

## BLenheim'S WATER SUPPLY

### EARLY HISTORY:

In the early 1900's a number of schemes for supplying water to Blenheim were proposed and investigated. A number of sources were suggested including the Taylor River which flows through Blenheim and has its origins in the hills to the south of the town. The Waihopai River some 20 kilometres to the west of Blenheim was another possibility.

About 1910 the Borough Council paid a Christchurch engineer a fee of 100 guineas to produce a scheme which was to cost 1960 pounds.

The following year in 1911 the Council received a report from Mr L.H. Reynolds, a Consulting Engineer, on a scheme to supply water from the Taylor River in 16 inch wooden stave pipes. The local Health Officer of the day condemned the proposal and it didn't proceed.

The Council then commissioned Mr A.D. Dobson to produce a report on a new water and drainage scheme. At this stage the population of Blenheim was 3700 and half acre sections in Mayfield were selling for 75 pounds - 5 pounds cash with 1 pound per month at 5½ percent interest.

In 1912 John Sturrock reported on a water supply and reticulation scheme. He proposed to use Murphys Creek near Battys Road as the source and pump from there to a tower located near the High Street - Lee Street area.

In 1913 the Council considered a water supply and drainage scheme to cost 107,000 pounds. In the same year a new concrete bridge was built across the Taylor River at Upper High Street at a cost of 2500 pounds. That year the Council passed new Plumbing and Drainage Bylaws. However as a result of a public poll the Council dropped this water and drainage scheme.

In 1919 the Council decided to borrow 100,000 pounds for a water and drainage scheme and in 1920 accepted a tender of 13,000 pounds to build the intake at the third crossing of the Taylor River some 6 kilometres south of Blenheim. The intake was 390 feet above the centre of town. By now the population had increased to 4,300.

By 1922 the Council had problems with the scheme, pipes were leaking, the finance was 22,000 pounds short and the ratepayers favoured abandoning the scheme and sacrificing the 70,000 pounds already spent.

The following year the water supply failed during a serious fire at the Farmers Coop Building in Queen Street causing public consternation.

The original pipes were spiral rivetted steel.

During early 1934 there were water restrictions and hosing was prohibited.

A ratepayer complained of fish in the water mains in 1937.

Two inspectors were appointed to police hosing restrictions in 1938.

By 1943 the Council had decided to drill for artesian water.

In 1946 following a drought there was an acute shortage of water and again all hosing was banned.

The Medical Officer of Health in 1954 advised that the towns water supply was a health threat and further test bores were drilled.

In 1960 the Health Department ordered the Taylor River supply to be cut off and to use the artesian supply only. However after further tests the river supply was permitted to be used again later that year.

By 1965 the Taylor River supply had been discontinued and the population was now 11,500.

#### THE PUMPED WATER SUPPLY:

The first pump station using semi artesian bores was located at the Grove Road - Pitchill Street area.

Originally built about 1945 it was later upgraded about 1957. It had a capacity of about 200 <sup>760 litres</sup> gallons per minute and finally ceased to operate about 1966.

The Beaver Road pump station was built about 1958. It contains twin 30 H.P. Mather and Platt Ltd 2 stage direct drive pumps each with a capacity of <sup>760 litres</sup> 200 gallons per minute at <sup>61 meters</sup> 200 feet head. A standby single stage Ajax pump powered by a Fordson Major diesel engine is also located here. This was upgraded in 1995; the pump is now a submersible.

The Graham Street pump station was built about 1960. It has a 50 H.P. direct drive 3 stage Pulsometer HSR B4 pump with a capacity of about <sup>2271 litres</sup> 600 gallons per minute. This well was abandoned in 1991 due to the well screen collapsing & its low capacity.

The Andrew Street pump station was built about 1961 and has a single stage Sigmund pump belt driven by a 90 H.P. motor. There is also a standby Worthington and Simpson 5.6 NU 3 stage pump driven by a G.M. diesel motor with mains failure starting system. Both pumps produce about <sup>3217 litres</sup> 850 gallons per minute at <sup>70 meters</sup> 230 feet head.

The present Grove Road pump station was constructed in 1963 and contains a Pleuger G205/III + UM 900 3 stage submersible pump. This is a 90 H.P. unit and pumps <sup>3800 meter</sup> 1,011 gallons per minute at <sup>70 meter</sup> 227 feet head. The pump unit is suspended about <sup>3.6 meter</sup> 12 feet down a <sup>360 mm</sup> 14 inch casing drilled to <sup>27 meter</sup> 90 feet deep.

The Colemans Road pump station was installed in 1964 and uses a Pleuger Q 102/III + V11-75 3 stage submersible pump. This is a 94 H.P. unit and also pumps <sup>3827 liter</sup> 1,011 gallons per minute at <sup>70 meter</sup> 227 feet head.

A spare pump unit is held which will fit either Grove Road or Colemans Road. This is a Pleuger G195-4 + V11-75 but is to be converted to a G205-3 + V11-75 unit when it is rebuilt.

