# Chapter 3 - History Of Groundwater Use In Marlborough

## Introduction

The first inhabitants of the Wairau Plain were attracted to settle here by the freshwater springs. It is not certain how they modified the springs for their own use, but it is likely that they would have been just as fascinated by the clear, cool water emanating mysteriously from the ground all year round just as we are today.

Local Maori adapted springs for their own use, in much the same way as we do today, but on a much smaller scale. The remains of channels made by Maori for trapping or collecting food such as eel are examples of pre-European use of groundwater. Known examples of this exist in the Wairau Lagoon and Wairau Diversion areas.

The existence of a groundwater resource was known in the early days of European settlement, but the potential of it was not fully appreciated until about the early 1950s. To some extent the development of the groundwater resource had to wait until the advent of more advanced pumping hardware and the arrival of drilling rigs capable of constructing wells of large enough diameter, and a sufficient depth.

From early accounts European settlement of the Wairau Plain was anything but plain sailing. Pioneer life was hard, with few frills and more than enough thrills. There is however, little mention of droughts in the early chronicles. On the contrary it seems as if there was too much water about too much of the time: *"Built on a swamp, devastated time and again by floods, its shops and buildings burnt down with monotonous repetition, Blenheim certainly grew up the hard way."* (Beverly - 1969).

New Zealand Geological Survey (NZGS) geologist Len Brown summed up what the Wairau Plain looked like at the time of European settlement in this extract from his 1981 paper: *"Blenheim was originally named Beavertown because at the beginning of European settlement of the Wairau Plain in the mid-nineteenth century, the surveyors had to live on logs in the swamps, like beavers. Grovetown (originally named Big Bush) was the site of a forest of about 40 hectares and was an island in the swamp. Other forests were at Tuamarina and the adjacent Pukaka swamp. Another buried forest occurs in the former Fairhall Swamp."*

**Figure 3.1: Early Wairau Valley domestic well**

**Figure 3.2: Close up of stone lined well in the Wairau Valley**

A sample of totara wood found in a well near Fairhall, at a depth of nine metres from ground surface, gave a radiocarbon age of 240 years before present, which suggests rapid infilling. These historical buried forests illustrate that some areas of the Wairau Plain were free from flooding for periods long enough to permit establishment of forests.

And what of clean water - well that wasn't plain sailing either. In the early 1900s Blenheim struggled to come to terms with providing itself with a communal water supply. *"Flood control was a heart-breaking task; on the other hand the provision of water seemed at times an insuperable obstacle."* (Beverley 1969).

**Figure 3.3: Brick lined Benmorven well (June 2010). Photograph taken as well was being pumped to verify its depth. The green hose is the pump intake and the static level is marked by the darker shade of orange sitting just below the top of the metal pipe.**

