

THEME FOUR

**TRANSFORMING & MANAGING LAND
& NATURAL RESOURCES**



4.1 INTRODUCTION

The land now comprising the City of Greater Geelong has been managed by the Wadawurrung peoples for tens of thousands of years as part of their traditional fire, farming and lifestyle practices. This forms the beginning of this theme which especially explores the transformative effects brought about by European colonisation since 1836.

The theme examines livestock grazing, one of the earliest forms of European farming within Greater Geelong, and the physical legacies that survive today in the homesteads, woolsheds and other farm buildings dating from the 19th century. A focus is also provided on the horse breeding and training accomplishments of the Wilson family at St. Albans Stud (St. Albans Park), Frankfort (Suma Park, Marcus Hill) and Bonny Vale (Ocean Grove).

Transformative on the landscape were the many cultivated farms established in the 1840s in the production of wheat and other grains and crops; the excavation of guano as fertiliser; establishment of model farms involving orchards, vineyards and dairies; the importance of the asparagus farm near Barwon Heads in the early 20th century; the mixed farming practices (including dairying) and the success of various farmers from the 1850s to the early 20th century, including the establishment of 'Sparrovale' at Marshall by the Geelong Harbor Trust in 1907; the construction of dry stone walls; and the now lost hay stacking practices.

The planting of the first vineyard in Victoria commenced in 1842 near Greater Geelong at Pollocksford by David Pettavel and Frederic Brequet. This began the unique proliferation of vineyards and orchards, particularly by Swiss and German vigneron in the Barrabool Hills, Ceres, Waurn Ponds, Mount Duneed and Batesford. Together with similar establishments created by British settlers at Fyansford, this theme gives an overview of the development (and physical legacies) of this industry until many of the vineyards were destroyed by *Phylloxera vastatrix* disease in the 1870s.

Exploitation of the indigenous landscape – through wattle barking – was specific to the Bellarine Peninsula from the 1860s. Large tracts of thickly-timbered land was cleared to supply the burgeoning tanneries at Marshalltown, Breakwater and South Geelong, and similar industries beyond the boundaries of the municipality. An historical overview is given on the importance of this trade to farmers at Portarlington, St. Leonards, Mannerim and Wallington.

Fundamental to the success of Greater Geelong's building industry was the procurement of stone, and clay for bricks. The earliest gouging of the land for building purposes in Greater Geelong was the limestone quarry established

at Limeburner's Point in 1838. In parts of Newtown from the 1840s – and particularly Ceres, Barrabool Hills and Waurn Ponds – the land was quarried for sandstone. Tangible evidence of the operations of these former quarries are numerous 19th century sandstone buildings in the municipality. The production of bricks, first at Ashby (Geelong West) and Newtown from the early 1840s – and later at North Geelong, Belmont and Portarlington (and elsewhere), brought about significant employment as well as further change to the landscape. Some manufacturers, such as T.H. Widdicombe of Portarlington, were particularly inventive. In addition to masonry, lime was critical and the burgeoning Melbourne and Geelong markets brought about several lime burning operations: initially at Limeburners Point; and subsequently at Belmont and especially at Lara, where evidence of the industry survives today. This theme gives an account of these developments.

The frenzy of the Ballarat goldrush in the 1850s had an influential effect on Geelong citizens. Several unsuccessful attempts were made to mine gold at Mercer's Hill, Newtown, from 1851. In addition to providing an overview of these enterprises, this theme gives an account of the more unusual secondary impact of gold mining in the land tenure legislation that affected some farming, lime burning and building developments in the Lara, Little River and Anakie areas, a consequence of the close proximity of these places to the Steiglitz Division of the Ballarat Mining District.

The theme concludes by providing an overview of the development and evolution of the water supply and sewerage system for Greater Geelong. Numerous proposals were put forward before a water supply scheme by Henry O. Christopherson was adopted and work commenced on the gravity fed Upper Stony Creek Reservoir in 1866. This dramatically changed the natural landscape in the Brisbane Ranges but provided Greater Geelong a permanent and reliable water supply. Defects in the embankment of the Upper Stony Creek Reservoir caused the construction of the Lower Stony Creek Reservoir in 1873-74. Designed by the Scottish Engineer, George Tindal Gordon, this reservoir was not only essential to the completion of the initial water supply, but the engineering and constructional innovation in the concrete dam wall (of Portland cement) is highlighted. Similarly, the innovative concrete construction employed in the ocean outfall scheme from 1911 – and particularly the work of the engineers, Stone and Siddeley in the manufacture of ovoid concrete pipes and Barwon ovoid sewer aqueduct built on the French Considère system – is especially examined.



Figure 4.01: Staughton Vale Homestead, 532 Staughton Vale Rd, 1998. Source: David Rowe.

4.2 FARMING AND AGRICULTURE

INDIGENOUS FARMING

Farming began in the City of Greater Geelong by the Wadawurrung people. It was inherent to their survival but was also sophisticated. Wadawurrung farming underscored their animist beliefs of respecting and celebrating the environment as part of seasonal change (see Theme 2). It was about managing the land rather than transforming it.¹

EUROPEAN FARMING AND AGRICULTURE

LIVESTOCK GRAZING

The earliest forms of European farming in Greater Geelong was livestock grazing, including horses, cattle, pigs and especially sheep. It had begun when Thomas Manifold disembarked with 22,500 sheep at Point Henry in 1836 and was soon progressed by squatters associated with the Port Phillip Association, Derwent Company and the Clyde Company who had taken up cattle and sheep stations at Anakie, Balliang, Sutherlands Creek, Connewarre, Breamlea and the Bellarine Peninsula (see Theme 2). Of the numerous sheep stations established throughout the 1840s and early 1850s, physical evidence survives of very few, including Coriyule at Drysdale (built in 1849 for Misses Drysdale and Newcomb); Spray Farm at Bellarine

(built in 1851 for Captain James Conway Langdon); and Kardinia, Belmont (first built as a replacement for an original dwelling in 1850 for Dr Alexander Thomson) (see Theme 2 for further details).

By 1857 the northern and north-western and western parts of Greater Geelong, including Anakie, Balliang, Cowies Creek, Lara, Lovely Banks, Little River, Moorabool and Sutherlands Creek,² boasted the largest number of sheep grazed, with a total of 53,445 stock.³ Other livestock was considerably fewer, including 6054 horned cattle, 274 horses and 1919 pigs.⁴ In the Parish of Barrabool, only 800 sheep were grazed at this time, along with 673 horses, 1194 cattle and 1220 pigs.⁵ In the southern parts, more substantial numbers of sheep were grazed in the Parish of Duneed, with 4053 being recorded in 1857.⁶ In the Conewarre Parish, there were 1303 sheep, along with 1045 cattle and 284 pigs. The Bellarine Parish grazed no sheep at this time but 1799 cattle and 1192 pigs.⁷ Similarly, the Parish of Moolap grazed 1256 cattle and 1287 pigs as well as 700 sheep.⁸

In addition to Coriyule, Kardinia and Spray Farm, physical evidence of the early sheep grazing enterprises survive in some of the few remaining farm properties: in existing farm homesteads, woolsheds or other outbuildings. Most of these properties also carried out different forms of cultivation. They include the following.

STAUGHTON VALE HOMESTEAD, STAUGHTON VALE

Situated on the southern bank of the Little River between Anakie and Balliang, Simon Staughton established his Brisbane Range Station there in 1842.⁹ The gabled two storey portion of the existing homestead at 750 Staughton Vale Road is a physical legacy of Simon Staughton's Run. The single storey bluestone extension with encircling verandah was constructed in 1905¹⁰ (Figure 4.01).

Brisbane Ranges Station was an adjunct to Simon Staughton's main station, Exford, near Melton.¹¹ No less than 16,000-17,000 sheep were grazed at the Brisbane Ranges Station, along with 'a good many head of cattle.'¹²

In 1872, construction began on a mill at the Brisbane Ranges Station (then owned by Simon Frederic Staughton) for the experimental production of sugar beet by the Victorian Sugar Beet Company.¹³ With the involvement of local farmers, 350 acres of sugar beet were planted.¹⁴ The influx in employees to work the mill brought about a daily mail service between Staughton Vale and Little River.¹⁵ It was at this time when the name of the station was changed to Staughton Vale.¹⁶ A new timber State School was erected at 535 Staughton Vale Road in 1875 to serve the increased population (although no longer serving its original purpose, the building remains).¹⁷ However, the larger numbers of school children was short-lived given that closure of the promising sugar beet mill in 1874.¹⁸

WOOLOOMANATA HOMESTEAD

Woolloomanata Homestead (Figure 4.02) off the Bacchus Marsh Road, Lara, was built for the eminent Victorian pioneer, Frederick William Armytage in c.1860,¹⁹ the bluestone Victorian Italianate styled dwelling being possibly designed by Leonard Terry.²⁰ He advertised tenders for the erection of offices and cottages at Woolloomanata in 1866. A biography of F.W. Armytage is given in *Henderson's Australian Families*:

He was a great lover of horses, and his coach, drawn by four magnificent specimens, used to attract much attention in the early days. During his world travels he collected many valuable pictures, some of which were exhibited in the National Gallery in Melbourne and later acquired by the Trustees. Many of the Victorian and visiting Governors were entertained by Mr. Armytage at Woolloomanata, which was renowned for its good pheasant shooting ... Both Mr. Armytage and his wife took a great interest in the welfare of the aborigines around Woolloomanata, one of whom, Billy Leigh, 'king' of the tribe, was baptised and confirmed at the Church of England at Lara. ... [see Theme 2] Frederick



Figure 4.02: Woolloomanata Homestead, Lara, n.d.
Source: GRS 2009/00464e, Geelong Heritage Centre collection.

William Armytage, together with George Fairbairn and Hastings Cunningham, pioneered the frozen meat export industry in Australia, and the greater part of the initial shipment to England in the steamer "Strathleven" in 1879 was owned by him, and the first bill of lading for frozen products shipped from Australia was in his name. ... He was appointed a Justice of the Peace in 1871, was a director of several companies in Melbourne, and a prominent member of the Melbourne Club. He married Mary Susan, daughter to Simon Staughton, of Exford, Melton, Victoria. ... Frederick William Armytage died at Como, South Yarra, 3rd September 1912, at the age of 74.²¹

The property continues to serve as a farm to the current day, and outbuildings (including stables and a woolshed) survive.

NARADA HOMESTEAD

At 130 Mount Road, John Browne had the Geelong architect, John Young, design a single storey bluestone homestead, 'Narada' in 1864.²² Two storey additions and a cast iron balcony and verandah were built to a design by Joseph Watts, architect, in 1873²³ (Figure 4.03). 'Narada' remains as one of the more substantial dwellings at Anakie. Comprising 4028 acres in 1886, the sheep station was sold to Frederick Armytage in 1886.²⁴ By 1911, the property (then comprising 6000 acres) was owned by W.E. Sargood, a third ear-marked for wheat growing, some for pig-breeding the remainder as a merino stud.²⁵ The basis of the stud was given in *The Australasian*:

Having decided upon Riverina-bred ewes, which showed a heavy infusion of Wanganella blood, a deal was made for 1,750 ewes off Mooloomoon,



Figure 4.03: Narada Homestead, Anakie, 1998. Source: David Rowe.

80 miles north of Deniliquin, and for 30 stud ewes off Wanganella. The former are by Wanganella rams out of Moffat ewes. The latter and 40 of the tops of the Mooloomoon ewes were mated with particularly good Tasmanian ram bred by Mr. F.G. Gibson, of Meadowbanks; this rams combines the best features of Esk Vale and Winton, is of goodly frame, comparatively free from body-folds, and carries a bright, dense, fleece of pleasing character and high quality ... For a first venture at stud formation, few breeders have the luck to meet with so many pleasing characteristics as are now in evidence in these youngsters, both male and female.²⁶

PIRRA HOMESTEAD²⁷

First known as Windermere and then Lara House, Pirra Homestead (Figure 4.04) has its roots during the Fairbairn family occupation between 1863 and 1907. George Fairbairn (senior), one of Australia's most prosperous pastoralists and owner of millions of acres of land throughout Australia, established Pirra as a premier sheep stud. An original homestead was built in the

early-mid 1860s (and has been subsequently demolished), with a second extant single storey homestead built in c.1869. The brick two storey hipped roofed mansion house was designed in 1880-82 by the prolific architectural firm of Alexander Davidson and Co. The Victorian Eclectic house style, with several highly unusual French mediaeval decorative features, represented an important example of the work of the Davidson practice.

During the Fairbairn ownership, Pirra developed into a large property of 5436 acres and included the construction of a 70-acre water reservoir to service the expansive grazing land and homestead complex. This complex included several outbuildings such as stables, manager's house, slaughter house, shearing shed, men's huts, dairy, and machinery shed. As a typical 19th century homestead complex, Pirra also was known for its cultivated areas, including the house orchard and garden, tennis and croquet courts, and the cricket ground to the north of the mansion with a view of the You Yangs framed by stone pine trees.



Figure 4.04: Pirra Homestead, c.1910. Source: GRS 2009/01847/134, Geelong Heritage Centre collection.

By the early 1890s, Pirra was managed by George Fairbairn's sons, Thomas and George junior. The latter son eventually had sole ownership of the property. As a member of the Victorian Legislative Assembly from 1903, George junior (later Sir George) used Pirra as his country residence, whereby he developed a well-known Merino and Shropshire sheep stud.

By 1907, the Pirra property had been sold for Closer Settlement as the Lara Estate, with the homestead and 637 acres being taken over by the Lara Inebriates' Institution. This Government sanatorium constructed an Inebriates' Dormitory at this time, and in 1927 an Inebriates' Laundry was built south of the two storey mansion house (see Theme 8 for further details).

After the closure of the Inebriates' Institution in 1930, Pirra was sold to James McDonald in 1938. He grew crops on part of the property and ran sheep on the remainder. In 1946, he leased the former Inebriates' building to the States Tobacco Company.

In 1948, the Tobacco Company had folded and Pirra was sold to Oscar and Edna Mendelsohn. Employees from the Tobacco Company were employed by the Pelaco Factory which occupied the former Inebriates' building. The Mendelsohn's renamed the property 'Serendip'. They established a commercial almond orchard in the vicinity of the original orchard and the large water reservoir was proclaimed a sanctuary for the protection of the local birdlife. Oscar Mendelsohn was also appointed assistant inspector of the Fisheries and Game Department at this time.

Further subdivision of the Pirra property was experienced in 1959, after the Mendelsohn's sold to the Department of Fisheries and Wildlife who took control of the 600 acres surrounding the sanctuary. The immediate homestead, now reduced to 37 acres, was taken over by the Social Welfare Department. The two storey mansion house and nearby buildings became the Pirra Girls' Home in 1961 and it was at this time when the property was named "Pirra" (see Theme 7 for further details).

No buildings associated with the property's early sheep grazing function survive.

AVALON HOMESTEAD²⁸

'Avalon Station' was first taken up by James Austin in the late 1830s as a sheep Run. While there is some debate whether Austin ever lived at Avalon, it continued under his ownership. He had returned to England in 1856 and made only one further visit to Avalon in 1889. Austin died in England in 1895. From 1879, the Avalon property was leased to James Austin's, son, Frank although W.H. Bullivant also had an interest in the property from the 1860s until the early 1880s. Both were sheep graziers and they became well-known sheep breeders.²⁹ Frank Austin (1859-1914) was born in England and educated at Clifton College. He came to Victoria to take over the management of Avalon from his father, and purchased the property in 1881. He later became a 'pillar of support' to the Australian Sheepbreeders' Association and he also served as President of the Geelong Racing Club and the Geelong Agricultural Society.³⁰



Figure 4.05: Avalon Homestead, c.1963. Source: National Trust of Australia (Victoria), B1116, Victorian Heritage Database online.



Figure 4.06: Avalon Woolshed, n.d. [c.1963]. Source: National Trust of Australia (Victoria), B1116 Victorian Heritage Database online.

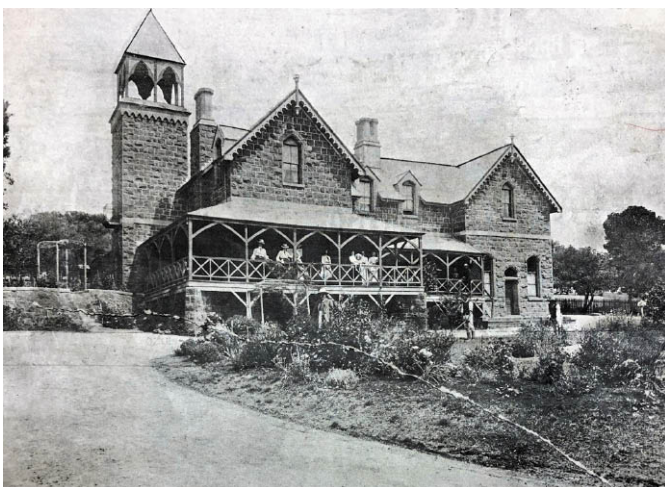


Figure 4.07: Elcho Homestead, 1907. Source: *News of the Week*, 14 February 1907, p.13, GRS 2121/1, Geelong Heritage Centre collection.

In 1908, the *Pastoralists' Review* published a book on the Avalon property, highlighting it as a premier Merino stud:

Every visitor to the annual show at Melbourne of the Australian Sheepbreeders' Association will be familiar with the Avalon sheep. Other competitors will no doubt be even more familiar with them, for when Mr. [Frank] Austin does not make a clean sweep of the prizes he at any rate carries away a large proportion of them. On one recent occasion he took no less than seven-eighths of the total prize money given in the Merino section.

Mr. Austin's ideal in evolving a distinctive type of Merino sheep has been to acquire length and density of wool, somewhat on the strong side in the fibre, and to achieve a hard constitution. So large a measure of success has he achieved in accomplishing what he has aimed at that he has some 300 stud and flock rams and a similar number of stud ewes available for sale every year.³¹

It appears that the first bluestone dwelling at Avalon was built in 1842-43. The existing single storey, bluestone, Victorian Picturesque Gothic styled homestead (Figure 4.05) was built in 1880-81 to a design by the well-known architect, Alexander Davidson, who simultaneously had also been responsible for the design of nearby Windermere (Pirra). In 1896, the Melbourne architect Walter Butler was engaged to design a porte cochere extension to the homestead. It was described as 'one of the largest such structures in Victoria', designed 'to mask the west end of the main body well as to provide weather protection.'

The sheep grazing function of 'Avalon' is especially identified by the surviving woolshed (Figure 4.06) nearby the homestead, although no longer part of the property. The gabled bluestone woolshed was built in 1869 to a design by Geelong architect J.L. Shaw for W.H. Bullivant.³²

ELCHO HOMESTEAD

The substantial bluestone Victorian Picturesque Gothic styled Elcho homestead (Figure 4.07) was built in 1864 for John Galletly and his wife, Elizabeth (nee Armytage) on a four-thousand-acre property fronting the Bacchus Marsh Road. The substantial and picturesque Gothic-inspired homestead was designed by the eminent Melbourne architect, Leonard Terry.³³ A wing on the north side of the dwelling was added in c.1872.³⁴

On John Galletly's death in 1876, Elcho remained part of his Estate for many years and was occupied by successive managers. In 1890, the Trustees of the Estate proposed to subdivide Elcho into five- and ten-acre blocks.³⁵

An extensive survey was made and some dwellings erected.³⁶ With the demise in the land boom caused by an economic down-turn, the subdivision was a failure. In 1892, the firm of Williams and Co. of Ballarat relocated four of the houses from the Elcho Estate, with one taken to the farm of Henry Warren at Moolap.³⁷

In 1896, a lease for Elcho was taken up by Hugh Mann Sutherland (1848-1916) of North Shore.³⁸ He commenced breeding pure Border-Leicester sheep³⁹ and cultivating English grass, oats, barley and Lucerne 'on true scientific lines.'⁴⁰ Born in 1848 at Clashmore in the Highlands of Scotland, H.M. Sutherland came to Victoria in 1872, having been engaged by Thomas Chirside to work at his Werribee estate for three years. Sutherland married Sarah Crossley in 1878.⁴¹ In Geelong, Sutherland became a real estate agent under the name of Abraham and Sutherland in 1888 and W. Abraham and Sutherland, Robertson and Company in 1890. The firm was successful in the sale of 'choice allotments' as part of the residential subdivision of North Shore (see Theme 6). In 1903, Sutherland purchased the Elcho property and subdivided outlying land into 24 allotments (see Theme 2). The property was later acquired by John Sutherland (born in 1881 in Shepparton), on his father's death in 1916.⁴² By 1923, the Elcho property had been acquired by the Lands Department and was initially used as a training farm for British immigrants (see Theme 2).

SOME OTHER PROPERTIES ASSOCIATED WITH SHEEP GRAZING

Physical evidence exists of other sheep grazing establishments in the northern parts of Greater Geelong. They include the woolsheds at: 'Marathon', 1385 Ballan Road, Anakie (built in c.1867 for Sir Samuel Wilson); 'Darrivill', 225 Steiglitz Road, Moorabool (built in 1878 for George Hope by S. and J. Bond at a cost of £113/9/6); 'Ripley Park', 75 Gilmores Road, Balliang (built in c.1870 for Joseph Love); and the stone dairy of James Tait in Staceys Road, Connewarre (possibly constructed in c.1855).⁴³

At 75 Staceys Road, Lovely Banks, the property 'Kia Ora' (Figure 4.08) represents a later example of a sheep farm. It was designed by Laird and Barlow, Geelong architects, in 1903 for H.M. Sutherland of 'Elcho' on behalf of his son, John Sutherland.⁴⁴ He also became a well-known breeder of Border Leicester sheep. In 1913, John Sutherland was successful at the Australian Sheepbreeders' Association's Annual Exhibition in Sydney. As was reported in the *Adelaide Advertiser*, 'In Border Leicesters Mr. John Sutherland, of Kia Ora, Lara, had things practically his own way, and he annexed the championships for ram and ewe.'⁴⁵ A year later in 1914, *The Leader* newspaper

also commented on Sutherland's fine breed of prize-winning sheep:

BORDER LEICESTERS. This fine breed of mutton sheep is attractively represented by a large number of high grade animals. Borders are steadily winning their way in Australia, their alertness and capacity as foragers standing them in good stead even under adverse conditions. Honors in this section easily went to John Sutherland, of Lara, who a few years ago imported some of the best sheep obtainable in Scotland, and is to-day reaping the reward of his enterprise. His four-year-old ram Allanfearn, who secured the championship, is a large, shapely sheep of gay carriage, marked by the great spring of rib and solid back, for which the breed is famous. His younger ram, another descendant of the imported ram Lord Elcho, and a fine representative of the breed, was given the reserve champion ribbons. J. Sutherland was also successful in other ram classes.⁴⁶

WILSON HORSE TRAINERS

JAMES WILSON SENIOR & ST. ALBANS STUD

Influential and well-known in horse racing circles throughout Australia was James Wilson (c.1829-1917). Born in Yorkshire, his interest in horses began at an early age.⁴⁷ In 1848 at the age of 18 years, he emigrated to Victoria on the *Mahomed Shah*, his occupation at this time being as a saddler.⁴⁸ In 1856, Wilson married Miss Mary Jamieson.⁴⁹ He subsequently gained experience in horse racing in the Western District where he was a fierce competitor as a cross-country horseman with Adam Lindsay Gordon (renowned poet and horseman) who was a personal friend 'out of the saddle.'⁵⁰ James and Mary Wilson had a daughter Anne in 1854, followed by a son James junior at Hamilton in 1856.⁵¹ Other children followed: Sarah (1858), William (1859), Sarah Jane (1860), Emma (1860) and Mary (1862).⁵² Following Mary Wilson's death in 1863, James Wilson married Elizabeth Clements in Geelong in 1867.⁵³ They had a son, George Joseph Clement Wilson at Dunkeld in 1868.⁵⁴ Soon after, James Wilson was appointed to take charge of John Moffat's Leigh Stud farm at Shelford in the 1860s.⁵⁵ In 1870, Wilson established his own training establishment at St. Albans, east of Geelong, which he named the St. Albans Stud.⁵⁶ In 1873, Wilson won the Melbourne Cup with the horse, Don Juan.⁵⁷ In this same year he engaged the Melbourne architect, James T. Conlon to design a substantial single storey polychromatic brick Victorian homestead⁵⁸ (Figure 4.09). The *Geelong Advertiser* gave a glowing report on the developing stud property in July 1873:



Figure 4.08: 'Kia Ora' sheep farm, Lovely Banks. Source: *Journal of Agriculture, Victoria*, 11 January 1909, p.56.



Figure 4.09: St. Albans Homestead, 6-30 Homestead Drive, St. Albans Park, 1990. Source: David Rowe.

The Homestead.

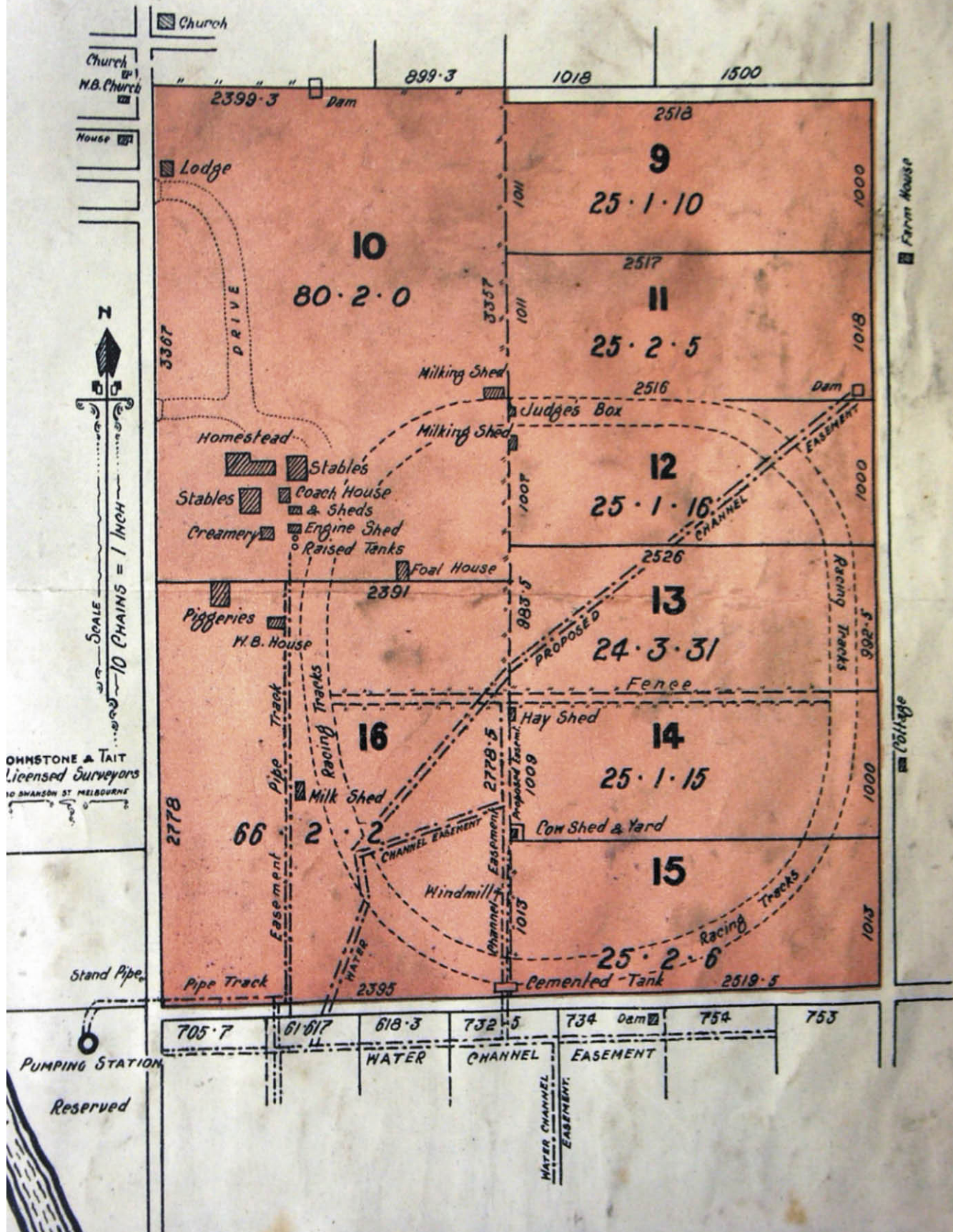


Figure 4.10: Site Plan of the St. Albans Estate showing homestead & outbuildings, racing tracks & gate lodge, 11 November 1925. Source: St. Albans Estate Auction Notice, 11 November 1925, Authentic Heritage Services collection.



Figure 4.11: J.T. Collins, St. Albans Stud Stables, 27 April 1978. Source: accession H96.210/656, State Library of Victoria.

When he [Wilson] first arrived he contented himself with an "ancient" house in the retired little village of St. Albans, but soon found the allotment of land attached thereto far too small for the stable accommodation he required, besides which, like many other trainers, he preferred having a course on his own private property to giving horses their trial gallops on a public common. ... One of the chief improvements is the circular course about one mile and three quarters in circumference, and for the purposes required it is not to be equalled by any course with which we are acquainted in Victoria. ... The sowing of couch along with the English grasses will be the means of retaining this refreshing green appearance all the year round ... The present cost of the course is estimated at over £2,000, and Mr Wilson, determined to give the grasses every chance of taking firm hold of it, is now engaged in making an inner course for ordinary training purposes. ... On the rising ground to the west of the course a lofty and capacious wooden, zinc roofed, building, 90ft. x 51ft., has been erected, in which, on the eastern side are to be found six loose boxes 14 ft. x 12 ft., and a harness room. ... the center of this building is an open space, 25 feet broad, in which ample room will be provided for the horses in training to take walking exercise in wet weather. ... On the western side are a store-room and granary, 12 feet wide, the latter being provided with platforms on iron, vermin proof, standards. Not far from this building, about 70 or 80 yards, and to the west of it, is a new and handsome brick-built villa residence, from which a fine view can be obtained of the surrounding country. When completed, this residence which has been built from plans prepared by Mr Conlon, of Melbourne, will

compare favourably with any in the district, and afford ample accommodation for numerous friends, it being much larger than it appears when viewed from outside. At the rear of the house is a brick cemented tank, 21ft. x 17ft., and close alongside of these fourteen loose boxes are to be provided in a building now in course of erection, 86ft. x 42ft.⁵⁹

James Wilson relinquished ownership of the St. Albans Stud in 1886.⁶⁰ In 1899, new timber racing stables were erected to a design by the local architects, Tombs and Durran.⁶¹

In late 1925, the St. Albans Stud property (then owned by A.W. Jones) was offered for sale, either as a whole or as subdivided allotments ranging from 25 acres.⁶² At this time, the vast estate not only included the private racing tracks and complex of homestead buildings, but a substantial tree-lined drive and gate lodge (built in brick in 1890-91 to a design by the Melbourne architects, Henderson and Marryat)⁶³ (Figure 4.10).

The property remained intact as a horse stud in the ensuing years and in 1930, the famous race horse, Phar Lap was secretly stabled at St. Albans Stud as a safety measure⁶⁴ (Figure 4.11). As reported in *The Argus*:

Phar Lap, whom a shooting attempt was made at Caulfield on Saturday, was taken to the St. Albans Stud, Geelong, early on Sunday morning, and there he remained until yesterday, when he was driven to Flemington in a motor-float, accompanied by a strong police guard. While at St. Albans, Phar Lap was exercised on the private track there, and was taken to the Geelong racecourse for a gallop yesterday morning.⁶⁵

The homestead and stables remain today in the suburb of St. Albans Park.

KINGSTON ESTATE, OCEAN GROVE

In 1882, James Wilson acquired the 1170 acre farm property, 'Kingston' from the grazier, John Archer.⁶⁶ In partnership with W. Branch, horse trainer, Wilson established another private race course and training ground as part of the stabling of horses.⁶⁷ This property was sold in two parts in 1884 and 1885 to John Robertson and Donald McPherson following the dissolution of Wilson's partnership with Branch.⁶⁸ Nothing survives of the Kingston horse stud today.



Figure 4.12: 'Suma Park', 2135-2165 Bellarine Highway, 1991. Source: David Rowe.

FRANKFORT (SUMA PARK), MARCUS HILL

James Wilson senior returned to England for a holiday in 1886 during which time his son, James Wilson junior acquired 450 acres of land near Queenscliff on his behalf in order to establish a new stabling facility and training track.⁶⁹ The racecourse was completed by January 1887 as the annual meeting of the Queenscliff Racing Club was held there in February of that year.⁷⁰ A 13-roomed brick villa, built to a remarkably similar design to Wilson's previous St. Alban's Stud, was completed in 1887 and named 'Frankfort'⁷¹ (Figure 4.12). Wilson senior lived there until his death in 1917.⁷² Now called Suma Park, the complex (without race course) still survives.

JAMES WILSON JUNIOR & BONNY VALE, OCEAN GROVE

James Wilson junior (1856-1935) followed his father in the horse racing industry. He first commenced as a stable hand at St. Alban's Stud before becoming a successful jockey (his first ride was at Flemington on New Year's Day, 1869), trainer and owner.⁷³ Wilson's athleticism and interest in sport continued beyond horse racing. He captained the Geelong Football Club between

1879 and 1882, and also captained the Victorian team on a visit to Adelaide as part of an interstate match.⁷⁴ In 1889, Wilson acquired the 370 acre property near Ocean Grove previously owned by R.G. Talbot, horse trainer in Tasmania.⁷⁵ Talbot does not appear to have developed or improved the site as he went to England for 12 months in 1888.⁷⁶ Called 'Bonny Vale', Wilson had a dwelling, stables and other horse-training facilities constructed⁷⁷ (Figures 4.13-15). Further south towards Bass Strait and immediately behind the sand dunes, Wilson developed a private race track. This training course survived until at least 1954 but was disused at this time. In addition to horse training, the property also produced oaten hay as horse feed. Bankruptcy in 1934⁷⁸ appears to have taken its toll on James Wilson as he died in the following year, 1935. Today, the homestead (albeit altered) is all that remains of the 'Bonny Vale' Stud.

CULTIVATED FARMS

The majority of farms throughout Greater Geelong from the mid-19th century were mixed in that they produced a range of grains and other produce. The transformation of the land began in earnest in the 1840s, and by 1847



Figure 4.13: Royal Australian Survey Corps, Corio (special) Military Survey Map, Part Sheet No. 867/1, Zone 7, 1956, showing Ocean Grove. Source: GRS 2030/R055, Geelong Heritage Centre collection.



Figure 4.14: 'Bonny Vale' training course, c.1926. Source: Bellarine Shire collection, image 11/06, Bellarine Historical Society.

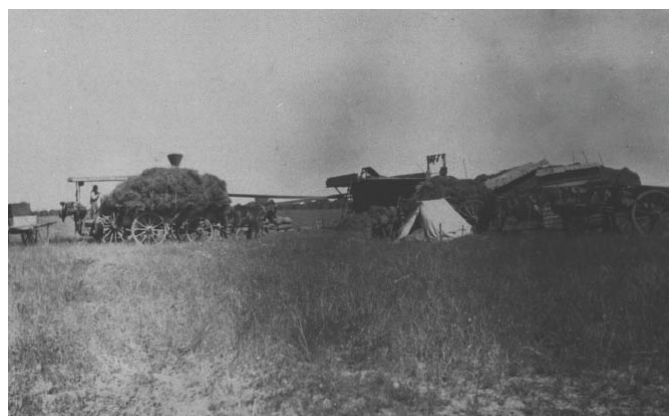


Figure 4.15: Threshing oat hay at 'Bonny Vale', c.1925. Source: Bellarine Shire collection, image 10/15, Bellarine Historical Society.



Figure 4.16: Newlands Homestead, Barrabool Rd, Ceres, 1998.
Source: David Rowe.

the Barrabool Hills were 'laden with potatoes, wheat, oats, vegetables and butter,'⁷⁹ with farming enterprises extending to Moolap in 1848, as outlined in the *Geelong Advertiser* in 1848:

A considerable quantity of purchased land has lately been put under cultivation on the flat ground, about three miles on this side of Point Henry. The soil appears to be a dark rich loam, and suitable for harvest produce such as wheat, oats, and barley, but perhaps not so well adapted for potatoes. The distance from Geelong is about three miles, with an excellent road for the transit of produce all the way into town. This last desideratum will tend greatly to enhance the value of the land, although here is an absence of conveniences (chiefly the want of a supply of water nearer at hand). Several good huts have already been built by the owners of the allotments, and others are in the course of erection. As yet only small portions of land have been ploughed, but in the course of a very short period, by the industry of the purchasers, many acres will be under direct cultivation.⁸⁰

By far the largest producers of wheat in 1857 were situated in the Bellarine Parish, with 130,890 bushels grown.⁸¹ They were followed by farms in the Barrabool Parish with 94,499 bushels. Wheat grown in lesser (but still considerable) amounts were in the Parishes of Duneed (38,617 bushels), Moolap (23,929 bushels), Moorpanyal (20,693 bushels), Conewarre (12,727 bushels) and Paywit (10,327 bushels). By 1899, the volume of wheat grown in the Greater Geelong region continued to be substantial, the Shires of Bellarine and Barrabool producing 14,845 and 12,297 acres worth respectively.⁸²

Barley was grown in considerably less volumes in the 1850s, the largest concentration being in the Bellarine Parish in 1857 with 2,969 bushels.⁸³ A larger volume of oats were grown in this Parish at this time, amounting to 34,931 bushels.⁸⁴ However, the Barrabool Parish boasted a production of 39,241 bushels, with the Parish of Moolap having farms that produced 21,174 bushels.⁸⁵ By 1899, oats and malt were the secondary principal grains grown in the region.⁸⁶

'Newlands' Homestead at 670 Barrabool Road, Ceres (Figure 4.16), is a physical legacy of mid-19th century developments in cultivated farming in the Greater Geelong region. Previously part of the vast estate of Charles McLachlan, the land now comprising 'Newlands' Homestead had been taken up by James Piper (1819-1911) who cut his first wheat crop in 1846 'which yielded well' and which Piper 'recalled with satisfaction' in 1898.⁸⁷ Part of the Merrawarp Estate subdivision in the early 1850s, Piper secured his tenure by taking up a freehold purchase. One of the first Barrabool Shire Councillors (see Theme 7), Piper built his stone dwelling in 1853, with various outbuildings subsequently erected including a stable (built 1861) and a dairy.⁸⁸

Further east at 50 Prospect Road, Ceres, John Leigh (1815-1886) had a substantial Barrabool stone homestead constructed in 1861 to a design by Geelong architect and surveyor, Andrew McWilliams.⁸⁹ Leigh had settled at the Barrabool Hills as early as 1846, as outlined in his obituary in 1886:

The deceased gentleman, who had reached the ripe age of 71 years, was the oldest resident on the Barrabool Hills. He arrived at Melbourne in 1841, and five years later he settled on the hills, at which place he resided ever since, conducting with every success the business of a farmer. His quiet, unobtrusive demeanour, assisted by all those genial qualities so characteristic of the agriculturist, earned for him the respect and esteem of everyone on the hills ... The deceased was a native of Devonshire, England.⁹⁰

Prospect Farm was continued on by the Leigh family and in 1898 the *Geelong Advertiser* reported that 'the hay crop will give a satisfactory return, and a wheat crop, which has filled out very well, is one of the most advanced of its kind on the hills.'⁹¹ The homestead and other early outbuildings survive at the property today (Figures 4.17-18).

At Anakie, Lara and Lovely Banks, a number of other farms dating from the 19th century exist that were known for their hay, barley and oat crops. At 125 Buckingham Street, Lara, is the stone cottage and stables of David McHarry built in 1874-75 now known as 'Laurence Park'⁹²



Figure 4.17: Prospect Homestead, 1998. Source: David Rowe.



