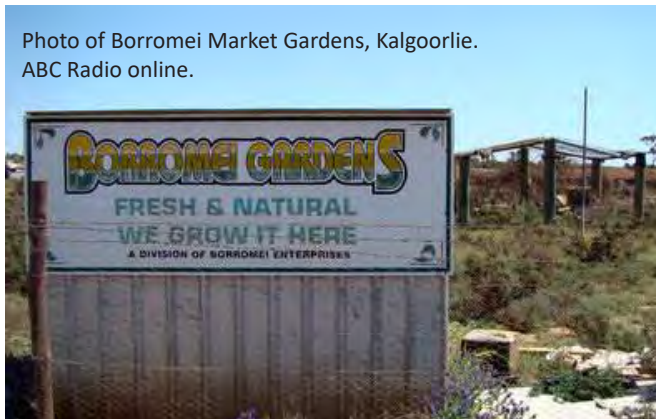


Photo of Borrromei Market Gardens, Kalgoorlie. ABC Radio online.

Scheme water allowed Kalgoorlie market gardens to be irrigated, although once water quotas were introduced, it became more expensive to continue their operations and it made it more difficult for local growers to compete with supplies from other places.

Livestock had been driven into the Goldfields region using the stock routes that extended from South Australia since the turn of the century. The arrival of Scheme water, however, would sustain the fresh meat industry, along with the construction of the Kalgoorlie City Markets in 1900. The Pipeline enabled stock to be railed into Kalgoorlie and kept watered until being sent to the abattoir. The West Kalgoorlie abattoir, near the end of the stock route, not only supplied choice cuts to the City Markets and local butchers, but also supplied the local Aboriginal people with low-grade offcuts and discards directly, as it was located outside the 6km 'Prohibited Areas Proclamation' radius of 1936.

As World War II brought the Depression to a close, Australian men aged between 16 and 65 were called up for direction into important industries. In 1943 this was extended to boys aged between 14 and 16. In *River of Steel* there is a



Old Abattoir office, West Kalgoorlie

vivid account given in 2003 by Cyril Kelly who found himself instructed in 1944 to report to a gang working on the GWSS near Coolgardie:

I was issued with a rail warrant for Bullabulling and boarded the Friday Kalgoorlie Express. The train was completely packed, mostly with troops. There were no seats left so I slept in the corridor. I got out at Bullabulling, and the train departed leaving me standing in the early morning dark. All I could see was the outline of a building, which turned out to be the hotel. So, I sat on a wooden keg outside it and went to sleep. When day broke, I could see some tents about half a mile away, across the railway, towards the pipeline where the gang was doing a 'divi'. I was placed assisting the welders during the day, and in the cool of the night, for five to six hours. I ran cement mortar up the pipe to the plasterers who were lining the pipe. So that's how I started with the GWS.³⁰

During the war, the Goldfields Water Supply Scheme was considered a key asset. Kalgoorlie local Don Hoddy, recalls that there was a real fear that the Japanese would bomb the pipeline. To protect it, an armed guard was stationed at Ghooli No. 6 Pump Station:

...although he was only given a rifle, a sidearm and holster, so God knows what he would have done if the Japs did try and bomb the pipe.



Cec Styles, Southern Cross Draper and Special Guard employed to protect No. 6 Pump Station during WW2. From Yilgarn, Good country for hardy people.

Life at Ghooli

Shared by Bethlynne Jarvis

I was 21 when I married Keith, who had been working at the No. 7 Pump Station in Gilgai, but moved to the No. 6 (Ghooli) once we were married. The settlements were small. At Ghooli there were only 22 people. Everyone knew what everyone else was doing, I recall one time the neighbour asked why I was washing my sheets a second time in the one week – it was because Keith had spilled his tea. At Gilgai the new teacher had to explain why there were only 6 pairs of underpants on the line at the end of the week!

There were no phones at Ghooli. There was a special type of phone that Keith used to communicate up and down the line, but we had to relay messages to people who had a phone if we needed to contact someone quickly...we wrote to our family each week. I had to make sure that Keith's letter to his Mum was written in time for the postman to collect. If his mother in Kal didn't get her weekly letter from him, it was me who got the blame.


When the Pump Station closed, Keith moved to other industries that were still using steam-powered engines.