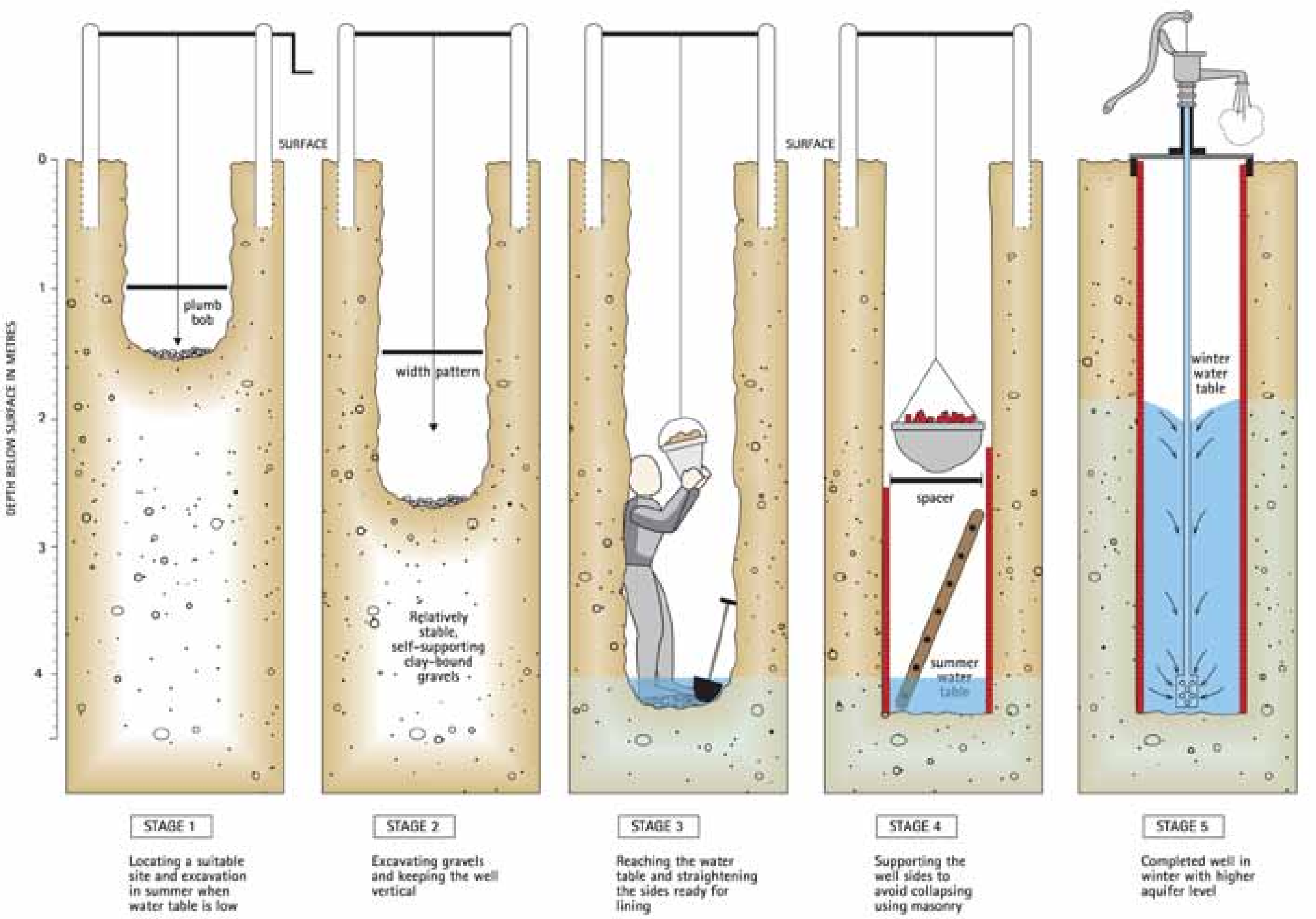


**Figure 3.4: Possible well construction sequence of Villa Maria well**

Today the Blenheim water supply relies entirely on groundwater as its water source. It is also far and away the most important source of water in the developing rural and primary processing based community of Blenheim and its surrounding district.

# Getting at groundwater

## Early methods

Many of the early settlers selected house sites near rivers, creeks or springs so as to be assured of a water supply. On occasions extensive diversions of creeks were made to provide running water at the back door. Rainwater was also collected off roof tops.

The earliest wells were dug by hand and lined either with stone or brick. They provided water for both domestic and stock use. They were relatively shallow and of a large diameter, thus giving some amount of water storage within the well (Fig. 3.1).

Some of these earliest wells still exist, particularly in more remote areas where traditional land uses remain. A early well that still remains in the Wairau Valley is 7.5 metres deep, around 0.6 metres in diameter, and wonderfully constructed using no cement or mud to bind the stones together which line the wall of the well (Fig. 3.2). The stones are placed so they interlock using a dry-stone technique.

One of the earliest wells dug in Blenheim was for Alfred Dobson in 1866 or thereabouts. This well was around 12 metres deep, some 0.9 metres in diameter and was lined with brick. Alfred Dobson, a brother of the well known surveyor Arthur Dudley Dobson (Arthur's Pass), built "Argyle" which still stands today near the corner of Weld Street and Muller Road.

A deep bricked lined well dating from around 1900, still exists in the Benmorven area. It currently belongs to Villa Maria Estate Ltd and is located behind their winery on Paynters Road opposite the golf course (Fig. 3.3). According to Phil Bishell, whose family owned the farm, the remnants of a cob cottage stood beside the well and water was presumably pumped for drinking water. While the exact method of construction is uncertain, it is likely that a pit was hand dug down to the water table during a dry period. With the possible aid of a hand pump to keep water levels at the base of the well low while excavations were going on, the walls were carefully lined with bricks for support from the bottom up (Fig. 3.4). Once the brick lining was complete the annulus space of the oversize excavated hole was probably carefully backfilled.

The tensile strength of the circular brick lining relied on the mutually interlocking way in which the bricks were placed (Fig. 3.5). The size of the bricks suggests they may have been made specifically for this purpose.

**Figure 3.5: Close-up of interlocking bricks**

The survival of the well is testament to the construction methods of the time and represents a lost craft.

All of the excavated material would probably have been lifted from the hole using a winch or windlass, and the bricks lowered down in the same manner. With a diameter of just 0.72 metres and a depth of 4.5 metres, this would not have been a job for the faint hearted, as there would always have been the potential for a collapse, especially once the water table was reached.

With the advent of modern drilling techniques came the opportunity to prospect for groundwater at greater depths than had been the case when wells were just dug by hand. Whereas dug wells were generally between five and seven metres deep, many drilled wells were in excess of 20 metres, or as deep as required to tap the aquifer. However the arrival of well sinkers or well drillers has not seen the total demise of the dug well, although today drilling wells is most definitely the preferred method of construction.

The early drilled wells were constructed using the hollow rod technique. A steel pipe perforated with holes in the lower section to let water in was driven into the ground until water was found. The pipes were driven by the pile driving method. As time progressed, motive power behind the pile driver changed from man or beast to machine. One well drilled for the Blenheim Borough Council (BBC) in 1892 reached a depth of 96 metres before the drilling pipes broke off.

A popular method of cleaning the well once driven to the final depth was to blow it off with explosives. A charge would be lowered to the bottom of the well, the well then filled with water to direct the force of the explosion sideways, and the charge set off (Fig. 3.6).

**Figure 3.7: Windmill at Marshlands Station stock water well (1990)**

The process of cleaning up and improving well yield after drilling is known as development. The practice of using explosive charges as a means of well development is no longer used. While it seems to have been effective most of the time, there were often cases when stones became locked within the well pipe thus blocking it off. Today wells are developed using jets of compressed air or surged with water in a similar action to that of a plumber's plunger.

The diameter or size of dug and drilled wells was another distinct difference in the final product. Dug wells were generally about one metre in diameter, and not always circular in shape, whereas the earliest drilled wells were around 50 millimetres diameter and were always made of circular pipe.

The casing size of drilled wells depended both on the use for which the water was to be put, and capability of the driller's rig. Most early wells were for household use and it was found that a 40 millimetre diameter well was sufficient for the small volumes of water involved.

A common sight on the Wairau Plain landscape until recently were windmills to drive stock and domestic water supply well pumps (Fig. 3.7). The windmill provided the power to drive a piston pump that bought groundwater to the surface and filled a tank on a raised stand nearby.