Figure 4.19: 'Laurence Park', Lara, 2015. Source: David Rowe.



Figure 4.18: Prospect Stables, 1998. Source: David Rowe.



Figure 4.20: 'Laurence Park' Stables, 2015. Source: David Rowe.

(Figures 4.19-20). At 785 Bacchus Marsh Road, Anakie, is a timber Federation styled dwelling associated with the farm of Richard and Martha Wisely. The dwelling was built in 1906-07.⁹³ At 450 Staceys Road, Anakie, is 'Roselea', a Federation era farm with timber dwelling and outbuildings established by the Leigh brothers of Ceres: Albert, Frederick and Rowland, in 1911.⁹⁴ The success of these farms was outlined in *The Leader* in 1916:

The average of the farmers in the Lara district is up to a very good standard in the working of their land. This is shown in the continued fertility of the older farms lying outside of the Fairbairn [Lara Estate] subdivision. The Lee [sic. – Leigh] Brothers reflect credit upon their training, obtained originally on the Barrabool Hills. Their proportion of grain cultivation for market over and above that provided for their sheep grazing is larger than the average, and the quality of their work is indicated by their yields of oats, running to averages

of from 35 to 45 bushels per acre, and their Cape barley from 30 to 35 respectively. The older settlers did not consider the district suitable for wheat, but Mr. Wisley, from the Mallee, has attracted attention by the growth of a very fine crop of Federation wheat last year. Not much has yet been done about lucerne, although there is no reason against that best of all fodder plants doing well here, considering its success (without irrigation) in the adjoining Western district, whose climate and conditions generally are much the same as those of Lara. Lara is essentially a good winter country. The temperature is comparatively mild, and growth, both of crops and pasture, continues right through the winter season. There is a tradition about Mr. McCarry [sic. – McHarry], a very early settler in this district, having once put in a small paddock with lucerne, only he did not then know the value of the plant. He called it a weed, and tried to get rid of it by ploughing. He remarked that it was the most stubborn

weed he had ever met with, as the more he ploughed it up in the effort to exterminate it the better and more persistently it grew.⁹⁵

Fewer mixed farms of the 19th and early 20th centuries remain on the Bellarine Peninsula that were known for their large wheat crops and other produce, particularly potatoes. In 1857, 1,132 ½ tons of potatoes were grown in the Bellarine Parish, the most substantial quantity in the Greater Geelong region at this time.⁹⁶ By 1899, the Bellarine Shire had 661 acres under potato crops.

A well-known mixed farm on the Bellarine Peninsula in the 1860s was Jonas Levien's 'Murradoc Farm' on Founds Road, Drysdale. On 640 acres he grew grains, potatoes and seeds as a 'model farm' with guano procured from nearby Mud Island to fertilise his crops.⁹⁷ Established in 1864 'when the soil was choked with weeds,'⁹⁸ the *Geelong Advertiser* gave a detailed account of Levien's farm enterprise in 1869:

It had been cropped for the past 13 or 14 years with cereals so for the first two years he allowed it to rest and applied large amounts of manure. Many neighbours have now followed his example of not over-cropping. He is now engaged in growing seeds, growing crops in rotation and preparing the soil beforehand.

After growing a crop of potatoes from heavily laden manured soil, Levien sows seeds, the next year a crop of cereal and the fourth year is lies fallow. Grain is drilled into the soil as this method is best for land subject to the wet.

Mr Levien leases Flat Island where excellent guano is obtained. It is also fortunate that Levien prefers seed farming as he is obliged to employ more men than he would have to do for an ordinary farm, and many have benefited from the work during the winter months. On an average he employs 20 men and currently has 24 men and 8 boys.

This season 380 acres are under cultivation with wheat, hay, onions, barley, mangolds, garden seeds, peas, canary seeds, flower seeds and potatoes. Some 120 acres are under English grass, 40 acres with original grasses and 100 acres fallow. In some of the barley, caterpillars have made an appearance so this part of the crop has been cut down already.

Some of the oat crops are so thick that Levien has purchased one of Robinson's machines to cut them down. A man and a boy are required to manage the pair of horses pulling the machine which can harvest 15 acres per day. The wheat being grown is purple

straw and Mount Gambier. The barley is either English or Cape varieties. The 5 acres of seeds being grown include: carrots, peas, spinach, beetroot, parsnips, onions, marrow, cucumbers and long, red mangolds. An acre of mignonette casts a beautiful perfume about. The 25 acres of canary seed is to fill orders and if he had twice as much he could find ready buyers! The 3 acres of cabbage lettuce looked like the ground had been scattered with green cannon balls – the hearts of the plants having been taken out to allow the seed to push through – if this had not been done it is probable, the hearts being so hard, the plants would have decayed before the spur could get through.⁹⁹

In 1871, the architect Andrew McWilliams designed a cottage for J.F. Levien that was later known 'Murradoc House'.¹⁰⁰ Levin (1840-1906) was the son of Benjamin Goldsmith and Eliza (nee Lindo) Levien, early punt operator in Geelong (see Theme 3). Educated at the Geelong Grammar School, J.F. Levien entered politics as a conservative protectionist for South Grant in 1871, defeating Peter Lalor. It was also in 1871 when Levien married his first cousin, Clara Levien.¹⁰¹ As a politician, Levien's interest in science of agriculture continued as minister of mines and agriculture between 1883-86 during which time he introduced the bill that established the Council of Agricultural Education, with Levien installed as its first president.¹⁰² Levien died in 1906 at his home in St. Kilda Road, Melbourne.¹⁰³ Levien's earlier farm property at Drysdale was advertised for sale in eight allotments on 11 March 1921 as the Bellarine Farms (Figure 4.21), being described as within 'the heart of this noted dairying and onion district.'¹⁰⁴ Today, Levien's previous farm is the location of Scotchmans Hill Winery.

Seed cultivation was also a key part of Robert Willey's 'Avondale' farm, 10 Church Road, Bellarine (Figures 4.22-23). Unlike Levien's 'Murradoc Farm', 'Avondale' exists today as a physical legacy of mixed farming on the Peninsula. The existing timber dwelling (built in c.1868) first commenced as the Farmer's Hotel on land originally owned by Robert Willey's father, Frederick¹⁰⁵ (see Theme 6) Educated at Geelong College, Robert Willey had established a garden at his Farmer's Hotel property by 1871 as it was at this time when he won first prize in the garden produce section for his twelve onions in the Geelong and Western District Agricultural and Horticultural Society's Spring Exhibition.¹⁰⁶ By 1888, Willey had turned his full attention to farming and nominated 'Avondale' for the best managed farm in the Geelong and Western District Agricultural and Horticultural Society's annual competition.¹⁰⁷ The extent and type of farming carried out at 'Avondale' by Willey was detailed in the *Australasian*:

BELLARINE FARMS

This is for its size the **BEST FARM** in the Geelong District.

To be Sold by Auction, FRIDAY, 11th MARCH

At 2.30 p.m. in **GEELONG WOOL EXCHANGE.**

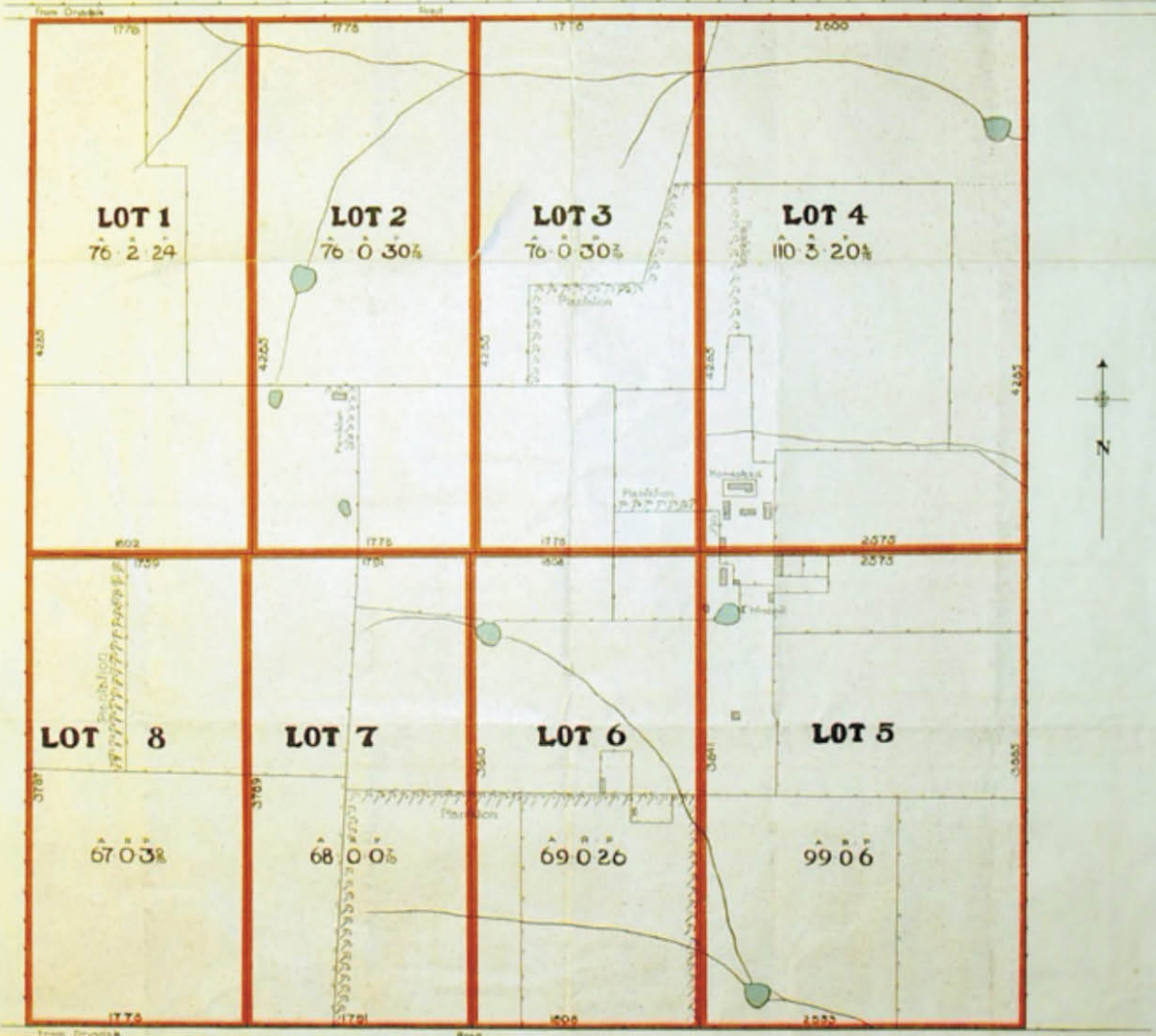


643 Rich Acres

3 miles east of Drysdale Station. Improved by roomy Farm House, Sheds, Stables, superior fences. Ample water supply. In the heart of this noted **DAIRYING & ONION DISTRICT**, formerly known as "**LEVIEN'S FARM.**"

The Blocks have access to one another, thus suiting large or small buyers. Beautiful undulating country.

TERMS: 10 per cent. deposit; 15 per cent. on 1st June; 15 per cent. in 2 years; 15 per cent. in 4 years; balance, 5 years. Interest at 6 per cent. from date of possession, 1st June, 1921.



Scale, 5 chains = 1 inch.

Fences shown thus

HENRY TRACKER LITHO

E. T. M. Gorlick, Assoc. M. Inst. C.E., LICENSED SURVEYOR.

Strachan, Murray & Shannon, Ltd., & Thos. Roadknight & Co.,

Agents in conjunction for the Union Trustee Co., Melbourne, acting for the late John Aitken's Estate.

Figure 4.21: Bellarine Farms Auction Notice, 11 March 1921. Source: Map 9, Bellarine Historical Society.

One of the most interesting farms at East Bellarine is a small property of 80 acres owned by Mr. Robert Willey, of Avondale. He has other land in the district, I believe; but on this property, where he resides, there is an immense amount of farming done, labour employed, money laid out and, generally speaking, a remarkable quantity and variety of produce grown. Mr. Willey's house, and some of the stock he keeps and the crops he grows, are shown in the accompanying pictures, and anyone can see at a glance that an air of prosperity and comfort pervades the place. A small but select herd of dairy cattle are kept, mostly pedigreed Jerseys. In the way of dairying little more is attempted than supplying household requirements, but even in doing thus much Mr. Willey aims at doing it in the best and cheapest way possible, by keeping good cattle and treating them well. Whatever work he does is done thoroughly; there are no mediocre, unprofitable cows, calves, pigs, or poultry about his premises. His house, his barns, and stables, and machinery and all the very best of their kind; there is nothing but what is tidy and neat.

Mr. Willey's specialty, however, is seed growing. Farm and garden seeds are raised on a large scale. The most of the farm is devoted to seed growing, and dealing with so many different kinds of plants requires no little skill and accuracy in carrying on such work. Nearly every kind of seed is grown, including peas, onions, lettuces, carrots, cabbages, parsnips, and vegetables of every kind, far too numerous to mention. The land for seed-growing purposes is laid out in sections or plots, as shown in the accompanying illustration, and a prettier sight, when the different crops are in bloom, is hard to find. The minute and technical features of this business are too intricate to describe on paper, but it may be said that order and system prevail throughout. Every operation has to be done with accuracy and precision, and exactly at the time it should be done, or the seeds would be spoiled. A large quantity of machinery is necessary for thrashing and planting the various seeds grown, as well as numerous barns and granaries for storing and preparing them for market. All those things are provided, and the buildings of one kind and another on the place form what may be correctly described as a small township. Mr. Willey has done useful service for Victorian Government in testing both seeds and manures, and in the numerous prizes and certificates which adorn his dwelling, gained at industrial exhibitions in various parts of the world, testify that his seeds are of the highest quality.¹⁰⁸

Part of the success of potato growing on the Bellarine Peninsula was the exploitation of guano as fertiliser

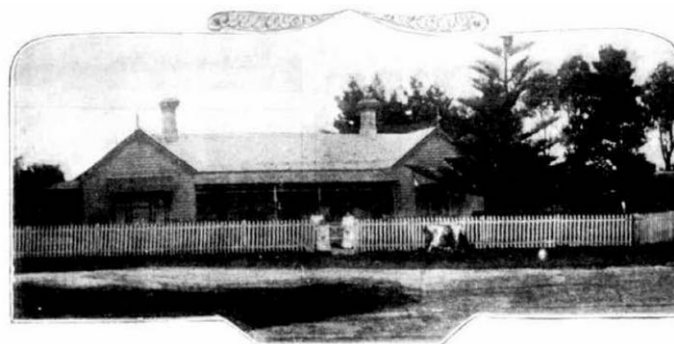


Figure 4.22: 'Avondale', Church Rd, Bellarine, 1894. Source: *Australasian*, 10 November 1894, p.7.



Figure 4.23: 'Avondale' seed farm, Church Rd, Bellarine, 1894. Source: *Australasian*, 10 November 1894, p.7.

(see Theme 5 for further details on the industrial manufacture of guano). The use of this sedimentary material and bone dust was noted in the 1860s in the *Geelong Advertiser* as the cause of the crops in the Bellarine district 'looking exceedingly well.'¹⁰⁹ Along with J.F. Levien, one of the earliest proponents of guano as a fertiliser was Detliv Julius Moller (1814-1865), Danish poundkeeper and farmer of Leopold.¹¹⁰ He was photographed excavating for guano on the Bellarine Peninsula in 1861 by the surveyor, Richard Daintree (Figure 4.24).

Moller's son, Andreas Kranker Moller (1855-1932) took up 21 acres of land at Leopold (at what is now Mollers Lane) in 1880.¹¹¹ There, he grew potatoes and continued his father's practice of fertilising the soil. A.K. Moller was also a successful orchardist.¹¹² Detliv Moller's grandson, Herbert Andrew Moller (1891-1979) was a third generation of the Moller family to cultivate the land at Leopold and grow potatoes. He too continued the practice of his grandfather by fertilising the soil, but with superphosphate. As he outlined in 1928:

My father has been growing potatoes for half a century on the same land, and this season one of the best crops in the district was on that ground. We begin ploughing either in summer or autumn, and the land must be frequently worked with a spring tooth cultivator or



Figure 4.24: Detliv Julius Moller reclining beside his guano excavation, Bellarine Peninsula, 1861. Source: R. Daintree, accession H36571, State Library of Victoria.

some other suitable implement, and kept free of weeds to conserve moisture and combat the pea mite, which can be controlled to a certain extent by thorough cultivation. Before ploughing a heavy dressing of stable manure is spread over the surface of the ground and turned under, and this adds considerable humus and plant food to the soil. It is difficult, if not impossible, to get this class of manure in Geelong, and the majority of farmers are stabling their horses to ensure a supply. At planting time the land is ploughed again, and artificial fertilisers are sown in the furrows in which the seeds are placed. Of recent years a mixture of six parts of superphosphate to one part sulphate of ammonia has been used ...¹¹³

H.A. Moller had taken up 20 acres of farmland at 61-81 Mollers Lane in 1913.¹¹⁴ It might have been about this time when the existing Edwardian timber dwelling was constructed. Moller was president of the Leopold



Figure 4.25: Herbert Andrew Moller tending his crop at Leopold, 1936. Source: *Weekly Times*, 28 March 1936, p.28.



Figure 4.26: Asparagus Farm Pump House (now demolished), 1998. Source: David Rowe.



Figure 4.27: Alexander Shanks & Son Ltd Engine in pump house, 1998. Source: David Rowe.



Figure 4.28: Asparagus Farm Manager's House, 1998. Source: David Rowe.



Figure 4.29: Asparagus Farm Stables, 1998. Source: David Rowe.

and Wallington District Fruit and Vegetable Growers' Association when it held its first potato show at Leopold in 1930.¹¹⁵ He had increased the size of his property to 40 acres by 1931 when he cultivated cabbages, cauliflowers, onions, lettuce, carrots, parsnips, melons, pumpkins, marrow and 'the most popular salad plants' in addition to potatoes.¹¹⁶ In 1936, Moller also grew French beans and maize¹¹⁷ (Figure 4.25).

The popularity and success of potato growing continued throughout the 20th century. In 1965, the *Victorian Year Book* declared that Victoria was 'the largest producer of potatoes in Australia' and that crops 'are grown in favoured localities where the risk of frost is not great, such as in the Bellarine Peninsula ...'¹¹⁸

ASPARAGUS FARM, BARWON HEADS

In 1910-11, Walter Higgins, bulb merchant, acquired 65 acres of land on the south side of the Barwon Heads

Road at Barwon Heads from Edwin Collins, adding to his existing adjoining landholdings where he had established a bulb farm.¹¹⁹ The new-acquired land included part of the Murtnaghurt Swamp.¹²⁰ In 1919, Messrs. Higgins and Co. had commenced the cultivation of asparagus at Barwon Heads and it was also had this time when the firm's bulb farm at Corio (North Shore) was transferred to the Barwon Heads site.¹²¹ In 1919, Higgins' crop was the largest asparagus farm in Australia, covering 30 acres and with 25 acres in full bearing.¹²² The *Geelong Advertiser* described the farming operation:

Hidden away on a side track [now Lings Road] from the main road to Barwon Heads, the asparagus growers are located. There are eight men employed, three of whom are returned soldiers. Rich sandy soil is said to be just the thing for asparagus culture, and here it is ideal ... The output of the farm at present is about 60 tons per year, and an average of two tons of



Figure 4.30: Women's Land Army workers at the asparagus farm, 1939. Source: J. Pescott, *South Barwon 1857-1985*, p.137.

asparagus is sent every week to a Melbourne canning firm. So prolific are the plants that they must be cut every day – Sundays included. It seems incredible that so much could grow in one night. Each day seven men traverse the 25 acres, and cut the shoots, which are just showing above the ground. The latter are trimmed at once in the sheds nearby, and packed ready to catch the afternoon coach to Geelong, and thence sent by rail to Melbourne. It is contended that the asparagus sweats and loses much of its goodness by the journey, and that canning adjacent to the area of production would make for a better product.¹²³

It was about 1919 when a pump house (Figure 4.26) was constructed and an Alexander Shanks & Son Ltd. engine installed (Figure 4.27) to pump water from the Murtnaghurt Swamp through the grid of hundreds of underground concrete pipes that had been installed to water the asparagus.¹²⁴ A manager's house and outbuildings were also constructed at this time (but later altered)¹²⁵ (Figures 4.28-29).

In late 1922 or early 1923, Higgins' asparagus farm (then comprised 220 acres) was sold for £7600 to A.M. Robinson, acting for the Australasian Jam Company in Melbourne.¹²⁶ The *Geelong Advertiser* reported that the

farm had been sold to the Geelong and Western District Preserving Company.¹²⁷ Both companies appear to have been associated with of Henry Jones (IXL) Co-operative Ltd as part of a confederation of companies.¹²⁸ The property had been managed by Neilson and Neilson of Geelong and in 1922-23, George and Walter Foster, asparagus farmer, were appointed managers.¹²⁹

The property was later acquired by P.J. Ling (from whom Lings Road is named) and with labor shortages during World War 2, the Women's Land Army was called in to cultivate the asparagus¹³⁰ (Figure 4.30). In the early 1970s, asparagus farming was replaced with cattle grazing until the farm was sold in 1999 to a joint venture to establish the 13th Beach Golf Links and Resort.¹³¹ Today, the former manager's house and stables remain at 95 Lings Road, while the pump wheel of the former Alexander Shanks and Son engine forms a landscape feature beside the 5th green of the beach course.

MIXED FARMING - DAIRYING

A number of farming establishments in the Greater Geelong region from the 19th century also mixed dairying with different forms of cultivation. A smaller number survives to the current day.

'ROSEDALE'/'LINCOLN'S FARM', PORTARLINGTON

One of the more notable was 'Rosedale', 1-65 Point Richards Road, Portarlington, acquired by Edwin Collins in 1862 from Joseph Birkett, the first Crown purchaser in 1849 who had established 'one of, it not the best and most productive farms in the whole of the Bellarine district' as well as a dwelling house 'and all necessary outbuildings.'¹³² In 1864-65, Collins had extended the double-gabled four-roomed dwelling with the construction of a zinc-roofed dairy that consisted of a submerged white-washed stone coolroom with a gabled loft above.¹³³ There, he commenced the manufacture of cheese, winning second prize for his 'Five Cwt Cheese' in the Autumn Exhibition of the Port Phillip Farmer's Society in 1865.¹³⁴ In 1866, Collins won first prize by the Board of Agriculture for his salted butter that had successfully made the return voyage to England.¹³⁵ In 1872, the *Geelong Advertiser* gave a detailed account of Collins' enterprise:

Alterations and additions to his previously large dairy establishment, have been made during the past few months, by Mr Collins, Bellarine, whose Cheddar cheeses are so sought after in this and the Melbourne markets, that he is able to command his own price, and although he anticipates making ten tons this season, he has already received orders for nearly every pound of it. Mr Collins' success shows what may be done by careful dairy farming. A very few years ago, colonial cheese, like colonial ales, and wines, was not appreciated, and Mr Collins had some difficulty in making his article well-known, and to be known, knew would cause it to be appreciated. In those days our colonial cheesemakers ' either did not know how to make cheese, or they had not the pasturage adapted for the business, and it was not until Mr Cooper of Turkeith, Mr Coulson of Ondit, and Mr Collins of Bellarine, the two former with Stilton and Mr Collins with Cheddar cheese began to send their goods to market that the use of the imported article commenced to decrease in favor and give way to the produce of our own makers. Whatever others may have done since, there is not much doubt about it that the pioneers of good cheese-making in this district were the three persons mentioned, and their doings are always therefore watched with interest. The season for cheesemaking has just opened, and that, owing to the cold wet weather, very unfavorably as from cows fed on cold wet grass the milk could not possibly be so rich as would otherwise be the case. Still Mr Collins looks forward to a very successful season, he having made a large quantity of English grass hay on which the cows taken from the pasturage thrive amazingly. His place,



Figure 4.31: Lincoln's Farm, Portarlington, 2007.
Source: David Rowe.



Figure 4.32: Dairy, Lincoln's Farm, Portarlington, 2007.
Source: David Rowe.



Figure 4.33: 'Main Shed, Lincoln's Farm, Portarlington, 2007.
Source: David Rowe.



Figure 4.34: 'Clover Hill', Forest Road South, Lara, 2012. Source: Wendy Jacobs.

as already reported, has been sown with English grass, and that portion reserved for the grazing of his cattle is about 200 acres in extent. From the cows so fed he anticipates, this season, making at least £1000 worth of cheese, or at the rate of £5 to the acre.¹³⁶

In 1875, the *Illustrated Sydney News and News South Wales Agriculturalist and Grazier* described Collins' 'Rose Hill' Farm:

On the 335 acres 1200 head of cattle, young and old, are kept, and the luxuriance of the pasture shows that the farm is not overstocked. The dairy cows in milk at one time run from about 25 to 50 head, the usual number being about 40. The subdivision of the farm, by permitting the fields, time about, to be rested and seeded, contributes along with the system of fertilising adopted, to keep the large quantity of stock always in abundance of pasture.

In a large yard opening from the milking shed hundreds of loads of sea-shells are carted from the beach throughout the year, and deposited and spread. This serves the two fold purpose of keeping the yard clean, and by absorbing all the liquid and solid

manurial matter from the herd adds to the value of the sea-shell, which, of itself, is found to be a most valuable fertiliser for the class of soil of which the farm consists, viz., strong black loam. From the yard the fields are systematically top-dressed with this compost, beginning with one paddock and going round till all have received a turn, the more clayey patches receiving the thickest coat. The influence of this fertiliser is most marked in its effects on the thickness of the pasture, and that the grass is also sweetened is shown by the fondness of the cows for the top-dressed portion of an unfinished field. Mr. Collins's out-buildings, including milking-house, cheese-house, and milking sheds are notable for their handiness and cleanliness, but cow-sheds for winter stabling are not used ... The cows are fed in the winter with oaten hay, and in the summer with green maize, liberal supplies of which are raised on the farm and always kept on hand.¹³⁷

Collins sold the farm in 1876 and it was later named 'Lincoln's Farm' after William Lincoln, owner in the later 19th century.¹³⁸ Today, only part of the dairy remains in a parlous and neglected state (Figures 4.31-33).



Figure 4.35: 'Blairgowrie' ruins, 25 Blairs Road, Lara, 2012.
Source: Wendy Jacobs.

OTHER DAIRY FARMS

At Lara and Leopold are other surviving dairy farms. In c.1866, Irish emigrant, William McClelland, took up ownership of 350 acres of Bates' land holdings at 155 Forest Road, Lara.¹³⁹ There commenced a long-standing and successful farm that was continued on by two of his sons in later years.¹⁴⁰ In the early days, McClelland ran a dairy farm on the property.¹⁴¹ The farm later included stud stock with a Clydesdale horse stud established by William and later carried on for many years by his sons. In 1916, *The Leader* newspaper reported that McClelland had 'earned a reputation for the breeding of high-class Clydesdales.'¹⁴² A jersey cow stud was also established by McClelland's sons, Abraham and Robert McClelland, and it continued until the 1950s. The 'Clover Hill' farm house (Figure 4.34), built of limestone, was gutted by fire in 1926 and rebuilt.¹⁴³

Only stone ruins exist of another early dairy at Lara, it being 'Blairgowrie', 25 Blairs Road, the former property James and Grace Blair from 1868¹⁴⁴ (Figure 4.35). The dairy farm was operated by Mrs. Blair,¹⁴⁵ with Mr. Blair serving as the Secretary of the Corio Road Board (later the Corio Shire Council) for forty years from 1862 until 1902 (see Theme 7).

At 2 Harriott Road, Armstrong Creek (previously 105-205 Groves Road, Connewarre) are the ruins of the former dairy farm of John Bogan (Figures 4.36-37). The land had been first acquired by Alfred Firmin in 1855, but as he resided in the Barrabool Hills, it was not until c.1862-63 when a small farm complex appears to have been constructed for Bogan at Connewarre.¹⁴⁶ Bogan was the landlord of the Breakwater Hotel operated by Michael Murnane in 1855 (and who was to become Bogan's father in law).¹⁴⁷ At Connewarre, Bogan ran his dairy farm and conducted a milk delivery service around Geelong.¹⁴⁸

In 1895-96, the farm had been expanded to 170 acres and it was jointly owned by John and his brother, Michael Bogan.¹⁴⁹ The property was leased to William Kee from 1904¹⁵⁰ but by the early 1940s, it was again occupied by descendants of John and Michael Bogan.¹⁵¹ The ruinous farm cottage at Bogan's former dairy farm was demolished in recent years and the surviving chimney and underground tank are proposed for removal in 2019 to make way for a residential subdivision.

At 40 Ashgarth Avenue, Leopold, the surviving Victorian vernacular dwelling and farm buildings erected in 1866 and 1870 reflect the farm dairy first established by William Brinsmead (1815-1905)¹⁵² (Figure 4.38). Peas, potatoes and other vegetables were later cultivated on the farm and pigs grazed, with second prize being awarded to the Brinsmead brothers for their 'sow not over 12 months' at the spring show of the Geelong and Western District Agricultural and Pastoral Society.¹⁵³ William Brinsmead was born into farming at St. Giles in the Wood, England. He married his cousin, Ann Brinsmead, in 1839, possibly at the Methodist Chapel on Ann's father's farm next to the farmhouse.¹⁵⁴ After farming in the village of Alwington, they emigrated to Port Phillip via Adelaide in 1850 with their children: Thomas Ireland (born 1841), Mary Ann (born 1844) and William (born 1847).¹⁵⁵ Settling at Leopold, they named their property, 'Allens Week Farm', after the family farm in St. Giles in the Wood.¹⁵⁶

At 'Chevy', Fenwick Street, Wallington, David Rhind, experimental farm cultivator, stockbreeder and dairy farmer¹⁵⁷ established an extensive model farm which included a dairy herd. Originally part of Fairfax Fenwick's Chevy Estate (Theme 6), including his homestead built in c.1853,¹⁵⁸ Rhind had purchased his 3000 acre property in 1886, following the death of the then owner and first Town Surveyor of the Geelong Council William Weekes (see Figure 7).¹⁵⁹ The land included leased dwellings, vineyards and other farming properties between Lake Connewarre and Curlewis as well as Wallington.¹⁶⁰ Rhind appears to have made changes to the original homestead with the construction of substantial Victorian Italianate styled additions (Figure 4.39).

In 1906, the *Geelong Advertiser* gave a detailed account of Rhind's farm. It was considered to be 'one of the best known properties around Geelong' with its location 'on the hills overlooking the lakes'.¹⁶¹ Over 200 acres were devoted to cultivation, including wheat (where the Department of Agriculture had trialled formalin pickled wheat without success), peas, beets, broad beans, rye, rape, barley and flax, the latter Rhind believed had the potential to be profitable.¹⁶² He also stocked pigs and cows, as well as Hong Kong geese (bred in New Zealand)

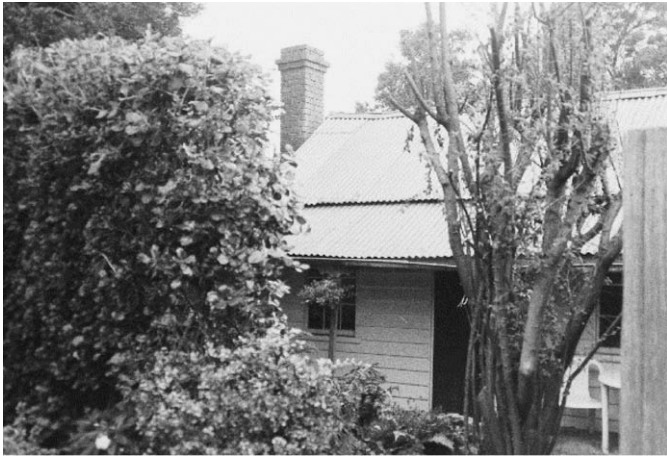


Figure 4.36: Cottage, Bogan's Farm, Armstrong Creek, 1998 (now demolished). Source: David Rowe



Figure 4.37: Rear Cottage, Bogan's Farm, Armstrong Creek, 1998 (now demolished). Source: David Rowe.

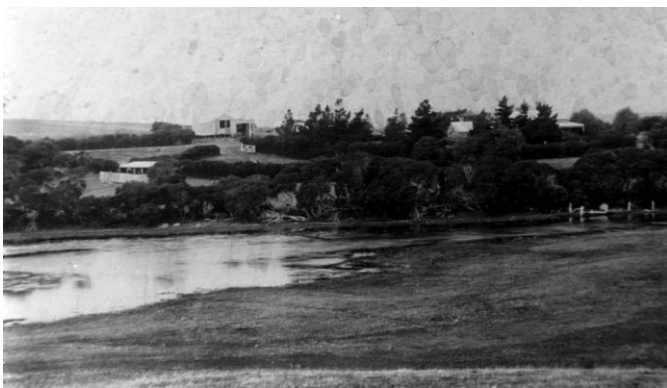


Figure 4.38: 'Allens Week' Farm, Ashgate Ave, Leopold, n.d. Source: Image 1792, Bellarine Historical Society.

and Minorca and White Leghorn fowls which gave 'good egg returns.'¹⁶³ Of his dairy farm, the *Geelong Advertiser* stated:

The dairy herd at "Chevy" numbers between 40 and 50 cows, chiefly Ayreshires, and mostly bred by Mr. Rhind, who has to cull extensively in getting his herd together. Bulls are also bred for the market and command top prices. The stock with few exceptions has been dehorned, and in that condition there is less chance of the animals inflicting bodily injury on one another. While deeming it advisable to treat dairy herds in that manner, Mr. Rhind believes in following a humanitarian course, and the operation is performed when the stock are small calved and the horns just the size of a button.¹⁶⁴

A legacy of 'Chevy' today is the homestead in Fenwick Street, Wallington.

'Springfield' at 532-560 Bellarine Highway, Leopold (Figures 4.40-41), is one of the few remaining dairy farms still functioning, albeit primarily for sheep grazing. The property was first acquired in c.1857 for dairy farming and sheep grazing by Michael O'Halloran of County Clare, Ireland on land previously occupied by Misses Newcomb and Drysdale's Lap Lap out-station and later John Cumming, founder of Geelong's Volumn brewery.¹⁶⁵ O'Halloran arrived in Geelong in 1850 and was first employed by the Anderson family in the Barrabool Hills. He then went to the Ballarat goldfields and to Sydney (where he married Margaret Kenovan in 1853)¹⁶⁶ before returning to Geelong where he leased the London Hotel in Moorabool Street and subsequently the Red Lion Hotel.¹⁶⁷ First known as 'Springfield Avenue' farm, O'Halloran 'introduced the latest principles of agriculture and dairying.'¹⁶⁸ He gave up dairy farming in 1874.¹⁶⁹ O'Halloran's sons, William, Stephen and Denis took over the management of the farm in 1884.¹⁷⁰ Denis O'Halloran (c.1856-1937) married Sarah Larkins in c.1890 but their marriage was brief as Sarah died in 1894.¹⁷¹ He then married Mary Ann Fitzgerald in 1897,¹⁷² the same year the existing Late Victorian timber dwelling was erected to a design by the Geelong architects, Laird and Barlow.¹⁷³ Denis O'Halloran revived the dairy farm at 'Springfield'. On his death in 1937, *The Age* reported that:

Mr. O'Halloran was for 39 years a member of the Bellarine shire council, and at the time of his death was a representative of the Moolap riding. He was four times president. For some years he was associated with the Geelong Agricultural Society, and was connected with the Leopold Progress Association and Leopold hall committee since their inception.¹⁷⁴

In addition to the homestead, a number of early farm outbuildings remain on the property.

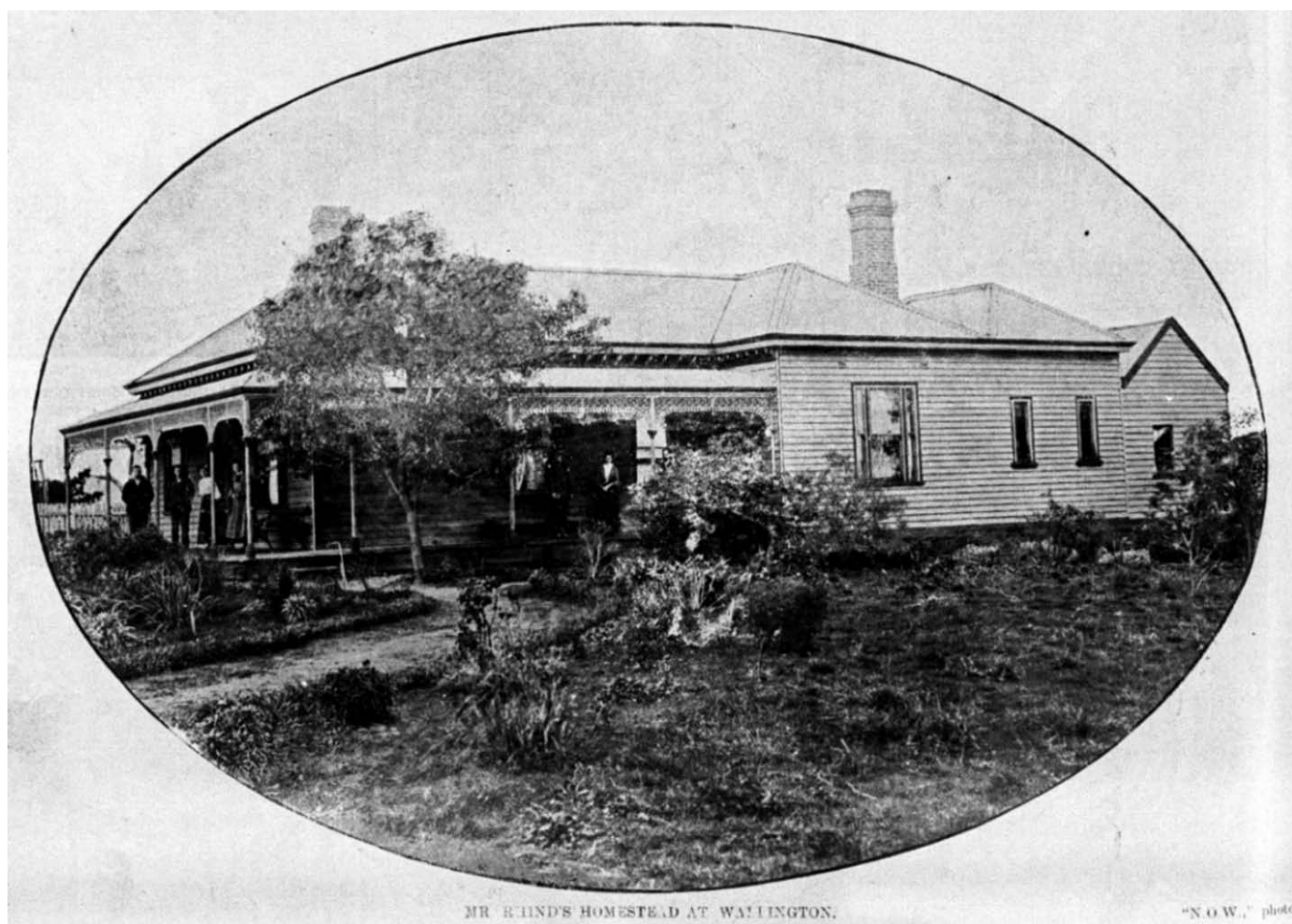


Figure 4.39: Chevy Homestead, (date unknown) [c.1918]. Source: *News of the Week* in the Bellarine Shire collection, sheet 08 image n33, Bellarine Historical Society.



Figure 4.40: 'Springfield', Moolap, c.1922. Source: Image 796, Bellarine Shire Collection, Bellarine Historical Society.