Keith and Bethlynne Jarvis at No. 1 Pump Station with Diana Frylinck (far right) with Briony and Julie



Bethlynne Jarvis sharing stories with Carolyn



During the period of 1920-1930, the agricultural area east of Northam into the Wheatbelt was extensively developed and vast areas were cleared. The clearing of the perennial vegetation caused disruption to the natural subsurface moisture balance and released vast quantities of salt into the drainage system. As a result, all streams and rivers in this area became saline and were therefore unsatisfactory for either domestic or stock purposes. This situation was exacerbated by the fact that the area had relatively low rainfall and underground water was scarce and often salty. At the time, the common method of providing water for farm use was to construct dams, which captured rainwater runoff. Due to limitations in mechanical technology, the deep excavations which enable water collected in a good season to be stored and carried through to poor rainfall season, were limited. Periods of water shortages on farms were common, with a high cost for farmers.

In 1937, a 68km 'off-shoot' pipeline was constructed, pumping water from the Goldfields Water Supply main conduit to Barbalin, where local water storage solutions had failed. By 1940 the GWSS was being utilised to its capacity, both in respect to the storage available at Mundaring Weir, as well as the size of the pipeline and pump stations. Except for those along the main pipeline, towns in the agricultural areas had no water supply or used unreliable water supplied from earth or rock catchments. On occasions these rudimentary catchments failed completely, and water was delivered by road tankers and pumped into rainwater tanks.

Over a number of years, multiple schemes had been investigated, by which parts of the area east of the Darling Range might be provided with a reliable reticulated water supply. However, in every case it was found that the revenue which could be generated would barely cover the operating expenses. In 1946 the State Government proposed substantial expansions to the Goldfields Water Supply Scheme, with its proposal for a Comprehensive Water Supply Scheme. This concept considered upgrading the storage capacity of Mundaring Weir as well as Wellington Dam with additional pipe and pump station infrastructure to supply reticulated water to approximately 2.5 million hectares (ha) of farmland in the northern sector and the same again to the southern sector, comprising approximately 60% of the cereal and sheep areas that had been developed up to that time. The Commonwealth Government refused to fund the original scheme but agreed to a modified scheme, which focused on 1.6 million ha of land in northwest area most disadvantaged by the lack of satisfactory water supply, supplying water to 15 substantial wheatbelt towns.³¹

The Comprehensive Water Supply Scheme included raising the Mundaring Weir wall by 10 metres (m) in 1951, with sections of the main pipeline enlarged and branch mains extended north and south. Work on the scheme commenced in 1949 but due to shortages of material and labour, it was not completed until 1962. These ongoing extensions to the original Scheme ensured a whole new generation of workers and their families developed a special relationship with the Pipeline, either because they participated in the construction and renewal projects or because their homes, their towns and their regional communities came to benefit from the new reticulated water supply.

Cleaning the reservoir, supplied by John Browner

Home at No. 8 Pump Station

Submitted by Dianne Madden

My grandfather, Robert Collins, was an engineer who worked at Pump Station No. 8 and lived there with his wife and family for many years. He worked for the Goldfields Water Supply from 1934 until his retirement in 1965, and died only a year later in 1966. His retirement was an auspicious occasion and he received many handmade gifts including a series of artworks and signed messages from staff.

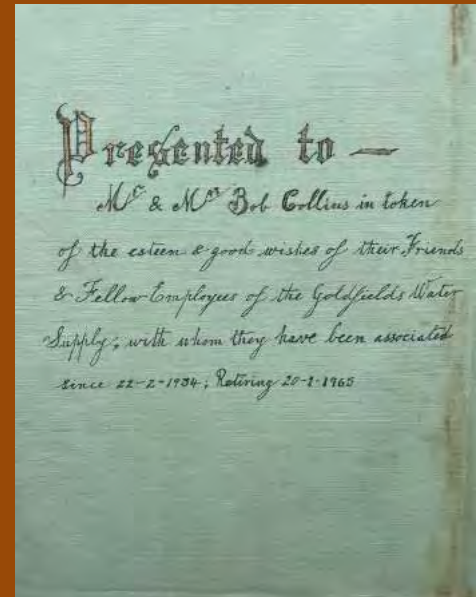
He was originally a ship's engineer and migrated to Australia from Dunbarton, Scotland, where he married an engineer's daughter, Mary [known as Molly] and they had two children, Irene [known as Vicki] and Thomas [known as Bob].