**Figure 3.6: Blown-off well pipe. Note the round drilled holes in the pipe which allow water into the well.**

**Figure 3.8: Top of historical shallow excavated well at Rapaura**

## Modern well making techniques

As time passed the capability of drilling rigs improved and so did the availability of materials for constructing wells. This generally has been a direct result of the groundwater industry in the United States, which has been the pacesetter internationally in this field.

While there have been many advances in well construction, some of the traditional methods are still in use today, but the techniques and material have been refined. Large diameter wells are less common than historically, but they are still used and being constructed today to access shallow groundwater at places like Rarangi, Wairau Valley and the gravels of the Omaka, Fairhall or Taylor Rivers.

Large diameter wells are suitable for providing small volumes of water and they last forever because of the lack of corrosive materials used in their construction. However they are relatively slow to construct, and the lack of a proper screen makes them hydraulically inefficient. This can be a problem in shallow aquifers when there is limited drawdown available, especially over summer when water levels fall.

Excavated wells were once common place in the Rapaura area for supplying crop irrigation, but have been replaced as declines in the water table made the use of surface mounted pumps marginal in some drier

**Figure 3.9: Rarangi golfclub clubhouse well**

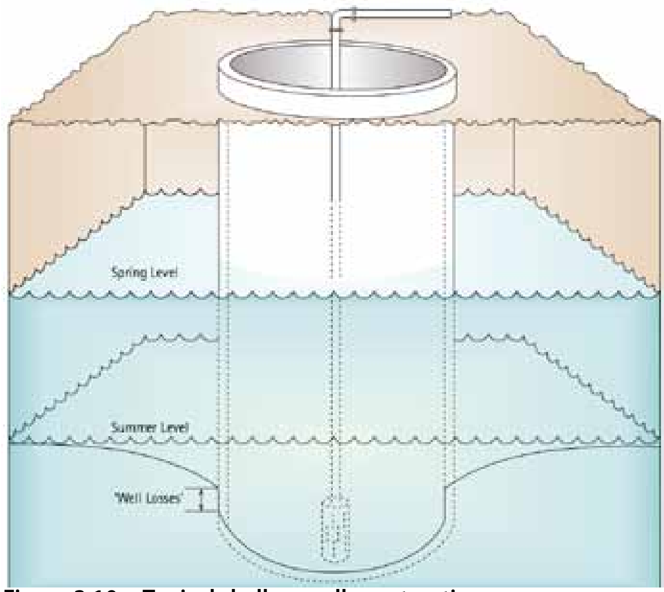


**Figure 3.10: Typical shallow well construction**

summer seasons (Fig. 3.8 to Fig. 3.10). They performed favourably in high yielding areas where their lack of efficiency wasn't as critical and large volumes could be pumped for quite small drawdowns.

By far the most common type of well constructed today is drilled rather than driven or excavated. Larger diameter bores of up to 300 millimetres in diameter are drilled at faster rates than have been possible in the past.

Advances in drilling technology together with the availability of more sophisticated pumping equipment such as electric submersibles, has meant there are far more options for using groundwater as a water source than the pioneers had available.

Most modern wells consist of a pipe or casing, usually but not always made of mild steel of varying diameter, extending vertically downwards below the land surface to intercept the aquifer. It is normally fitted with an open screen at the base to allow groundwater to enter the casing.

Improvements in drilling technology have been matched by advances in community knowledge of the resource. This has come about through investigations and the pooling of information in archives documenting drilling results. These have all enhanced the ability to extract water from the ground, particularly in areas previously thought to be dry or marginal in some seasons.

A recent innovation in well construction is the infiltration gallery which are most commonly used in places like the Awatere, Wairau or Waihopai River beds. In these circumstances a conventional vertically cased well is not suitable because of the thin nature of the water bearing layer.

Galleries are effectively a horizontal well adapted to extract the maximum amount of water possible from a narrow band of gravel associated with a river or thin water bearing layer located close to the surface (Fig. 3.11 and Fig. 3.12).

There may be future issues with the longevity of infiltration galleries, particularly those in river environments such as the Awatere or Waihopai Rivers with a naturally high sediment load. Frequent maintenance is probably required to maintain their hydraulic connection with the water source, which tends to deteriorate as the active channel shifts, and silts or clays clog the area around the intake.

**Figure 3.12: Awatere River infiltration gallery under construction. Note size of person standing in the trench.**

## Well drilling activity

It has been estimated that to date approximately 6,000 wells have been drilled in Marlborough. The majority of these wells have been on the Wairau Plain (Fig. 3.13). Because the Marlborough District Council (MDC) doesn't have records for all wells, the exact number is not definitive.