Figure 4.41: 'Springfield' dairy, Moolap, c.1922. Source: image 801, Bellarine Shire Collection, Bellarine Historical Society.

SPARROVALE FARM

With the relocation of the Geelong Racecourse from its first site near the Barwon River at Marshall in 1891 - and the creation of the Geelong Harbor Trust in 1905 - this land, together with the Connewarre Farmers' Common was endowed to the Trust.¹⁷⁵ The low-lying, salt-ridden flats were proposed to be reclaimed in order to increase their capital value, operate a farm from it and thus generate an income to offset the vagaries of port revenue.¹⁷⁶ The land was cleared, fenced and the salt leached from the soil by surface and underground drainage and irrigation.¹⁷⁷ The Geelong Harbor Trust named the farm 'Sparrovale', after Mr. E.R. Sparrow, the well-known auctioneer and secretary of the Geelong Racing Club.¹⁷⁸ In 1907, William Baird was appointed manager of the farm 'on the share system', his appointment being influenced by 'his previous experience and success in such general farm practice.'¹⁷⁹ Baird had been the inaugural chairman of the Wallace Millbrook and District Butter Factory and Creamery Company at Wallace from 1893, a neighbouring settlement to his dairy farm at Bungaree.¹⁸⁰ He resigned as chairman in 1903 and relocated to Moe where he continued dairy farming before moving to 'Sparrovale' in 1907.¹⁸¹

The design and construction of Sparrovale Farm was carried out under the direction of A. C. MacKenzie, engineer of the Geelong Harbor Trust.¹⁸² Open channels and agricultural drains were first constructed and maize crops planted (Figures 4.42-43).

By 1908 the Sparrovale Homestead site had been laid out (Figure 4.44). Situated on higher ground, a Federation styled manager's residence had been built in timber (Figure 4.46) and a flower garden and shrubbery laid out. Behind it to the east was the main working area of the farm including the workmen's quarters. was described by J.S. McFadzean, Dairy Supervisor, in August 1908:

These comprise a large weatherboard building containing kitchen, dining-room, two dormitories, and two bath-rooms, all lofty, well lighted and neatly fitted.¹⁸³

Other infrastructure situated in the working area included stables (Figure 4.47), machine shed, carpenter's shop, engine shed, blacksmith's shop, laundry, foreman's room, boiler and creaming, engine house, two large concrete silos (built on the Monier system) (Figure 4.45), hay shed, milking shed and row of pigsties, together with neatly laid out hay and straw stack yards, bull yards, and sow yard. The main entrance gates were to the south of the manager's residence, separating the main working area from the poultry yard, holding yards and horse paddocks.

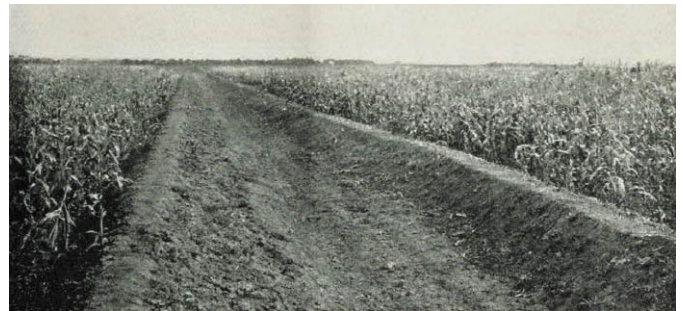


Figure 4.42: 'Sparrovale', irrigation pumping plant & farm ferry, c.1908. Source: *Journal of Agriculture, Victoria*, 10 August 1908, p.499.

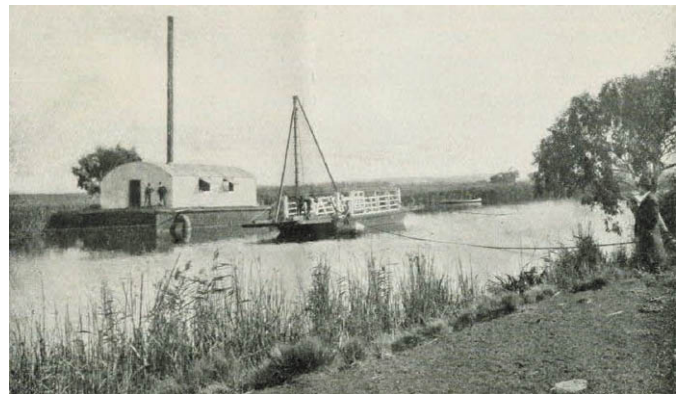


Figure 4.43: 'Sparrovale', maize crop, c.1908. Source: *Journal of Agriculture, Victoria*, 10 August 1908, p.499.

To the west, an acre of ground had been reserved for a future nursery to be managed by 'a practical gardener and forester.'¹⁸⁴ Calf sheds were also built (designed by a Mr. G. Harmer, Government Dairy Supervisor for the Geelong district) with two exercise yards.¹⁸⁵

McFadzean also gave a detailed description of the dairy buildings:

The first of these is a two-storied brick building, the lower portion of which is to be fitted as a refrigerating-room. Upstairs is the milk testing room, which it is intended to furnish with every convenience requisite for the work - Mr. Baird being a very firm believer in the benefits to be derived from systematic testing of the yields. In the next building to this the separating, cooling, and general dairy work is done; and a pulley-hoist is at the door for loading and unloading the milk. Next to this is the boiler-house, and a temporary steaming-room with vats for scalding feed as required for any of the stock.¹⁸⁶

The extensive dairying operations at the height of Sparrovale's production in the first decades of the 20th century saw milk transported to Melbourne by passenger train.¹⁸⁷ A tramway line ran directly from the

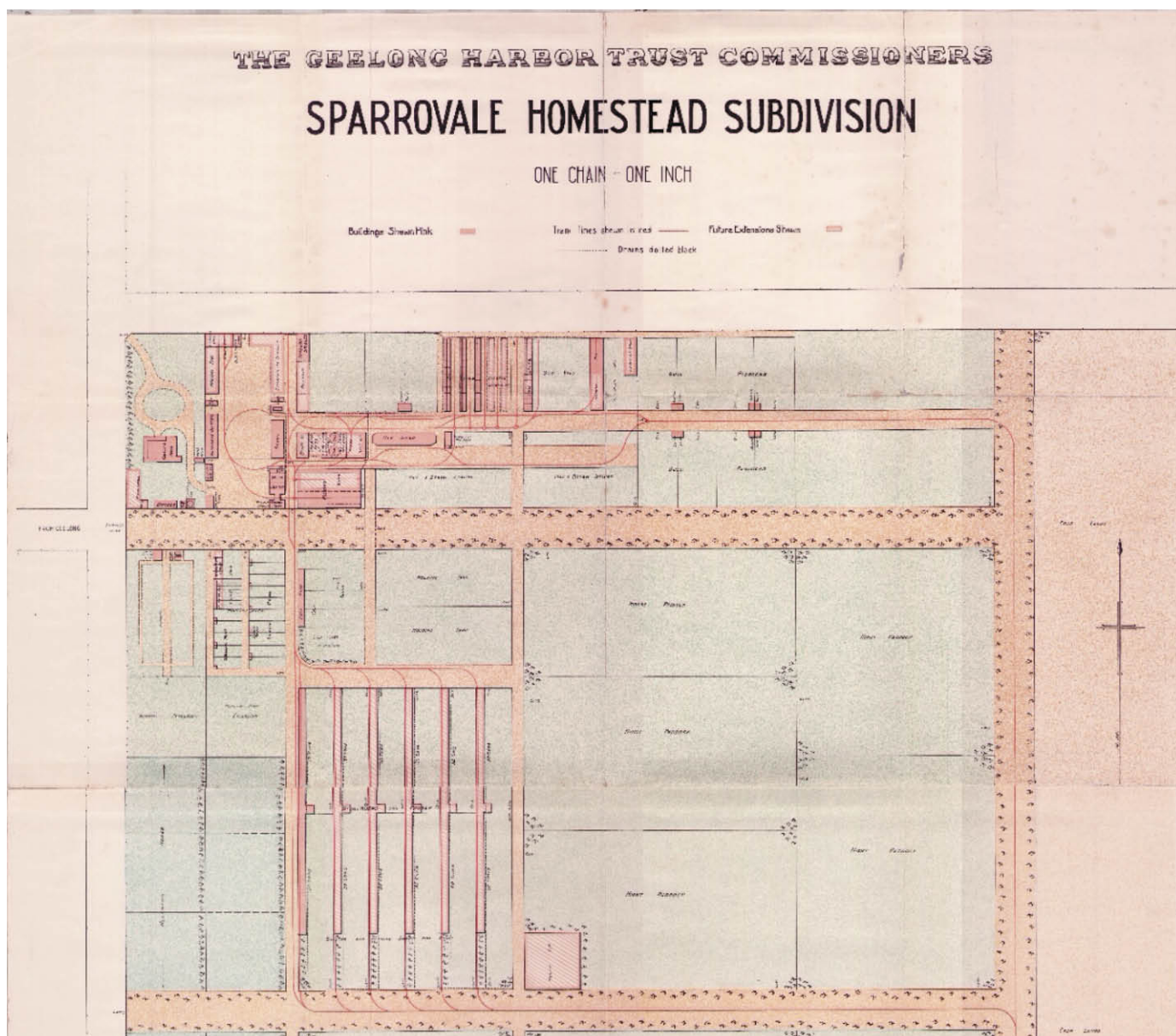


Figure 4.44: Part of the Sparrovale Homestead Subdivision, The Geelong Harbor Trust Commissioners, c.1908. Source: Karen Ware, Stawell.

middle of the dairy shed with the milk cans transported by rail truck to the Marshall Railway Station, whereby it was loaded onto the passenger train.¹⁸⁸ Because Sparrovale was also under the constant threat of flooding due its low-lying location near the Barwon River, and after damaging inundations in 1909 and 1911, the Trust decided to protect the property by a levee bank almost three miles long in January, 1912.¹⁸⁹ Work carried on throughout 1913 and 1914 with a sufficient height being established to prevent ordinary flooding (but fell short of an optimum height to stop abnormal flows).¹⁹⁰ With the retirement of William Baird in 1927, Sparrovale was leased until 1934 when it was sold as a private property.¹⁹¹

By the 1930s, the then owner, Stradbroke Fowler, changed his farm into dairying.¹⁹² On a visit from his friend, the Anglican Vicar of Barwon Heads, the Rev. D.D. Carruthers, the surplus woolshed was purchased by All Saints Anglican Church and relocated to Hitchcock Avenue, Barwon Heads and it opened as a church in 1937 (see Theme 8).¹⁹³ Today, the former manager's house, stables, milking shed, boiler and creamery, and ruins of the silos bases are the main fabric that remains of the Geelong Harbor Trust's Sparrovale farm venture.

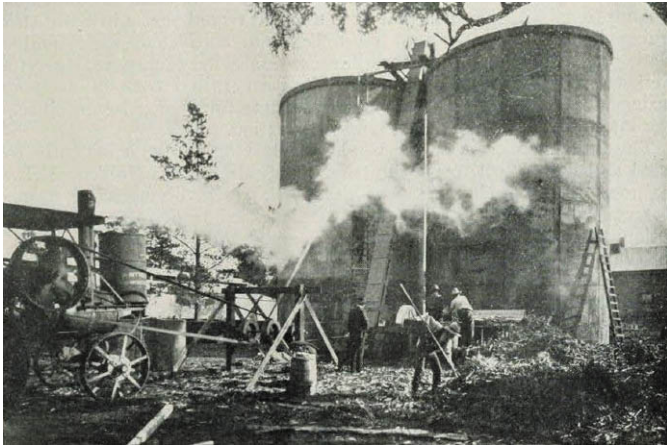


Figure 4.45: 'Sparrovale', concrete silos, c.1908. Source: *Journal of Agriculture, Victoria*, 10 August 1908, p.501.



Figure 4.46: 'Sparrovale' Manager's House, 1998. Source: David Rowe.



Figure 4.47: 'Sparrovale' Stables, 1998. Source: David Rowe.

DRY STONE WALLS

Important functional elements that also became landscape features in rural parts of Greater Geelong was the construction dry stone walls. They were especially prevalent at Anakie, Avalon, Balliang, Batesford, Ceres, Fyansford, Lara, Little River, Lovely Banks, Staughton Vale and Sutherlands Creek where stony ground proliferated. These stone walls were highly valued as a reliable and enduring barrier for the containment of livestock and gardens. This was intimated in several sale notices for properties from the 1850s. In Newtown, for example, a property next door to 'Sladen House' at 410 Pakington Street was offered for sale in 1867, the 'desirable family residence' being 'delightfully situated on the banks of the Barwon' with the 'finest agricultural land, enclosed on both sides with stone walls'.¹⁹⁴

In rural parts of Greater Geelong, the walls reflected British farming practices in providing fencing between paddocks and enclosing farm stations. Some of the earliest were constructed in the mid-19th century for the substantial pastoral and viticultural operations. In 1859 for example, a 'valuable farm on the Moorabool River' adjoining the estate of George Hope (known today as 'Darriwill') was offered sale, the whole 20 acres being enclosed with stone walls.¹⁹⁵ The large scale of Frederick Armitage's 'Wooloomanata' station meant that stone fencing continued to be erected over several years, with some walling built in 1867, seven years after the completion of the homestead.¹⁹⁶ Also in 1867 at Fyansford', Batson's vineyard was offered for sale, the 'very desirable vineyard property' being described as 'comprising 20 acres really superior land, well fenced with stone wall'.¹⁹⁷ In 1868, the large sheep grazing property, 'Marathon' at Anakie, boasted 13 paddocks subdivided 'by substantial stone walls and post-and-rail fencing'.¹⁹⁸ Similarly, dry stone walls were erected at Elcho Homestead, Lovely Banks.¹⁹⁹ At the 'Paradise Vineyard', Batesford, 1000 feet of dry stone wall was built in 1872 with stone 'near at hand'.²⁰⁰ Other dry stone walls came in subsequent years, including walls at Barrabool and Waurn Ponds in 1899 for the Barrabool Shire Council.²⁰¹

The continued construction of dry stone walls in rural parts of Greater Geelong throughout the second half of the 19th century was due in part for the need for rebuilding them following the damaging impacts caused by rabbits after their introduction at Winchelsea by Thomas Austin in 1859 (see Theme 1). This was highlighted in an article by a correspondent of Little River in the *Geelong Advertiser* in 1880:



Figure 4.48: Dry stone walls, 380 Robbs Road, Sutherlands Creek, 1998. Source: David Rowe.

Quite a new grievance, a sort of con-comitancy with the rabbit plague, has recently sprung up in this locality. The nature of the country here being inclined to be stony, the whole of our fences, with but few exceptions, are built with stone wall. As is generally the rule when the land is stony, the soil is always too strong and clayey for burrowing, and consequently the rabbits are forced to take refuge in the only hiding places on the plains – stone walls. Accompanied with a pack of half-bred greyhounds and other mongrels, the larrikin element of our population – inveterate rabbit hunters – are not slow in discovering the whereabouts of a bunny in the first wall they come to. Down comes the wall instanter, the booty is secured, the hunt re-commenced, and so on, until the required number of rabbits is secured, the young vandals, however, always conveniently forgetting to replace the stones removed. The destruction that is now going on is something scandalous, chains of fencing in some instances, particularly at Bulban and Mouyoung, requiring to be re-built.²⁰²

Further dry stone walls were erected following closer settlement subdivisions in the early 20th century. They included those as part of the Lara Estate in 1907 and the Staughton Vale Estate in 1908 (see Theme 2).²⁰³

Today, surviving dry stone walls are a physical legacy of a lost farming practice. They include those in parts of Anakie (outside 1215 Geelong-Ballan Road and at 220 Hams Lane), Lara, Lovely Banks (Geelong-Bacchus Marsh Road opposite the prisons), Little River and Sutherlands Creek (380 and 555 Robbs Road and adjacent to the Sutherlands Creek Cemetery) (Figure 4.48).

HAYSTACKING

Ubiquitous throughout the rural parts of the Greater Geelong region in the 19th and early 20th centuries were haystacks (Figure 4.49). These transient structures dotted the farming landscape until needed to feed stock. In 1857, the Barrabool Parish produced 4,949 tons of oaten hay, the largest volume in the district.²⁰⁴ It was followed by the Moolap Parish with 1,100 tons and the Moorpanyal Parish with 1,069 tons.²⁰⁵ By 1899, the Barrabool Shire produced 3,331 acres of wheaten hay and 4,969 acres of oaten hay.²⁰⁶ By comparison, the Bellarine Shire produced 1,711 acres of wheaten hay and 7,357 acres of oaten hay. Initially, the cutting, mowing, loading and stacking of hay was laborious.²⁰⁷ In 1859, the *Geelong Advertiser* reported that ‘the demand for agricultural labor continues unabated.’²⁰⁸ The process of haystacking was outlined in detail in the *Geelong Advertiser* in 1917:

As the builder is building his walls and patting them back into position, he should allow a little swell, so that the walls are inclined outward slightly. All loose hay should be removed from the top of the stack as building proceeds. It is a nuisance, if left there, when taking the stack down for chaffing, and it will very likely cause the sheaves to slip whilst bunding. Loose hay should similarly be got rid of from the top of the waggon load as unloading proceeds. This loose hay is best put in a cock by the chaffcutter, to be chopped and fed to the horses at the first opportunity, thus getting rid of the nuisance and making full use of it with minimum loss. Great care must be taken of the two outside rows of sheaves during building; if they are interfered with they will slip; the pitcher must throw the sheaves further in toward the centre than these two rows, and must not let his fork touch them as he pitches. The receiver also must stand well in toward the centre. It is well for the pitcher not to continually drop his sheaves in the one spot, nor for the receiver to constantly stand in the one place, as this is apt to cause unequal settlement when the stack sinks down, and this may ruin the pitch of the roof and cause a leak. It is wise where it is possible to let the loads come in on alternate sides of the stack in order to avoid this evil. When the stack gets too high for the pitcher to throw the sheaves in further than the first two rows, it is best to rig a stage on to which he can throw the sheaves and from which the receiver can pitch them well on to the top of the stack. A day or two after the stack has been finished, all loose hay should be raked off. This not only gives the stack a better appearance, but it gives a freer run for the water to drain off the roof. Always allow plenty of hay to complete the roof; it is disastrous to



Figure 4.49: Haystacks, Connewarre, 1931. Source: T.T. Holmes collection, Authentic Heritage Services.

run short and have to build the roof too flat. As the stack should remain undisturbed for several weeks before being opened for chaffing, it is well to build a butt of hay near the cutter to supply the horses for these few weeks, and as it is of small moment whether this butt contains three weeks or three months' supply, it is wise to err on the safe side, and start the roof while ample hay is left, putting all that is left over into the butt. With a stack of ordinary shape, from a quarter to one-third of the total hay in the stack is in the roof.²⁰⁹

The building of hay stacks was also potentially dangerous given the scale and weight of the stacks. One instance of injury to a haystacker was reported in 1896:

Upon reliable information, I have to report that a serious accident, which might have terminated fatally, happened to a well-known farmer of Bellarine. He was engaged thatching a large haystack near the above post office some 50 feet high, when he was seized with a fit of dizziness. A bystander had the presence of mind to seize a fork and stick it in the stack, thereby breaking his fall, otherwise the consequences would have been more serious. As it is, he is now recovering.²¹⁰

The skills required to building hay stacks led to farmers' associations and particularly the Geelong Agricultural and Pastoral Society to hold hay stacking competitions. In 1923, for example, the Society held a competition that was opened to all farmers within a radius of 20 miles from the Geelong Post Office.²¹¹ Prizes were awarded and the competition conditions were:

(1) stack to contain not less than 40 tons; (2) to be the product of 1923 harvest; (3) each competitor is allowed to nominate one only; and (4) the name of the builder is to be supplied with entry.²¹²

Technological developments brought an end to the 19th and early 20th century building of haystacks. In 1937, for example, Messrs. F.W. Parris and Sons in Nagambie worked their 'unique' method of baling hay by pulling their hay baling machine into a paddock. It moved 'along the rows or to conveniently placed heaps with a minimum of time and effort.'²¹³ Similar machines were soon to be used within Greater Geelong.

VINEYARDS, ORCHARDS & NURSERIES

VINEYARDS OF GREATER GEELONG: AN OVERVIEW

The planting of the first vineyard in Victoria in 1842 by David Louis Pettavel and Frederic Breguet at 'Neuchatel', Pollocksford (in the Surf Coast Shire) began a transformation of the Barrabool Hills district into established vineyards, orchards and other produce, largely by Swiss and German immigrants (see Theme 2).²¹⁴ By 1857, the Parishes of Barrabool and Duneed cultivated the largest quantity of vines in Victoria, with Barrabool producing 7,400 gallons of wine, and Duneed 2,800 gallons.²¹⁵ The success of the German and Swiss vigneron was noted in a report in 1857 by John Elkington, Statistical Collector for the counties of Grant and Polwarth:

That the grape culture has hitherto formed a very profitable item of investment there can be no doubt, as notwithstanding the outlay of capital and length of time where the grower can look for a return in the shape of the first fruits of his labor, and as a period of four years usually passes after first planting the vine before any profit can be derived from it, it is remarkable that so few complaints are heard as to the general results of these investments, but it is worthy of notice at the same time to bear in mind that the majority of the vine growers are skilful, steady, and industrious men, chiefly natives of Germany and Switzerland, who display great economy in their system of cultivation and are frugal in domestic concerns; but unlike many of our colonists who are oftentimes impatient in their undertakings and eager for rapid gains; these German and Swiss cultivators possess a large share of patient endurance, which leads them cheerfully through their toil and pursuit, till arriving at something like independence in circumstances, and enabling them to live in comparative ease and comfort.²¹⁶

In addition to vines, most of the vigneron grew orchards. In 1857, 170,500 lbs of fruit were sold from vineyards and orchards in the Parish of Barrabool, compared to 78,000 lbs in the Parish of Duneed, 21,500 lbs in the Parish of Moorpanyal and 20,000 lbs in the Parish of Bellarine.²¹⁷

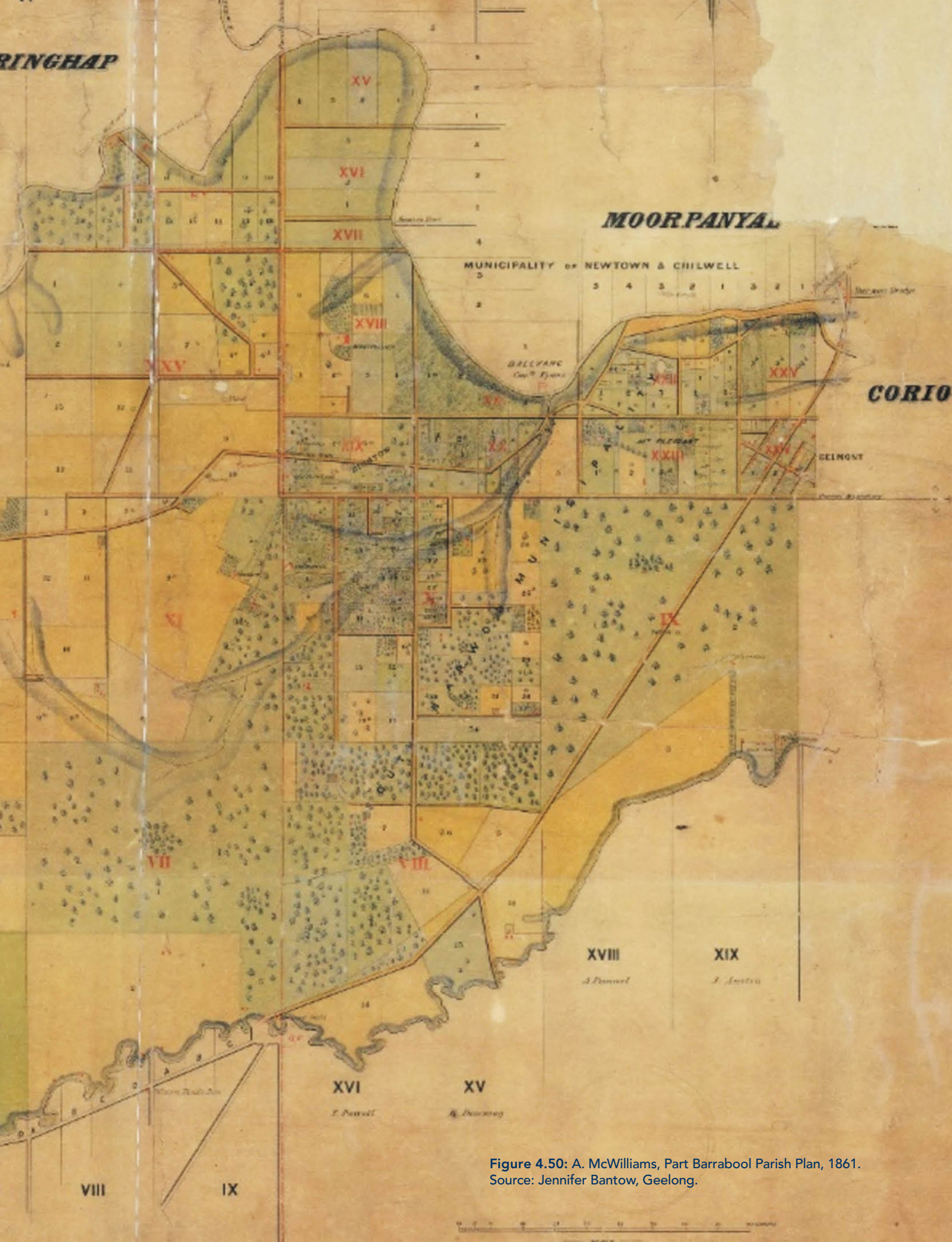


Figure 4.50: A. McWilliams, Part Barrabool Parish Plan, 1861.
 Source: Jennifer Bantow, Geelong.

The locations and names of the vineyards established in the Barrabool Parish featured in a coloured map by Andrew McWilliams (Figure 4.50). By 1878, there were 74 vineyards in these areas, ranging from those that boasted healthy crops, to those neglected or diseased (see Appendix 4.1 for a list of the vineyards and their locations). These properties were shown on a Plan of the Vineyards of the Geelong District in 1879 (Figure 4.51).

Diseased vineyards had been brought on by attacks of *Phylloxera vastatrix*, microscopic, pale yellow sap-sucking insects that caused deformations on grapevine roots and secondary fungal infections.²¹⁸ While only 13 vineyards were effected in 1877, it proved catastrophic with the sustainability of many local vineyards in the ensuing years. A report by the Inspectors of Vineyards, A.R. Wallis and Edwin Hopton, gave an overview of the possible locations where the disease first took hold:

It would be difficult to say where the disease first made its appearance in the Geelong district; but it would seem, from the progress which it made in the several infected vineyards, that it started from two, if not three, points, viz., from Mr. Wyatt's Frogmore Nursery, spreading to Mr. Ball's, Mr. Marendaz's, Mr. Dietrich's, and Messrs. King and Son's vineyards; from Mr. Dardel's vineyard, at Batesford, spreading to Mr. Hammerley's and Mr. Deppeler's; and from Mr. Kerger's, at Germantown [Grovedale], spreading to the adjoining properties.²¹⁹

FORMER VINEYARDS & ORCHARDS AT BARRABOOL AND CERES

Several surviving properties associated with earliest development of vineyards and orchards at Ceres are located just in the Surf Coast Shire, outside the Greater Geelong area. They included the Suisse vineyard (now named 'Neuchatel'), 460 Merrawarp Road, Barrabool, the property of the pioneer vigneron at Pollocksford, Frederick Brequet, planted in the late 1850s, Belperroud and 'Berramongo', 100 Crooks Road, Barrabool, where Jean (John) and Alexandre Belperroud first planted their vineyard in 1842.²²⁰ In 1859, Belperroud's essay (prepared in 1858), 'A Concise and Practical Treatise on the Cultivation of the Vine in the Colony of Victoria' was the first of two treatises that won a prize offered by the Geelong and Western District Agricultural and Horticultural Society and which were published in 1859. He gave an overview of vineyards already established in the Ceres, Barrabool, Fyansford, Batesford, Pollocksford and Waurn Ponds areas, together with guidance on

choosing the aspect, siting and soil for a vineyard, and the preparation and treatment for cultivation. Of 'Berramongo', Belperroud gave the following details:

This far-famed Vineyard, of which Edward Willis and Charles L. Swanston, Esqrs., are the proprietors, has been worked by John Belperroud for the last sixteen years, and possesses all the requisites for a Vineyard of the first class. The aspect being north and east, it receives the benefit of the sun both morning and evening. This site is a very gentle slope from the middle to the foot of a tolerably high hill, which shelters all the Vineyard from the strong cold south and west winds. The soil is of different kinds – one square of calcareous, deep, light, and warm soil, fit for any kind of Grape worth cultivating; a second, of rich black soil, producing Grapes of the best quality; another, of pretty deep soil, containing a mixture of sand, vegetable mould, and white clay, from which large crops of Grapes of good quality are obtained; and the fourth, of sand, gravel and reddish clay, full of granite stones, and this produces very large quantities of good Grapes given the best light dry wine, similar to the French "Sauterne."²²¹

Notable amongst the group of German vignerons were the Seidel brothers, Bernard (1817-1903) and (Gustav) Alwin (1822-1910)²²² In Dresden, Alwin married Augusta Frederike Frobe (1823-1895) in 1848 and in 1849 they emigrated with Bernard Seidel to Victoria on the *Emmy* as part of the immigration program of the German Immigration Committee.²²³ Alwin Seidel sought naturalisation in June of that year in an effort to purchase Title of land in Ceres.²²⁴ Following naturalisation and with assistance from Dr Alexander Thomson, Alwin and Bernard purchased 40 acres of Section 12 in the Parish of Barrabool from David Fisher in 1850.²²⁵ There, they established the 'Ceres Nursery'. Alwin Seidel had been a Gastell-macher (coach maker) in Dresden, and Bernard Seidel a Zumftgartner (Guild gardener), taking after his father who 'held the high position of Master Gardener to the King of Saxony, at Dresden.'²²⁶ According to A. Lauterbach:

Alywin's talent and skill as coach and implement maker no doubt assisted in the manufacture of vats, tubs and presses, necessary to operate a vineyard, while Bernhard's qualifications as a Master gardener could not have been more allied to that of a vigneron. Like many of the early pioneers, they toiled hard and long to make a success of their nursery and vineyard.²²⁷



Figure 4.51: S.B. Bonney, Plan showing the Vineyards of the Geelong District also showing the Natural Features of the Locality, 22 September 1879, Dept, Lands & Survey, Melbourne. Source: State Library of Victoria.



Figure 4.52: E. von Guerard, 'Seidels' Farm, pencil sketch, 1854. Source: image 1638009h, Mitchell Library, State Library of NSW.



Figure 4.53: Cellar ruins of the former Seidels' Ceres Nursery, November 2016. Source: David Rowe.

Following initial success, the Seidel brothers suffered from a disastrous fire on Black Thursday, 6 February 1851. The *Geelong Advertiser* reported on the considerable losses, including the 'Germans near Mr Fisher's,' who 'have lost their stacks' (see Theme 1 for further details).²²⁸

In 1854, the well-known German artist, Eugene von Guerard captured the Seidel brothers' farm at Ceres (Figure 4.52).

Soon after, the Seidel brothers went to the Victorian goldfields, as did Oberlander, Straubel and the Kawerau brothers.²²⁹ Physical evidence of the Ceres Nursery survives in the ruins of the stone cellar (with a tree growing out of it) immediately west of the property at 410 Barrabool Road, Ceres (Figure 4.53). At 240 Gully Road, the ruins of 'Barwonside' (Figure 4.54) survives (built by 1856), having been originally established by Robert McDonald, an Irish farmer, in 1850.²³⁰ There, McDonald laid out a 1 acre vineyard although he had greater success as a wheat farmer



Figure 4.54: J.T. Collins, 'Barwonside', front view, c.1980-85. Source: accession H94.200/649, State Library of Victoria.

following his use of Flat Island Guano fertiliser, writing to Alexander Reid, Commission Agent in Geelong in February 1862 that:

The Flat Island Guano I had from you last season I harrowed in for a wheat crop at the rate of 1 cwt per acre on rather poor soil. I was much pleased with its effects; the crop came rich, green, and healthy-looking, and the increase of yield from the use of the guano must have been about 7 to 8 bushels per acre. On the whole, I think very favourably of it as a manure, and I shall require a couple of tons more this year. Taking the difference of price into account, I consider it far preferable to Peruvian.²³¹

'Barwonside' was sold to David Lamb of Rock Bank Farm, Gheringhap by February 1876. A few years later, the vineyard was recorded as being neglected.²³² Only the 'Barwonside' dwelling – now almost ruinous - survives of this early vineyard.

FORMER VINEYARDS AND ORCHARDS AT WAURN PONDS

Within the City of Greater Geelong one of the earliest and most substantial vineyards was the Victoria Vineyard, Waurn Ponds (now 75 Kingsbury Lane) established by David Pettavel in 1848 on 300 acres.²³³ The importance of Pettavel to the vine growing area in the Geelong district is given in Theme 2. His knowledge was also influential. In 1859, Pettavel's essay (prepared in 1858), 'A Concise and Practical Treatise on the Cultivation of the Vine in the Colony of Victoria' won second prize offered by the Geelong and Western District Agricultural and Horticultural Society and was published with Belpourroud's treatise. It was at Victoria Vineyard where Pettavel changed his farming practices and trenched with the plough:

Although I commenced to cultivate the Vine in this Colony in 1842, and assisted to form the Vineyard at Pollock's Ford, it was not till 1848 that I could sufficiently throw aside my prejudices in favour of the spade and forked hoe, which I had always seen used in the Vineyards of Switzerland, to induce me to adopt the plough as my usual method of trenching. However, the scarcity of labour in Victoria, the consequent high rate of wages, and the comparative slowness of the return from the time of commencing to invest capital in the cultivation of the Vine, have compelled me to try the experiment, of which I am now able to report the complete success.

When the land has been carefully cleared by grubbing, or by long continued cultivation of other crops, commence to trench at the lowest part of the ground by a common plough, drawn by two strong horses, striking out a furrow; as soon as they have got sufficiently ahead, let the trenching plough, drawn by from ten to twenty bullocks, according to the nature of the ground and the strength required, follow, going as deep as it can; let it be followed by one, two, or more men, as may be necessary, to remove stones, roots, &c., which will be brought to light, and to throw up and break large lumps, which would otherwise fall back and lie in the furrow, and prevent the next sod from turning down well. As soon as the horse plough has gone to the end of the furrow, let it be drawn back, without entering the ground, to the end from which it started at first; then turn over a slice, if possible, of from seven to eight inches, which will fall into the furrow left by the bullock plough; when the bullock plough has got to the end of the furrow, let it be thrown out and turned back, as was done with the horse plough; then let it follow the horses as before, and in the course of a few furrows, each being kept well cleared by men following



Figure 4.55: Ruins of Pettavel's house, Victoria Vineyard, c.1970s. Source: Wynd collection, Authentic Heritage Services.



Figure 4.56: Former Blacksmith's Shop previously part of Victoria Vineyard, 1998. Source: David Rowe.

as previously mentioned, the bullock plough will get the full depth of from fifteen to eighteen inches, and the work will go on in the same manner till the piece of ground intended to be trenched is completed.

... Doing the work in this manner, I am sure that the spade could not do better, neither will any levelling to required after the ploughing has been finished.²³⁴

At 75 Kingsbury Lane, the cellar of Pettavel's original eight-roomed stone house (which was in ruins by the 1970s) (Figure 4.55) and a blacksmith's shop survive as a legacy of his former Victoria Vineyard.²³⁵ (Figure 4.56).

In 1857, Pettavel established the Prince Albert Vineyard, where he installed in charge his nephew, Charles Tetaz (see Theme 2). Nothing survives of this property today. Other local vineyards that contributed to the local economy at Waurn Ponds and where the early dwellings



Figure 4.57: Dwelling, 35 Lemins Rd, 1998. Source: David Rowe.



Figure 4.58: 'Claremont Homestead', Waurn Ponds, prior to subdivision, 1998. Source: David Rowe.

survive included George Hanson's at 76 Ghazeepore Road (built c.1860); John Lowe's at 35 Lemins Road (built c.1860) (Figure 4.57) and Rudolph Tribolet's at 125 Lemins Road (built c.1870).²³⁶ Following the destructive phylloxera infestation, inhabitants turned to fruit growing. This included the Baum family who took

up 'Claremont Homestead' (Figure 4.58) at 16 Kinsmead Street in 1894.²³⁷ The homestead had been built in 1857 to a design by Shaw and Dowden, for Thomas Powell (1812-1787), brewer of Little Malop Street, Geelong²³⁸ (see Theme 5), who had a vineyard established. In the early 21st century, the vast acreage was subdivided and the orchard lost.

FORMER VINEYARDS & ORCHARDS AT BATESFORD

At Batesford, one of the most well-known vignonn and orchardists in Victoria was Joseph Henry Dardel (1811-1903) who came to Australia from Switzerland in 1842.²³⁹ Although his Paradise Vineyards (four in total) were established on the western banks of the Moorabool River (now part of the Golden Plains Shire), they began the transformation of the Moorabool valley at Batesford. In 1868, the *Geelong Advertiser* gave a detailed outline of Dardel's Paradise vineyard:

An old camping ground at Batesford, over the bridge, has within the last five years undergone a wonderful

transformation. Under the talismanic touch of the proprietor, Mr J.H. Dardel, who purchased the land some years since, a scene blooming and blossoming like the rose has followed the original wilderness camping ground. In no part of Victoria is there to be found a more magnificent spot. The vineyard covers an area of twelve acres, and the orchard twenty-five acres. There is also a large extent of grazing land. The property is bounded on one side by the Moorabool, and an artificially formed lagoon forms a line of division between, that irrigates both the vineyard and orchard. A dwelling in keeping with the surroundings of the spot has lately been erected, as well as a cellar and every appurtenance.

The vineyard is now nearly five years old. The varieties planted are the burgundy and hermitage for red and chasselas and tokay for white – two of each kind being only cultivated.

... The orchard, as before stated, is twenty-five acres in extent, and contains every variety of fruit tree. [cherries, gooseberries, apples, plums, damsons, peaches, pears] ... The trees were first planted in the orchard, where they did not appear to thrive. They were then transplanted to the sloping grounds in proximity to the vines, and terraces were formed for them. The result has been unexpectedly good. ... There are some 80 trees of the Mandarin, St. Michael and Sicilia varieties, also lemon trees.

... The avenue, extending for about a quarter of a mile, and other paths are lined with borders composed of French roses on the one side and English box on the other, with other descriptions equally beautiful. On the pleasures grounds adjacent are trees and shrubs of exquisite beauty. Camelias, roses, myrtles, flowery acacias, laburnums, weeping ash, &c., are in gorgeous profusion.²⁴⁰

A celebrated vigneron at Batesford within today's City of Greater Geelong was Dr Robert Culbertson Hope (1812-1878). With his brothers, George (1814-1884) and James (1810-1877) Dr Hope acquired the Sutherland Creek Run now the location of Darriwill Homestead in c.1841 (see Themes 2 and 6). There in the 1850s, George Hope established a vineyard²⁴¹ and had a three storey bluestone wine house and cellar constructed in 1863 to a design by the Geelong architect, J.L. Shaw.²⁴² However, it was Dr Robert C. Hope at his property, 'Lynnburn' (Figure 4.59), 600 Ballarat Road, Batesford, who was the more successful viticulturist.²⁴³ He had a substantial bluestone homestead constructed in 1853 to a design by the architect, Walter Sheridan.²⁴⁴ This homestead exists today, albeit altered. Between late 1863 and early 1864, he also had a stone



Figure 4.59: 'Lynnburn', Batesford, 2010. Source: David Rowe.