The Auckland Street pump station was built in 1977 and contains a Pleuger P104/2 + V8-68 submersible pump. This is a 2 stage 55 H.P. unit which will pump about <sup>2450 litres</sup> 650 gallons per minute.

Following investigations by Stevens and Fitzmaurice and a report by them to the Council, a <sup>4 920 000 litres</sup> 1,300,000 gallon reservoir was constructed on the Wither Hills to the south of Blenheim in 1971. This is basically a balancing tank on the top end of the system, being filled by pumping overnight and draining back into the reticulation during the day.

pumps out of the top end of the reticulation to supply the reservoir. This contains 2 K.S.B. pumps model BRT 435/3 with motor 10A 733/2. These are 100 H.P. units and each pump <sup>3 780 liter</sup> 1,000 gallons per minute at <sup>97 meter</sup> 320 feet head.

At this time planning is underway for 2 further pump stations to pump from artesian bores direct into the reticulation.

#### THE RETICULATION:

Reticulation mains range in size from <sup>100 mm</sup> ~~4 inch~~ to <sup>400 mm</sup> ~~15 inch~~.

Originally some <sup>40 km</sup> ~~25 miles~~ of the spiral rivetted steel pipes were installed in the early 1920's.

As the town expanded additional cast iron mains were installed.

Because of deterioration of the pipes in 1952 the Council decided to borrow 100,000 pounds to replace the original pipework. Replacement commenced in 1954 and by 1960 some <sup>6.5 km</sup> ~~4 miles~~ had been replaced. By 1964 a further <sup>17 km</sup> ~~11 miles~~ had been replaced and this programme was eventually completed in 1968.

From about 1964 onwards asbestos cement pipes were used.

From 1958-61 the Redwoodtown area to the south of Blenheim was reticulated following a change of status from County Town for incorporation within the Borough. This was hastened by a severe drought which caused many shallow wells in the area to fail. At the same time the Burleigh area in the Marlborough County containing about 70 houses was supplied.

The Springlands/Farnham area was reticulated in the 1962-63 period. This is the north-west corner of the town which had been brought into the Borough in 1951.

#### THE WATER:

The water is sourced from an extensive aquifer under the Wairau Plains. This aquifer originates from the Wairau River to the west of Renwick and some 16 to 18 kilometres from Blenheim. The aquifer is generally <sup>21</sup> ~~70~~ to <sup>27 meter</sup> 90 feet deep under Blenheim and is about <sup>40</sup> ~~130 feet~~ deep at the coastline.

All the wells are some artesian and some will just flow to the surface during winter time.

The water is pumped direct into the reticulation without treatment.

Typically the pH is about 6.7, the free carbon dioxide about 15 to 20 grams per cubic metre and the total hardness about 40 grams per cubic metre.

The Blenheim water supply has an Ab grading on the Health Department grading system for public water supply systems.

WATER RESTRICTIONS:

The original system suffered because of reduced river flows during summer drought periods and complete hosing bans were not uncommon.

During the 1960's the pumped system was not increased sufficiently rapidly to cater for the growth of the town and hosing restrictions were imposed during the summer. However these restrictions were not effectively policed and often not observed.

In 1968 a restriction system based on house numbers was introduced. With house numbers ending in 9 and 0 permitted to use sprinklers on Monday, number ending in 8 and 1 on Tuesday and so on. This continued until 1976 when the staff were able to persuade the Council that restrictions should not be imposed unless the system could not meet the demand. At that point no more water was used during peak periods than had been used during the restrictions.

There has been no need to impose restrictions on the use of water since 1976.

WATER CONSUMPTION:

Blenheim, because of warm dry summers experienced, has one of the highest water consumptions per head of population in New Zealand.

The peak monthly consumption recorded was <sup>540 000 m<sup>3</sup></sup> ~~143,000,000~~ gallons in January 1983. This is an average of <sup>17 500 m<sup>3</sup></sup> ~~4,613,000~~ gallons per day or <sup>970 gal</sup> ~~256~~ gallons per person per day. Consumption figures as high as <sup>1000 gal</sup> ~~290~~ gallons per person per day have been recorded in southern areas of the town.

Industrial and commercial usage makes up about 22 percent of the total consumption. The major consumers being the Wairau Hospital, the Girls College, the Boys College, the Blenheim Steam Laundry and the Milk Treatment Station.

The reticulation system is used to irrigate Seymour Square, Athletic Park, A & P Park, Oliver Park and planting areas in the town centre. Generally these systems use only <sup>230</sup>60 to <sup>590</sup>140 gallons per minute and are operated off time clock systems between 10 p.m. and 6 a.m.

#### COST OF OPERATION:

The total cost of running the water supply system is currently \$400,000 per year.

Of this, \$112,000 is power charges for pumping operations. The 2 main pumping stations Grove Road and Colemans Road costing \$30,000 per year each just for power.

Rate payers are charged a uniform annual rate of \$53.50.

Only commercial and industrial premises are metered and they pay for excess usage at the rate of 13.2 cents per cubic metre or 60 cents per <sup>3800 litre</sup>1,000-gallons.

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5 March 1984