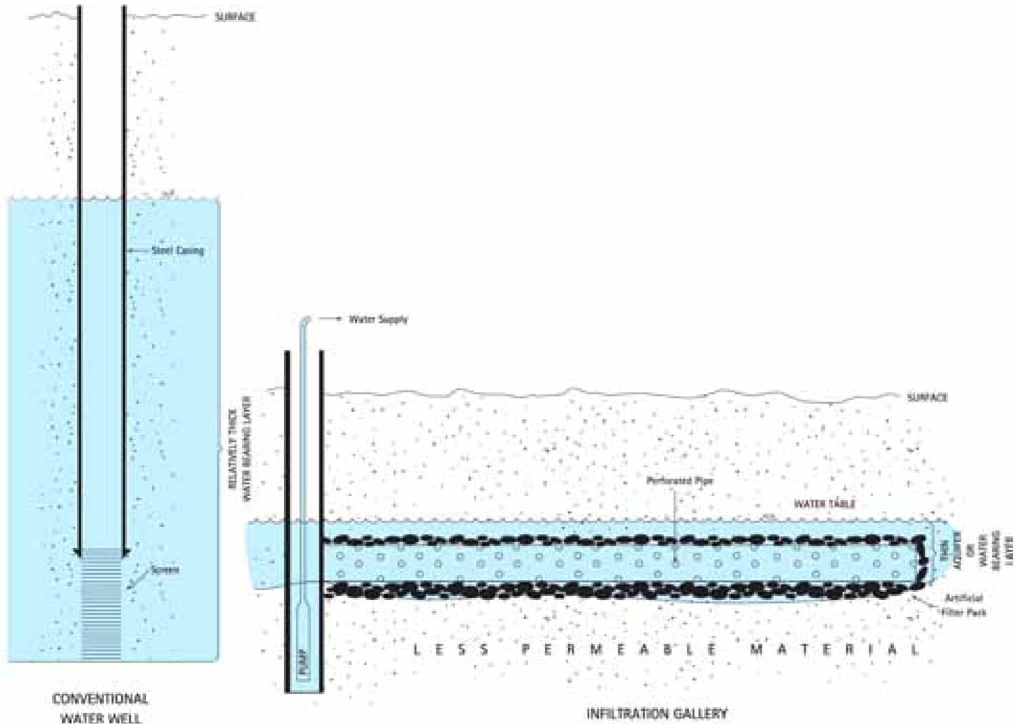


**Figure 3.11: Infiltration gallery**

Almost all that is known about groundwater has originated from the results of drilling. Without this knowledge we would have little understanding of underground water resources.

There is a definite pattern to well depths across the Wairau Plain with deeper wells occurring in the southern valleys catchments and east of SH1. This distribution largely reflects variations in the subsurface geology.

The numbers of wells drilled has increased dramatically since the late 1970s. (Fig. 3.14). While one cannot read too much into the figures as the records are incomplete, they do indicate the relative variation in drilling activity for underground water over the years.

There are however, some apparent trends in drilling activity over the years, including a fall off in activity following the completion of the Blenheim Borough water supply scheme in 1923. There has also been a general growth in activity since the 1980s associated with land-use intensification involving crop irrigation or rural residential development. There are also distinct peaks associated with the 1997/98 and 2000/01 drought events. During this time many shallow wells failed and had to be replaced or deepened.

It is likely that as many water wells have been drilled since 1988, as the combined total up to that time. There are a number of reasons for this including the need to deepen or replace wells affected by drought, and the increase in water demand associated with subdivision, or growth in the area of irrigated crops. The number of wells currently being drilled probably varies between one and five per week depending on seasonal weather conditions and economic activity.

The wells have been drilled by a number of different drilling contractors (Fig. 3.15). Butt Drilling Ltd has constructed more wells than any other individual company followed by Waimea Drilling and then Simpson Well Drilling.

The large number of wells where the driller is unknown reflects wells identified in the 1960s or 1970s as part of the initial baseline survey by Len Brown of the NZGS. At this time there was no formal requirement for drilling companies to supply records to the Council or to gain planning approval to drill a water well.

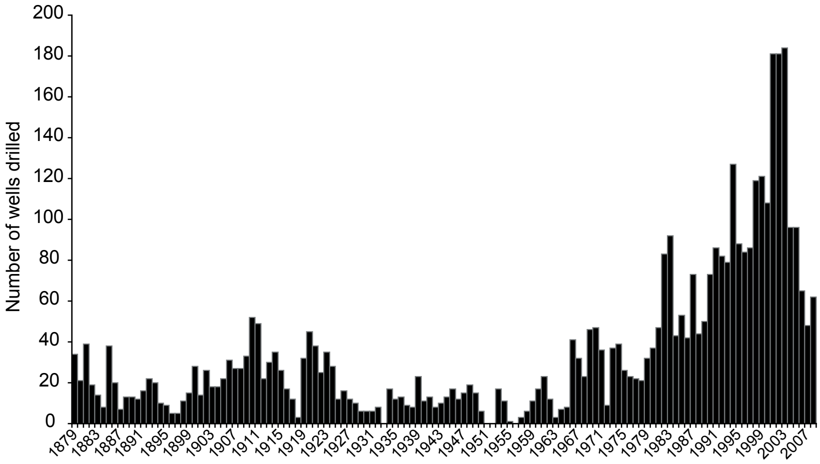


**Figure 3.14: Well drilling activity since 1879**

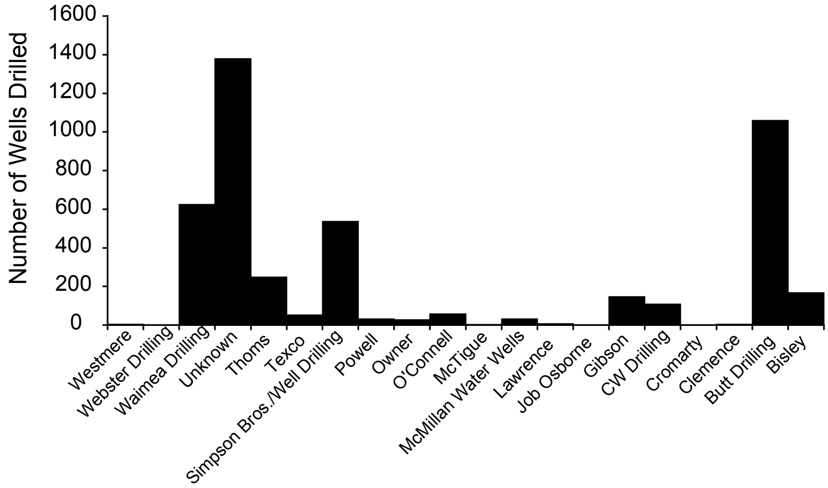


**Figure 3.15: Wells drilled by contractor**

Just under half of the 4,500 wells that have been drilled in the MDC record are attributed to the Wairau Aquifer. This isn't surprising as it represents the predominant aquifer system in Marlborough and underlies the area where most intensive agriculture occurs and where the majority of the population live or work.