Figure 4.60: 'Lynnburn' wine house cellar ruins, Batesford, 17 October 1973. Source: J.T. Collins, accession H91.100/1227, State Library of Victoria.

cellar and wine house erected which has been claimed to have been 'one of the best in Victoria'.²⁴⁵ Only the cellar ruins survive today (Figure 4.60), the design possibly reflecting wine house at 'Darriwill' built a few months earlier.

Robert Hope commenced planting his vineyard at 'Lynnburn' in 1858, with two acres cultivated 'on the lowest portion of the hillslope, on the extreme eastern boundary'.²⁴⁶ Hope's vineyard was described in detail in 1864:

The vineyard hill rises from a flat on the eastern bank of the Moorabool; the highest point on which vines are planted being from 100 to 120 feet above the river's bed ... The two acres originally planted were hand-trenched to a depth of 24 inches, but in his subsequent trenching Dr. Hope has adjured manual

labor in favour of the plough. He uses the large American implement for the trench furrow, which completed inverts the soil, bringing the subsoil to the surface. The ground has been trenched with this plough from 15 to 24 inches, the lesser depth being adhered to where the subsoil is clay, as well as for the undesirability of bringing so much of that to the surface as for the difficulty of getting the plough down into it. The varieties planted in 1858 were chiefly Hermitage, Miller's Burgundy and Riesling, with a small proportion of table varieties, including black and white Muscats. In 1861 planting was continued on the crown of the hill, above the two acres first planted, and to the hollow in the centre of the vineyard. Five acres of Riesling were then put in, eight of the Hermitage and about half-an-acre of Miller's Burgundy. In the two following years an additional eleven acres, forming the southern wing of the vineyard, was planted with Hermitage alone, the total breadth now under vines being 26 ½ acres.

... With prudent forethought of the immense quantity of wine this large vineyard will produce in another season or two, Dr. Hope has a capacious cellar, fermenting rooms, and wine-house in course of erection. The building will consist of three stories, each of which will be forty feet by thirty in the cellar. The grapes will be pressed on the top one, the floor of which will be about level with the middle slope of the vineyard, the lower stories being excavated in large vats on the second story, and conveyed thence by hose to the store casks on the lowest floor. There will be one drawback to this lowest cellar – namely, that the entrance to it faces the north; but it is proposed to remedy this by having a double set of doors, so that one may be closed before the other is opened, and thus to insure the exclusion of hot winds.²⁴⁷

Qualified as a Doctor of Medicine in Edinburgh in 1834, Dr Hope resided at 'Lynnburn' with his wife, Catherine (nee Hassall) Hope and their nine sons and two daughters.²⁴⁸ He was elected a Member of the Legislative Council in 1856, serving until 1864 and again from 1867 until 1874.²⁴⁹ He also served as chairman of the Board of Agriculture and president of the Geelong Vinegrowers Association and the Geelong and District Agricultural and Horticultural Society.²⁵⁰ Failing health forced Hope's retirement from politics and his vineyard in 1874 and he

relocated permanently to Melbourne.²⁵¹ 'Lynnburn' was leased (and later sold) to Charles Craike who continued the vineyard until it was attacked with *Phylloxera vastatrix* in January 1879.²⁵² Although vines were uprooted, further testing in 1883 revealed 'the phylloxera clustering in thousands' on remaining vine roots.²⁵³

Craike sold 'Lynnburn' to Jacob Deppeler in 1891, a vigneron who previously held vineyards on the western side of the Moorabool River at Moorabool.²⁵⁴ He revived the vineyard as the Batesford Experimental Viticultural Station with the planting of phylloxera resistant vines, under the direction of the Government superintendent of nurseries, Mr Adcock.²⁵⁵ The success of the American vines at 'Lynnburn' was outlined in 1901:

About six miles to the north-west of Geelong, on the old Ballarat-road, a group of orchards, massed along either side of the Moorabool River, furnish ample evidence of soil fertility in this picturesque valley. In the same locality viticulture was an important industry until the advent of phylloxera, when the uprooting of vines throughout the Geelong district caused a check, the severity of which is even felt to the present day by some vignerons. On the slopes of a hill lying back from the Moorabool, a vineyard of 25 acres was established by Dr. Hooper [sic. Hope], and later on destroyed in order to check the increase of phylloxera. On the same property, and adjoining the old vineyard site, Mr. J. Deppeler planted out six acres under vines, while 30 acres are devoted to fruit trees. The vines, comprising Chasselas and Hermitage as the varieties best adapted to the locality, represent one of the comparatively few plantations established near Geelong since the uprooting period. Now that phylloxera has been again discovered in the district, the salvation of the industry is centred on the system of reconstruction with American vines, with this object in view, a nursery for the propagation of phylloxera resistant stocks was established in Mr. Deppeler's vineyard last year, and further supplies will be added during the present season.²⁵⁶

Deppeler became a promoter of 'American resistant vines' following his success at 'Lynnburn', with cutting sand rootlings available for purchase from 1904.²⁵⁷ He continued to reside at 'Lynnburn' until the property was sold in 1954.²⁵⁸ None of Deppeler's vineyard and orchard appear to survive at 'Lynnburn' today.



Figure 4.61: 'Fyan's Ford and Swan Hotel, near Geelong', October 1860. Source: G. Strafford (artist) & S. Calvert (engraver), accession no. H4955/12, State Library of Victoria.

FORMER VINEYARDS & ORCHARDS AT FYANSFORD

SWAN HOTEL AND PLEASURE GARDENS

At Fyansford, one of the earliest vineyards and orchards where vestiges may survive is at the Swan Inn on the west bank of the Moorabool River, established by Herbert Swindells in the early 1850s. The Inn had been built in 1842 for John Atkins to a design by Alexander

Skene²⁵⁹ (see Theme 6). It was closed to the public by 1845.²⁶⁰ When Swindells went insolvent in March 1855, his estate included 'the fruit and vegetables contained in the gardens attached to the Swan Hotel, Fyans' Ford.'²⁶¹ The garden was expanded into 'pleasure grounds' by the subsequent occupant, William Bohn as part of a revival of the hotel business in 1855.²⁶² The pleasure grounds were also to be supplemented with 'zoological specimens.'²⁶³ Bohn's occupation of the hotel and gardens

came to an end in 1858 following the mysterious death of his wife, Sarah Bohn, 'from a wound caused by the talons of an eagle hawk.'²⁶⁴ The property was taken over by Samuel Hassell and in 1860 the pleasure gardens featured in wood engraving by the engraver, Samuel Calvert (the work of George Stafford) (Figure 4.61).

In September 1862, William Barrell became the proprietor.²⁶⁵ He promoted his 'picnic gardens and pleasure grounds' as a 'beautiful retreat', and employed George Hodgson, member of the Victorian Horticultural Improvement Society, to direct the cultivation of the vineyard.²⁶⁶ The variety in the gardens was detailed in December 1862:

The gardens of the Swan Hotel, though not just now so redolent of the early crops of fruit as they were a few weeks back, proffer great attraction. The glorious harvest of cherries which has been gathered in, and no more for this year, except a few for "leazing," and they are superb in size and flavor. The peaches, nectarines, and apricots are bowing down under the weighty crops, and fast approaching maturity. The almond trees in refreshing verdancy invite the visitor to repose under their umbrageous shadow. Apple trees groan under the luxuriance of their own burthen, and pear trees charged with fruit, by the potentiality of their weight, sway to and fro with an ominous indication of a crash. But, perhaps, the most attractive features of the gardens are to be found in the vineyard, which is under the direction of Mr George Hodgson. A more luxuriant crop of grapes it would be difficult to imagine, than that presented here. The different styles of managing the vine are exemplified, and the results shown, practically, of the effects of pruning and training, under the different methods obtaining in England, and practised on the Continent, and introduced here by the vigneron of our wine district.²⁶⁷

'FROGMORE', 425-465 HAMILTON HIGHWAY, FYANSFORD

At 'Frogmore', Charles Wyatt (1823-1885) planted a vineyard as part of his nursery in 1858.²⁶⁸ The property had first been established by Captain John Montagu, a partner in the Port Phillip Association (see Theme 2) in 1843.²⁶⁹ The existing Victorian Italianate styled bluestone homestead was built in 1857 to a design by Edward Prowse for Charles Wyatt following his acquisition of the property in 1856²⁷⁰ and the former stables are located nearby (Figures 4.62-63).

In 1863, a detailed account of Wyatt's fledgling vineyard was given:



Figure 4.62: 'Frogmore', Fyansford, 1998. Source: David Rowe.



Figure 4.63: 'Frogmore' outbuildings, 1998. Source: David Rowe.

At present only twelve acres are under vines and fruit trees, and the position of the vineyard is indicated by the large bluestone residence, and extensive stabling and offices lying about 500 yards to the left of the road, a mile and half westward of the Fyans-ford bridge ... Mr Wyatt commenced operations in 1858, with one acre, by spade trenching the ground to a depth of eighteen inches. New horse and cow dung was laid in the trenches to produce a rich soil for the roots by the time the fibres should strike down so far, and compost to the extent of two hundred loads was well worked in with the soil. The cuttings for this acre were procured from Sydney, and turned out principally Black Prince and Black Hambro', which were planted at 4 ft. by 4 ft. The following years two acres more were submitted to a similar process and planted chiefly with Chasselas and Gouais cuttings from the Berramonga Vineyard [Barrabool] ... The vineyard and orchard are by no means all that is worthy seeing on this property. The nursery, which is a model of neatness

and professional order, comprises a very extensive collection of conifers from all parts of the world, some of the more recent arrivals being from New Caledonia, California, and New Zealand. ... The descent to the river, which forms a graceful bend at this portion of its course, is made by a long flight of stone steps, the slope on either side being laid out in terraces and planted with various kinds of fruit trees.²⁷¹

In the 1870s, Wyatt's vines showed signs of sickness which was confirmed in 1877 with the presence of *Phylloxera vastatrix*.²⁷² Wyatt had apparently underestimated the extent and seriousness of the disease in the Geelong region and following his return from an extended stay in Tasmania, was shocked to discover the vineyard had been entirely destroyed. It was the remaining portions of his Frogmore Nursery, including the fruit trees, ornamental and forest trees, shrubs, and wide variety of plantings and bulbs that enabled it to survive. Following Wyatt's death in 1885, the property was leased to James Matthew and subsequently to W.J. Lobb, nurseryman of St. Kilda.²⁷³ By the turn of the century, 'Frogmore' had supplied most of the trees in the parks and gardens of Geelong, and the elms along St. Kilda Road. However, when the property was purchased by Andrew Condie in 1907, the nursery had been discontinued.²⁷⁴

FORMER VINEYARDS & ORCHARDS AT HIGHTON

On the hill overlooking the Barwon River, a substantial two storey Italianate villa of Barrabool stone was constructed for John Highett in 1850-51 known as 'Highton' (and later 'Highton House')²⁷⁵ (Figure 4.64). The name of the property derived from the Highett family farm at Weymouth, England²⁷⁶ (see Theme 5 for biographical details on Highett). By January 1859, Highett had sold 'Highton House' and it became Edwin Hooper's Montpellier Hotel, vineyard and gardens.²⁷⁷ The name appears to have derived from Montpellier, a city built on a hill in the south of France. All that survives of 'Montpellier', Highton, today are stone ruins and mature trees being remnants of the once notable garden setting.

Another prominent nursery at Highton from 1851 was 'Kardinia' (Figure 4.65), first established by Thomas Adcock (1820-1900) (see Theme 7 for biographical details). A comprehensive account of the Kardinia Nursery was given in the *Geelong Advertiser* in 1867:

The above far-famed nursery is situated in a romantic valley on the Barrabool Hills, about three miles from Geelong ... A more delightful spot could not well be imagined, nor one more suited for the establishment of a nursery. Nature has been assisted by industry and art, and what in 1851 was merely



Figure 4.64: 'Montpellier', Highton, c.1900. Source: GRS 6185/0, Geelong Heritage Centre collection.

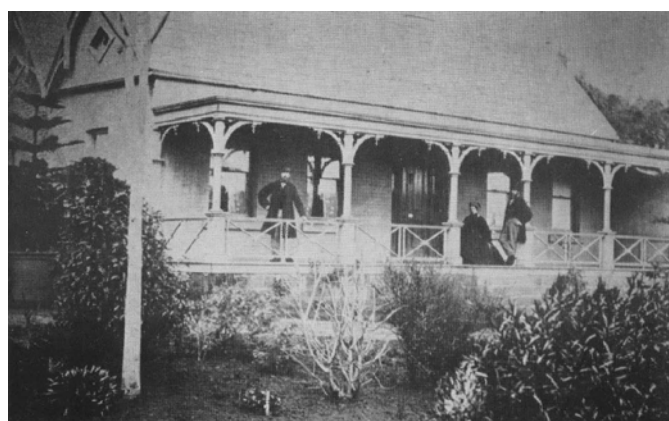


Figure 4.65: Adcock's Residence, 'Kardinia Nursery', n.d. Source: J. Pescott, *South Barwon 1857-1985*, p.91.

uncultivated bush land, now teems with floricultural and horticultural novelties, in the midst of which appears the substantial mansion of the proprietor, Mr Thomas Adcock. The nursery is twenty-two acres in extent, facing the north, and is well protected from the sea breeze. Looking through a valley to the right the visitor obtains a fine view of the town of Geelong; and on the left, a picturesque country, dotted here and there with villa residences. ... In addition to the nursery there are two acres of vines. The vineyard, however, was not established for the purpose of wine-making, but the produce is sold as it ripens. In 1866 the quantity of fruit of all sorts sold was 20,578 lbs, and in 1867 16,937 lbs, the greater part of this fruit consisted of grapes, as most of the fruit trees, which number 200,000, are young and intended for transplanting ... The first place we visited was the extensive shelter shed near the dwelling-house. There we found at least 20,000 pot plants of infinite variety; of pines alone there were

thirty varieties, and many of them very rare. Among them we observed the *pinus Puce*, *pinus tuberculata*, *pinus Coulterii*, and others, for the names of which we refer our readers to the printed catalogues, which can be obtained of Mr W. Clarkson, in Great Ryrie-street ... A fine variegated New Zealand flax plant with its swordlike leaves is a curiosity in its way, and if in England would command a very high price. In the pits adjoining the shelter house we find an immense number of two-year-old cypresses *goveriana*, a shrub of quick growth and highly ornamental, the *pinus canariensis*, the *auracaria uleii*, the true silver tree of Africa, etc. In addition to the *corniferous* trees mentioned in the catalogue some fine specimens of the *cedrus Atlantica*, the silver cedar of Lebanon, were brought under our notice, and in bedding plants we were shown twelve new varieties of Japanese chrysanthemums. In conclusion we must not forget to mention the very large collect of standard roses, and two very large and fine specimens of *Cupressus Lambertiana* and Norfolk Island pine planted opposite Mr Adcock's residence.²⁷⁸

FORMER VINEYARDS & ORCHARDS AT MOUNT DUNEED, GROVEDALE AND BELMONT

The numerous vineyards and orchards established in Mount Duneed, Grovedale and Belmont, primarily by German and Swiss emigrants (see Themes 2 & 6), have largely been replaced with suburban expansion (see Theme 6). A number of dwellings have been demolished since 2000.²⁷⁹ The earliest surviving dwelling associated with German immigrants and the establishment of a vineyard is the 'German Settler's Cottage' at 224 Torquay Road (Figure 4.66). It was built in c.1857 for Johann Sohr.²⁸⁰ By 1870, it had been sold to John Andresson, vine grower.²⁸¹ The steeply-pitched gabled cottage was built of light timber framed construction and represented the amalgamation of northern German and British Colonial building traditions.²⁸²

At 197 Francis Street, Grovedale, is Winter's Cellars (Figure 4.67). The property was first taken up in 1854 by John Winter, one of the original immigrants who arrived on the *Emmy* in December 1849.²⁸³ After working as a market gardener at Cowies Creek and then trying his luck on the Victorian goldfields, Winter established a stone cellar at 197 Francis Street.²⁸⁴ It was operated by his son, Heinrich William Winter, for many years 'until phylloxera swept the district and devastated the vineyards.'²⁸⁵ The existing timber Victorian dwelling was built in 1878.²⁸⁶



Figure 4.66: 'German Settlers Cottage', 224 Torquay Rd, 1998. Source: David Rowe.



Figure 4.67: Winter's Cellars, 197 Francis St, 1998. Source: David Rowe.



Figure 4.68: 'Oak Trade', 50 Whites Road, Mt Duneed, 1998. Source: David Rowe.

At Mount Duneed, the gabled bluestone Victorian farm dwelling, 'Oak Trade' at 50 Whites Road (Figure 4.68), was built between the late 1850s and 1863 by the English pioneers, Joseph and Elizabeth Rainford.²⁸⁷ They had emigrated from Liverpool in 1852 and following employment as a wool presser, Joseph tried his luck at the Ballarat gold diggings without success.²⁸⁸ They returned to Geelong where Joseph became a market gardener at Marnock Vale, as well as a stone cutter. They purchased 57 acres of land at Mount Duneed in 1857, the property being first-named 'Oakgrove.' There, Joseph and Elizabeth Rainford established a 2-acre vineyard which in 1878 was described as being 'well attended and pruned.'²⁸⁹ Rainford also farm red clover from which he made hay.²⁹⁰

Nearby at 140 Whites Road is a surviving remnant of the vineyard established between 1865 and 1869 by Wilhelm Schulz (1819-1879), a Prussian immigrant from Kay.²⁹¹ He had arrived in Victoria in 1853 on the *Wilhelmsburg*.²⁹² Accompanying him were Louise Schulz (aged 25), Johanna (aged 7) and Rudolph (aged 2) as they were identified in the *Wilhelmsburg* passenger list.²⁹³ Johanna Pauline Schulz and Rudolph Schulz were the children of Wilhelm Schulz and Johanna Schwalb, his wife in Prussia.²⁹⁴ A shoemaker, it appears that Schulz went to the Bendigo goldfields upon arrival in 1853 as there references in later years to the family's connections in Bendigo.²⁹⁵ In 1862, Schulz was a farmer at Puebla (presumably Mount Duneed) when he applied for naturalisation.²⁹⁶ At his Mount Duneed vineyard at 140 Whites Road, Wilhelm Schulz and Louisa Stenka – whom Wilhelm described as his housekeeper - had two children: Amelia Florentina (1865-1867) and Matilda (1872).²⁹⁷ By 1878, the name, Auguste Schultze (possibly erroneous for Wilhelm Schulz), was given as the occupier of the vineyard at this time, the vines described as being 'in excellent order' and with 'a good crop' at this time.²⁹⁸ On Wilhelm Schulz's death in 1879, the property contained 60 acres 'on which is erected a four roomed wooden cottage.'²⁹⁹ The property was bequeathed to Louisa Stenka although it remained occupied and under the name of the Schulz family and Adolph Pohl until it was advertised for sale in 1912.³⁰⁰ At that time it included 120 acres of ploughed land 'watered by Armstrong's Creek and by dam' and a 'man's hut and 8-stall stable.'³⁰¹ Although the timber stables and two gabled huts survived in a parlous condition in 1998,³⁰² all that remains today is one of the gabled stone huts (Figure 4.69).

In Belmont are three existing properties associated with vineyards of the 1860s. At 80-84 Francis Street, James Goodall Francis (1819-1884), M.L.A. for Richmond between 1859 and 1874, and for Warrnambool between 1878 and 1884, established a five-roomed weatherboard house with

cellar and a vineyard in 1864.³⁰³ This was an adjunct to his more substantial Goonawarra vineyard at Sunbury that he had created in 1863. By 1879, Francis' vineyard was not diseased with phylloxera 'but neglected.'³⁰⁴ In 1884, the Estate of J.G. Francis sold the property to William Newtown Sommers, publican, and in 1887 half the estate was purchased by Leon Monbon who established a market garden there.³⁰⁵ In the 1890s, the house and market garden were acquired by Thomas Mallett and leased to John Hebbard, gardener.³⁰⁶ By 1908, the property had been subdivided and the dwelling was owned by William Sumner Hunt.³⁰⁷ He carried out substantial alterations and additions to a Federation design. Named 'Karrima', the Victorian dwelling (with Federation era alterations) survives (Figure 4.70), including the original cellar.

At 26 Spring Street, a Victorian timber dwelling is a legacy of a vineyard established in 1864 by Thomas Cain, a 'celebrated horticulturist', and owned by the publican of the Caledonian Hotel in Little Ryrie Street, Thomas Campbell.³⁰⁸ Between 1874 and 1876, the property was occupied by Edwin Butt, one-time curator of the Corio Cricket Ground (former Corio Oval, Eastern Park).³⁰⁹ He tended to the vineyard and garden that was then set in a paddock covering about ten acres.³¹⁰ Although Campbell sold the property to James Fitton, hotel keeper in 1877, it was acquired by Robertson Chamberlain in 1878.³¹¹ John Hebbard, farmer, occupied the site for much of Chamberlain's ownership, which ended in 1889 when it was purchased by the gardener, Charles Brame. His death in 1890 brought the transfer of the property to Brame's son, Alfred and Herbert, farmers and market gardeners.³¹²

At 103 Mt Pleasant Road, Belmont, is 'Mount Pleasant Villa' (Figure 4.71), built in c.1872 for Morris Jacobs (c.1852-1927), well-known Geelong draper.³¹³ The brick villa was constructed on land previously comprising two vineyards. The first was established by Mary Transton in c.1853 and the other John Davison in c.1856 (the latter on land owned by James Noble of Connewarre).³¹⁴ First known as the Jacobs' Vineyard³¹⁵ Morris Jacobs and his wife, Emma, had named their property 'Mount Pleasant Villa' by 1878.³¹⁶ Although Jacobs continued his business interests as a draper, the vineyard was retained, presumably by employed gardeners. In 1878, Jacobs' 6 acre vineyard was described as being 'well attended' with a 'good crop.'³¹⁷ Hendy and Apted, architects of Geelong and Queenscliff, called tenders for 'renovating and painting' and 'raising and re-blocking one wing' of the villa in 1901.³¹⁸ In 1924, the 71 acre 'Mount Pleasant Villa' property was subdivided into smaller residential allotments (see Theme 6).



Figure 4.69: Early outbuildings associated with Schulz vineyard, 1998. Only the gabled bluestone building (left) appears to survive today. Source: David Rowe.



Figure 4.70: 'Karrima', 80-84 Francis Street, Belmont, 2005. Source: David Rowe.



Figure 4.71: 'Mt Pleasant Villa', 103 Mt Pleasant Rd, Belmont, 2019. Source: David Rowe.

FORMER VINEYARDS & ORCHARDS AT WALLINGTON

Throughout the 19th and 20th centuries, Wallington was known for its fertile soil, including the growing of orchards, fruit and vegetable crops. One of the few physical legacies is the dwelling, 'Willow Bank' (now 'Carinya'), 20 Rhinds Road. Of brick construction, it was built in 1864-65 for Thomas Magarey and occupied by Arthur Douse who had established a vineyard and fruit garden there in c.1861.³¹⁹ In partnership with Douse for a time was a Mr Reynolds. The vineyard had been abandoned by 1884 as the *Geelong Advertiser* described the property (which was then for sale as part of the 'Chevy' Estate of W.R.H. Weekes) as 'good grass land substantially fenced' and 'formerly known as the estate and vineyard of Messrs Douse and Reynolds, and contains, among other improvements, a well-built brick cottage, etc.'³²⁰

FORMER VINEYARDS & ORCHARDS ASSOCIATED WITH THE NOVEL INDUSTRIES ACT

In 1862, the Victorian Legislative Assembly passed the Duffy Land Act which included Section 47 to encourage the development of 'novel industrial enterprises.'³²¹ Conditions of the lease included the planting of vineyards, tobacco, olive trees or hop plantations or any 'useful plant or industrial enterprise or process which was previously unknown or not generally known.' The lessee had a pre-emptive right of purchase following expiration of the lease, or after 5 years, at the price of one pound per acre.³²²

Within Greater Geelong, at least 25 leases under Section 47 for the production of wine, olives, tea, mulberries, oranges, tobacco, maize, flax, linseed, cider, cherries, plums, pears, peaches and other fruits were registered (see Appendix 4.2). One lease was taken up by John Myles in 1862 at Ocean Grove on the north side of Thacker Street (west end).³²³ Myles had served as a Member of the Legislative Assembly from 1852 until financial difficulties caused the end of his political career in 1861. At Ocean Grove, he proposed to establish 6¼ acre vineyard, 6¼ acre orchard (apple and pear trees for cider and perry production; cherries and peaches for brandy; and plums and gooseberries for jam and dried preserves); and a 2½ acre tobacco plantation.³²⁴ Myles soon purchased his property and then offered it for sale in 1866 with 234 acres, six-roomed house, 10 acre vineyard together with an orchard.³²⁵ Nothing survives of Myles' vineyard at Ocean Grove, the land comprising a residential estate.

4.3 TIMBER INDUSTRY

WATTLE BARKING

From the time of European colonisation, transformative of the Greater Geelong landscape – particularly in the Bellarine Peninsula, was wattle barking. Initially, land was cleared by pastoralists in order to cultivate and graze it. Yet, from the early 1860s, the thickly-timbered areas at Portarlington, St. Leonard's, Queenscliff, and Wallington provided a much-needed and prized wattle bark product for the burgeoning tanneries at Marshalltown, Breakwater and South Geelong (see Theme 5). Wattle bark was a key ingredient in the production of tannin liquor used to immerse hides as part of the manufacture of leather.³²⁶ Several farmers on the Bellarine Peninsula were to capitalise in providing the tanneries with this prized commodity.

At Indented Head between Portarlington and St. Leonards in 1860, Edward Alfred James Harvey purchased the sheep run, 'Woodhalla' established by Captain Frederick William Langdon (brother of Captain J.C. Langdon of 'Spray Farm' – see Theme 2) by 1857.³²⁷ With the principal purpose of sheep grazing, Harvey attempted to further clear the land 'by eradicating the wattles growing thereon, but they grew too thickly and too fast.'³²⁸ With the land covered with wattles, in subsequent years Harvey found it profitable to strip the wattles for their bark and deliver it to industries in Melbourne.³²⁹ In 1877-78, Harvey shipped 500 tons of bark from Portarlington with 'much more' 'sent by road to Geelong.'³³⁰ Nearby, the Sheppard brothers were one of Harvey's competitors.³³¹

It was also from the 1860s at Mannerim when newly-arrived sheep graziers exploited the wattle bark as another source of income, and created a permanent industry in growing and barking the trees. Larger growers at this locality included R. and P. McDonald of 'Blairwood', Mrs Davies, G. Dunn and J. Dutton.³³²

By the 1870s, the wholesale stripping of bark from wattle trees had become 'one of the most flourishing trades of Australia'³³³ led to shortages of the product. Together with wattle barking in other parts of Victoria, much of it had been shipped to England where it was worth three times the value than in the colonies.³³⁴ However, wattle trees had not been planted to replenish the rapidly diminished supplies.³³⁵ The ensuing crisis led to the appointment of a Board of Enquiry on 7 January 1878.

The Board of Enquiry visited Geelong to take minutes of evidence and to inspect the local bark-producing areas. Its findings read in part:

Evidence was taken at Geelong, Portarlington, Queenscliff, and Wallington ... Wattles were seen growing in singular luxuriance, the trees being uniformly of a fresh, vigorous growth, and of the species known among tanners as the golden wattle. The foliage is quite distinct from the commoner kinds of acacia, known as the black and silver respectively; the leaf of the latter being light and feathery, while that of the golden is broad and glossy, resembling that of a lightwood. The bark is highly esteemed by the tanners. Portarlington is an important bark-producing district, an excellent trade being carried on by road and water with Geelong and Melbourne, the superior quality of the bark finding for it a ready sale. Several of the persons examined stated that the cultivation of the wattles on their land yielded them a handsome profit, but if the price of bark were reduced, they would destroy the trees as fast as they could ... The Board, on the road home, held a sitting at Wallington, and heard evidence of a similar character, one of the witnesses going so far as to assert that it was utterly impossible to extirpate the wattles on his land. He had for years struggled with the wattles to keep them down, but they had absolutely mastered him, and lately he had encouraged their growth on account of the high rates he received for bark.³³⁶

Joseph Brearley, proprietor of the Australian Tannery at Marshalltown from 1852 (the largest in the southern hemisphere – see Theme 5) gave evidence to the Board of Inquiry. His firm had initially sought bark supplies until 1860 from the Western District, and on average absorbed 1,300 tons of bark each year.³³⁷ Brearley found wattle bark to be superior compared to the bark of other trees, with ironbark not making leather suitable for the English market (it being too light in colour) and honeysuckle bark also not being as strong as wattle.³³⁸

The Board of Inquiry recommended measures be put in place to ensure a sustainable supply of wattle bark, including the provision of wattle tree plantations and bark harvesting licenses.³³⁹

LOGGING

In addition to wattle barking, indigenous trees were logged for a range of reasons. At St. Leonards, Captain George Ward Cole employed 300 men in cutting timber as firewood for export to Melbourne from 1857 until the 1870s.³⁴⁰ At the You Yangs in 1853, 75 men were employed to fell timber for the construction of the Geelong to Melbourne Railway line.³⁴¹ You Yangs timber was also exploited for fire wood, especially for the local lime burning operations.³⁴² In the Brisbane Ranges near

Anakie, logging was first carried out to create sheep and cattle runs. Clearing continued in the 1850s with the timber required to service the gold mining town of Steiglitz nearby.³⁴³ In 1879, iron bark in the Brisbane Ranges was used in the construction of the new bridge at Little River by Mr Kirk, contractor (see Theme 3).³⁴⁴

FORESTRY AND OTHER RESERVATIONS

YOU YANGS

The burgeoning lime burning industry in the 19th century resulted in the need for timber. The Little River and Duck Ponds Common and associated forested land at the You Yangs were an ideal source to fuel the lime burning fires. The reserve took in Station Peak and the immediately surrounding land. In 1865, members of the Corio Shire Council became concerned about the extensive cutting of both dead and green timber and in 1866, 800 hectares was declared a timber reserve.³⁴⁵ A ranger was appointed in 1868 to police the reserve. In 1877, the timber reserve was increased to 2000 hectares and a tree planting program commenced in the following years.³⁴⁶ However, tree removal continued until a sustained tree planting effort commenced in the 1880s. By 1896, 480,000 trees had been planted including wattles to provide bark for leather-tanning, willows for making baskets and bamboo to prevent erosion.³⁴⁷ The superintendent of the plantations was John Blair.³⁴⁸

With the establishment of the Forestry Commission in the 1920s, further reforestation efforts of the Timber Reserve were made.³⁴⁹ Since the Second World War, many sugar and brown mallet trees have been planted. Habitats for native fauna were established by the Geelong Field Naturalists' Society and the Bird Observers' Club.³⁵⁰

Yet, since the 19th century and throughout the 20th century, the You Yangs has provided gravel for roads, timber for public sale and sand for the ready-mix concrete market.³⁵¹

BRISBANE RANGES NATIONAL PARK

On 5 October 1894, part of the Brisbane Ranges was reserved from further destruction by logging. Advertisements appeared in the Steiglitz Miner 'offering a reward for information leading to a conviction of people responsible for cutting timber and young saplings.'³⁵² While the gold mining town of Steiglitz met its demise (thereby reducing demand for timber in the Brisbane Ranges), between 1949 and 1951 the Forest Commission of Victoria established a timber cutters' camp in Boar Gully (now the camping area in the Brisbane Ranges National Park). The camp employed 50 men harvesting of the natural resources contained in the reserved Park.³⁵³ Between 1965 and 1970, a limited supply of timber was provided to the CSR Chipboard Mill at Bacchus Marsh. The short-lived venture was 'due to the poor quality of the timber being supplied.'³⁵⁴ In 1973, 3,023 hectares of bushland was reserved as the Brisbane Ranges National Park. This Park was further extended in 1979 the purpose being to preserve the rare diversity of flora and to 'primarily provide public enjoyment, education, and inspiration in natural environments.'³⁵⁵

FARMERS' COMMONS

In 1861, the Victorian Colonial Government set aside Crown Land as farmers' commons, giving opportunities for farmers to graze stock for an annual licence fee. With the existing boundaries of the City of Greater Geelong, commons were set aside in: Anakie Parish (approximately 7150 acres near the Little River); Conewarre Parish (about 4500 acres); and Little River and Duck Ponds at the You Yangs.³⁵⁶ Other commons were established at Belmont (1860), Geelong (as the Town Common, 1861), Newtown and Chilwell (Fyansford, 1861), Moolap (1862), Portarlinton (1862) and Drysdale (1878).³⁵⁷ Given the urbanisation of the municipality, it appears that none of the original commons survive for their original purpose.

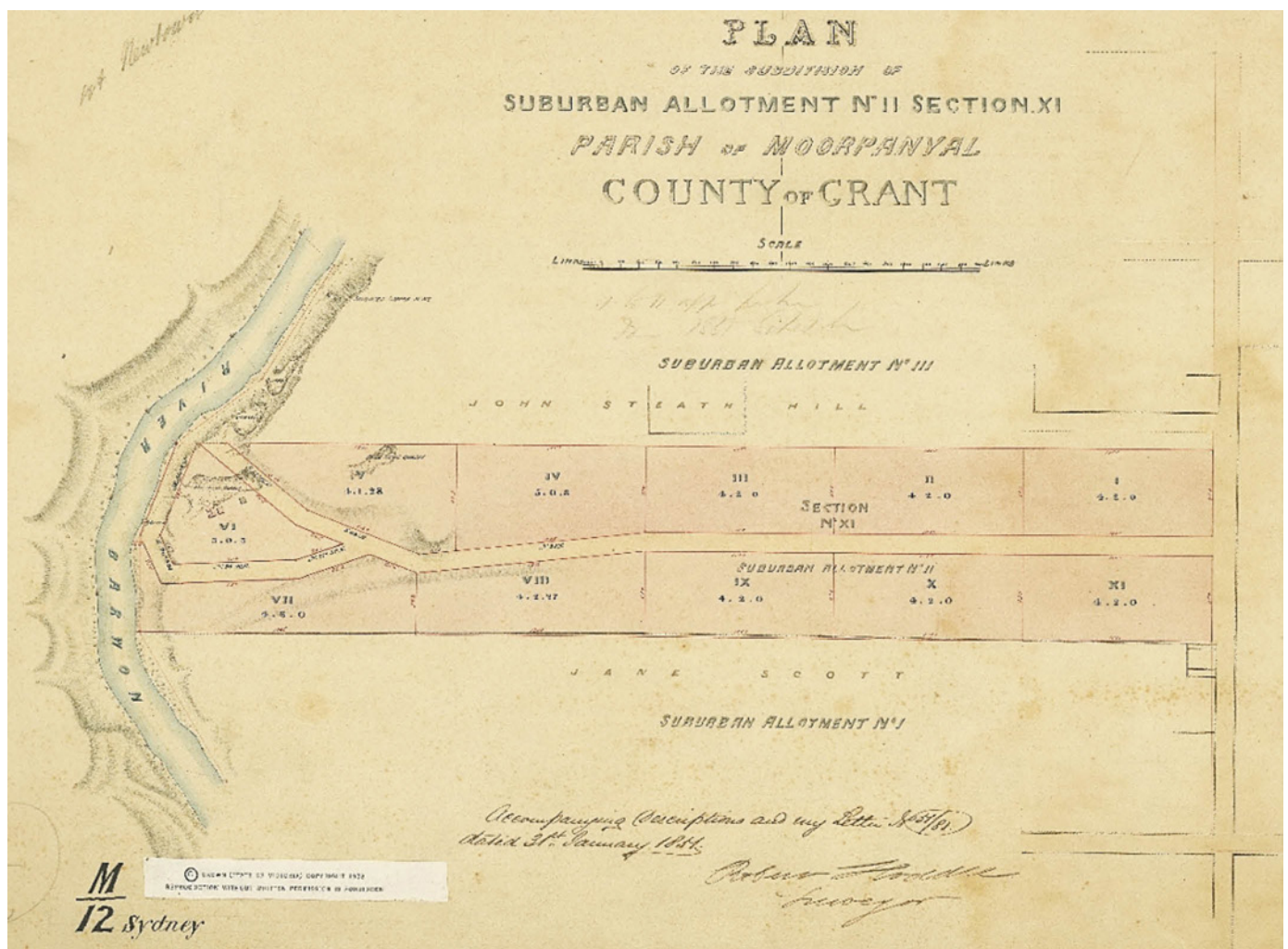


Figure 4.72: Plan showing quarries at the west end of Camden Road, Newtown, beside the east bank of the Barwon River, 1850. Melville's quarry was in the triangular allotment VI. Source: R. Scott, Assistant Surveyor (R. Hoddle, Surveyor), Plan of the Subdivision of Suburban Allotment No. II Section XI, Dept Crown Lands & Survey, 31 January 1851, VPRS 8168/P2 Unit 6171 SYDNEY M12 MOORPANYAL, Public Record Office Victoria.

4.4 STONE QUARRYING³⁵⁸

With the development of Melbourne and Geelong following European colonisation in the 1830s came the need for building materials. The Greater Geelong area, and particularly the banks of the Barwon River and the Barrabool Hills, were the locations of bluestone and freestone quarries which fed the extraordinary demand for masonry as a building material in the early-late 19th century. The stone quarries were to provide for a much-needed commodity at the expense of the natural landscape.

EARLY QUARRIES & QUARRYMEN

INITIAL YEARS

The earliest quarry in the City of Greater Geelong was that of the Wadawurrung at the Dog Rocks, Batesford, where greenstone was procured and made into axe heads and other implements and objects for trade.³⁵⁹

Quarrying was one of the earliest European extractive industries established on the Corio Bay foreshore at Limeburner's Point by Patrick Melville in 1838.³⁶⁰ There, he worked a lime quarry with James Boucher until their partnership was dissolved in 1843 (see following subsections).³⁶¹ The following year in 1839, stone was quarried for the construction of the breakwater at Breakwater (see Theme 3).³⁶²

By early 1841, Robert Somerville (c.1814-1880) had established a quarry in Geelong. He advertised his freestone quarry and thanked existing customers for their patronage in the *Geelong Advertiser*:

R. Somerville, Stone Mason and General Builder,

In returning thanks to his friends for the liberal support he has received since his commencement in Geelong, in the above branches of business, begs to assure them and the public, that no effort on his part shall be spared to deserve its continuance; and as his motto has ever been, and will be "not words" but "actions," he will make that alone his guarantee to public favour. And as a claim on their support, he further begs to remind them of his being the first to carry out the onerous task of opening a Freestone Quarry of superior quality in the neighbourhood, from which the public can be supplied to any extent they may require.³⁶³

The location of Somerville's quarry is not known (he gave his address as South Geelong) but stone from his quarry was used to build the architraves and window sills at St. Andrew's Presbyterian Church in Yarra Street from March 1841, the first church in Geelong³⁶⁴ (Figure 8.02). Construction was carried out by Somerville and R.H. Marr.³⁶⁵

NEWTOWN QUARRIES, BARWON RIVER

While Somerville's tenure of his quarry seems to have been short-lived, other quarrymen and stonemasons established quarries under license on and near the banks of the Barwon River at Newtown and Marnockvale. The earliest and originally most substantial was that of Patrick Melville (1817-1857) (see Figure 4.72). He commenced work there in the early 1840s³⁶⁶ following limeburning at Limeburner's Point (see following subsection).³⁶⁷ At Newtown, Melville named his enterprise the 'Barwon Quarry'. It was situated at the west end of Camden Road, (bound today by Camden Road, Jackman Road and the Barwon River). The quarry was shown in a part Plan of Moorpanyal by Robert Hoddle, Surveyor, on 31 January 1851.