Robbie & Molly Collins



Goldfields Water Supply Mainline Station and Head Office Staff, 1964
Supplied by Dianne Madden



Inscription from Robbie's fellow employees on the occasion of his retirement in 1965



Pen & Ink wash, "Robbie's wee hoose at No.8" by E. K. Harvey, 1964, with a photograph of the real house, inset.
Supplied by Dianne Madden

Many of the workers on the post-war Comprehensive Water Supply Scheme were 'displaced persons'—men who had found themselves homeless in the chaos of Europe at the end of the war and who were assisted to emigrate to Australia. As part of the emigration process, these 'New Australians' were required to work where directed for two years, and those working on the pipeline extensions became a regular fixture along the pipeline.

Between 1954 and 1969 the first seven original pump stations were replaced by electric pump stations. No. 8 Pump Station at Dedari was replaced by a diesel station in 1970 and eventually converted to electric power in 1984. Doug Wilson, who formerly worked as Engineer at both the No. 7 and then the No. 6 Pump Stations, accompanied by his wife Adele, recalled life before electricity was extended to the Pump Stations:

...we had no electricity, just our own 24V DC power supply which just ran the lighting. It turned off at 10pm each night, so you had to crank the diesel to turn the lights back on. We had a winding clock and you had to remember to set an alarm or work in the dark.

Many of the maintenance workers in the 1970s and 1980s were Aboriginal men, a fact that gives their descendants justifiable pride. Deborah Moody from Northam recalls her husband, Matthew, and her cousin working as welders on the pipeline, while her uncle read water meters. Others were employed in various other capacities such as leak detectors. She remembers taking food to her husband late at night when the welding lights on 6AM hill near Northam made a magical scene. Similarly, Alan Bullen, a Ngadju man, worked as a welder on the pipeline.

In Widgiemooltha, Kaprun elder Brian Champion Snr became the manager of the Pump Station of the secondary conduit on the Norseman line, not far from where he was raised at the Church of Christ Mission in Norseman. For the Aboriginal children the Norseman extension (Norseman connected to the Scheme via Coolgardie in 1936), the pipeline formed a significant part of their childhood. Mission children walked along the pipeline to get places, laid their bare feet on the pipe to keep them cool and scratched their names on the section of pipe that passed by the Mission. Later, as a first-class welder working maintenance on the pipe, Brian welded his initials 'BC' into various sections of the pipe near Kalgoorlie, a permanent reminder of his personal and ongoing connection with the pipe.



Brian Champion Snr, standing near the pipeline that bears his initials 'BC'
Supplied by GALAC

the Pipeline is an icon. I have good memories of it. The section at Northam where it comes down the hill is where I tell my grandkids that's where Pop used to work. - Deborah (Northam)

The Long Run...

Submitted by Linda Temby (nee Wilcox)

My name is Linda Temby (nee Wilcox) and I have been employed with the Water Corporation since 1989. For my whole career I have lived and worked in Northam. I am the 3rd generation of Wilcox's to work consecutively with the Water Corporation, the only significant break in family service being my grandfather, Frederick's, war service (WWII, he recommenced work with the then, Goldfields Water Supply) when he returned from duty, and my own maternity leave. My cousin Debbie worked for the Water Corporation in Perth and my sister, Robyn has just commenced working for the Water Corporation. My son also works for Water Corporation and he is the 4th generation Wilcox to work consecutively at Water Corporation. 2023 marks our families' 98 year anniversary.

My grandfather, Frederick Wilcox (now deceased) commenced work as a length runner in 1925 along the Grass Valley to Northam main. His job entailed him riding a push bike along corrugated tracks in rain, hail or shine and hammering wooden stakes into any leaks that he found on that main. When he finished his day's work, he would return to his home, a tent located at the Grass Valley GWS Maintenance Shed. His wife, my grandmother, and 6 of their 11 children all lived in that tent.

I can remember my Aunt Betty telling me stories of how my grandmother was extremely proud to have had a piece of linoleum on the floor of the tent and that the kids had to remove their shoes before she would let them step foot inside that tent. The family lived in that tent until they moved into a house in Grass Valley townsite.