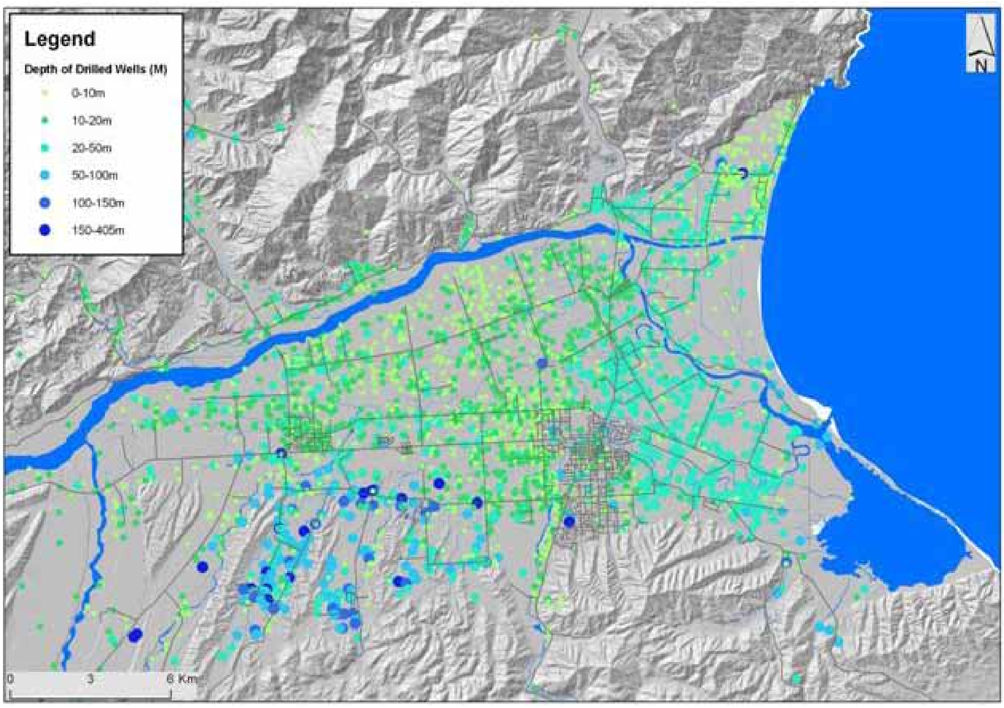


**Figure 3.13: Wairau Plain well location and depth**

## Local drillers

The first known well sinker on the Wairau Plain was Thomas Cragg who operated out of Grovetown (Fig. 3.16 and Fig. 3.17). He had four sons, a blessing indeed in those days before horses were harnessed in well drilling work.

**Figure 3.16: Thomas Cragg and Sons using hand operated well drilling equipment about 1900 (Marlborough Historical Society)**

Records of Thomas Cragg's work are very sketchy, but it would seem that he probably began operating in the mid to late 1860s. Beverley (1969) , says that in May 1877, *"....a new well at the rear of the Royal Hotel sunk to 70 feet produces some small gravel - and also numerous colours of gold, some of which weigh 5 grains".* This was more than likely one of Thomas Cragg's wells.

In 1878 Blenheim had some 1,692 inhabitants and some 350 dwellings. At that time Thomas Cragg was bought out by the Gibson family who continued well drilling under the name of Adam Gibson and Son. They had a good drilling plant and were capable of constructing wells up to 100 millimetres in diameter. This firm must have amassed a wealth of knowledge as they drilled some 1,200 or so wells between 1878 and 1962. Some 330 of these were drilled before the turn of the century, the oldest being at the old Grovetown School (21 metres deep), and at the old Spring Creek School (10 metres deep).

One of the first industrial or commercial uses was by a Mr Fell who used the flow and pressure from an artesian well to work a hydraulic ram. An article from the Marlborough Express of 2 March 1878 reads: *"Mr Fell has had a hydraulic ram fixed to the rear of his house which fills some large tanks about the height of the house containing about 400 gallons, from whence pipes have been laid on to his wharf for the supply of the vessels. This arrangement is quite a success and means water can be laid on all over the house at a small expense. Mr John Smith of Wynen Street fitted it up".* The well itself was probably drilled by either Thomas Cragg or Adam Gibson and Son.

**Figure 3.17: Thomas Cragg and Sons operating a steam powered cable tool rig at Grovetown Hotel around 1900 (Marlborough Historical Society)**

From the days of Thomas Cragg through to the present there has always been sufficient demand for well drilling to keep at least one local drilling firm in business. From time to time drillers from outside the district have worked here and some still do. The availability of groundwater in those early days was a foregone conclusion.

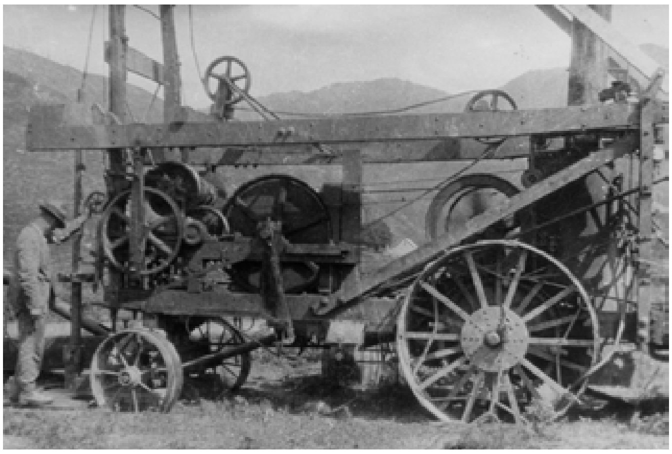

**Figure 3.18: Cable tool machine well drilling rig operating at Cullensville about 1930 as part of alluvial gold investigations. (Marlborough Historical Society)**

Until the early 1940s, Adam Gibson and Son had all the drilling work to themselves with the odd exception where drillers from out of town were engaged on specific projects (Fig. 3.18).