In early 1847, Melville endured criticism by a competitor, the claim being made that Melville had a monopoly on the quarry trade. In responding, Melville gave the following insightful information of quarrying in Newtown at this time:

... during the seven years I have resided at the stone quarry – my envied residence – that no less than five to six licenses have been granted to different parties to quarry some nearly on the same bank I am working. Some have abandoned doing so any longer, from the fact that they could not make laborers' wages, or scarcely a livelihood; and because they would not remove the obstacles or go through the faults when

they met them, as they thought, when done, they could not get sufficient remuneration for their labor. Those parties did procure stone equal to such as my much-desired quarry contains; but, because these could not procure rock without trouble and less expense, they abandoned their operations, and turned their attention to other pursuits more profitable. Which if they had expended, as I have done, from three to four hundred pounds, together with the labor of seven years, they would be able now to occupy as good a quarry as I now hold.³⁶⁸

Patrick Melville (Mulvailie/Mulvillie) was born at Ennis, County Clare, Ireland, in 1817, the son of John Mulvalle, a farmer of County Clare.³⁶⁹ A Catholic, Melville became a Land Steward in Ireland.³⁷⁰ He married Miss Arrabella Cullinan, a Protestant school mistress, in c.1834.³⁷¹ They emigrated to Port Phillip on the *Calcutta*, arriving in October 1838 and Melville immediately commenced quarrying.³⁷² At his Barwon Quarry, Newtown, by February 1847, Melville procured Barrabool stone for the construction of the 'English Church' (presumably Christ Church, Moorabool & McKillop Streets, completed in 1847) and 'Wesleyan Chapel' (presumably Wesley Church, Yarra Street, erected in 1844-46).³⁷³ Melville's stone was also used in the construction of Sladen House, Newtown, in 1850.³⁷⁴ Melville died in Geelong on 11 May 1857, aged 40 years, leaving his wife, Arrabella, and eight children.³⁷⁵

Melville's competitors at Newtown in 1847 were Archibald Grant (c.1813-1874)³⁷⁶ and Nicholas McCann (1803-1879) (see later subsection). Grant's quarry appears to have been immediately north of Melville's at the west end of Noble Street (see Figure 4.73). Nicholas McCann's freestone quarry was situated further north on the steeply-sloping banks of the Barwon River, adjacent to where Benjamin Levien relocated his punt and later the location of the Queens Bridge (Figure 3.28) (see Theme 3).

The importance and extent of stone procured from these quarries was given in the *Geelong Advertiser* on 14 March 1848:

Some idea may be formed of the stone buildings, at present in the course of erection, at Geelong, when the fact is related, that four quarries are now at work, and in active operation. The average amount of stone that is daily brought into town is thirty loads, or about one thousand tons per month! Two of the quarries are worked by Mr Melville; a third by Mr Grant; and the fourth by Mr McCann, all on Crown lands, and under license. Rubble stone is sold at seven shillings per load; cut stone, eightpence halfpenny per foot. There are other higher prices paid per foot for stone, according to the dimension or the particular manner it is required



Figure 4.73: View on the Barwon River near Queen's Park, Geelong, c.1878. Note the quarries above the east bank of the Barwon River at Newtown earlier worked by Nicholas McCann. Source: F. Kruger, accession PH321-1979, National Gallery of Victoria, Melbourne. Gift of Mrs Beryl M. Curl, 1979.

to be cut; but the three mentioned descriptions is the kind in greatest demand. It will be perceived that the amount paid for this article of demand is very great. Beside the four quarries mentioned, for which there are several other places from which this building material is obtained, and occasionally in large quantities, that cannot be termed quarries, as the ground is only worked a little below the surface.³⁷⁷

The majority of these quarrymen on the banks of the river at Newtown were not to endure at this location. In 1849, Archibald Grant relocated to a property 'on the Barrabool Hills, lately occupied by Mr Williams [sic. Willis]' where he commenced working a freestone quarry and advertised to builders the superiority of his product.³⁷⁸ While a partnership as builders and quarrymen between McCann and Grant, Bellerine Street, was dissolved in late 1850, McCann also followed Grant to the Barrabool Hills to continue quarrying as well as farming (see later subsection).³⁷⁹ Patrick Melville continued quarrying until his death in 1857.

Others took up quarrying on the Barwon River, including Fredric Allen in 1850.³⁸⁰ Soon after, James Austin had acquired two quarries on the Barwon River.³⁸¹ One appears to have been Archibald Grant's former quarry north at the west end of Noble Street, the other possibly the former quarry of Nicholas McCann near Queens Bridge.³⁸² One of the earliest contracts from Austin's quarry was in 1854 for 2000 yards of stone for the Geelong Gaol (see Theme 7).³⁸³ In 1889, John Windmill (1857-1939) and his brother, William (1859-1943) son of Josiah Windmill (1810-1887), formed a partnership and took out a seven year lease of Austin's quarry³⁸⁴ (Figure 4.74). In 1892, the Windmill Brothers procured a new stone crushing plant which featured in a report in the *Geelong Advertiser* in 1892:



Figure 4.74: Austin's (Windmills') Quarry, Newtown, n.d. Source: GRS 2009/02372/097, Geelong Heritage Centre collection.

The demand for machine broken metal for road making purposes and for ballasting has induced Messrs J. and W. Windmill to enter largely into the business and they have just completed the erection of a valuable stone breaking and crushing plant in the vicinity of the Austin quarries at the west end of Noble-street close to the River and the Queen's Park Bridge over the river Barwon. The plant is that known as the Victorian Patent Stone-Breaker made by Messrs Jaques Bros., of Coppin-street, Richmond, and it is the first of its kind introduced to notice in this district, the breaker being capable of crushing the hardest of ores, quartz, and stone ... In this district, the Messrs Windmill Bros. promise to provide for the public the various kinds of broken metal for roads, streets, footpaths and yards, as well as screenings for asphalt pavements and courts, and metal for concrete work.³⁸⁵

Austin's quarry remained under the ownership of James Austin until his death in 1896. At this time, the quarry was leased to the Windmill Brothers at an annual amount of £50. The property was valued at £1000.³⁸⁶ By 1897- 98, the Windmill Brothers had purchased the quarry and 13 1/5 acres of land from James Austin's Estate.³⁸⁷

In 1911, the firm of J. and W. Windmill was dissolved and the quarries and stone crushing plant put up for sale.³⁸⁸ The property was purchased by John Windmill³⁸⁹ who continued business there with his sons, Josiah and William. The quarry continued to be worked by Josiah and William after John's death in 1939.³⁹⁰ In the 1950s, they donated the quarry to the Newtown and Chilwell Council for recreational use. It is now known as Windmill Reserve.³⁹¹ The only other recognition of the previous associations with quarries in the area are the names of the streets: Grant (after Archibald Grant) and Windmill (after John Windmill).

MARNOCKVALE QUARRIES

In 1851, the Victorian Colonial Government offered a one year lease for a stone quarry comprising 1 acre and 16 perches 'at allotment 4, section 12, Moorpanyal.'³⁹² This was a triangular portion of land to the south-west of the Shannon Avenue and West Fyans Street intersection and was to become the Corporation quarry where bluestone was procured for road-making and other engineering infrastructure (see Theme 6). In 1854-55, it was worked by William Allen, Pascoe Ellis, Hewin and Chappel, Shields and John Williams.³⁹³ The quarry featured in Richard Daintree's Geological Survey Map of 1861 (published in 1863) (Figure 4.75).

By 1866, the quarry site had been subdivided into three municipal quarries for the Geelong Corporation and Boroughs of Newtown and Chilwell, and South Barwon, respectively³⁹⁴ (Figure 4.76). In 1901, the quarry site became a rubbish tip for the Newtown and Chilwell Council.³⁹⁵ In 1984, the former quarry was transformed into a terrace garden known as Leach-Wood gardens.³⁹⁶ It was opened by the Hon. J.L. Simmonds, M.P., Minister for Employment and Training on 24 November of that year in the presence of Mayor and Councillors, and Town Clerk and City Engineer of the Newtown City Council.³⁹⁷

Several other quarries were established at Marnock Vale from the 1850s. Some of these were shown in Daintree's Geological Survey Map (Figure 4.77). In 1854, two whinstone quarries were worked by quarrymen also associated with the nearby corporation quarry: Pascoe Ellis, and Hewin and Chappel.³⁹⁸ On the south side of West Fyans Street between Shannon Avenue and Bridge Street were at least two quarries. At different times they were worked by a Mr Oates, Jonathan Chappel (honeycomb bluestone quarry) and Mark Daniels.³⁹⁹ Before 1873, W. Bottrell acquired Chappel's honeycomb quarry.⁴⁰⁰ Following acquisition by the Newtown and Chilwell Council, these quarries were filled in.⁴⁰¹ The site is now largely a mountain bike park. There were other quarries south of Bartlett Terrace (these quarries were purchased by the Newtown and Chilwell Council in 1947 as a site for a swimming pool, this being the location of the Geelong Aquatic Centre today).⁴⁰² At Rocky Point, a bluestone quarry had been in operation before 1855.⁴⁰³ Between 1878 and 1898, James Walker had a quarry that supplied his steam-powered stone crushing works at 103 Fyans Street.⁴⁰⁴

Possibly the most interesting quarrying enterprise in the second half of the 19th century at Marnock Vale was Scott's quarry. Jane Scott had acquired 53 acres comprising allotment 1 of section 1 in the Moorpanyal Parish in 1847.⁴⁰⁵ Situated on the north side of West Fyans



Figure 4.75: R. Daintree, Part of Geological Survey of Victoria Map 24 SE: Gherineghap, Moorpanyal, Barrarbool, Corio, geologically surveyed 1861, published 1863, showing quarries at Newtown (centre), including Marnock Vale (circled). Source: Earth Resources online http://earthresources.vic.gov.au/_data/assets/image/0003/1125588/9_24se_2879x2190_big.jpg.

Street (and west of Shannon Avenue), she was to live there with her husband, Duncan Scott, an inaugural Councillor with the Newtown and Chilwell Borough Council in 1858 (see Theme 7). A quarry had been established on the Scott property by 1860 as James Morris, quarryman, had been charged 'with blasting stone in the vicinity of Mr Duncan Scott's, Fyans street, without license and without taking proper measures of precaution to avoid accidents from splinters, &c.'⁴⁰⁶ Duncan Scott claimed that 'he, as well as his family, had narrow escapes of their lives from the splinters falling about.'⁴⁰⁷ The location of the quarry was shown in Daintree's Geological Survey Map (Figure 4.75).

While it was variously known as 'Scott's quarry' and 'Mrs Scott's quarry',⁴⁰⁸ it appears that Jane and Duncan Scott never operated it. In 1878, this quarry supplied the bluestone for the railway ballast for the construction of the Geelong to Queenscliff railway line.⁴⁰⁹ The contractors, Messrs. Topham, Angus and Smith, laid an iron tramway from West Fyans Street to a railway yard between Moorabool and Yarra Streets.⁴¹⁰ While the contractors were praised for their speedy and efficient construction of the railway line, complaints had ensued about the tramway from the quarry in that 'on downhill grades the horses were unhitched and the wagons allowed

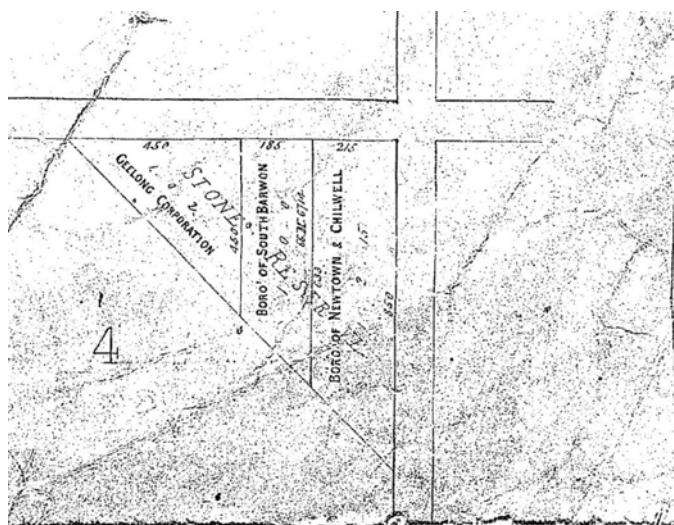


Figure 4.76: Bluestone quarry, Williams Road, Mount Duneed, 1999. Source: Jeremy Smith for Authentic Heritage Services.



Figure 4.77: Bluestone quarry, Williams Road, Mount Duneed, 1999. Source: Jeremy Smith for Authentic Heritage Services.

to roll unattended at considerable speeds terrifying pedestrians as they went by.⁴¹¹ The tramway had been removed by September 1879.⁴¹² The quarry continued to be worked in the ensuing years and the site is now a public reserve known as Rotary Centennial Park.

OTHER SUBURBAN GEELONG QUARRIES

Numerous other private and corporation quarries were established throughout the suburban areas of Geelong from the mid-19th century (Figure 4.77) and worked by a number of quarrymen (see Appendix 4.3 which includes a list of quarrymen). There were also other quarrymen that gave different occupations, such as builders, contractors and stonemasons.⁴¹³

MARBLE QUARRY AT LIMEBURNER'S POINT

At Limeburner's Point on the Corio Bay foreshore, in addition to limestone, a marble quarry was worked at different times.⁴¹⁴ From 1849, Alfred Ronalds, a recently-arrived English engraver and copper-plater,⁴¹⁵ in an effort to locate local lithographic stone, fossicked the eastern shores of Corio Bay. His initial marble discovery at Point Galena (as Limeburner's Point was earlier called)⁴¹⁶ found that 'it was so impregnated with quartz as to be of little use except in such small blocks as rendered its commercial value for artistic purposes of small moment.'⁴¹⁷ In 1851, Ronalds came across another outcrop that was different to those he had previously seen. He forwarded samples to Sir Thomas Mitchell, then Surveyor-General of New South Wales, seeking an opinion about the quality of the stone. Mitchell's reply was that 'they were beautiful samples of Sienna and brocatelle marble' and if there was sufficient quantity, a Sydney firm was willing to acquire it.⁴¹⁸ However, the Victorian gold rush put a halt to Ronalds' enterprise, the value of gold outweighing that of the marble at eastern beach.⁴¹⁹ In 1862, promise was again given to the possibility of eastern beach marble being quarried in commercial quantities. Robert Shanklin, a Ballarat chemist and son in law of Alfred Ronalds, obtained a lease to work the marble quarry. Although a block was polished and presented the appearance of Sienna marble 'of a very beautiful quantity,' Alfred Selwyn, Government Geologist, visited the site and expressed doubt that the marble would exist 'for any considerable depth below the surface.'⁴²⁰ Nevertheless, Shanklin persisted in establishing a company to work the marble quarries. The *Geelong Advertiser* gave the following description:

A prospectus has been issued by Mr Shanklin, of Ballarat, of a Company to work the Marble Quarries, at the Point. A lease has been obtained of three acres, and it is proposed to raise a capital of L2,000, in shares of L25 each. Notwithstanding the number of specimens to be seen about town, not a few it seems are incredulous as to the fact of such quarries existing. We may state, however, from personal observation for we visited the spot yesterday, that the material does exist, and in such quantity, quality, and variety as to leave no doubt whatever of it proving a most valuable investment to the fortunate lessee. Conversing with a man who was busily employed there roughly squaring a specimen block, he stated that he had been working at the kilns for the last three years, and thousands of tons of it had been burnt into lime. He traced along the shore several huge blocks, which he said would not be less than two or three ton boulders, probably more. Most of the rock eastward of the powder magazine and a little to the west-ward of it appears to be of a



Figure 4.78: Explorers' Fountain Monument, Ballarat, 1935. The Eastern Beach marble tablets are located in the incised panels at the base of the monument. Source: J. Walton, image MM4334, Museums Victoria.

yellowish grey,— the real Sienna marble in fact; while more eastward the blocks are generally of another character, darker in color and closer in grain. Some that we cracked (for we went a la Murchison) was of a bluish black, with veins of white and yellow. Another specimen was a rich mixture of blood red, white and black. A third resembled a very handsome granite. The variation in color of rocks which lie close to each other is very extraordinary, one often being a Sienna while its next neighbour is perhaps nearly jet black. A large boulder of Sienna marble has been prized, and will be found just past the Chinaman's hut. We are not aware whether Mr Shanklin's lease of three acres takes up the whole sea frontage along which these rocks extend; we should think not. In any case the lime kilns frontage embraces sufficient quantity of the material to give ample room for a second company, if necessary; and knowing now the true character of the stone which, by the way, has won for Mr Cakebread's lime a world-wide reputation, it is possible that gentleman may enter the field as the rival of our enterprising Ballarat friend. The shares in the present projected company are too high, we think, for the investment to become at once popular. A lower sum would be more certain to command immediate success. We shall shortly, too, have the wool ships in port, affording a ready and speedy means of access to a foreign market, and if operations are quickly commenced, share-holders would have to wait but a short time for a handsome dividend upon their outlay. There is another feature in this matter which should not wholly be lost sight of. It is quite possible as these quarries are worked that a pure magnesian limestone adapted for

lithographic purposes may be found. The stone burnt during the last year or two, of this character has been decidedly superior in quality to that of former years. There have been generally fewer quartz nodules in it, and the color has been considerably more promising. We saw some yesterday which had all the appearance of being sufficiently good for the smaller sizes used, and we confidently expect it will come out by and bye of a quality little if at all inferior to the French and German stone. Lithographic stone in slabs is worth in London from 2d to 3d per lb wholesale, and here where it is extensively used in the Government surveying departments of all the colonies, besides the quantity annually taken up by the trade it would readily command a higher price. For the present then we will leave the matter to fructify in the public mind, convinced that the natural wealth which lies within grasp will be wisely availed of to their advantage.⁴²¹

Although Shanklin's anticipated success in procuring marble at the Geelong quarries never met expectations, the marble was to feature as memorial tablets donated by Shanklin for the construction of the Explorer's Monument, Sturt Street, in 1867⁴²² (Figure 4.78). The 'white' marble 'with a few dark veins'⁴²³ has been removed in subsequent years given that the incised panels in the granite base have black marble tablets today.⁴²⁴

HAYE'S PATENT VICTORIA STONE MANUFACTORY, EASTERN BEACH

In 1854, Messrs. Hayes and Co. took out a permissive occupancy of foreshore land at Eastern Beach and established a factory to manufacture 'Victoria stone'⁴²⁵ (Figure 4.79). Having previously formed a factory at Sandridge (Williamstown), Patrick Hayes continued to prosecute various experiments to prosecute slabs of stone, 'admirably calculated for street pavements, or for the flooring of kitchens, workshops, &c.'⁴²⁶ Considered to be far cheaper than imported pavement stone, the *Geelong Advertiser and Intelligencer* gave a description of the characteristics of the new masonry material:

For all purposes of drainage or walls under water, the sand-stone is peculiarly adapted, owing to its being thoroughly impervious to water, and so easily moulded to any required form. It may be sunk in the shape of cassoons, and thus used for any sub-marine works. By applying a thin coating of the stone, while in a soft state, to the surface of any building, it may be made to form a covering bidding defiance to all moisture, and adhering as firmly as any cement known to the walls or boarding to which it may be applied. Another useful purpose is answered by this manufacture, namely the

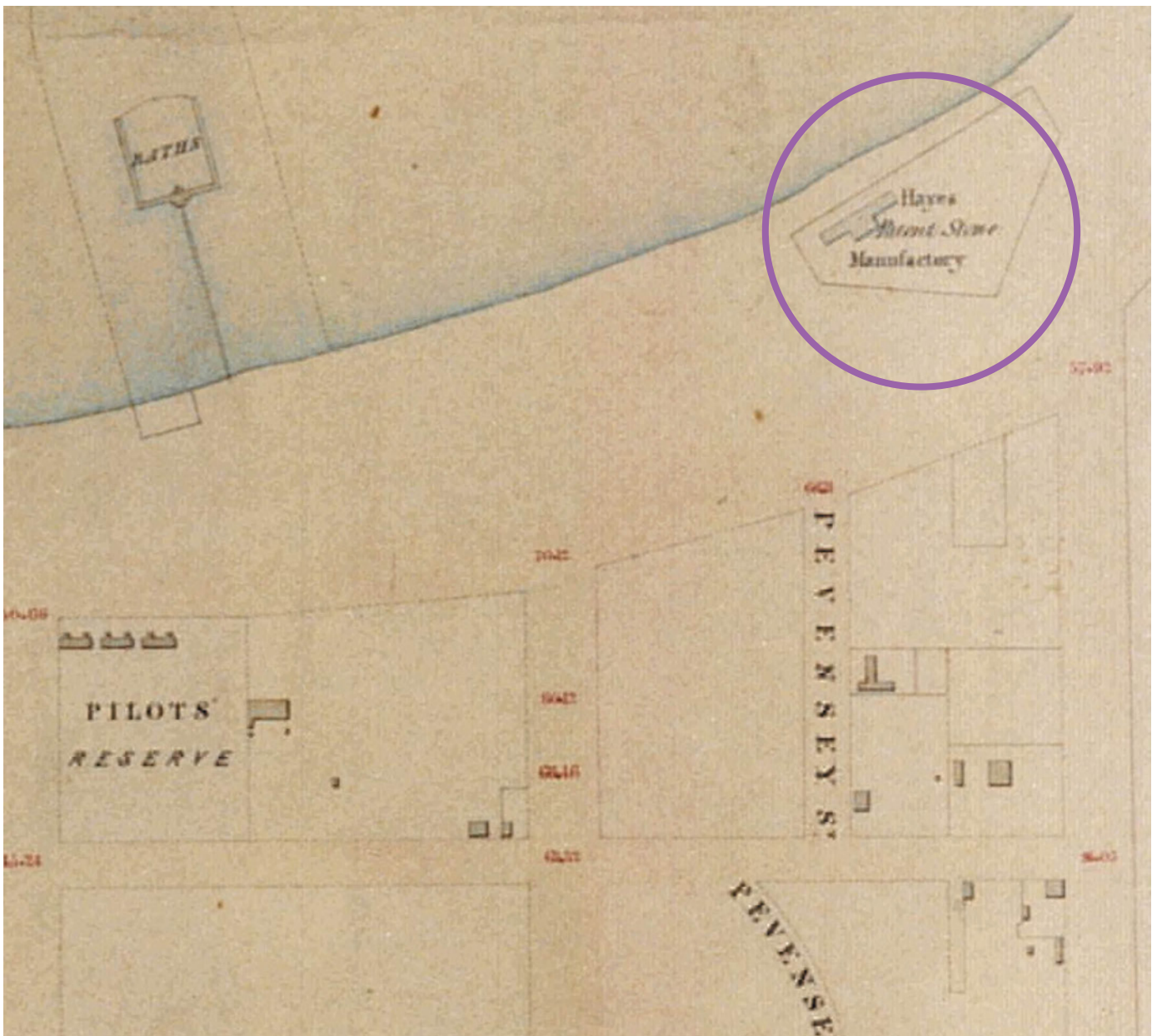


Figure 4.79: Map showing the locations of Hayes' Patent Stone Manufactory, 1854. Source: J.H. Taylor, Map of Geelong, Surveyor-General's Department, Melbourne, VPRS 8168/P2, Unit 5416, item Roll 39 Geelong, Public Record Office Victoria.

production of a very brilliant gas, which is given out in the process of amalgamating some of the ingredients that enter into the composition of the stone, and is produced without any waste of the materials as regards their use in the formation of the stone.⁴²⁷

Hayes' manufactory was not to last, it closing after 1856.⁴²⁸

BLUESTONE COUNCIL QUARRY, BELMONT

At Belmont on the southern bank of the Barwon River (and below Strawberry Hill), a reserve had been set aside by 1851 'for quarrying purposes "blue stone"⁴²⁹ (Figure 4.80).

By 1857, the quarry had been subdivided for use by the Barrabool District Road Board, Geelong Corporation and the South Barwon Municipality⁴³⁰ (Figure 4.81). These quarries were still in use in 1886 when the South Barwon Shire Council called tenders for quarrying '200 yards of bluestone, near Belmont.'⁴³¹ The quarry had closed by 1903 when the site was transformed into an ornamental plantation.⁴³² It was later named in honour of Dr Frederick Moreton (1861-1948), local medical practitioner, tree preservation advocate and inaugural President of the Geelong Town Planning Association (see Themes 1 and 7).



Figure 4.80: R. Hoddle, Plan of the Subdivision of Section VII and Allotment No. 1 Section XXV, Parish of Barrarbool, County of Grant, 21 March 1851, showing quarry reserve (left). A lime kiln and limestone huts are circled. Source: VPRS 8168/P5 Item SYDNEY Record B1, Public Record Office Victoria.



Figure 4.81: A.M. Mason, Plan of Quarries on the Barwon River, Parish of Barrarbool, 11 September 1857. Source: Put-away plan M197/1, Landata, © State of Victoria.

BREAKWATER CORPORATION QUARRY

At Breakwater, a corporation quarry was in use in 1855 with blue metal used in the construction of 20 chains of the Point Henry Road.⁴³³ It was situated to the north of the breakwater.⁴³⁴ In 1887, another corporation quarry was in use 'near the police paddock, at South Geelong', again for making a road near Point Henry.⁴³⁵ This quarry had been reserved in 1884 and was situated to the north of the police paddock, adjoining the Geelong to Colac Railway line.⁴³⁶

BARRABOOL HILLS & WAURN PONDS QUARRIES & QUARRYMEN

The most prolific quarries from the mid-19th century in Greater Geelong were situated in the Barrabool Hills: at Ceres, Barrabool and Waurn Ponds. The vast estate of Charles McLachlan and Captain Charles Swanston were subdivided into a number of estates from 1850, including the Merrawarp estate west of Gully Road, Ceres (Theme 6). Other neighbouring pastoralists also subdivided their properties from this time, including David Fisher who subdivided his Roslin Estate in 1850 into small farm lots and created the village of Ceres (see Theme 6). Immediately north of the Ceres village, Matthew Holmes subdivided his Glencairn dairy farm in 1851⁴³⁷ and offered leaseholds for farm lots. On a number of these farm lots were opportunities for quarrying Barrabool sandstone. The principal quarrymen and stonemasons were Nicholas and Peter McCann, and Ezra Firth and Benjamin Holdsworth.

NICHOLAS AND PETER MCCANN

Nicholas McCann was born in 1803 in New South Wales, the son of Peter and Mary McCann.⁴³⁸ He married Miss Catherine Johnson in 1826 when McCann was a stonemason at Parramatta.⁴³⁹ With his wife and two sons, Charles and Peter, Nicholas McCann relocated to Georgetown where Catherine McCann died in 1831. At Campbell Town, Tasmania in 1836, McCann married Catherine Nelson.⁴⁴⁰ Soon after, McCann heard glowing reports of the grazing potential in Victoria and in 1837 the family sailed to Westernport and then to Port Fairy. There, he became involved in the whaling and building industries. In 1840, he travelled from Victoria in search of grazing land.

Arriving in Geelong in 1841, he became a builder, stonemason and quarry developer. It appears McCann's first solo venture in 1845 when he advertised his 'new quarry', giving his occupation as a builder:

The undersigned begs leave to return his sincere thanks to the people of Geelong and the public in general, for the liberal support which he has received since his residence amongst them; and he further begs leave to intimate that he has opened a new quarry on the banks of Corio Bay, and he feels assured of being able to keep a full supply of the best material of stone that has ever been offered in Port Phillip, and at the most moderate prices. The undersigned trusts by strict attention and good workmanship to give general satisfaction to all who may give him their patronage. All orders for Melbourne or elsewhere strictly attended to. Specimens of stone may be seen in Yarra-

street, facing Mr. Harrison's; it has been examined by Mr Skene, architect, and been approved by him as the best material he has seen in Port Phillip.⁴⁴¹

It appears that McCann's quarry on the foreshore of Corio Bay was short-lived given his relocation to the bank of the Barwon River at Newtown in 1847. While he retained leases over two quarries at Newtown until 1851, he also took up a lease in 1849 of a quarry with 'very superior stone on the Barrabool Hills' that he leased from E. Willis.⁴⁴² Willis was the son in law of Captain Swanston, owner of the Merrawarp Estate.⁴⁴³ In 1850, Garrard and Shaw, surveyors, prepared a subdivision Plan of the Village of Merrawarp for Messrs. Swanston, Willis and Swanston (Figure 4.82). The newly-created allotments flanked both sides of the Barrabool Road to the east and west of the junction with Merrawarp and Honeys Roads. The eastern allotments on the south side of Barrabool Road included the location of McCann's quarry, together with the quarries of G. Grigg and J. Highett.⁴⁴⁴ McCann and Grigg purchased these quarry allotments.⁴⁴⁵

McCann might also have worked a quarry on James Piper's Newlands Homestead opposite McCann's quarry site. In 1898, Piper was reported as recalling the following:

In the early 50's a freestone quarry on his land was rented to a party by Mr Piper, and hundreds of tons of material were taken out, and used in building construction in Geelong, Melbourne, and other parts of the colony.⁴⁴⁶

In February 1851, David Fisher subdivided his 1280 acre 'Roslyn Estate' at Ceres ranging in allotments between 2 and 42 acres. Advertised as the 'Garden of Port Phillip', the subdivision included '11 lots of quarry land.'⁴⁴⁷ Situated on both sides of the Barrabool Road east of Gully and Cochrane's Road, and excluding the newly-created Village of Ceres, 750 acres of the land was acquired by William Harding.⁴⁴⁸ Immediately east of the Ceres Village, Nicholas McCann leased farm land on the north side of Barrabool Road. In 1855, McCann's farm and the remaining allotments owned by Harding, were advertised for sale in 1855. The property leased by McCann was described as follows:

No. 4 is a farm occupied by Mr. Nicholas McCann, consisting of 59 acres, 0 roods, 10 perches. The whole of which is under the most profitable cultivation. This farm has been truly described as the model farm of the Barrabool Hills. The land is a rich black alluvial soil, perfectly clean, and produces the most luxuriant crops with less labour and outlay than any other farm of the same extent in the parish. One side of this farm adjoins the Village of Ceres.

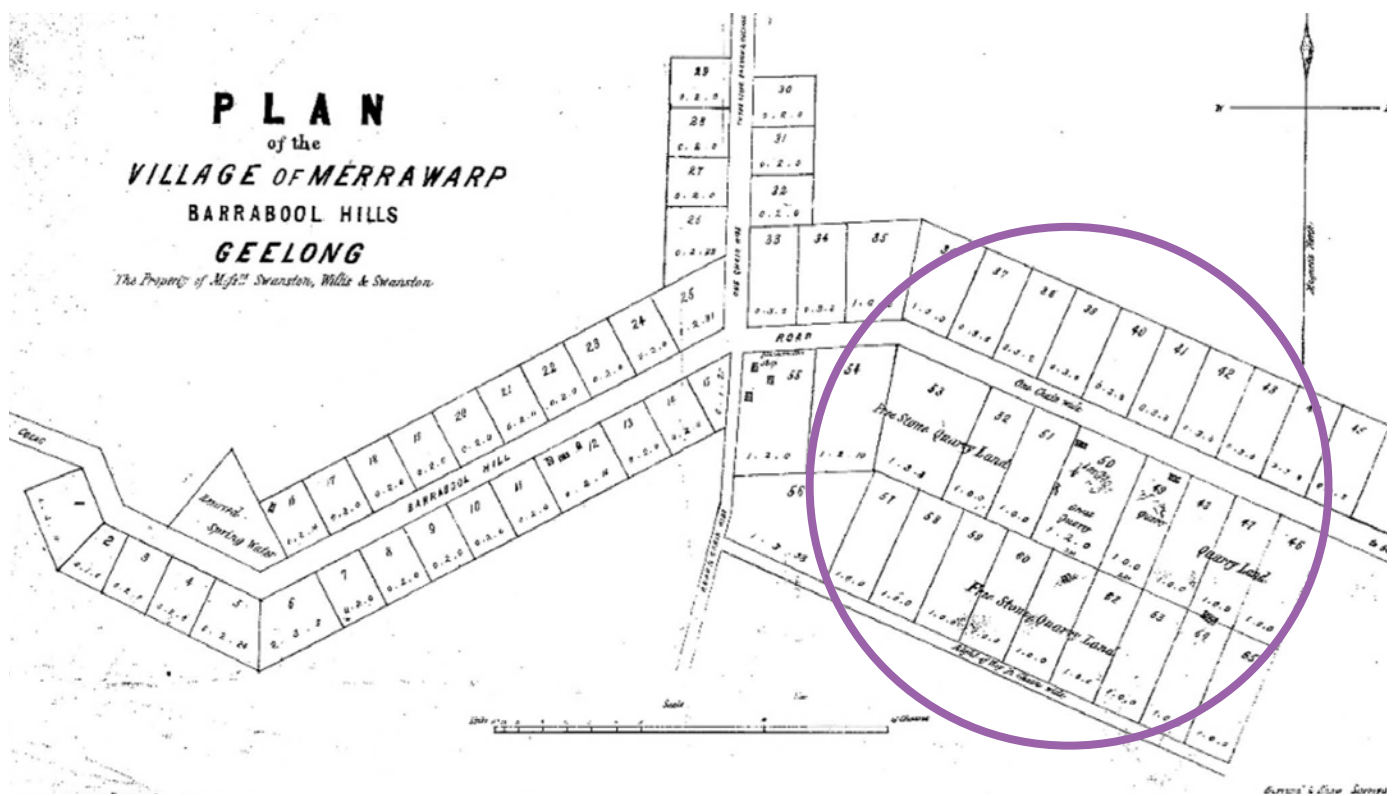


Figure 4.82: Garrard & Shaw, Plan of the Village of Merrawarp, Barrabool Hills, Geelong, September 1850, showing quarry allotments (circled). Source: GRS 2030/M137/001 Geelong Heritage Centre collection.

There is a valuable stone tank made to hold twelve months' supply of water. The dwelling, stables, barns, and outhouses are all suitable for profitably conducting farming operations.

The present tenant's lease expires on 1st April, 1858.⁴⁴⁹

McCann therefore combined his quarrying operations with farming. In 1859, he gave the name of his property as 'Fairview Farm.' It is likely that McCann had named his farm on the Barrabool Road by this name, being the same name as 'Fairview', Merrawarp Road, owned and occupied by James Huggett from at least 1856.⁴⁵⁰ It is also likely that McCann purchased his farm from Harding in 1855.⁴⁵¹ In 1856, McCann's dwelling was described as 'a neat, but humble and unpretending, building.'⁴⁵²

McCann's continued interests in quarrying in the late 1850s appear to have been in partnership with his son, Peter McCann (1828-1908). In July 1859, Nicholas outlined his lament at the prejudice of Melbourne architects against the use of Barrabool stone, ending his letter to the editor as 'McCann and Son'.⁴⁵³ In particular, McCann declared:

We are aware that a prejudice has existed in the minds of architects resident in Melbourne against Geelong stone, simply from the fact that many of the mouldings and other projecting parts of buildings erected with

a kind of stone found near Geelong some years since has not resisted the weather as well as could be wished; but it is only necessary to understand two facts connected with the matter in order to clear that prejudice entirely away. First, that in the olden days no care was taken to have the stone put in the building in such a way as to lie on its natural bed – a precaution that is indispensably necessary with all kinds of freestone. Secondly, that we have now quarries of a very much superior character to those in use at the time referred to, as evidence of which we challenge any one to show the slightest crack or sign of decay in any building erected with stone from our present quarries.⁴⁵⁴

Robert Upston, Overseer of the Immigration Depot in Geelong took umbrage to McCann's claims. He advised the Messrs. McCann 'to look at the Chamber of Commerce and the Savings' Bank again, although neither is yet finished, and if they cannot find some cracks of a very serious, nay, even one of a – to me – dangerous nature, I will point out the same to them upon their calling upon me.'⁴⁵⁵ Upston did further state that 'in justice to the stone, I think I should ask for any inquiry as to whether the fault lies in the frailty of the stone or the quantity used to support the weight placed upon it.'⁴⁵⁶ In reply the

following day, Nicholas McCann defended his product and chastised Upston's claim that the stone was defective:

In reply to Mr Upston we beg to say that before he again rushes into print about a matter he evidently does not understand, it would be well for him to get the advice of some professional friend as to what constitutes a "fault of defect in stone," he will thus be saved from the error of ascribing a break in a lintel (caused by excessive and improper pressure in the middle) to a defect in the stone. However, as there happens to be positive proof of the superiority of Barrabool stone for the purpose of lintels we would just refer Mr Upston to the report of M J.G. Knight, by which he will find that Barrabool stone is capable of bearing nearly double the weight sustained by either Bacchus Marsh, Tasmanian, or indeed any other stone yet discovered in the colonies. At the same time, as Mr Upston seems interested on behalf of the Hobart Town stone, we would recommend him to examine the lintels in the Bank of Victoria. If he does, he will find that three out of four have broken, and that too across opening very much narrower than those of the Chamber of Commerce, while also the lintels of the Bank of Victoria possess the advantage of a support in the middle.⁴⁵⁷

Interestingly in 1863, Richard Daintree, geologist, in his Report on the *Geology of the District from Bacchus Marsh to Bass's Straits* gave inference to some deficiencies in quarrying Barrabool stone:

McCann and Holdsworth's quarries on the Barrabool Hills supply freestone to the district; but here, as everywhere in the series, joints running in all directions through the stone cause a large amount of "spoil", and a difficulty in raising large sound blocks.⁴⁵⁸

At Ceres, Nicholas McCann also gave generously to the Wesleyan cause in the establishment of the Wesleyan church and to the Barrabool Hills Total Abstinence Society, donating the land for its hall in 1861.⁴⁵⁹ He died at Ceres in 1879.⁴⁶⁰

PETER MCCANN

Peter McCann was the second son of Nicholas and Catherine McCann. He was born in 1828 at Parramatta, New South Wales.⁴⁶¹ He went with his father to Port Fairy, helped him in the whaling and building business before becoming a partner in his father's business.⁴⁶² In 1850, Peter McCann travelled to England to bring back his sister, Ann, who, following the death of Catherine McCann, had been adopted to a couple in Launceston who relocated

to England. There, McCann married Miss Elizabeth Begley.⁴⁶³ From 1852, McCann was actively involved in sandstone quarrying at Ceres as well as contracting.⁴⁶⁴ He had established his 'Eureka' quarry on 50 acres of Matthew Holmes' 'Glencairn Farm'. Holmes left Ceres after the death of his youngest child in the Black Thursday bushfires of 6 February 1851.⁴⁶⁵ He subdivided the farm into farming and quarry lots and leased them. It was from there where considerable freestone was procured for building many of Geelong's masonry structures and which was shown on Andrew McWilliam's Map of Barrabool in 1861 (Figure 4.83).

With Mr Pettigrew in 1857 and 1858, McCann worked the Corporation quarry at Marnockvale for stone used in the construction of the piers for the Barwon River bridge at South Geelong.⁴⁶⁶ McCann and Pettigrew also built the piers (see Theme 3) and suffered a heavy financial loss in the process.⁴⁶⁷ By the early 1860s, McCann also had a quarry at Cowies Creek, which he had established with his step-brother, William Nelson McCann, stonemason and Member of the Legislative Assembly from 1860 until 1 August 1867 when his seat was forfeited following McCann's conviction of forgery and subsequent imprisonment.⁴⁶⁸ Peter McCann's most substantial quarry was to commence at Batesford in 1867⁴⁶⁹ and in 1888 he purchased an adjoining property there which was to become the quarry of Australian Cement Limited (see following subsection). He initiated the cement works at Fyansford in 1890 and was the chairman of the first board of directors of Australian Portland Cement Co. Ltd⁴⁷⁰ (see Theme 5).