Whilst living at that site, one day someone left a gate opened in the yard and two of my dad's older brothers snuck out. They were only young at the time, aged 2 and 3, and when the family noticed the boys were missing, a frantic search entailed. They found them both, one was found standing by a nearby farmers sheep dip and the other face-down in the water, drowned. They lost one little boy that day but were very lucky not to have lost them both.

When they were old enough, two of Fred's sons worked alongside him – Ernie Wilcox (now deceased) and my father, Bernie Wilcox (now aged 86). They both worked at the Northam workshop as Welders. Dad commenced employment in 1957 and retired in 2002, a period of service totaling 44 years, whilst my uncle Ernie achieved +40 years. It was the only place they ever worked and ever wanted to work.

For 98 years the Mundaring to Kalgoorlie Pipeline has been a part of our lives. It has fed us, housed us, educated us and employed us. It is intricately woven into the Wilcox family history, our triumphs and our tragedies and for that long association, we are extremely grateful.

Pipeline as a community landmark

Personal affection for the Pipeline and the old Pump Stations surpasses its specific role as a substantial network of public infrastructure for delivery of water to the Eastern Goldfields and Wheatbelt regions of Western Australia. Communities like Cunderdin have celebrated their appreciation for the pipe by painting a 2-kilometre section that runs through the town. Sections of redundant pipe are found on display in the Cunderdin local park, as well as in Coolgardie and in the WA headquarters of the Water Corporation in Leederville.

In Meckering, the former school principal recalls how at the end of each school year the children from the school would run out and write their names on the section of pipeline that runs along the townsite's southern boundary. Elsewhere initials, names and dates can be found scratched into the painted surface of the pipe. A number of memorials are positioned along the length of the Pipeline, including one located 30km east of Southern Cross, which marks the site where a tragic car accident occurred in 2011.

The fondness the community feels for the Pipeline, as both the provider of water and as a landmark that has been in the backdrop of their lives and family folklore cannot be understated, as year 9 and 10 high school students from Cunderdin wrote, '... everything changes, but the pipeline stays the same'.

As a consistent and well-known feature of the landscape running east-west between Kalgoorlie and the Darling Scarp, the Pipeline has become something of a beacon for people who are heading home. Richard Hartley, author of *River of Steel*, describes how travellers on the Kalgoorlie railway during the 1930s were fascinated to see the pipeline emerge from the ground, 'like an endless snake from the Dreamtime'. Even today the pipeline is a well regarded as a favourite landmark for many people:

I remember taking a family holiday to The Goldfields. The pipeline was the constant companion on the long drive. Dad would make regular stops to let me and my brother run about and get 'the fidgets out'. We were drawn to the pipeline like a magnet. Of course, we had to get on top of it and run along its silvery curve. The paint had corroded over time and wherever we touched it, we were daubed in silver. I'm not sure what Mum thought was worse; us being covered in silver when we were let out of the car or enduring our increased bickering if we weren't.- Carolyn (Albany)

Despite many attempts, I never seem to end up too far from the Pipeline. - Josh, Kellerberrin

the Pipeline is our safe place. If you know where the Pipeline is, you know where home is. - Kathy, Kurrawang



Creative artworks by students of Cunderdin and Southern Cross District High Schools as part of the 'Stories in the Pipeline' project.

The Pipeline is also affectionately known as a landmark, helping those who are lost use the pipeline to re-orient themselves and find their way back:

One time my husband was out testing a new metal detector in the bush. I took the dog for a walk while he was pinging and dinging around the place. Anyway, before I knew it, I was completely lost. The tree circle I was sure I'd left him in was completely empty, no dinging, no car, no husband! The dog kept wanting to go in a particular direction, but what would he know? By the time I found the pipeline, figured how the sun looked from my verandah in the afternoon and followed it back home, I had walked about 25 kilometres. Lucky the pipeline was there, otherwise I'd probably still be walking in circles. Perhaps I should have listened to the dog?? – Tracy (Kambalda)

The pipe was right across our driveway at Clackline. Every time we came and went from the house, we had to negotiate it. One day my husband rang from Mundaring and said he was lost. I said, "can you see the pipeline? Just follow it, it will bring you to Dad's place". - Kylee (Merredin)

I remember being with the grandkids on a long drive home. We stopped at Boorabbin and we used the pipe to lay out our meal. The kids said it was the longest table they had ever sat at. - Betty, Coolgardie