From 1943 to 1953 the Blenheim firm D.C. Freeman Ltd, who were principally plumbers, joined the well drilling business alongside Adam Gibson and Son. Freeman's used a Star drilling machine that was capable of drilling wells up to 80 millimetres in diameter (Fig. 3.19). This rig was subsequently operated by Mr Syd Price from 1953 to 1956.

To the trained eye there are many similarities with the machines of today, although the motive power and the way it is transported have changed radically.

The firm of A.F. Stretch and Son Ltd was another operating in the well drilling field in the 1950s. Mr R.D. Thoms operating a combined cable tool/percussion and rotary drilling rig, started off with Freeman's in the early 1950s, and in 1955 built his own percussion type rig to play around with at weekends. He built a second

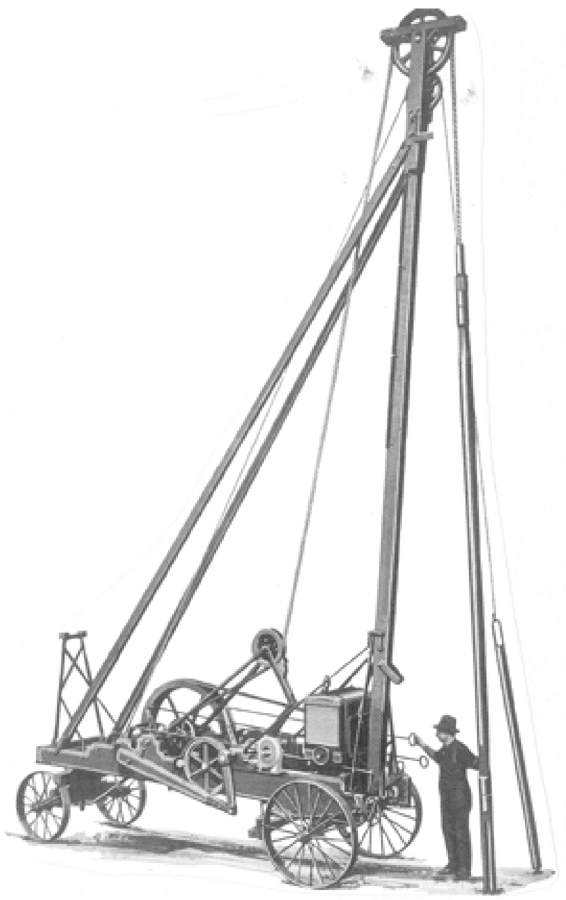

Figure 3.19: Star drilling rig

combination type rig in 1958, and by 1969 the hobby had become a full-time occupation specialising in drilling domestic supply bores. Records show that Mr R.D. Thoms has drilled some 220 wells since 1969 with a feature of his time in the well drilling business being the experience he gained in the construction of small diameter wells for domestic supply.

From the mid 1950s to the mid 1960s, another local firm in the drilling business was the father and son combination of Stan Lawrence junior and senior. Each had a rotary rig to operate and they became involved in drilling for minerals as well as for water. Young Stan as he became known, had a flair for water divining and it became a matter of course that he would select the well site by divining prior to drilling it.

The Lawrence's business was bought out by the engineering firm Simpson Brothers General Engineers. Mr G.R. Simpson alternated between drilling and engineering jobs. Mr G.R. Simpson and Mr S. Lawrence (Young Stan) became a water divining and well drilling team, continuing the practice of selecting a well site by divining prior to drilling (Fig. 3.20).

Mr G.R. Simpson attributed his 90% plus success rate on all wells drilled to Young Stan's divining. Following the death of Mr G.R. Simpson in 1988, his son Colin took over the business and today Simpson Well Drilling along with Butt Drilling construct the majority of water wells locally. Records show that Simpson Bros./Simpson Well Drilling have drilled around 600 wells in the time that they have been operating. They drill the full range of wells from domestic supply through to irrigation bores and have also been responsible for many of the Blenheim municipal wells. This company divines most wells prior to drilling as a standard practice (Fig. 3.21).

John Butt bought Mr R.D. Thoms business in 1990 and today drills the majority of water wells in Marlborough. Butt Drilling Ltd operates several modern drilling rigs that are capable of very fast rates of drilling. By 2010 Butt Drilling Ltd had eclipsed all other drilling contractors in terms of the number of wells drilled in the district with a total of around 1,200 wells constructed (Fig. 3.22).

Some of the drilling firms have made the construction of particular types of wells their specialty business. This is the case for T.N. Powell with their large diameter wells which are constructed using a clamshell bucket fitted to an excavator. These are still popular in areas where the water table is close to the surface all year round such as the flats of the north-bank tributaries bordering the Wairau River.