In 1872, Holmes offered for sale his 'Glencairn' Estate and in 1876-77 Peter McCann purchased 84 acres (including the Eureka quarries).⁴⁷¹ He had also taken over ownership of his father's property in 1870-71.⁴⁷²

Following Benjamin Holdsworth's death in 1881, Peter McCann took over the quarry and limestone operations at Waurin Ponds⁴⁷³ with his eldest son, John Nicholas McCann (see following subsection). They traded under the name P. McCann and Son.⁴⁷⁴ In addition to his business pursuits, Peter McCann was a member of the Ceres Roads Board and a justice of the peace. On Peter McCann's death in 1908, the *Geelong Advertiser* outlined the buildings constructed by Nicholas or Peter McCann, including the buildings constructed of stone from their quarries. Captain Foster Fyans' house, 'Balliang' and B.G. Levien's house near the Queens Bridge, Newtown, were some of the first works carried out by the McCann family. The *Geelong Advertiser* continued:

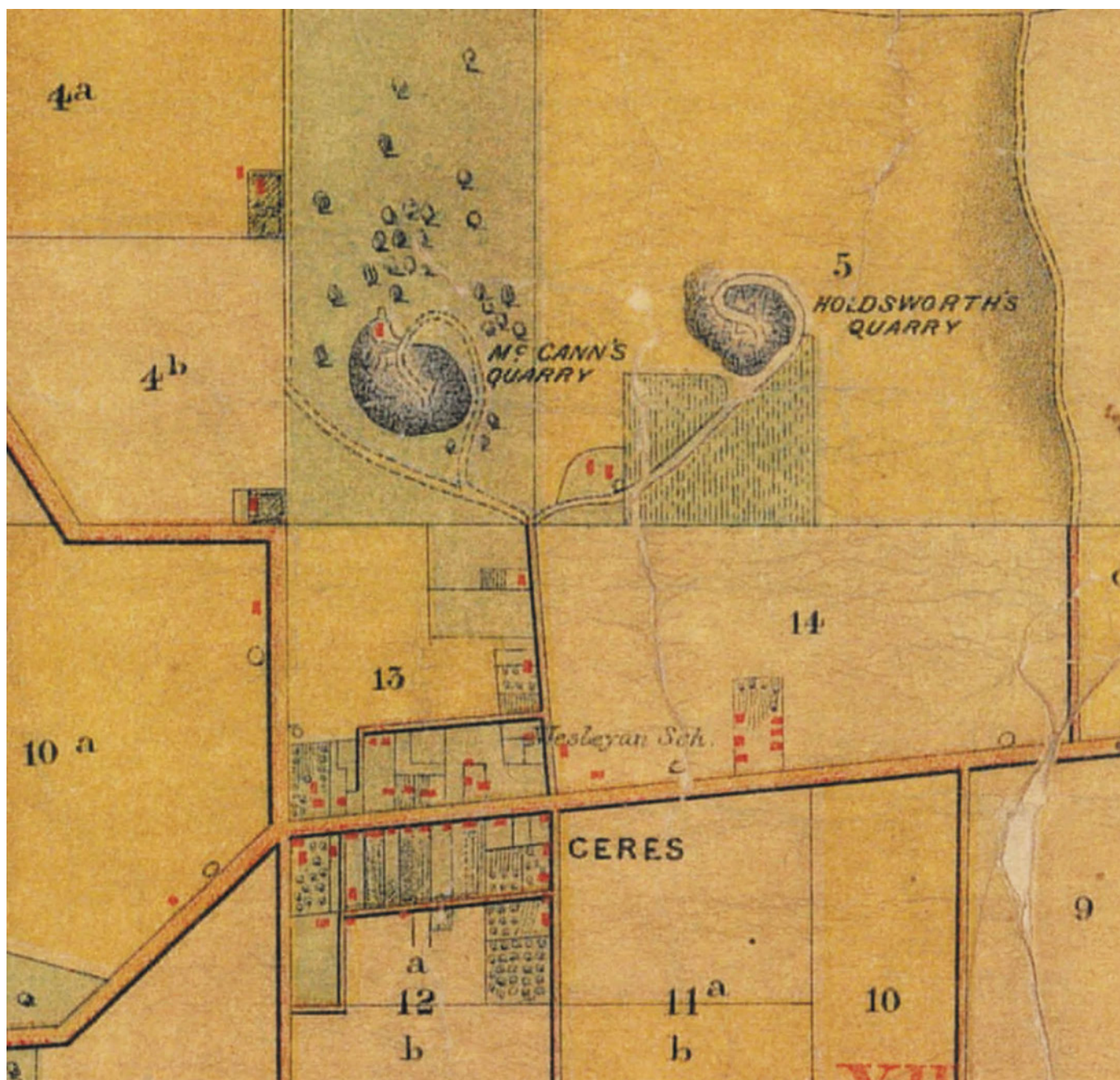


Figure 4.83: A. McWilliams, Part Barrabool Parish Plan, 1861, showing McCann's and Holdworth's Quarries.
Source: Jennifer Bantow, Geelong.

Of late years, Messrs. P. McCann and Sons have completed large contracts for the supply of Barrabool and Waurm Ponds stone to important public buildings in the State, notably the Anglican Cathedral, Melbourne; Scot's Church, and Roman Catholic Cathedral, Bendigo.⁴⁷⁵

EZRA FIRTH AND BENJAMIN HOLDSWORTH

EZRA FIRTH

Ezra Firth was born at Bradford, Yorkshire, England, in 1823, the son of John and Sarah Firth.⁴⁷⁶ He married Miss Eliza Craggs in 1842. A stonemason, Firth emigrated to Victoria on the *Larpernt* in 1849, and first worked for George Armytage at 'Ingleby' homestead, Winchelsea, 50 kilometres from Geelong.⁴⁷⁷ With the discovery of gold at Ballarat in 1851, Firth tried his luck at the diggings and within two months he had collected over 250 ounces of gold. To gain a better price, he took the gold to England, working as a seaman for the journey.⁴⁷⁸ He returned to Victoria in 1852 and settled at Ceres where he established a freestone quarry with Benjamin Holdsworth⁴⁷⁹ on part of Matthew Holmes' 'Glencairn' estate and adjacent to McCann's quarry (see Figure 4.84). Stone from their quarry was used to build several substantial structures in Geelong and Melbourne, including the Town Hall, Customs House and old Supreme Court buildings in Geelong.⁴⁸⁰ In 1858-59, a Board appointed by the Victorian Parliament to report on Building Stone assessed samples of stone provide by Holdsworth and Firth in considering superior building stone in the colony. The Board concluded:

The stone placed third on the list is forwarded by Messrs. Holdsworth and Firth from their quarries near the Township of Ceres, on the Barrabool Hills, about six miles from Geelong. This stone is certainly superior to the material used in most of the buildings at Geelong, which is obtained from quarries more contiguous to the town. The indiscriminate use of this latter stone has no doubt placed the better kind from the Barrabool Hills at a disadvantage.

The principal objection to the stone is its color, a dull greenish brown; in other respects the Board are of the opinion that if it were selected of equal quality to the sample submitted for their examination, it would be but little inferior to that imported from Kangaroo Point.⁴⁸¹

Firth and Holdsworth 'were also extensive farriers', operating a forge in the Ceres Village.⁴⁸² In January 1864, Frith advertised a clearing sale of household furniture and effects on account of him and his family leaving for Queensland.⁴⁸³ There, he established the Mount Surprise sheep station in the far north of the state, initially in

partnership with James Atkinson.⁴⁸⁴ Retiring from the station in 1884, Ezra and Eliza Firth travelled to England before settling in Brisbane where Ezra Firth died in 1910.⁴⁸⁵

BENJAMIN HOLDSWORTH

Benjamin Holdsworth was born in Leeds, Headingley, Yorkshire on 6 October 1815, the son of Joseph and Dorothy (nee Elwand) Holdsworth.⁴⁸⁶ Benjamin married Miss Ann Fisher in Leeds in 1839, where he was a clothier.⁴⁸⁷ They emigrated to Victoria in 1849, arriving at Point Henry in 1850.⁴⁸⁸ In Geelong, Holdsworth worked as a contractor and subsequently established what became widely known as Holdsworth's quarry with Ezra Firth at Ceres. In 1855, Holdsworth and Firth advertised that 'they are now prepared to supply in Melbourne, on the shortest notice, any quantity of their superior Freestone, cheaper than any in the colony.'⁴⁸⁹ From about this time, Holdsworth and his family were resident at Highton.⁴⁹⁰ In 1856, Holdsworth and Firth obtained equity in the Great Western Hotel, 177 Aberdeen Street and following the insolvency of Charles Corbett in 1857, acquired complete ownership.⁴⁹¹ They advertised the sale the hotel between February and April 1859. It seems for a brief period in mid-1859 Holdsworth managed a quarry at Bacchus Marsh as he advertised for a freestone quarryman at Bacchus Marsh as manager 'on the works' at this time.⁴⁹²

Holdsworth's quarry interests however remained at Ceres until 1869 when he took out leases of a large area of land on the Colac Road, Waurm Ponds.⁴⁹³ There, in addition to farming, Holdsworth re-opened freestone and limestone quarries that had been in operation before 1861 as several quarries on the south side of the Colac Road at Waurms Ponds, as well as flanking the Waurm Chain of Ponds in that locality were shown on Daintree's Geological Survey of Duneed and Barrabool.⁴⁹⁴ Several of the earlier quarries appear to have been smaller than the quarry re-established by Holdsworth. His freestone quarry was such a success that by 1870 its 'opening out' brought a call for it to be fenced in 'as on a dark night it is dangerous to any stranger coming to the main road by the upper road.'⁴⁹⁵

In 1872, the *Geelong Advertiser* gave a glowing and detailed report of Holdsworth's quarry enterprise (Figure 4.85) in 1872:

The quarry was opened up, and it was found that not only was there every indication, of the quality of the stone improving as the cutting proceeded, but the quantity was likely to be unlimited. Machinery was imported, operations were commenced, and the stone, which had only to be applied to building purposes to re-commend itself, soon came into extensive use. Mr J. Watts, builder and architect, of Geelong,



Figure 4.84: R. Daintree, Geological Survey of Victoria part Barrarbool, Duneed & Conewarre, 1861, showing quarries at Waurnd Ponds (lower centre). Source: VPRS 8168/P5, item MD, record 28A, Public Record Office Victoria.

was among the first to bring its merits as a building material prominently before the public. He used it extensively in the erection of an elegant villa residence in Latrobe-terrace for Mr Hensley, and subsequently in a new building for Dr Mackin. The appearance of the stone contrasting with the red bricks was universally admired, and it rapidly won its way into popular favor. At Birregurra a new Church of England was about to be built and Mr Terry, of Melbourne, architect and

contractor, had resolved upon sending to Tasmania for stone, when the fact was brought under his notice that better material could be found only a few miles from the site of the proposed church at less than half the cost. The Waurnd Ponds' stone was therefore used and has fulfilled expectations. More recently the Scotch College, Geelong, was partly built of this stone, and the Waurnd Ponds School and Church. During the past twelve months it has been used

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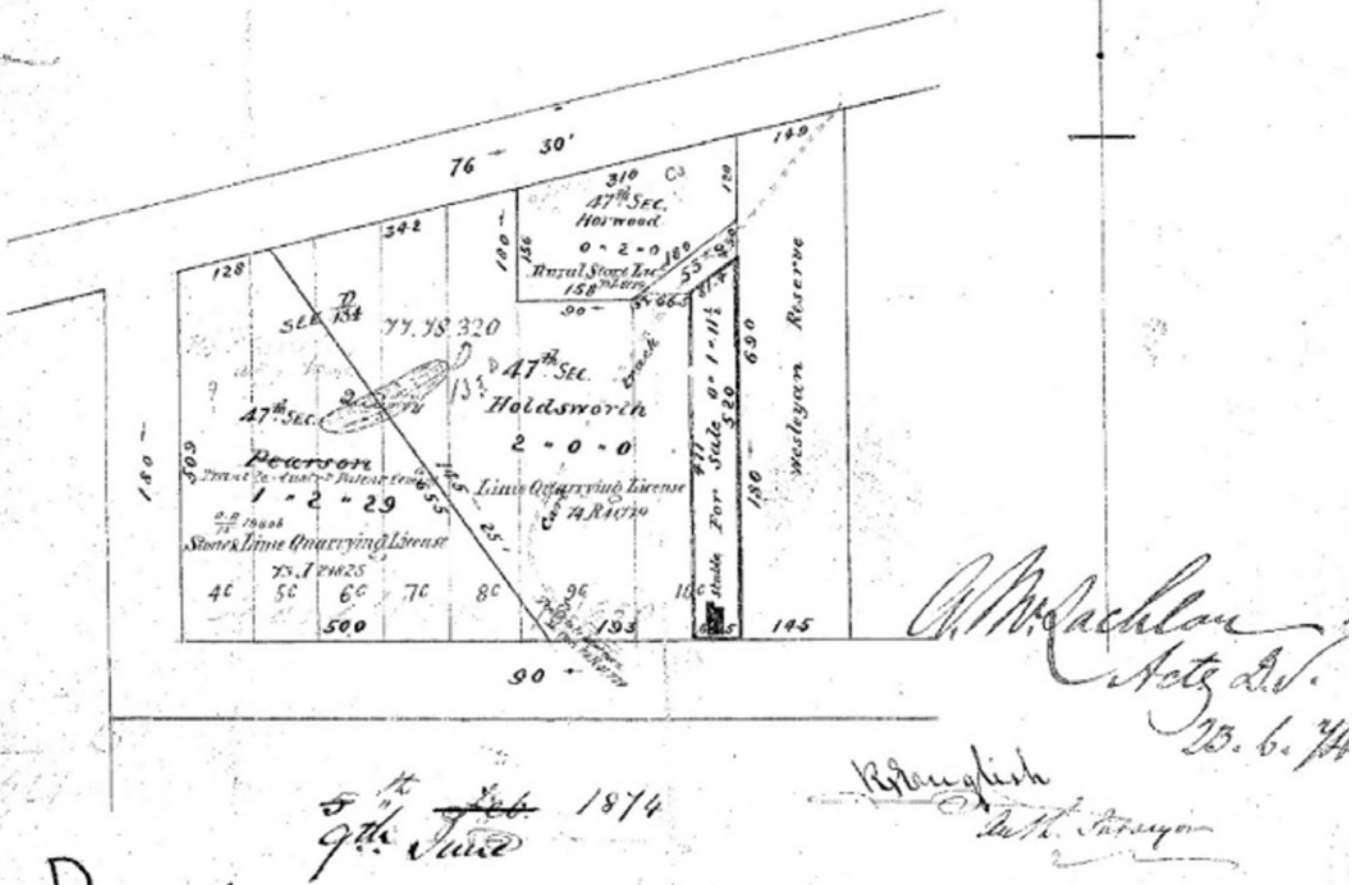


Figure 4.85: R. English, Plan of Subdivision of Allotment C2, Section 7, Duned, 9 June 1876, showing Holdsworth's quarries, Waurn Ponds. Source: Put-away plan D134B/1, Landata, © State of Victoria.

extensively in the ornamentation of new buildings, and by monumental masons. Mr Brain, the sculptor, is now engaged executing some carvings from it for the new warehouses in process of erection in Moorabool street, and the door pillars surmounted by lions' masks that embellish what was previously a common place building at the corner of Ryrie and Moorabool streets are pleasing evidences of the skill of the artist, and the beauty and intrinsic value of the material. At the present time Mr Terry, whose name has already been

mentioned, is engaged erecting a Church of England at Williamstown with stone from Mr Holdsworth's quarry. Tested with samples of the different kinds of building stone from all parts of this and adjoining colonies, the Waurn Ponds stone stands next to that of the Grampians so far as pressure is concerned, and will, it is confidently anticipated, occupy the foremost position in reference to other equally important characteristics. Examined beneath the micro-scope, it is found to be lime stone, the production of myriads of industrious

zoophytes of past ages. Its adhesive properties render it especially valuable for works of art or ornamentation. Fresh from the quarry it can be sawn or cut into any shape with facility and is full of moisture, but exposed to the atmosphere it becomes as hard and durable as granite, and unlike brick or sandstone repels rather than absorbs the damp. It contains not a particle of grit or earthy substance, and therefore free from any liability to decay or vegetate. As the hill is penetrated, the mass is becoming more consolidated, it contains few seams, and columns of almost any size can be obtained. At first it is a beautiful cream-colour, but becomes whiter from exposure, and is free from spots and imperfections, the tint being uniform. Already large quantities have been forwarded by lighters to Melbourne, and, as it becomes better known, there is every prospect of its coming into very general use in the construction of the best public edifices of the metropolis. In the meantime there is one drawback - the fact of its distance from town, but the "black" line of railway, should that be the line adopted, will go far to obviate all difficulty on this score, seeing that it will pass the scene of operations, and tap this apparently the most valuable quarry of the Western District and, in all probability, the colony.⁴⁹⁶

On Holdsworth's death in March 1881, his quarry was taken over by Peter McCann (see earlier subsection).

BORAL CEMENT QUARRIES

In 1964, the largest limestone quarry was established at Waurin Ponds (130 Reservoir Road) by the Victorian Portland Cement Company,⁴⁹⁷ the company established by Peter McCann (see following subsection and Theme 5). A clinker kiln, two mills, silo storage and railway sidings formed part of the plant. In 1974, the quarry and cement works were taken over by Blue Circle Southern Cement and in 1987 by Boral Ltd.⁴⁹⁸ In early 2018, this company announced its intention to close at the Waurin Ponds site and it earmarked \$24 million 'for the rehabilitation of the limestone quarry, which includes filling the quarry voids.'⁴⁹⁹

BATESFORD

The quarrying dynasty of the McCann family also continued at Batesford from 1867 when the most substantial quarry of monolithic proportions was to be established on the west side of the Moorabool River, north of Fyansford. There, bluestone and especially limestone was procured, initially for building construction. The earliest building erected of bluestone and limestone from McCann's new Batesford quarry was the Ashby Common School (later the first Geelong West Town Hall) in Pakington Street

(see Theme 7 for further details). Built from early 1867, the *Geelong Advertiser* gave an insightful description of the provenance of the building's stonework:

The walls are substantially built of bluestone from the west side of the Moorabool river near Batesford, and the quoins with limestone from the same locality, where McCann has recently opened a quarry. The limestone is of a very superior quality, it is easily worked, and it is said hardens by exposure. As this is the first time it has been used in a public building we shall therefore watch its further development with much interest, hoping it will prove as efficient as Mr Balding, the Town Surveyor, prognosticates. Should his judgment be correct, the stone will be invaluable, and will drive the Barrabool freestone, which has been provided to be affected by the atmosphere, out of the market. Whether it will or not time will prove. At any rate, we can only say that it adds materially to the appearance of the blue stone walls, by relieving them of their otherwise sombre appearance. It is very similar to the English Bath stone, and to that now being imported into Melbourne for buildings, from Oamara [sic. Oamaru, New Zealand].⁵⁰⁰

McCann's bluestone was also used in the rebuilding of the Yarra Street pier in November 1868, for the stone abutments (see Theme 3). It was reported that 'some of the finest blocks of stone we have seen for some times are being used in the walls' and 'finer bluestone could hardly be desired for any purpose.'⁵⁰¹

The limestone at McCann's quarry was to transform this part of the Batesford landscape and bring ultimate success to Peter McCann and other McCann family members in the creation of a lucrative, internationally-renowned cement works company (see Themes 2 and 5). The advantages of the limestone were outlined by Peter McCann's son, W.B. McCann in 1943:

The Limestone deposits on the Moorabool River and Batesford were also opened up (this being the deposit which later on was to become of great value for the manufacture of cement) and was used in the first place by my Father for the manufacture of dripstone filters for purifying water and as stone dressing for buildings in a number of churches and public buildings in Geelong and elsewhere, and can be seen in a great number of buildings at the present time, the stone being of a very soft texture and can be easily sawn with an ordinary wood saw, is of a very durable character and hardens on exposure to the atmosphere, and although the buildings referred to, in which it was used have now been in existence for over eighty years the stone shows no sign of decay, beyond the usual weatherings which appear on all Freestone.



Figure 4.86: R. Pockley, Limestone Quarry, Australian Cement Co., Batesford, c.1950-54. Source: accession H200.25/26 State Library of Victoria.

The Batesford Quarry on the North side of the Moorabool River was also opened by my Father. This stone was used in the construction of the new Court House at the corner of Russell and Latrobe Streets, Melbourne, but was found to be very expensive stone to work, the granite for the Dog Rocks nearby having become mixed with the Limestone.⁵⁰²

The acquisition in 1888 of the Dryden Estate at Batesford adjoining McCann's existing limestone quarry provided an area of 1200 acres of limestone deposits.⁵⁰³ This gave impetus of Peter McCann to continue his experiments in the material for suitability for the manufacture of cement. This was formalised in 1890 when the Australian Portland

Cement Company Ltd was established at Fyansford, the Batesford quarry (Figure 4.86) providing the product for the operations (see Theme 5).⁵⁰⁴

The quarry supplied limestone for the Geelong Cement manufacturing works at Fyansford until the company closed in 2001.⁵⁰⁵ Over 100 million tonnes of limestone and overburden had been excavated from the quarry since 1890.⁵⁰⁶ After the closure of the Australian Portland Cement operations, a new company was formed, Batesford Quarry, and this company continues to provide limestone and sand resources, with an estimated 20-30 year supply available.⁵⁰⁷

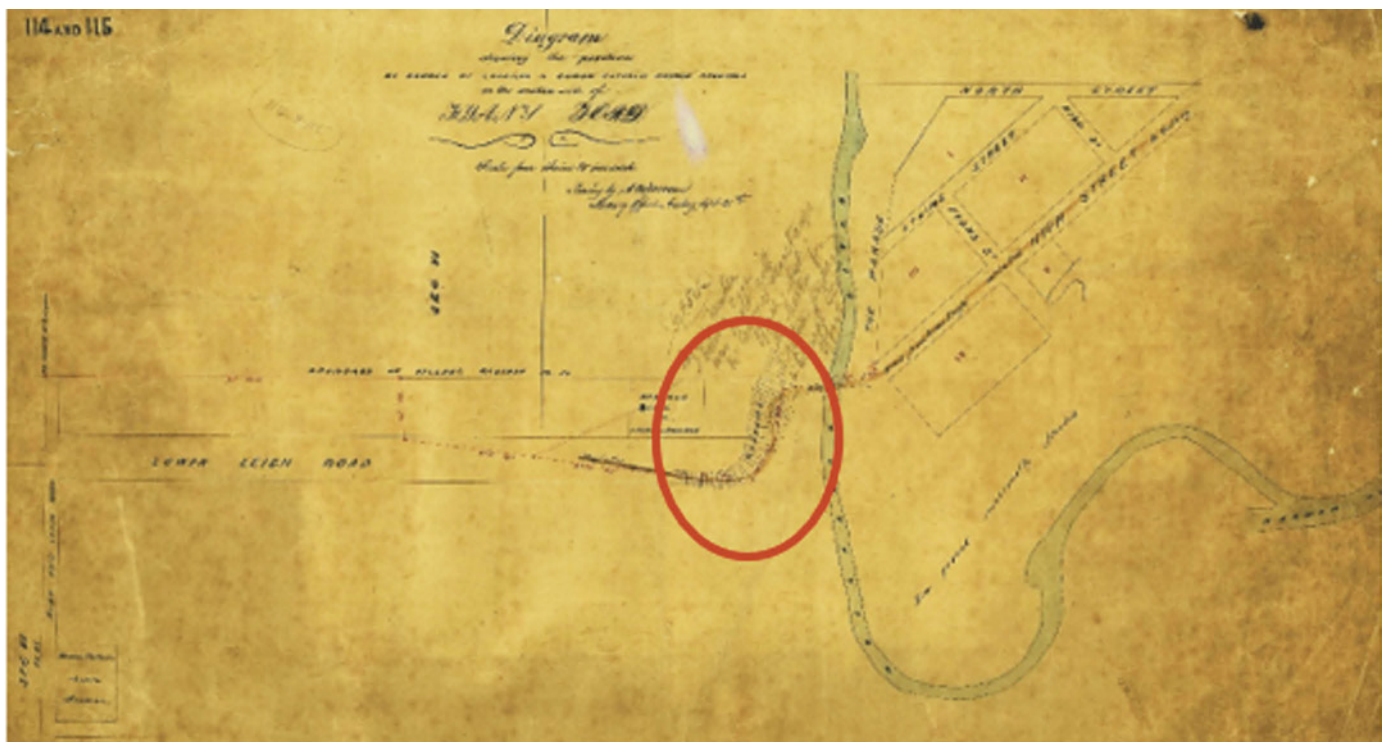


Figure 4.87: A.M. Mason, Diagram showing location of quarries west of the Moorabool River at Fyansford, 1882. Source: A.M. Mason, Diagram shewing the position of Church of England & Roman Catholic Church Reserve in one the western side of Fyansford, VPRS 8168/P5, item CEM, record 115 Public Record Office Victoria.

FYANSFORD

Quarries were also established at Fyansford before the early 1880s, making notable changes to the natural topography to the west of the Moorabool River (Figure 4.87). They were located on the rise between the bridge and the school reserve.

At 5-103 Hamilton Highway (south side), west of Lower Paper Mills Road, Ludwig Carl Wilhelm Nichterlein (c.1868-1942) established a bluestone quarry in the 1920s,⁵⁰⁸ brother of Wilhelm Nichterlein (1871-1952), Director of the Australian Portland Cement Company at Fyansford from 1911 (see Theme 2). Before 1934, Ludwig Nichterlein worked the quarry and had gone into partnership as cartage contractors with Frederick Kayler-Thomson under the name Fyansford Quarries.⁵⁰⁹ Fyansford Quarries Pty Ltd was created in 1936 with Ludwig Carl Wilhelm Nichterlein and Frederick Kayler-Thomson as subscribers.⁵¹⁰ The quarry employed between 20 and 25 men and provided metal and screenings that were highly rated by the Country Roads Board.⁵¹¹ Following Nichterlein's death in 1942, the quarry remained under the ownership of the Nichterlein and Kayler-Thomson families, including Frederick Kayler-Thomson's son, Bill,

and Ludwig Nichterlein's nephew, Hugh Collyer, until 1988.⁵¹² It was then sold to Geelong Quarries who held quarry operations on the north side of the Hamilton Highway.⁵¹³ The quarry continues in operation to the current day.

At 6 Hamilton Highway (north of the highway and behind the old Fyansford school site and other properties fronting the highway), Mobile Quarries was established in 1951-52 on land owned by the Synot family.⁵¹⁴ The founding directors of Mobile Quarries were Messrs. Strickland, Martin, Richardson and 'Digger' Dietrich, who was also quarry manager.⁵¹⁵ Blue metal and screenings were broken by Italian spallers for crushing.⁵¹⁶ In 1960, Mobile Quarries was sold to Messrs. Chisholm and Lockyer, trading as Geelong Quarries.⁵¹⁷ The plant was re-equipped to produce 200 tons of blue metal per hour.⁵¹⁸ Employing 50 men, Len Vautier was later appointed quarry manager.⁵¹⁹ Geelong Quarries was sold to Farley and Lewers in 1976 and five years later to C.S.R. Readymix.⁵²⁰ The area is currently being transformed into a residential development (see Theme 6).



Figure 4.88: L. Clarke, Plan of 8 Allotments marked at Limeburners Point Corio Bay near Geelong (part), showing lime kilns, 1849. Source: VPRS 8168/P5, item SYDNEY, record G9 Public Record Office Victoria.

4.5 LIME BURNING

INITIAL LIME BURNING AT LIMEBURNER'S POINT

The need for the production of mortar in the construction of permanent masonry construction brought about one of the earliest industries in Geelong. Lime was essential in the construction of masonry buildings and chimneys. In addition to the quarrying of limestone was the construction of pits and masonry kilns, either in hillsides or as freestanding structures, comprising cylindrical or bottle shapes.⁵²¹ The earliest in Geelong was at Limeburner's Point (first known as Point Galena) in 1838 when Patrick Melville commenced the quarry and James Boucher the limeburning.⁵²² Just three year later in 1841, 400 bushels of lime were exported to Tasmania for the Launceston market in anticipation of a 'considerable trade' 'not only with Launceston, but several other ports.'⁵²³ In 1847, Boucher began construction of 'a larger kiln than ordinary.'⁵²⁴ This suggested that Boucher had considerable demand for his lime product. Historically however, Boucher became widely known as the discoverer of five keys found during his excavation in 1847.⁵²⁵ These keys were misinterpreted by Superintendent Charles La Trobe as being of Portugese origin and which led to considerable

debate as to whether the Portugese had discovered Australia in the 16th century before British colonisation in 1788.⁵²⁶ The debate was revived in 1977 with the Kenneth McIntyre's publication, *The Secret Discovery of Australia*, but more recent analysis has concluded the keys were most likely those of a Geelong local who had accidentally dropped the keys into the bottom of Boucher's open excavation.⁵²⁷

Both the two kilns and eight quarry sites were shown in a Plan of Allotments at Limeburner's Point by Lindsay Clarke, Assistant Surveyor, in 1849 (Figure 4.88).

By 1848, Thomas Taylor joined Boucher in residing at and operating a lime kiln at Limeburners Point.⁵²⁸ James Boucher's kiln operation was taken over by Wesley Boucher in 1852 and in 1853 John Adolphus Jenner commenced lime burning in place of Boucher.⁵²⁹ Jenner was to patent an invention for the manufacture 'of a certain description of cement' in 1866.⁵³⁰ An enduring licensee was a Mr Baker, who worked lime kilns at Limeburner's Point between 1853 and 1864.⁵³¹ In 1854-55, Richard Boyce and George Cakebread took up the license of two lime kilns and a six roomed weatherboard dwelling (in 1855-56, Boyce had taken up a lime kiln in his own right).⁵³² Between 1855 and 1865, Dyer and Co. worked



Figure 4.90: Lime kiln, Limeburners Point, 1995. Source: Kevin Krastins.

three lime kilns. By 1865, there were four kilns in operation and a jetty had been built at the point on the foreshore.⁵³³ Cakebread had taken up the lease of a third kiln by 1870-71, which by 1872 he worked in partnership with a W.A. Blair before moved on from Limeburners Point.⁵³⁴ He formed a company with a Mr Campbell under the name Victoria Lime and Cement Co. which in 1865-66 held three kilns.⁵³⁵ Others to hold a lease of one of the six kilns until the 1880s included William Anderson (1854); Mr Pettigrew (1854-55); James F. Mixiner and Co. (1865-69); and Donald Murray (1873-74 – three kilns).⁵³⁶

By 1883, only one kiln was in operation, due in part to criticism emanating from some sectors of the community about the noise and negative impact the quarries and kilns were having on the adjoining Eastern Park and Geelong Botanical Gardens, and the superior product being produced at Lara and Waurin Ponds.⁵³⁷ At this time, the *Geelong Advertiser* gave a report on the operations at Limeburners Point:

At one time four large kilns were constantly at work, but now only one kiln is used. In former times wages

to the extent of £300 per week were paid away, but this sum has dwindled down to about £30 per week. It will thus be seen that the operations are not now on so extensive a scale as they were a few years since. At the present time four quarrymen and four “strippers” are employed at the quarries, whilst four men are engaged at the only kiln at work, and three carters are busily employed in removing the stone from the quarries to the kiln. The complaints regarding the heavy blasts appear to be greatly exaggerated.⁵³⁸

In 1904, the Geelong Council sought to level the mounds and beautify Eastern Beach beyond Garden Street. The Town Clerk was instructed ‘to see if the lessee of the limekilns was required to fill in the excavations.’⁵³⁹ The Council’s desire for improvements to the transformed landscape at the north end of Eastern Park were however delayed. The reserved quarry allotments were Crown Land and while ownership was taken over by the Geelong Harbor Trust in 1905, the kiln and quarries (Figures 4.89-90) continued to be worked by Edison, Utting, McCrae and Akhurst, lime merchants, until 1909.⁵⁴⁰

BELMONT

By April 1841, Bernard McKenna and John Byewater had discovered a 'Quarry of Pure Limestone' near the Barwon River. The location was given as the 'Suburban Property of Captain Swanston'⁵⁴¹ (which was on the north bank of the Barwon River at Chilwell) although later reports confirmed that the lime kiln was 'in the limestone hill' that ran 'along the south bank of the Barwon' known today as Belmont.⁵⁴² The quality of the lime was endorsed by the local architect and surveyor, Alexander Skene who declared:

I have this day examined the sample of stone lime burnt by Mr. B. McKenna, and find it to be of a good quality and strength, and with very little admixture of grit or sand.⁵⁴³

McKenna elaborated that the lime 'would improve when the kiln has been used some time, as the slight admixture of sand came from the sides of the kiln, and does not exist in the limestone.'⁵⁴⁴

In May 1841 of that year limestone excavators discovered several fossil remains.⁵⁴⁵ Limestone workers' cottages were also built on the hill top overlooking the Barwon River. The partnership of McKenna and Byewater also included John Whitehead and traded under the name of the Barwon Lime Kiln. In August 1841, McKenna advertised that the company had erected kilns 'and obtained a superabundant supply of the most superior Limestone.'⁵⁴⁶ Yet, within a year, the partnership of McKenna, Byewater and Whitehead had dissolved and the lime kiln closed, possibly due to the difficulty in transporting the lime across the river. In July 1842, McKenna advertised that he had been granted a license to burn lime 'on the Beach, in Corio Bay',⁵⁴⁷ but McKenna's tenure at Eastern Beach was not to endure.

In September 1851, the lime kiln and cottages (described as huts) were shown on a plan of subdivision (Figure 4.80). The lime kiln and one cottage were then situated on allotment 14 of section 22 in the Parish of Barrarbool. This allotment was purchased by W.R.W. Weekes, Town Surveyor.⁵⁴⁸ By 1852 it had been sold to J.A. Gregory, who with other allotments, established the Township of Strawberry Hill.⁵⁴⁹ Named after a railway station on the southern-west line about 10 miles from London, the township did not eventuate.⁵⁵⁰ In 1853, Gregory offered for sale the lime kilns, adjoining allotments and 'lime kiln cottages'.⁵⁵¹ The lime kiln and its site was acquired by Alfred Firmin (c.1826-1913) where he offered lime for sale to builders and others from March 1854.⁵⁵² Firmin was an inaugural Councillor of the Shire of South Barwon (see Theme 7). Nothing survives of the kiln and lime kiln cottages at Belmont today.



Figure 4.91: Walker's limestone quarry, Curletts Road (near Holy Trinity Church, before World War One. Source: Joan Wilks, Lara.

LARA

The abundance of limestone at Lara brought about the creation of a highly successful lime manufacturing industry. Impetus for establishing local lime burning activities came from a confluence of circumstances. Firstly, there was increased concern of the lime burning operation near the newly-established Geelong Botanical Gardens at Limeburners Point. Secondly, the goldrush of the 1850s had created a building boom that increased the demand for lime.⁵⁵³ The material was essential in making mortar.

A lime kiln had been established at Lara beside the northern bank of Lara Lake as early 1853, as it was shown on J.L. Shaw's Plan of the Village of Lara (see Figure 6.167). Other lime kilns had been created by 1861 at the confluence of Hovells Creek (Duck Ponds) near the crossing of Flinders Avenue. They are shown on Daintree's Geological Survey Map with the annotation 'Lime Kilns in excavating which several bone caves were found.'⁵⁵⁴

The *Victorian Directory* for 1868 listed six lime burners that were operating at Duck Ponds and beside the nearby Limeburners Bay to the south-east of the Lara village.⁵⁵⁵ They included John Jenkins and the Melbourne Builders Lime and Cement company that was managed by Robert Bell Walker.⁵⁵⁶ The kiln was 30 feet (9.1 m) high and it cost £300 to build. In 1878, Walker opened his own lime burning and crushing business in Walkers Road known as the Waverley Lime Works,⁵⁵⁷ although no physical evidence survives today. Walker had quarries in Kees Road and Curletts Road (behind the Holy Trinity Church)⁵⁵⁸ (Figure 4.91). The name of the lime works – Waverley – originated from the name of the train station in Scotland, the birth place of R.B. Walker.⁵⁵⁹ In 1888, he had 'worked up a good connection, sending away about 4000 bags per month.'⁵⁶⁰

David McHarry (senior) was another pioneer lime burner in Lara. He had arrived by 1868, having been listed in the *Victorian Directory* at that time. McHarry had previously taken up the position of foreman of lime kilns at Daylesford⁵⁶¹ and so he possessed experience in the lime industry. At Lara, he commenced his own lime burning business at a time when the Melbourne Builders Lime and Cement Company had been established locally. According to *Victoria and Its Metropolis* in 1888, '... Mr McHarry declined to go into business with this company. 'He had his lime tested by the Government, and it was declared to be of the first quality, the result being that his business began to increase at once, and he now ships some 8000 bags per month.'⁵⁶² While McHarry owned a farm property at 125 Buckingham Street, it is not known whether he carried on lime burning from this location. It is known that he operated a kiln immediately north of Windermere Road and adjacent to Hovells Creek as in 1903, the 'McHarvy [sic.] & Co. Lime Kilns' were annotated on the Subdivision Plan of the Elcho Estate.

Other early lime burners included James Sullivan and John Spalding.⁵⁶³ The latter was to become a long-standing resident of Lara. Spalding had emigrated from Suffolk, England in 1854 and in the following year he had established the first store and a butcher's shop at Lara.⁵⁶⁴ He subsequently commenced operations as a lime merchant and proprietor of lime kilns in 1862 and in 1866 his sales had amassed a remarkable 52,887 bags.⁵⁶⁵ Spalding resided at 'Limella Cottage', 31-45 Forest Road South, although it is not known whether any lime burning operations were carried out there. Known as the Lara Lime Works, John Spalding's son, James appears to have been responsible for the lime business in the early years until he became an ordained Minister of the Church of England. James Spalding again took over the operations of the Lime Works after 1893.⁵⁶⁶ It became a successful industrial operation and local employer.

Other lime burning operations were established by McClelland, Foot, Firth, and Reeves and Fletcher (they were listed as lime burners of Duck Ponds in 1863).⁵⁶⁷ William Foot's lime burning operations were nearby Hovells Creek, possibly on or near his farm property at 80 Gebbies Road. Today, there is only evidence of lime quarries near the banks of the Creek (remnant quarries being almost ubiquitous throughout the Lara area).

The success of the lime industry at Lara was recorded in 19th century newspapers. In 1883, *The Argus* reported that 'the quantity of Lime forwarded from Lara to different parts of the colony this month was over 770 tons.'⁵⁶⁸ In 1894, the *Bacchus Marsh Express* commented that 6000 bags of lime were trucked from the Lara Railway Station and declared:

Thus it would appear that a rift is breaking in the cloud of depression that has hung over the country for so long, and that a gleam of prosperity is beginning to shine upon the building trade. The Lara lime is of a hydraulic character, and is largely used by the cement manufactories.⁵⁶⁹

A lime burner who commenced business much later in the 19th century was James McClelland of 'Clover Hill'. McClelland went in for lime crushing. In 1891, *the Geelong Advertiser* reported on his lime burning and crushing activities:

Mr. McClelland's kilns are situated within a stone's throw of the Lara creek, and are backed by several acres of limestone country. Although not in the business many years McClelland, jun., has shown any amount of enterprise in introducing the lime crushing machinery to Lara in order that he should be equal to outside competition, and place the product of his kilns upon the market in the condition most acceptable to buyers. He is satisfied with the results attained by the crusher, although the demand for lime is just entering upon a revival after the depressing influence [of the collapse of the land boom].⁵⁷⁰

In addition to the use of lime for the making of cement, it was also produced as a fertiliser. The success of 'liming the land' was outlined in *The Leader* in 1916:

The advantages of applying agricultural lime to the soil have been well tested in this district. The examples are very marked, especially in the poorer fields, where, for instance, a crop of oats being grown for grazing and eventual harvesting for hay can be observed where it has been limed, showing up a bright green in color, thick and dense, some eighteen inches high, even now in the middle of winter, sharply defined up to where there has been no lime applied, and where the crop is short, scraggy and a dull, unhealthy yellow in color. This is quite in accord with the scientific position, the action of lime being partly physical, affecting the texture of the soil, and partly chemical, setting free the dormant supplies of plant food.⁵⁷¹

In 1904 and again in 1914, there were 11 lime burners listed in *Wises' Directory* at Lara. The Lara Lime Company site and three kilns near Hovells Creek at 105 Blairs Road are all that appear to survive of the once-thriving lime burning industry (Figure 4.92). At 105 Blairs Road, the kilns are now in poor condition and there is little noticeable evidence of the tram line that once linked the kilns near Hovells Creek to Blairs Road.