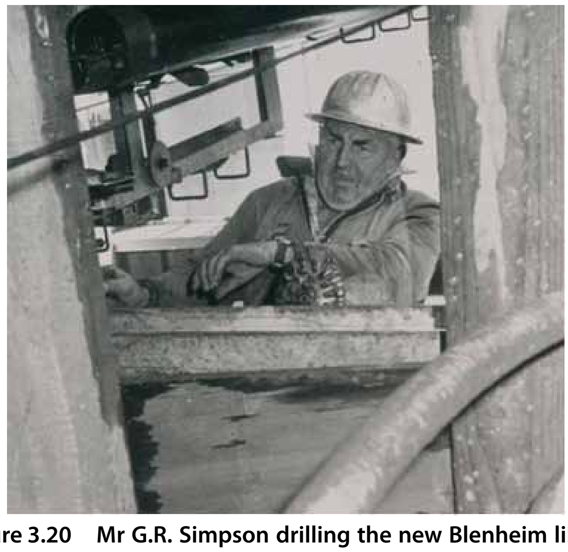

Figure 3.20 Mr G.R. Simpson drilling the new Blenheim library lift well (Courtesy of The Marlborough Express)

Figure 3.21: Colin Simpson drilling one of three new MDC Renwick domestic supply wells in 2008

**Figure 3.22: Rob Millard of Butt Drilling operating a rotary rig at Linkwater in 2009**

## Visiting drillers

In the earlier years drillers came from outside the district to do one-off jobs, presumably because the local drillers could not meet the job specifications or were unavailable. The 50 millimetre diameter well 0979 drilled to a depth of 96 metres for the BBC in March 1892, and the two 75 millimetre diameter bores at Wairau Hospital: 0838 to 154 metres depth in 1916, and 0980 to 87 metres depth in 1918, are examples.

Wells 0838 and 0980 at the Wairau Hospital are by no means high yielding, but are interesting results, particularly considering the area they are in.

Shallow groundwater also exists in the vicinity of Wairau Hospital. In 2009 an historic large diameter excavated well was uncovered during construction of the new hospital premises. Unlike the well located on Villa Maria land at Benmorven, the brick lining of the well is cemented (Fig. 3.23).

## Blenheim municipal supply

The development of a groundwater supply for Blenheim happened relatively recently.

A rich source of information on groundwater beneath Blenheim from the earliest days of European settlement has been provided by the various Blenheim municipal authorities and in particular the BBC and Marlborough District Council (MDC). Many wells have been drilled over the last century or so in an attempt to secure a suitable public water supply for Blenheim.

As early as March 1892 a 50 millimetre diameter well (0979) was drilled for the BBC. Drilling ceased after 9½ weeks of solid going when the drill pipes broke off at a depth of 96 metres. No promising water bearing layers were discovered and no further work was done.

In the early 1900s at the time when the BBC was hotly debating the options for water supply, there must have been some confidence in the prospect that groundwater could supply Blenheim with water, as an artesian supply was one of the favoured proposals at the time.

In 1943 a Mr Parkinson from Palmerston North was contracted by the BBC to drill exploratory bores for water supply purposes on Grove Road near the intersection of Herbert and Pitchill Streets. Mr Parkinson was on and off the job from early January 1944 to late June 1946. The first bore, 150 millimetres in diameter was drilled, with difficulty, to a depth of 148 metres without finding any appreciable quantities of water.

Local knowledge played a role thereafter. A Mr J. McCallum volunteered to Council staff the fact that he had a well on his mill site nearby which was about 24 metres deep and which gave a good flow at groundlevel. Council then directed that the first well be blown off at the depth of Mr McCallums well. This was done and a very satisfactory yield was obtained from the bore. A second bore of 100 millimetres diameter was drilled nearby and finished off in the same way with explosives.

Pumps were fitted and from 1946 this groundwater pumping station was used to augment the Blenheim Borough water supply which at the time received its water from the Taylor River (Fig. 3.24). This was the beginning of the end for the Taylor River as a source of Blenheim water supply.

The BBC began prospecting for groundwater in earnest in the late 1950s and early 1960s, and had submersible pumps installed in large diameter wells by the mid 1960s. No doubt concerned at the ability of the Taylor River to supply Blenheim's increasing water supply needs, and encouraged by the Grove Road bores drilled in the mid 1940s, the BBC decided to explore underground sources yet again.

**Figure 3.23: Cemented brick lined well**

**Figure 3.24: MDC staff member sampling the Taylor River at Borough Weir**

A major contribution in terms of well drilling and related knowledge about local aquifers was made when A.M. Bisley and Company Ltd successfully tendered to carry out an exploratory drilling programme for the BBC in 1959.

Bisley's bought state of the art well drilling technology to Blenheim and their association with the BBC spanned some 15 years from 1959 to 1974. In that time they drilled some 15 wells and the result was six operative pumping stations which were located around Blenheim.

At the same time as Bisleys were drilling, other investigations were commissioned by the BBC to help find an alternative to the problematical Taylor River supply. In July 1961 Mr T.L. Grant-Taylor, a geologist with the NZGS forwarded his report on water supply to Blenheim to the BBC.

In his report Grant-Taylor addressed the geological history, discussed existing well information and surface geology, considered different sources of water and came to the following conclusions:

*(i)* *The shallow aquifer in the region of Blenheim will have poor chemical and bacteriological characteristics. It is also likely to be affected by drought if much water is drawn from it.*

*(ii)* *The bed of the Taylor will provide water of chemical, but doubtful bacteriological quality water will in time require continuous chlorination.*

*(iii)* *The deeper aquifer (beneath Blenheim) will provide water of low bacteriological content and quite satisfactory chemical characteristics. The quality available should be such that it would serve Blenheim for some time to come.*

Today Blenheim has long been supplied with water from groundwater sources and the Taylor River supply is no longer operational.

For those that have observed drought flows of less than 10 l/s at the weir, it is hard to imagine this once supplied all of Blenheim's water requirements.

**Figure 3.25: Upgrading and redevelopment of Grove Road municipal wellfield 2010**

While many of the original Bisley wells have been replaced with larger diameter casings and screens to keep pace with larger pumping equipment, they are generally in similar locations and identical depths to the original wells.

The result of their work is evidenced by the fact that today the Taylor River no longer supplies any water to Blenheim with all water coming from underground.

Individual municipal wells were once located as far south as Eltham Road and Graham Street. Today however, the bulk of Blenheim's water is pumped from the Grove Road and Middle Renwick Road well-fields. This effectively represents the southern boundary of the main groundwater flow. This rationalisation was also prompted by the need to treat Blenheim's drinking water and have wells closer to the two central dosing plants.

Several smaller well fields are still used to augment the town supply network as required during high demand periods over summer, or when other stations are undergoing maintenance. These have intermediate sized pumps. Well-fields operate 24 hours per day, seven days per week during peak demand, and individually can pump at rates of up to 200 l/s.

**Figure 3.26: Historic wind driven well at Shep's Park Reserve**

**Figure 3.27: Close-up of well at Shep's Park Reserve. Groundwater flows out of the horizontal pipe as the curved handle is moved up and down by the turning of the wind vanes.**

In 2010 the MDC upgraded the Blenheim public water supply by drilling two new wells at the Grove Road wellfield (Fig. 3.25). These wells were the largest ever drilled for public water supply in Marlborough in an attempt to improve their efficiency so that more groundwater was pumped for less drawdown and less energy is required. These well casings have extra thick walls to allow for the corrosive nature of the naturally acidic water.

## Irrigation supplies

In 1952 WGG Cuddon Ltd became the first Marlborough firm to venture into the irrigation business. They supplied their first irrigation plant to Mr J. Woolley who at that time farmed in the Upper Rapaura area. Although a dug well undoubtedly supplied this small scale hand-shift sprinkler system, the idea of irrigation began to catch on. It should be remembered however,

**Figure 3.28: Mr C.S. Woodford drilling the MDC Omaka Aquifer exploratory well in 1995**

**Figure 3.29: McMillan Water Wells Ltd mud/air rotary rig drilling piezometers for the MCRWB.**

that the scale of irrigation at that time was to some extent limited by the technology available.

Initially the idea of irrigation was to provide some insurance on a small scale against dry summer weather when pasture growth became limited. The arrival in the early 1950s of the Marlborough Lucerne Meal Factory encouraged some Wairau Plain farmers to maximise their lucerne yields through the application of irrigation water. Most however, still seemed content to take the good years with the bad.

In the Lower Wairau area east of SH1, dairy and cropping farmers and market gardeners latched on to irrigation more quickly. Here the popular form of irrigation supply was to drill a well to the appropriate depth and use the resulting natural artesian flow to fill ditches from which the water was pumped for irrigation anywhere on the farm.

At the time stockwater and domestic supply wells commonly relied on the blustery winds common to Marlborough to provide the power to lift groundwater to the surface. Today few examples of these wind driven wells remain in good order, although one that does is located in Severne Street on Shep's Park reserve (Fig. 3.26 and Fig. 3.27)

The wells required for irrigation supply were of larger diameter than local drillers could cope with at this time. Firms such as Brown Bros., Richardsons from Christchurch, and McTigues from Woodend made trips to the area to drill the wells required. While the demand for irrigation wells was evident it was still not great in the 1950s. Consequently these trips were brief and sporadic and there didn't appear enough business to warrant setting up in the area full-time.

In the rural sector irrigation technology in New Zealand followed hard on the heels of development in the United States. This, together with the presence of A.M. Bisley and Co. Ltd seemed to spark a new level of demand for irrigation bores.

Throughout the 1960s and early to mid 1970s, Bisleys enjoyed regular business here and drilled some 125 wells all over the Wairau Plain. All of these wells were at least 150 millimetres in diameter and most are used for irrigation, industrial or municipal purposes. There is no doubt that local drillers became well equipped to meet the demand for irrigation wells.

## Modern era

In November 1969 Waimea Drilling Company Ltd, a firm based in Richmond near Nelson, ventured over the hill to drill a well in the Dillons Point/Swamp Road area. From that time on Waimea Drilling established themselves as one of the regulars in the drilling business in Marlborough.

Waimea Drilling Ltds Mr C.S. Woodford, or Woody as he is better known, drilled the MDC Southern Valleys test bore in 1995 (Fig. 3.28). His knowledge of drilling in this fickle terrain was important in the successful drilling of what remains the deepest water well yet constructed in Marlborough.

Waimea Drilling drilled most of the deeper irrigation wells in the Southern Valleys Aquifers from the early 1970s through until the turn of the century in 2000. Also many of the test or exploratory wells commissioned by the MDC required their larger capability equipment. While they continue to drill the occasional well in Marlborough they are not nearly as active as in their heyday of the 1980s.

One outstanding feature of the presence of both A.M. Bisley and Waimea Drilling, was their preparation of detailed well logs describing the underground strata and groundwater properties. Both companies recognised the importance of keeping good well records and providing copies for the Council archive, not only for successful wells, but also dry ones. This practice has left a significant legacy for future generations.

The pastoral farming downturn of the late 1980s associated with the stock market crash took its toll on the drilling industry, although it wasn't so evident here in Marlborough because of the emergence of the viticulture industry which relied on irrigation and wells, especially on the Wairau Plain.

Bisleys for example, one of the modern pioneers in drilling in this area, dismantled their drilling operation.

**Figure 3.30: John Butt constructing MDC Spring Creek effluent treatment pond well**

However new drilling firms such as McMillan Water Wells Ltd, operating out of Southbridge near Christchurch and C.W. Drilling Ltd from Motueka began drilling the occasional water well in Marlborough (Fig. 3.29).

Recently with the worldwide economic recession there has been a decline in new wells drilled, especially for crop irrigation purposes or exploration, however there will always be a need to replace wells and for maintenance or redevelopment of older wells (Fig. 3.30).

## References


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