Figure 4.92: Lime kiln, 105 Blairs Road, Lara, 2012. Source: Wendy Jacobs.

WAURN PONDS

The earliest lime burning operation on a commercial scale at Waurn Ponds had commenced by 1849 when Robert Moore of the Victoria Lime Kilns announced the availability of lime from his Lime Store in Yarra Street, between Mr Davidson's timber yard and the Prince Albert Hotel.⁵⁷²

The Victorian Lime Kilns operation was situated at Victoria Farm, Waurn Ponds (now the location of 'Canterbury Park, 155 Cochranes Road). This farm had been established by Cornelius Hogan on 1 July 1847 (with a stone house erected in 1849)⁵⁷³ on land leased by the Hon. Henry Miller (1809-1888) who had acquired it before 1845.⁵⁷⁴ Moore's lime burning enterprise appears to have been short-lived as he no longer advertised his product after 1851.⁵⁷⁵

More enduring and successful was the limeburning operations established by Peter McCann adjacent to Benjamin Holdsworth's quarry that he had acquired in c.1881 following Holdsworth's death. By 1882, a rotary kiln was in operation, the site (Figure 4.93) being a hive of activity:

In addition to the quarrying of stone for building purposes, a lime-kiln is extensively used in the production of excellent hot lime, obtained by the burning of what are known as the spalls. The lime meets with ready purchasers, both in this district and in Melbourne.⁵⁷⁶

In 1924, the lime works at Waurn Ponds were placed on the market, the improvements then consisting of 'a stone house and stables', 'a splendid brick rotary kiln and lime house and blacksmith's shops', and 40 acres of 'splendid limestone hills'.⁵⁷⁷

More substantial were the lime kilns at the Portland Cement Company's quarries to the south-west, established in 1964, and more particularly at Fyansford, established from 1890 (see Theme 5).



Figure 4.93: McCann's Lime kiln and quarry, Waurm Ponds, 1998. Source: David Rowe.

4.6 BRICK MAKING

The Greater Geelong landscape, particularly suburban and outer-suburban parts, was scoured with the excavation of brick fields to meet the demand for bricks required for building construction (see Theme 6 for further details on building development). By the 1850s, Geelong boasted over 50 brickmakers and about 30 bricklayers (see Appendix 6.1). Most were resident in Geelong West (Ashby and Kildare) and Newtown and Chilwell (including Irishtown).

SOUTH GEELONG

The earliest brick fields were at South Geelong operated by Thomas Skinner in 1841.⁵⁷⁸ It was likely that the bricks from South Geelong were used in the construction of St. Andrew's Presbyterian Church in Yarra Street from March 1841, this being the earliest brick Presbyterian Church building in Victoria.⁵⁷⁹

The brickfields at South Geelong were to operate for only seven years as in October 1848 the *Geelong Advertiser* announced that:

The Brickmakers living at South Geelong have received intimation from the authorities, that they must quit their present field of labor, at or before the expiry of the present year, as it is the intention of the Crown to dispose of the land in that direction about Easter next.⁵⁸⁰

No evidence of the location or the early brickfields at South Geelong are known to exist today.

NEWTOWN

At Newtown above the bank of the Barwon River near and between Melville's and McCann's freestone quarries (see earlier subsection), brickfields had been opened up by 1847.⁵⁸¹ They were followed by a brick field near the south-east corner of Aphrasia Street and Shannon Avenue (and taking in the properties now addressed as William and Margaret Streets) where 'the clay soil had attracted perhaps twenty brickmakers.'⁵⁸² Owned by a Mr Richardson, he sold the land as three lots in 1852, the third lot being a 'valuable brick field, comprising kiln, two large sheds capable of holding 100,000 bricks.'⁵⁸³ The advertisement claimed that 'the bricks from this field are too well known to require any remark as to the superior quality of the earth.'⁵⁸⁴ At Marnock Vale (near Gregory Avenue) from 1888, a brick kiln was operated by James Walker. The bricks were hand-made by Archie Sykes. This enterprise was short-lived as the cost of production outstripped profits.⁵⁸⁵

In the early 20th century, and particularly from 1914, the Geelong Brick Company had a brickworks factory at the west end of Noble Street.⁵⁸⁶ By 1925, this ten acre site had been leased to the Albion Quarrying Company and in the following year the site, 'together with the buildings and erections and the brickmaking machinery and plant thereon' was advertised for lease.⁵⁸⁷ The brick making machinery and plant were auctioned in 1934 and the site held by the Geelong Brick Company until 1943 when it was acquired by Hazel Heath of 'Chesterfield', 221 Noble Street.⁵⁸⁸ There is no immediate evidence of the brickfields and kilns in Newtown today.

GEELONG WEST

The largest concentration of brickmakers in Geelong in the 1840s was in Geelong West, with 80 men employed in 1848.⁵⁸⁹ At this time, Geelong was producing 80,000 bricks a week.⁵⁹⁰ In 1849, Hill and Hitchins auctioned 'about forty lots' at the Kildare brickfield', their advertisement declaring that 'bricks having now risen to 30s. per 1,000 at the kiln, parties in want of Brick Land should not lose this opportunity, as there is none other near town.'⁵⁹¹ By this time, in the Ashby-Kildare area on the south side of Church Street, between Pakington Street and Elizabeth Street (and taking in Britannia and Isabella Streets) the brickfields were the largest and most well-established, and supplied the best clay in the Geelong region.⁵⁹² The closure of the South Geelong brickfields provided the expansion of the brickmaking operations at Geelong West.

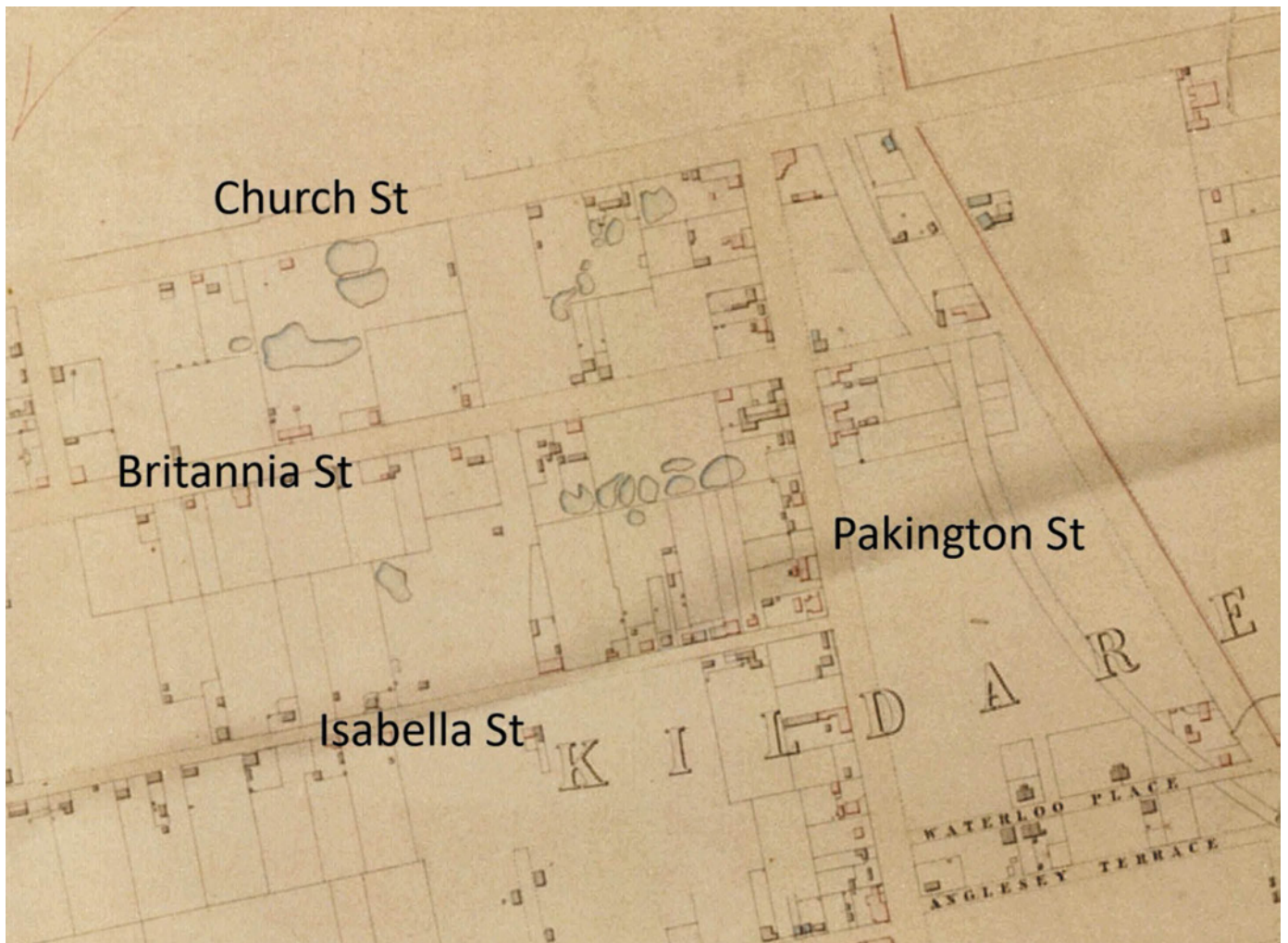


Figure 4.94: Map showing the locations of the brickfields in Geelong West (Kildare), 1854. Source: J.H. Taylor, Map of Geelong, Surveyor-General's Department, Melbourne, VPRS 8168/P2, Unit 5416, item Roll 39 Geelong, Public Record Office Victoria.

J.H. Taylor's Map of Geelong of 1854 graphically illustrated the brick quarries at Kildare (Figure 4.94). Some of the early brickmakers in this locality included John Grundle in Isabella Street; John Bliss off Britannia Street; John Cooper, Britannia Street; John Fayle, Church Street; John Matthews, Isabella Street; Richard Powell, Isabella Street; Daniel Slevin, Britannia Street; and Joseph Winter, Isabella Street.⁵⁹³ Others were soon to make their way to this location, including Thomas Everett, who had relocated from Aberdeen Street.⁵⁹⁴

By 1872, there were only seven brickyards at Geelong West that employed 20 men.⁵⁹⁵ Demand substantially increased with the construction of the railway tunnel for the Geelong and Colac Railway line in 1875, with two brickfields in the goldfields town of Ballarat and a new brickfield in Belmont (see following subsection) also supplying the railway given that those in Geelong West could not keep up with the number of bricks

required.⁵⁹⁶ Over the next few years, these brickfields had been worked out. By 1925, only one 'old brick yard' at 2 Britannia Street survived but was unused, the property of William Grundell.⁵⁹⁷ No evidence of the clay pits remain today as in 1928 the Geelong West Council gradually began filling them with refuse.⁵⁹⁸ More enduring physical evidence survives in the mid-19th century brick dwellings in Geelong West, including those at 30 Weller Street (built c.1852 for James Meek); 8 John Street (built c.1854 for Thomas or James Neal); 20 John Street (built 1858 for William Pardy, police sergeant); 11 Preston Street (built c.1855-56 for William Barbour) and 7 Candover Street (built c.1856 and owned by Thomas Everett, brickmaker).⁵⁹⁹ Of particular interest with the brick dwelling, 'St. Elmo', 127 Elizabeth Street (Figure 4.95). It was built by the brickmaker and bricklayer, George Arnott (c.1825-1920) in 1866 as a replacement of his earlier timber dwelling of 1859.⁶⁰⁰ Arnott demonstrated his bricklaying skills in the stylistic variations in the four chimneys.



Figure 4.95: 'St. Elmo', 127 Elizabeth Street, Geelong West, 2019. Source: David Rowe.

NORTH GEELONG

With the brickfields at Geelong West worked out by 1887, a new brickfield and kilns were established by 'several enterprising citizens' on five acres of land at North Geelong, west of the gas works.⁶⁰¹ The site had previously been laid out as the Rothschild and Windsor residential estates from 1853 (see Theme 6). The new enterprise – known as the Corio Brick Company - was opened at a ceremony at the site on 27 April 1887. The *Geelong Advertiser* gave a detailed description:

The company was formed owing to the great demand which exists for bricks of superior quality for building material, in the metropolis as well as in Geelong ... the ground has been enclosed by a substantial fence, drying sheds erected, machinery placed in position, two kilns constructed, and operations commenced by removing the clay from an excavation made in the south-eastern part of the ground. Each kiln is

capable of burning 100,000 bricks at a time, whilst the adjacent sheds are to be fitted as to provide drying room for 200,000 bricks. The portable engine, a 10 h.p. one, made by Messrs Clayton and Shuttleworth, is used in hauling the clay from the pit to the Chilean mill, and drives the machinery employed in grinding and pulverising the clay, which, when properly moistened and mixed, drops down a shoot to the brickmaker's below the upper level, and is there fashioned into bricks. Fourteen persons are engaged in the manufacture of the building material, and they are under the general supervision of Mr George Cakebread. The works have been successfully established by Mr Conwell, of Brunswick, who has acted as the managing director the time being, and, now that the hands engaged in the sheds are making an average over 7000 bricks per day, the formal opening of the undertaking was made a feature of yesterday afternoon.⁶⁰²

Adjacent to the Corio Brick and Tile Company (which went into liquidation in late 1892),⁶⁰³ were several long-time brickmakers who were either separately engaged or worked for the Corio Brick and Tile Company at the North Geelong brickfields. They included George, Rueben and Walter Dorling; William Everett, William Grundell; Daniel, John and Thomas Slevin, and Robert and William Welsh.⁶⁰⁴ By 1915, only three brickmaking businesses existed; Everett Brothers, Slevin Brothers (Daniel and John) and William Saddler (who first appeared from 1908 and remained in business until at least 1920).⁶⁰⁵

Rueben Dorling (1842-1917) and his brother, George (1844-1919) were sons of Samuel Dorling.⁶⁰⁶ Rueben lived in Geelong West until the death of his wife, Eliza, in 1879.⁶⁰⁷ He was then resident in Victoria Street, North Geelong, with his brother, George, when their father died in 1891 and lived there until his death in 1917.⁶⁰⁸ George Dorling was appointed caretaker of the Corio Brick and Tile Company site in 1892.⁶⁰⁹ His son, Walter Rueben Dorling (1879-1917) sought employment at the neighbouring gas works after the closure of the brickworks.⁶¹⁰

Thomas Everett (1814-1891) had arrived in Geelong in March 1853 with his wife, Eleanor (Ellen) Everett (nee Robinson) and their four children: William (born 1842), Elizabeth (1844), Ellen (born 1848), Joseph (born 1850) and James (born 1851). Another son, Charles, was born in Geelong in 1854.⁶¹¹ The Everett family lived in Britannia Street, Geelong West.⁶¹² Thomas and Ellen Everett's son, Joseph, became a coach builder, blacksmith, wheelwright and implement maker in Mercer Street and his son, Percy, trained as an architect and became Chief Architect of the Public Works Department of Victoria (see Theme 3). Thomas Everett's grandsons – and sons of William and Maria Everett - Joseph Thomas (born 1868) and William John (born 1869), followed their grandfather in brickmaking at North Geelong.⁶¹³ They traded under the name of Everett Brothers.⁶¹⁴

William Grundell (1859-1931) was the son of John and Elizabeth (nee Burns) Grundell of Isabella Street, Geelong West.⁶¹⁵ He remained an occupier of the property at 2 Britannia Street with the 'old brick yards' until he purchased the property in 1915-16 from the previous owner, John Baxter. His operational brick yard in the early 20th century was in North Geelong (Figure 4.96). He died there in 1931.⁶¹⁶

Daniel Slevin (1823-1893) was from Country Tyrone, Ireland and arrived on the *Bourneuf* from Liverpool in September 1852 with his sister, Miss Jane Slevin, a domestic servant.⁶¹⁷ An agricultural labourer, Daniel Slevin was a brickmaker in Britannia Street, Geelong West, soon after his arrival.⁶¹⁸ In 1853, he married Margaret Armstrong.

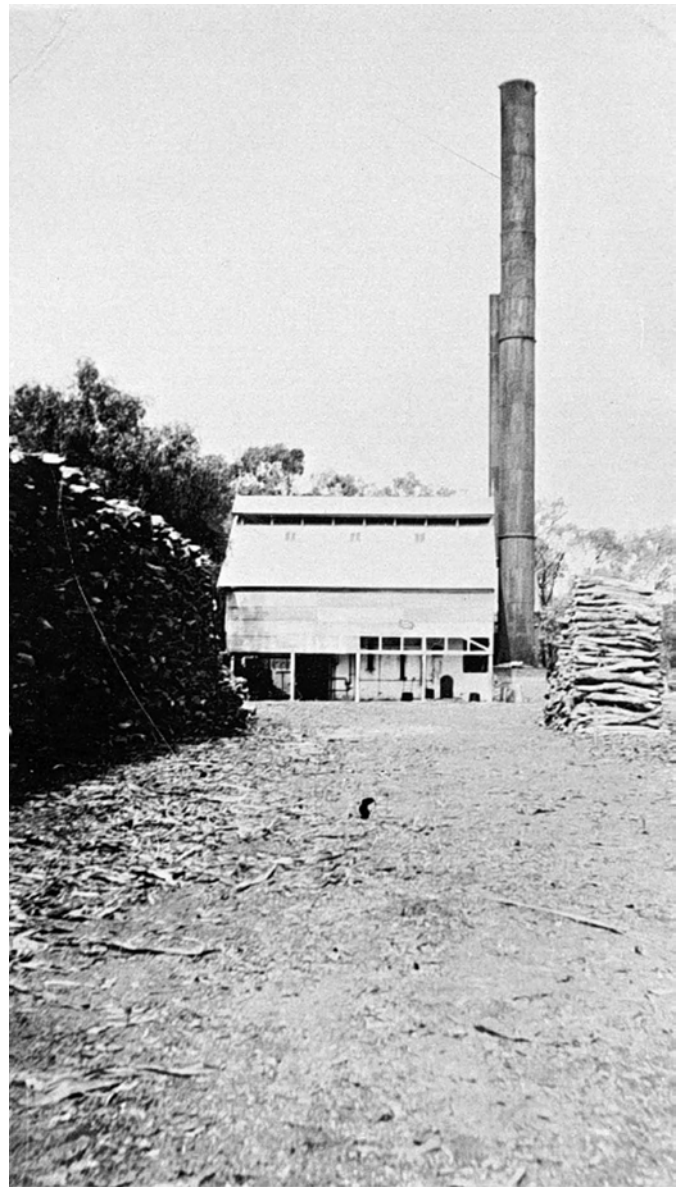


Figure 4.96: Grundell's Brickworks, North Geelong, c.1915. Source: Image MM219, Museums Victoria.

They had ten children, three of which became brickmakers in North Geelong: Thomas (1857-1913); Daniel James (1870-1980); and John (1876-1942). Another son, Patrick (1854-1922) was a painter.⁶¹⁹ His son, Thomas Daniel Slevin (1880-1955), became an architect responsible for a number of distinctive designs in Geelong, including 'Montana' at 53 The Esplanade, Drumcondra in 1911 (see Theme 6) and the additions to the Geelong Town Hall in 1917 (see Theme 7). Daniel Slevin's sons, Daniel and John, had formed a partnership under the name of Slevin brothers, brickmakers, by the early 20th century.⁶²⁰

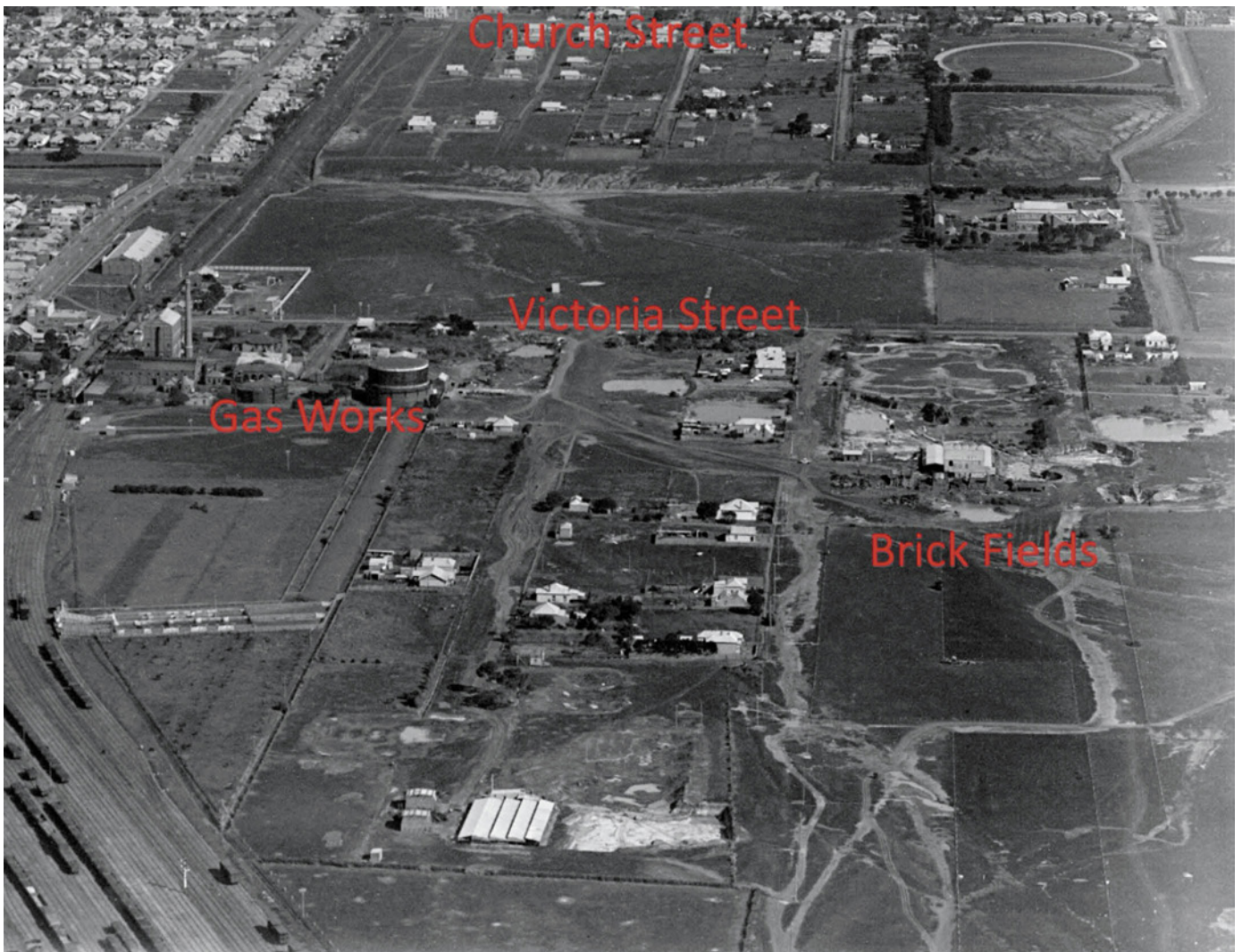


Figure 4.97: C. Pratt, Part aerial view of North Geelong showing the brick fields, c.1927. Source: accession H91.160/871 State Library of Victoria.

By 1918, it appears that the down turn in building during World War One brought an end to most of the small number of brickmaking operations at North Geelong. In 1919, the *Geelong Advertiser* reported on the need for good quality bricks and the potential for an updated brickworks operation at North Geelong:

In and around North Geelong clays have been made into bricks for many years. But the trouble is that the kilns have not been able to turn out a uniformly colored article. The fault is uneven firing. Bricks from light red to a slate color are turned out. The latter are exceptionally durable, but suffer in their appearance. Geelong bricks have mainly been made from hand moulds. The clay although it makes a strong brick, does not give as smooth a surface as those made near Melbourne. Properly worked, with up-to-date machinery, the kilns could be made a profitable

proposition. Several small yards have been carried on chiefly by small parties. The brothers Everitt, Slevin and Dorling and Welsh have been chiefly engaged in the industry, and with the Corio Brick Co., carried on operations until after the outbreak of the war, when conditions told against them. Their product was very serviceable, but their want of appearance prevented their use for outside work. If the makers could blend the slate colored and red bricks so as to get a blue color, and so introduce uniformity, there is no reason why they should not be powerful competitors of those of the Melbourne suburban output.⁶²¹

Contrary to this proposal, the Geelong West Shire engineer, H.G. Oliver, expressed his lament about the state of the former brickworks site, with concern that it 'might easily become a slum area' and that that it was 'a great pity that such an area of land should to practically

go to waste' given the intention in the 1850s for it to be a prime residential estate.⁶²² He encouraged the Council to resume the site under the Local Government Act 1915 and remodel it as a residential estate.⁶²³

Instead of being transformed into a residential estate, brickmaking continued at the North Geelong brickfields in the ensuing years. In 1920, the brickmaker William Saddler continued working his site.⁶²⁴ By 1925, the North Geelong Brick Works Pty Ltd company was formed.⁶²⁵ In 1928, bricks had been procured from the site for some buildings then under construction and the new company sought shareholders:

The North Geelong Brick Works Pty Ltd. is now issuing 22,000 £1 shares to the investing public. The nominal capital of the company is £50,000. Out of the capital to be obtained from the new issue the company will purchase 30 acres of a most valuable clay deposit at North Geelong and will install modern plant and machinery. Included in the new plant will be a new continuous kiln, which will cost about £5000. The works will then be able to deliver 176,000 bricks per week. The company has expended a large sum of money in experimental work, and has from time to time installed various kinds of machinery to enable it to deal with the extraordinarily plastic North Geelong clay. It has now succeeded in producing a brick which when burnt under proper conditions is as "hard as steel," and completely outclasses bricks made from ordinary reef clay. The various clay mixture from the pits will produce bricks of beautiful colors which are absolutely unobtainable in other Victorian yards. Since the new brick has been made, orders have poured in to such an extent that the present plant is quite unable to cope with them. Orders can be closed now for over one million bricks, and Melbourne architects will specify North Geelong bricks at a big price if obtainable. However, it is practically certain that Geelong and district will quickly absorb the output of the new plant. If intending investors require any evidence of what North Geelong bricks are like, they should inspect such buildings as the new St. Matthew's Church at East Geelong [see Theme 8], Geelong College, etc., now under construction. The Chief Architects of the Public Works Department, Melbourne, have publicly stated that they will place orders now for 300,000 North Geelong bricks if obtainable.⁶²⁶

The brickworks site was shown in an aerial photograph by Charles Pratt about this time (Figure 4.97).

Today, the former brickworks site is an industrial estate. Slevin Street (previously Richmond Street) takes its name from the long-serving Slevin family brickmakers at this locality while the Boral Asphalt site at Victoria Street is

a vestige of an industry association with brickmaking. In Corio, Dorling Avenue is named after Rueben Dorling, the brickmaker.⁶²⁷

HERNE HILL

In 1856, the architect, Christopher Porter, established a brick and pottery making business behind the Fairview Hotel, north-west corner of McCurdy Road and Hyland Street, Herne Hill (see Theme 6 for further details on Porter). The enterprise appears to have been revived in 1875 and known as the Fairview Brickworks when 30,000 bricks in the kiln on the site had been burnt.⁶²⁸

BELMONT

In 1871, James Miller, publican of the Prince of Wales Hotel, Belmont,⁶²⁹ purchased the Mount Pleasant Vineyard established from c.1851 by Alexander Mackenzie (c.1808-1873), vigneron and later President of the Victorian Board of Agriculture.⁶³⁰ Miller's interest was not in Mackenzie's 'excellent stone-built dwelling and various out buildings, with about nine acres of vineyard and orchard' situated on Mount Pleasant Road (and extending to Roslyn Road to the south),⁶³¹ but in the quality of the clay on the site. Miller had recognised the scarcity of brick manufacturing in Geelong and at his new site he had engaged four men to carry sinking to ascertain the extent and value of the red clay deposits.⁶³² In addition, the excavators discovered '16 feet of fine white or pipe clay.'⁶³³ The *Geelong Advertiser* gave a report on Miller's proposed development:

Messrs. Davidson and Henderson, the architects, with some other experienced gentlemen, having visited and inspected the ground, have pronounced the opinion that the clay is of a most superior quality – in fact, that there is nothing like it developed in the district. The proprietor has arranged for the erection as speedily as possible of a brick-making factory, furnished with all the latest improvement and similarly arranged, though on a small scale to the works at Brunswick. An order for the requisite plant and machinery, estimated to cost £1500, will be forwarded to England by the outgoing mail, and it is expected when once erected and in operation, from 15,000 to 20,000 will be turned out daily at the works. In the meantime brick-making by hand will be carried on, and Monday men will be employed to make a start with the patent kiln, sheds. &c, required in connection with the machinery.⁶³⁴

Miller sold part of his land to the Geelong Brick, Tile and Pottery Company Ltd. to operate the brickworks, with a Mr Simpson appointed superintendent of the brickfield and a Mr Leighton the manager of the pottery works.⁶³⁵

Just three months later in August 1874, at least eight shafts had been sunk, a trial kiln was under construction, 3000-4000 bricks had been made, and a timber storage shed was under construction to hold 46,000-50,000 bricks.⁶³⁶ This infrastructure fronted onto Roslyn Road. Of the pottery enterprise, the *Geelong Advertiser* gave the following:

In the pottery shed Mr Leighton was as busy as a bee, preparing jugs, basins, milk pans, and a variety of other articles for the trial kiln, and the dexterity with which he converted a shapeless lump of clay, as soft and tenacious as good putty, into handsome jugs, was remarkable, and quite an interesting sight. When taken out of the ground the clay intended for pottery purposes is run through a sieve; it is then mixed with water to the consistency of rich cream, after which it is placed in a brick boiling-pan close at hand until the water has evaporated sufficiently to solidify it to the consistency required. A circular kiln will have to be built for pottery purposes, and the articles manufactured will stand inside this on fire-brick rings, or stands, known by the name of "saggers." Affairs had not, however, sufficiently advanced yesterday to allow of our describing the process, which is said to be an interesting one. The potter's wheel was not quite completed, when it is, Mr Leighton states that, assisted by a clever lad, he will be able to manufacture a hundred dozen of flower pots per diem. As may be seen by the above few particulars the works, when completed, will be well worthy of inspection.⁶³⁷

Tenders had been called by the architects, Davidson and Henderson, for the construction of the sheds and kiln in July 1874.⁶³⁸ By January 1875, the large kiln had been completed and was officially opened in the presence of the Mayor of Geelong.⁶³⁹ Although initial firing produced blistered bricks, the quality was sufficiently improved by June 1875 when the bricks were used 'in the bottom invert' of the railway tunnel between Ryrie and Kilgour Streets then under construction (see Theme 3).⁶⁴⁰ The Geelong Brick, Tile and Pottery Company had experienced difficulties to the high moisture content in the clay and the need for additional drying of the bricks prior to firing. This led to additional expense with the construction of further shedding and a track room with covering. To provide accommodation for the manager and additional outbuildings, the Company sought to purchase the remaining portion of Miller's property, it being the former stone dwelling, outbuildings and garden of Alexander Mackenzie fronting Mount Pleasant Road.⁶⁴¹ The company directors also sought to increase manufacturing operations.⁶⁴² However, the anticipated success of the brickmaking enterprise did not meet

expectations and in November 1875 the Geelong, Brick, Tile and Pottery Company advertised the sale 300 dozen flower pots, 4000 agricultural drain pipes and 5000 bricks, together with the lease of the company's grounds.⁶⁴³ During its short duration, the Geelong Brick, Tile and Pottery Company had manufactured 180,000 bricks.⁶⁴⁴ The company was dissolved in 1897.⁶⁴⁵ The brick grounds were eventually sold, as was the stone residence built by Alexander Mackenzie. The latter was purchased by G.S. Vince, a nurseryman to Queen Victoria on the Isle of Wight. He lived in Mackenzie's bluestone dwelling until the construction of the existing Late Victorian styled timber dwelling, 'Minyip' at the front of the site (now 67 Mount Pleasant Road) in 1911 and the bluestone house was then demolished.⁶⁴⁶ Apart from the brick construction of parts of the railway tunnel in Geelong, no other physical evidence of the brickworks at Belmont are known to survive.

PORTARLINGTON AND THE BELLARINE PENINSULA

At Portarlington in 1870, Thomas Henry Widdicombe (1823-1907), miller, commenced the manufacture of bricks and tiles at the Portarlington Flour Mill (built in 1857)⁶⁴⁷ (see Theme 5 for details on the flour mill). Known as the Paignton Flour Mill⁶⁴⁸ after the village in Devonshire where Widdicombe was born (see Theme 5 for biographical details on Widdicombe), there had been a downturn in flour milling operations as a result of rust devastating the nearby wheat crops.⁶⁴⁹ It was in October 1871 when Widdicombe won honourable mentions for his bricks and flooring tiles.⁶⁵⁰ At this time, the mill and 19 acre site was leased to Widdicombe by the owner, James Fry, a miller of Ballarat.⁶⁵¹ By 1871, Widdicombe had purchased the mill property which the *Geelong Advertiser* described in December 1870 as 'Mr Widdicomb's [sic.] famous brick-making establishment.'⁶⁵² Widdicombe had constructed a kiln (Figure 4.104) and opened a brickfield adjacent to the mill on Crown land leased from the Government.⁶⁵³ Through the first few months of 1871, Widdicombe continued to experiment with his brick and tile production process as by April of that year the *Geelong Advertiser* reported that:

We have received another lot of samples from Mr Widdicomb's [sic.] brick manufactory at Portarlington, which are a marked improvement on these previously sent to this office. They consisted of an ordinary brick, a white fire-brick, and some tiling. All are close to the grain, well-burnt, heavy, of excellent quality, and much harder than anything we have ever seen made in the district.⁶⁵⁴



Figure 4.98: McMahon's Sydney Hotel, Mercer Street, Geelong, 1910, where Widdicombe's brick were used for the first time in 1872. Source: GRS 2009/01703/111, Geelong Heritage Centre collection.

From this time, 'superior ornamental white and red dressed bricks' and 'flooring tiles' were offered for sale.⁶⁵⁵ Early success of Widdicombe's manufacturing came from the patronage of the prolific Scottish architects in Geelong, Davidson and Henderson, in 1872. Widdicombe's bricks were used for first time in the architectural firm's design of the Sydney Hotel, Mercer Street for Peter McMahon (now demolished) (Figure 4.98):

Mr. Widdicombe of Portarlington had recently registered a new kind of brick and brick coping both of which are ornamental. With pressure any given pattern can be pressed on the brick before burning and when burn it looks like a cast in cement or stone carving. These bricks to be used for the first time in the new hotel being built for P. McMahon in Mercer Street.⁶⁵⁶

More locally, Widdicombe's brick factory produced bricks for numerous buildings on the Bellarine Peninsula. One of the earliest and most substantial was St. James' Anglican Church, Drysdale (Figure 4.99). Designed by Andrew McWilliams, architect and opened in July 1872 and described as follows:

The style is pointed Gothic, with lancet windows. The tower is on the southwest gable and is finished with pinnacles. The walls are built with the celebrated Widdicombe bricks from Portarlington. The dressings are white pressed bricks from the same place. The copings are cement. The color of the bricks is deep red, which, with the white facings and dressings, has a remarkably pleasing effect.⁶⁵⁷

In 1871, Widdicombe also applied for a patent for his 'bond brick' used for hollow wall construction⁶⁵⁸ in which



Figure 4.99: T.T. Holmes, St. James Anglican Church, Drysdale, 20 September 1930. Source: T.T. Holmes collection, Authentic Heritage Services collection.

he advertised in the *Geelong Advertiser* on 2 April 1872 (Figure 4.100).

The design of the brick was based on the ramped profile bond brick patented in England by George Jennings.⁶⁵⁹ The firm of Davidson and Henderson may have been the first to implement Widdicombe's 'bond brick' in the construction of their residence, 'Waverley', at 94 Western Beach Road, Geelong (Figure 4.101), in 1871, prior to the registration of the patent.⁶⁶⁰

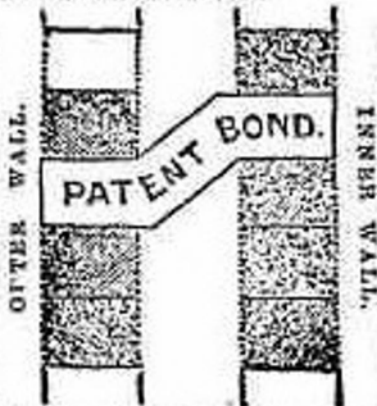
While Widdicombe's brickworks were highly regarded, inventive and even celebrated, he went insolvent in May 1873, a consequence of 'the difficulty in getting in monies owing, and the pressure of creditors.'⁶⁶¹ This forced the sale of the Paignton Mill, machinery, brick residence, foreman's house, stables, coach house and sheds, and about five acres of land in October 1873.⁶⁶² The mill property was purchased by Samuel Allnut of 'Glenholme', East Bellarine.⁶⁶³ The flour mill was leased to the Church of England at Portarlington as a temporary

place of worship.⁶⁶⁴ Widdicombe was able to hold his Government lease of the brick field and continue the manufacture of bricks by leasing back the brick residence and brick factory from Allnut.⁶⁶⁵ Others also held licenses for adjoining brickfields, including Allnut and Edwin Collins.⁶⁶⁶ Bricks produced by Widdicombe soon after the sale of the mill property, included those for the new Temperance Hall at Portarlington in May 1874 and the Portarlington State School in 1875⁶⁶⁷ (Figure 4.102).

In 1878, Widdicombe closed his brick factory at Portarlington a consequence of 'a sensational disaster that 'passed through in politics.'⁶⁶⁸ He relocated to Ballarat⁶⁶⁹ but retained the lease of the Government land with the brick clay deposits⁶⁷⁰ until they were taken up by Captain Howard Smith⁶⁷¹ (see Theme 3 for biographical details of Howard Smith) but it was not until 1884 when Howard Smith and Sons purchased the Paignton flour mill and brick factory site.⁶⁷² The property was managed by Harry Bellingham Smith⁶⁷³ and he also obtained a lease of brick fields previous licensed to Widdicombe (Figure 4.103).

**BRICK AND TILE FACTORY,
PORTARLINGTON.**

FLOORING Tiles of various colors, sizes, and designs, garden edging tiles, bricks, white and ornamental; also superior common bricks, specially adapted for flooring, setting boilers, or any other purpose for which a really good article is necessary; agricultural and other pipes, &c., &c.



I beg to call the attention of Architects, Builders, and others, to my Patent Bond Bricks, for hollow walls, which must commend themselves as being the cheapest and most efficient bond to be obtained, being made in such a manner as to ensure the utmost stability, at the same time offering the most certain preventative against any moisture being communicated to the inner side of the wall. It will be observed that the inner end of the bond is to rest on the wall at a course of bricks higher than the outer end and as it is impervious to moisture in itself, there is no possibility of dampness on the inner side of the wall.

T. H. WIDDICOMBE.
Geelong Agents
WILLIAM CAKEBREAD
And
SCOTT BROS.

Figure 4.100: Advertisement of Widdicombe's patent 'bond brick', 1872. Source: *Geelong Advertiser*, 2 April 1872, p.4.



Figure 4.101: 'Waverley', 94 Western Beach Road, 2014. The original wing is on the left, the addition of 1873 (centre). Source: David Rowe.



Figure 4.102: Portarlington Primary School, 2019. Source: Jennifer Bantow.

In February 1885, the *Edina* steamer transported the machinery necessary for the new brick and tile factory.⁶⁷⁴ Brick manufacturing had begun by October 1885, with Widdicombe returning from Ballarat to the factory as manager.⁶⁷⁵ The *Queenscliff Sentinel, Drysdale, Portarlington and Sorrento Advertiser* gave a description of the works (Figure 4.104):

To those of our readers who are not acquainted with the Port, and all should be, it will be necessary to mention that the locality of the works is at the foot of a hill, within a few yards of the beach, and handy to the pier. The material from which the bricks and tiles are made is easily obtained from a cutting in the hill. There appears to be an almost unlimited supply of clay. From the time that the pick touches the clay till it is turned out from the machine in brick form ready for the kiln a few minutes only elapse. The process of brickmaking is a very simple one. Men take the clay from a face in the cutting and shovel it into trucks, which run for a few yards on rails to the works, and the contents of the truck is tipped over falling down between two revolving rollers. Passing between these rollers, the clay is crushed, so that all hard pieces which might be in it are reduced and softened. The clay then falls into a receptacle, which is called a pug mill, and from this it is forced through a square shaped tube, coming out in brick shape. As it is forced through, a board on small revolving rollers is ready to receive it, and when enough is ejected to make 8 bricks, another board is ready to take a fresh supply. The clay is cut into brick size eight at a cut by 8 wires, and is then piled in the long sheds, ready for the kiln. The time they lay in the long sheds for drying is about two weeks, but the period required very much depends on the weather. There are 25 hands employed at present and they turn out between 7,000 and 8,000 bricks a day of eight hours. The wood consumed in burning will amount to about

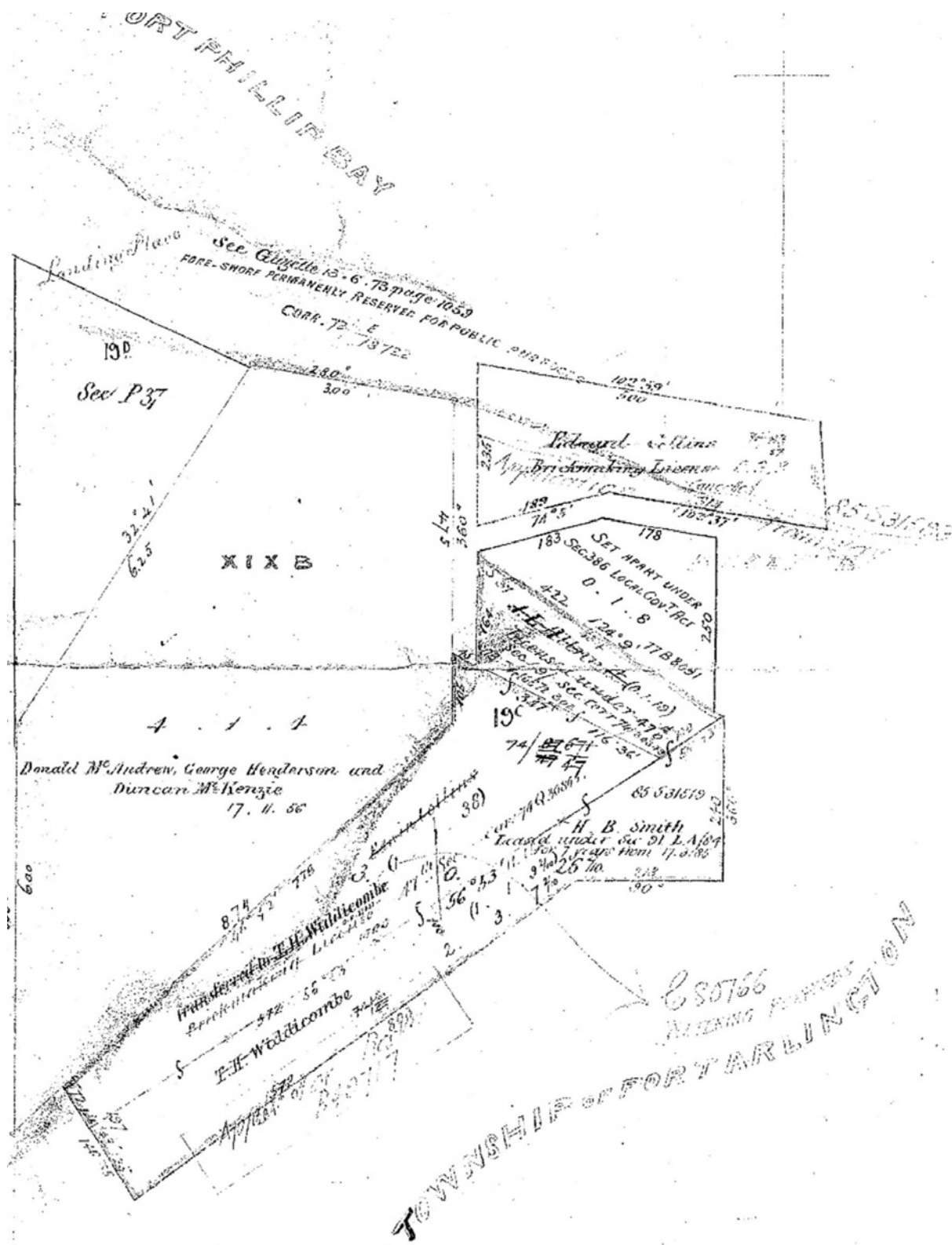


Figure 4.103: A.J. Skene, Plan of Allotment XIXB in the Township of Portarlington, County of Grant, showing brickfield allotments & licensee (some names added later), 27 August 1856. Source: Put-away plan, P38/1, Landata, © State of Victoria.



Figure 4.104: Portarlington Flour Mill & Brick Works (kiln circled), 1887. Source: GRS 2009/00883, Geelong Heritage Centre collection.



Figure 4.105: Brick from the Portarlington B & T Works, in the collection of the Bellarine Historical Society Inc., 2019. Source: Pam Jennings.

160 tons a month, and even this item alone will afford plenty of local employment. The wood is being obtained from Swan Bay. Mr Smith has a vessel of his own for this purpose, and also to ship the bricks by [to Melbourne].⁶⁷⁶

It appears to have been from this time when bricks were marked 'PORTARLINGTON B&T. WORKS' (Figure 4.105).

In 1889, the Portarlington Brick and Tile factory closed. Harry Bellingham Smith, merchant, was listed as the owner and occupier of the factory, and lessee of the brick field at that time.⁶⁷⁷ This brought a final end to the former Portarlington flour mill site as the location of a brickworks factory. In 1890, the factory site was leased to Frank Vial, leather merchant, the mill house being leased to Widdicombe⁶⁷⁸ (see Theme 5 for further details. It appears that Widdicombe had occupied the mill house since his return in late 1884 or early 1885). In addition to brick buildings manufactured of Portarlington bricks in the 1880s, there appears to be evidence of the clay pit in the cliff face below Newcombe Street to the east of the former Portarlington Mill which also survives at 7 Turner Court.

OTHER BRICKWORKS ON THE BELLARINE PENINSULA

No evidence appears to survive of the brick fields established at St. Leonards and Marcus Hill. In 1860, a Mr Anderson had established five kilns at St. Leonards, the location now being the golf course.⁶⁷⁹ At Marcus Hill, James Hutchings leased land from Will Luke (part allotment 22 of Section 23 in the Parish of Paywit) where he worked a brick field.⁶⁸⁰ His neighbour was owner and occupier Charles Phillips, whose land also included a brick field. On his death in 1906, the *Geelong Advertiser* gave the following obituary:

The late Mr. Charles Phillips, farmer, of Marcus Hill, who died at his residence on Saturday, last, had an interesting career. The Sunday previous to his death, he celebrated the jubilee of his residence, at Marcus Hill, having settled there just fifty years ago. He was born in Berkshire, England, in 1826 and came out to New Zealand in the good ship *De Auvergne* in 1837. From, there he came across to Victoria in the *Tuscan*, in command of Captain Ormond, father of the late Sir Francis Ormond, who was on board. The latter and deceased were then boys together, and played together on board the ship. Mr. Phillips started the battle of life, in Victoria amidst the hardships then prevalent, and was whip for the first hunt club meeting held in Melbourne. He rode the racehorse Dauntless in the Town Plate, which afterwards evolved into the Melbourne Cup. He engaged in various pursuits, from a bullock driver to a barrister's clerk, and took a trip home in the *Sussex* to bring out his mother in 1852. In the year 1856 he took up a block of land at Marcus Hill, and did the first carting on the roads from Geelong and Queenscliff. He married a daughter of Mr. and Mrs. Allison, in the district, and leaves a grown up family of six sons and five daughters. Deceased, who was widely respected in the district, was fond of relating intelligent and interesting reminiscences of the early days of Victoria. The remains of deceased were buried at Point Lonsdale yesterday.⁶⁸¹

MARSHALL

In 1855-56, the newspaper proprietor, Alfred Douglass, established a brickfield at Charlemont (Marshalltown), near Goat Island on the south bank of the Barwon River.⁶⁸² It appears to have been short-lived, the site later serving as 'Barwonside' Tannery (see Theme 5).

ANAKIE

In 1960, the Anakie Brick Company was formed and commence the production of brickmaking, with 40-60,000 bricks a month being produced by 1981.⁶⁸³

4.7 GOLD MINING

GOLD AT NEWTOWN⁶⁸⁴

The frenzy of the Victorian goldfields in the early 1850s created considerable interest and enthusiasm by prospectors in Greater Geelong, and gave hope that local gold deposits might be discovered and provide financial rewards. As early as August 1851, the *Geelong Advertiser* reported that:

Messrs. Stephens & Co. have left with us a specimen of quartz, intermixed with gold. The locality in which it was found is within ten miles of Geelong. We expect, in a few days, to be able to make disclosures that will astonish our quiet neighbours.⁶⁸⁵

While the specimen found by John Stephens and Company near Mercer's Well at Mercer's Hill above the north side of Noble Street, Newtown, proved fruitless, it identified further gold there,⁶⁸⁶ gold was discovered 'under a gum tree' nearby, the *Geelong Advertiser* giving a humorous report on 7 August 1851:

Mercer's Hill was again visited yesterday, by great numbers, who came trooping from all adjacent places. Detachments of miners from South Geelong and Chilwell, met bands of explorers from Corio, Little Scotland, and the regions of Ashby, and from the lands of Kildare in the far West – a motely throng, interspersed with equestrians, a few adventurous wives, and a fair sprinkling of nurserymaids, with their tender charges. Explorations were carried on in real earnest, and a sufficiency of quartz was broken up to supply the Corporation with "metal" for the whole of Geelong. The deep diggings at the west end of Malop-street were deserted for the more favoured locality, where large masses of stone might be seen shattered to fragments, - every fragment of which was examined with most minute enquiry, to detect, even if it were but a pin-head of the prized metal. At the foot of yonder gnarled and contorted gum-tree, excavating under the very roots, were three men digging with clasp knives to get what the spade had failed to procure – and showing in handfuls an admixture of reddish brown earth, quartz pebbles, and specks of black sand, enlivened with a profusion of deceptive spangles which yielded to the pressure of the finger and thumb, and were lost in a sombre smudge. One party carefully folds up some sand in paper and puts it in his waistcoat pocket – another carries away a pocket full of gravel like brown sugar, for private washing. All have specimens producible on demand, and go home handicapped with "debris", "detritus," – and fragments of the primary formation.⁶⁸⁷

While this southern face of the Newtown Hill had been scarred by the feverish excavations, the freeholder of the land, W.D. Mercer, publicly gave permission for the working of his land on the condition that he 'may be sent the first hundred pounds weight of gold found, in order that the same may be presented by me to Her Majesty.'⁶⁸⁸ Mercer's return to Scotland in October 1851 did not include £100 pounds worth of gold as the Mercer's Hill diggings were 'nearly abandoned,' the specks of gold in 'pebbles of water-borne quartz' not leading to any major finds.⁶⁸⁹

Eleven years later in August 1862, a public meeting, convened by Stephen Sleator, was held at the Newtown and Chilwell Council Chambers 'for the purpose of organizing an association to prospect the Municipality for gold and minerals.'⁶⁹⁰ Sleator argued that 'new life' needed to be 'infused' into the community, and 'where it were gold or coal that was found; either would have the effect of largely benefitting the district.'⁶⁹¹ In attendance at the meeting was William Blair who declared that 'he only that day' had been shown 'a very promising specimen obtained in excavating for a tank.'⁶⁹² There was also discussion about the advice of the Government Geologist, Alfred Selwyn, to the Geelong Exploration Committee about the potential for coal deposits 'in the neighbourhood of Melville's Quarry', at the west end of Camden Road, Newtown.⁶⁹³ The outcome of the meeting was the formation of the Newtown and Chilwell Gold and Coal Prospecting and Mining Association, the capital to be raised being £2000 in shares of £1 each.⁶⁹⁴

Enthusiasm for the creation of the Prospectus for the Geelong, Newtown, and Chilwell Gold and Coal Prospecting and Mining Association might have emanated from the feverish reports of gold discoveries at Newtown and Chilwell in the days after the formation of the Association. On 15 August 1862, the *Geelong Advertiser* reported that if half of the stories about gold discoveries in Chilwell were to be believed then the area would 'assuredly become as famous for its quartz reefs as Ballarat was for its jewellers' shops in the balmy days of '51.'⁶⁹⁵ The report further elaborated that W.J. Thomas of the Customs Department had discovered three specimens of gold at his leased residence on Newtown Hill, Mr Osborne of Malop Street had 'five or six very fine specimens' found 'some time back in a gully near the Barwon breakwater', Mr Lowe had discovered specimens in Russell Street, Chilwell while 'two or three persons with pick and shovel unearthed a large mass of quartz in the middle of Hotham terrace.'⁶⁹⁶ The crown of a reef of the latter find revealed it to be 'considerably honey-combed and burnt,' and while the colour was not verified, 'the stone was pronounced by an old reefer to be as promising looking stuff as he had ever seen.'⁶⁹⁷

The Prospectus of the Geelong, Newtown and Chilwell Gold and Coal Prospecting and Mining Association was published in October 1862. The Provisional Board of Directors were Nicholas Foott, M.L.A., chairman; William Blair, treasurer; and Stephen H. Sleator, honorary secretary.⁶⁹⁸ The Committee comprised 41 notable and successful men of Geelong including William Kernot, Peter Huddart, Joseph Lewis, D.K. Goodall, Dr Grace, William Thomas, William Siddall, William Stitt Jenkins, Moses Adamson, Joseph Carr, Dr Day and William Noble.⁶⁹⁹ A shaft was put down on Mercer's Hill in October 1862, the result not striking gold but the contractors and all the experienced were 'most sanguine as to the result.'⁷⁰⁰ Ultimately, the result failed. Some of the shareholders suffered heavy financial losses, including Joseph Lewis, publican and owner of 'Woolmers' (now 'Newtown Brae'), Stephen Street, Newtown, which contributed to his insolvency.⁷⁰¹ Another failure was an independent shaft in Bond Street.⁷⁰² Other mining companies tried their luck including The Newtown Hill Quartz Prospecting Company in 1866 but is lasted only 12 months, it being reported that mining had 'been discontinued, the movement not being so well supported as could have been wished.'⁷⁰³ In 1873, the Corio Quartz Mining Company let a shaft at Mercer's Hill in 1873 and this company subsequently disbanded.⁷⁰⁴

Soon after in 1875 the prospectors to be later associated with the Chilwell Gold Mining Company sunk a shaft on the north side of Noble Street. In August that year, the *Geelong Advertiser* gave the following report:

It is well known that a few enthusiastic individuals have for some time past been spending a great deal of time and money in prospecting for gold in various parts of Chilwell. Hitherto their operations have been confined to sinking small shafts in back yards, but as we have not yet heard of any large parcels of the precious metal being deposited in any of the local banks, we can only conclude that their efforts have not met with that success their pluck and perseverance deserves. They have now, however, brought their operations under the notice of the public by commencing to sink a shaft on the north side of Noble Street, on the spot where the celebrated rush took place some years ago, and where a tunnel was driven some distance into the side of the hill and afterwards abandoned.⁷⁰⁵

In June 1876, the prospectors sought assistance from the Department of Mines in determining whether the geological characteristics of Mercer's Hill held the potential for gold.⁷⁰⁶ The Geological Surveyor, Ferdinand M. Krause, visited Mercers Hill and prepared a report on 25 July 1876. His report was accompanied by a

'Geological Sketch Plan' (Figure 4.106) showing six shafts: numbers 1-3 on the north side of Hotham Terrace (being approximately located at 90-94 Prospect Road today) and numbers 4-6 on the north side of Noble Street (approximately in the vicinity of 98-102 Noble Street today). Krause concluded that:

The "coarse" gold reported by the [Chilwell Quartz Mining] company is apparently a misconception of the term, for the washings shown me on a former occasion provided the gold to be "scaley," and requiring some hundreds of specks to make up one penny-weight. The presence of coarse gold implies the proximity of the older palaeozoic rocks; while fine gold may be carried a considerable distance from the source, and occur in small quantities overlying indiscriminately rocks of any older order than the drift with which it is associated. If it can be shown that, as appears probable, the bed rock at Newtown Hill is a carbonaceous rock, with or without overlying miocene beds, then it is useless to expect any remunerative results from the operations in search of gold. The sinkers of the shafts, however, aver that the bottom is identical with the "reef slate" of Ballarat. If that were correct, the company will have made a discovery of great scientific as well as economic value; for if the Silurian rocks (the nearest outcrop of which is at Sutherland's Creek, north-east of Maude) underlie the tertiaries and newer volcanic which extend from there to the seaboard, then the principal conditions of a goldfield may be admitted to be present.⁷⁰⁷

Krause's findings were sufficient for the prospectors to float a company in August 1878 called the Chilwell Gold Mining Company.⁷⁰⁸ John Masters Garratt was appointed company manager (see Theme 2 for biographical details on Garratt).⁷⁰⁹ At this time, only 300 shares had been attracted of the total anticipated issue of 1000, with 117 shareholders (see Appendix 4.4).⁷¹⁰ The shareholders came from diverse socio-economic backgrounds, the majority being men, including Charles Dennys, woolbroker; Edward Nicholls, town clerk; and T. Templeton, cabinetmaker.⁷¹¹ There was also a sizable number of shareholders that were foundrymen, including Andrew Younger of Mercer Street, Geelong, Archibald Hardie of Catherine Street, Geelong West, and Samuel Wheeler of Malop Street, Geelong.⁷¹² Female shareholders included Mrs Emma Dobson and her daughter, Mary Ann (domestic duties) and Mrs Mary Martin, a widow of Noble Street, Newtown.⁷¹³ The first directors of the company elected in December 1878 were Messrs. W. Humble, L. Ryan, J. Donaghy, E. Richardson, H. Anderson, J. Brown and T. Pescott.⁷¹⁴

Like the mining companies before it at Mercer's Hill, the Chilwell Gold Mining Company was not to endure given

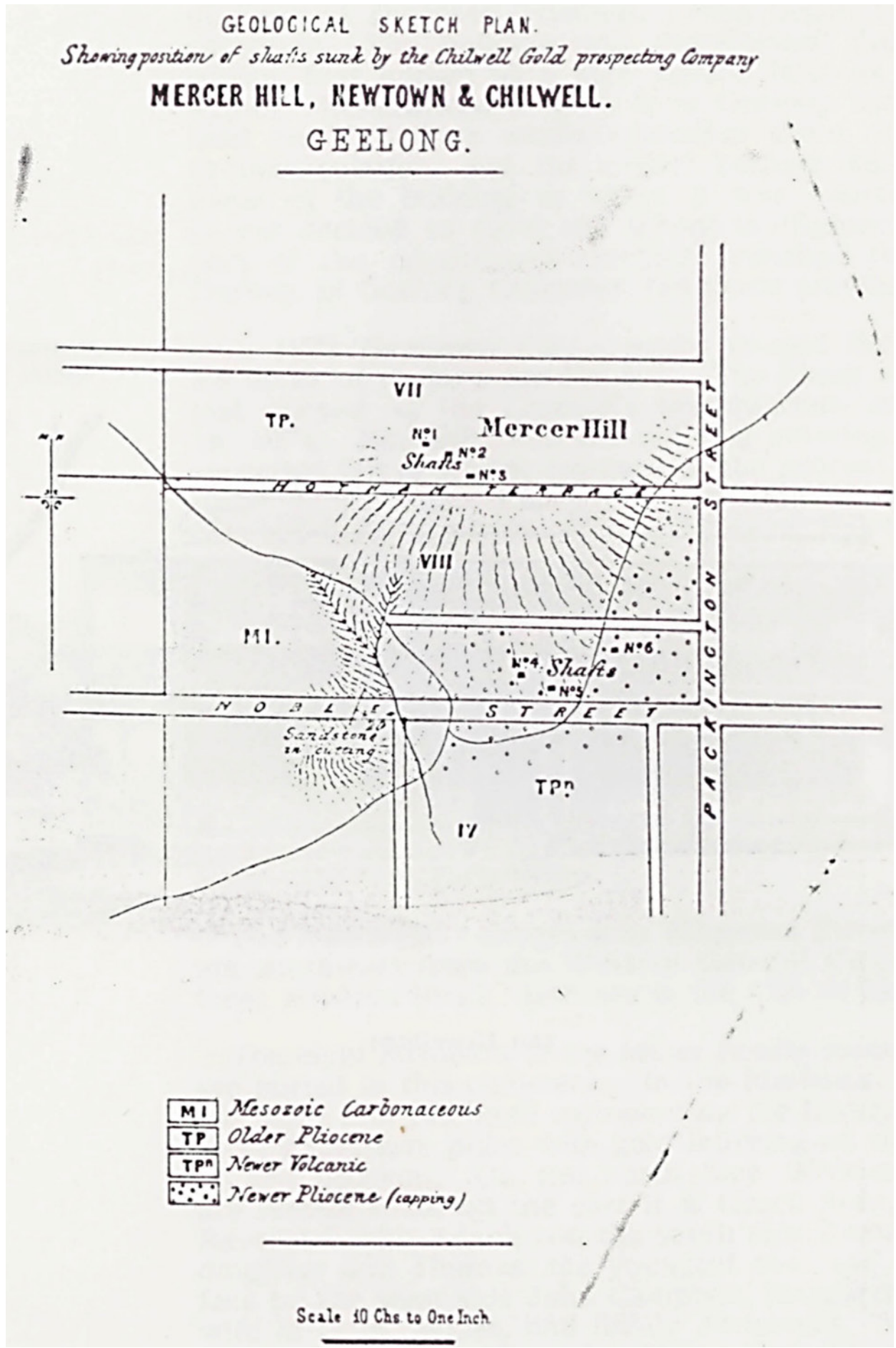


Figure 4.106: F.M. Krause, Geological Sketch Plan, Shewing position of shafts sunk by the Chilwell Gold prospecting Company, Mercer Hill, Newtown & Chilwell, Geelong, 1876. Source: D. Hamilton, 'Geelong's Own Gold Mine', *Investigator*, vol. 21, no.3, September 1886.

the lack of gold finds. The company was wound up in August 1879 and its land holdings were offered for sale in September of that year.⁷¹⁵ Apart from an independent shaft sunk nearby in Bond Street, Newtown, the shafts in the Mercer's Hill area represent the only and most prolific gold mining activity in the inner Geelong area.⁷¹⁶

DOG ROCKS

Similar excitement ensued at the Dog Rocks near Batesford as that of Newtown in 1861 when David Hughes alleged his discovery of gold. On 29 November of that year, a special meeting was held of the Geelong and Western District Exploration Committee to finalise negotiations with Hughes in relation to financial dealings with the exploration. The agreement reached included:

Mr Hughes undertakes to make known to the public through the Geelong and Western District Exploring Committee, a new and payable gold field within 20 miles of Geelong, and at least ten miles from any other diggings, on the following terms:

That £300 be paid by the Geelong and Western District Exploring Committee as a reward for the said discovery. The sum of £100 to be paid as soon as 1000 ounces of gold have been raised, if within a month, from the 29th inst., and if 500 men are on the ground during the last week of December, 1861. That the second sum of £100 shall be paid if 1000 men are on the ground at the end of January, 1862. That the third sum of £100 shall be paid if 1000 are on the ground at the end of February, 1862, and if at that date 5000 ounces of gold have been got from the field.⁷¹⁷

The agreement by the Geelong Western District Exploring Committee with Hughes caused an immediate rush to the Dog Rocks. One hundred people came by horse and on foot from Geelong, it being noted that the people in the neighbourhood of the Dog Rocks 'were in a state of blissful ignorance of the rush, and their puzzled, half-doubting looks and expressions when chaffingly hailed by the passers-by about going to the diggings were amusing.'⁷¹⁸ With the place of the discovery shown by Hughes, 'several tin dishes were immediately filled with the quartz gravel and clay of which the soil is composed, and were carefully washed at the water holes close by, but not one single speck of gold was found by anybody.'⁷¹⁹ By the end of the day, only one party considering camping overnight, the rush to the Dog Rocks proving fruitless.⁷²⁰

LITTLE RIVER

Enthusiasm for prospecting for gold was revived in 1864 when a discovery was reported in the bed of the

Little River.⁷²¹ The 'great excitement in the immediate neighbourhood' that had been caused soon deflated. Nevertheless, a party of experienced diggers began sinking in the river bed opposite the gully on the western bank in the direction of the You Yangs. Only one or two specs were found over two days. It had earlier been concluded by Mr Fitzalian, then Government Botanist in Queensland who had found small specs on the banks of the river in c.1858, that the physical characteristics of the surrounding country suggested that gold 'would not be found in payable quantities.'⁷²²

RURAL DEVELOPMENT & CLAUSE 42 OF THE AMENDING LAND ACT

It was not actual gold mining within Greater Geelong where the most notable physical evidence survives, but Government legislation that restricted freehold purchase of land in the northern and north-western parts of the municipality. In particular, Section 31 and Section 42 (also described as Clause 42) of the Amending Land Act of 1869 enabled licenses to be issued to reside on or cultivate small allotments on or adjacent to goldfields. In particular:

Section/Clause 42 of the Amending Land Act 1865 was designed to allow the use of lands on or adjacent to the goldfields to the advantage of the general population without interfering with the operations of miners. Occupation, at a modest rental, was to be temporary and for the purposes of residence and cultivation. Each licence was to cover a maximum of twenty acres for no more than one year although persons could apply for multiple licenses.⁷²³

Section 31 of the Amending Land Act 1869 'enabled holders of licenses under section 42 of the Amending Land Act 1865 to purchase their land or obtain a lease leading to purchase.'⁷²⁴ The Lara, Anakie, Little River and Sutherlands Creek areas were located "adjacent to" the Steiglitz Division of the Ballarat Mining District proclaimed in the *Victoria Government Gazette* in 1858. The eastern portion of the Steiglitz Division was described as including:

... the Anyche Youang hills; thence by the range to the Little River; thence by the Little River to its junction with its main tributary; thence by a line north-easterly to the junction of the Djerriwarrah Creek and the River Werribee ...⁷²⁵

The boundaries and names of the divisions and subdivisions within the Ballarat Mining District (Figure 4.107) changed a number of times in the 19th and 20th centuries.⁷²⁶ By 1890, there were 10 divisions within the district, this number falling to six by 1917.⁷²⁷

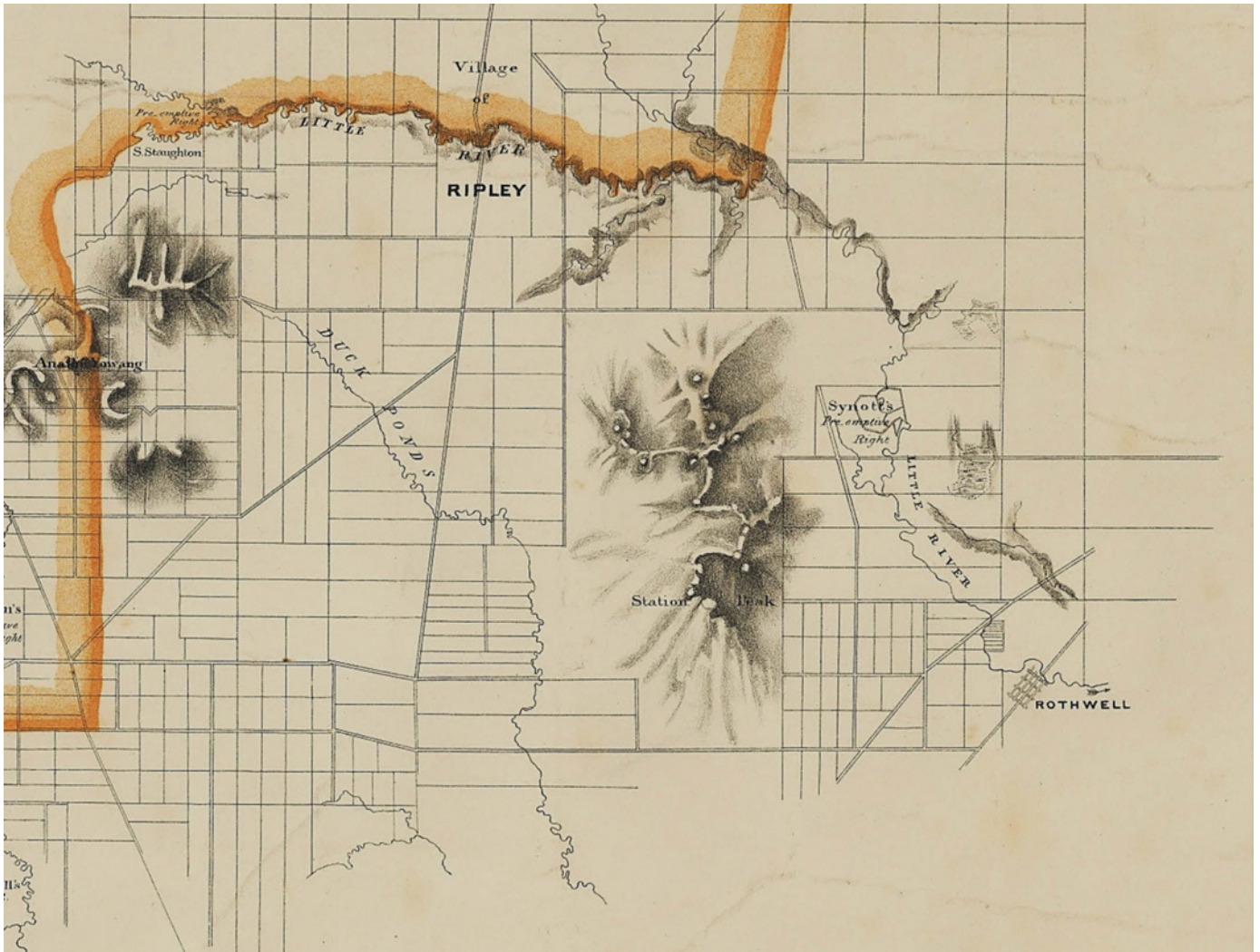


Figure 4.107: Detail of the Lara area in the Plan of the Mining District of Ballarat, 25 June 1859. The Lara area is situated in the bottom right corner. The boundaries of the Mining District are shown in the orange border. Source: Plan of the Mining District of Ballarat, compiled from the maps in the Surveyor General's Office and the Mining Surveyors Plans at the Office of the Board of Science, lithographed and printed in colours by DeGruchy & Leigh, Melbourne, 25 June 1859, State Library of Victoria.



Figure 4.108: Cottage, 85 Curletts Road, Lara. Source: Wendy Jacobs, 2012.



Figure 4.109: 'Limella Cottage', 31-45 Forest Road South, Lara. Source: Wendy Jacobs.

Small surviving farms and particularly vernacular stone dwellings associated with the Amending Land Acts are a physical legacy of these land provisions that led to some of the earliest developments for the working class at Lara and in nearby areas. At Lara, the surviving limestone Victorian vernacular cottages at 85 Curletts Road (built in 1869 for William Harding (Figure 4.108), farmer and builder); 'Limella' Cottage, 31-45 Forest Road South (built in 1872-73 for John Spalding, limeburner) (Figure 4.109) and the cottage complex at 80 Gebbies Road (built 1869-74 for William Foot) are a tangible legacy of the Amending Land Act and Lara's close proximity to the Steiglitz Division of the Ballarat Mining District.⁷²⁸ There are also ruins at 60 Branch Road (the former dwelling built in 1871 for John McGillivray) and at 120 Duggans Lane (built in c.1864-84 for Maxwell Bell) that have similar associations.⁷²⁹

While at least an additional 12 settlers purchased land in the northern Lara and Little River areas in the Parish of Wurdi Youang in the 1870s under Section 31 of the amending Land Act 1869 previously held under license (under Section 42 of the Land Act 1865), it appears that only one dwelling survives outside Lara.⁷³⁰ Located on lots 10 and 11 of Section A (now 160 Drysdales Road, Little River), it was possibly built for William Chesterfield in the 1860s (the land being purchased in 1877).⁷³¹ Other associations with the Section 31 provision of the Land Act beyond Lara include the stone ruins at 65 Drysdales Road, Little River, built in c.1860s for Moodie Drysdale (the land being purchased in 1876), and the ruins at 185 Little River Ripley Road, Little River, possibly built for John Henry.⁷³² In the Parish of Moranghurk were at least another seven settlers who purchased land under the same land provisions, but the original dwellings and structures do not appear to survive.⁷³³ Only three settlers in the Parish of Lara, surrounding the old Township of Ripley, are known to have occupied land under Section 42 and later purchased it under Section 31.⁷³⁴ In the Anakie Parish were another seven settlers who purchased land under Section 31 of the Act.⁷³⁵ Dwellings associated with the original purchases of the land do not appear to survive.

4.8 WATER SUPPLY AND SEWERAGE⁷³⁶

Transformative to the Greater Geelong landscape was the construction of water supplies and a sewerage system. These initiatives began during the earliest European colonisation of the municipality and involved changes to the Barwon River, with further and more substantial infrastructure transforming gullies in the Brisbane Ranges, and excavations in other outlying parts.

EARLY WATER SUPPLY

THE BREAKWATER

The choice of site for the Geelong Township in 1837 was governed by its close proximity to both Corio Bay and the Barwon River (see Theme 6) but there was a distinct disadvantage in that the Barwon River was brackish downstream from Buckley's Falls. To combat this, a dam was built from January 1839 (or possibly December 1838) on the Barwon River, south-east of Geelong, to a design by Captain Foster Fyans.⁷³⁷ He had presented his design for the breakwater on a visit to the Governor, Sir George Gipps, in Sydney of 1838.⁷³⁸ The construction of the breakwater – which also served as a river crossing (see Theme 3) – resulted in fresh water being 152 mm higher than the rush the saltwater tide, and therefore gave Geelong its first water supply.⁷³⁹ The first third of the dam was built by convict labour, with Governor Gipps having supplied 50 prisoners that boosted the 12 convicts already under Fyans' charge.⁷⁴⁰ By November 1840, the dam was almost complete as the *Geelong Advertiser* gave a glowing report:

THE BREAKWATER – This great undertaking is now nearly completed. We call it "great," when we measure it by the usual scale upon which the Government conduct their operations. The term "Breakwater" will be apt to mislead many; we will therefore attempt to explain it for the benefit of our Melbourne readers. The River Barwon, which forms the southern frontage of the town, although wider and deeper than the Yarra, has a navigable outlet to the ocean, where it empties itself into a series of salt water lakes to the westward of the Heads of Port Phillip. The tide, however, flowed past Geelong, and the water was almost constantly brackish. To remedy this evil, as well as to serve the purpose of a bridge, the Breakwater was proposed. It is about a mile from Geelong and



Figure 4.110: S.T. Gill (artist), J. Tingle (engraver), Market Square, north side Geelong, 1857 showing Gray's water tank. Source: accession 30328102131660/24, State Library of Victoria.

consists of two massive walls of rough stone, with clay filled in between. It is so far completed that there is an effectual separation of the fresh from, the brackish water, and a loaded dray can now cross over in safety.⁷⁴¹

Further alterations were made a few years later due to flood damage (see Theme 3).

GRAY'S WATER TANK, MARKET SQUARE

Capitalising on the regular supply of fresh water from the Barwon River was William Gray (1811-1891).⁷⁴² He had arrived in Geelong in 1838 and established a store in Corio Street and flour mills at South Geelong and Gheringhap Street (overlooking Corio Bay) in subsequent years (see Theme 5).⁷⁴³ At South Geelong from 1849, Gray used his flour mill as part of his Government-approved water supply system. The *Geelong Advertiser* gave the following report at this time:

Our enterprising townsman, Mr. Gray, has now completed every preliminary arrangement to enable him commencing on his work for bringing water into the town from the Barwon for the supply of the inhabitants. The *Scotia*, which left this port yesterday, will bring with her, on her return passage, the iron pipes which have been cast in Hobart Town and are now quite ready for shipment. The labour of digging the large reservoirs will be commenced immediately, whilst other portions of the work will proceed simultaneously. The commencement of another season will witness the completion of a spirited undertaking, by which that most appreciable convenience of every inhabitant receiving his supply of water from the very heart of the town, can be obtained.⁷⁴⁴

From his steam engine at the mill, he pumped water at night (allowing flour milling operations to continue during



Figure 4.111: La Trobe's Dam shown in J.H. Taylor, *Map of Geelong*, Surveyor-General's Department, Melbourne, VPRS 8168/P2, Unit 5416, item Roll 39 Geelong, Public Record Office Victoria.

the day) in cast iron pipes laid under Moorabool Street to a substantial, brick-lined, subterranean 60,000 gallon holding tank on top of the Moorabool Street hill, at the north-west corner with McKillop street).⁷⁴⁵ From there, the water was piped by gravity feed to a 'water fountain' in Market Square.⁷⁴⁶ Designed by his engineer, Mr. Easby, Gray supplied water for a nominal fee.⁷⁴⁷ Problems ensued due to low water pressure and so in early 1851 a large metal tank (Figure 4.110) was installed in Market Square as described in the *Geelong Advertiser*:

The Tank in Market square is fast approaching completion, and will prove a great ornament to the Square, whilst at the same time it will be of essential service to the whole town. It is about 90 feet in circumference, and six feet deep. It is supported by substantially well worked stone pillars, on which rests the wood-work intervening between the pillars and the superincumbent tank. When finished, it will be quite a refreshing object for the eye to rest upon, and when the houses which are rapidly advancing, are completed, a great change will have been worked on the sombre aspect which this large square presented.⁷⁴⁸

Gray continued to supply water until a dispute with the Geelong Town Council (of which Gray was a member for some time) about water changes and occupancy of his tank in Market Square brought to an end this early enterprising water supply service.⁷⁴⁹ No evidence of Gray's water system exists today, his underground iron pipes being dug up in 1874, his tank in Market Square removed, and his brick tank at the corner of Moorabool and McKillop Street converted into a dwelling 'of novel design' in 1885⁷⁵⁰ until the property was sold in 1890 and the existing two storey brick dwelling, 'Blandford' built for Alderman James Strong to a design by local architect Albert Derrick.⁷⁵¹

LA TROBE'S DAM, JOHNSTONE PARK

In 1848, the Superintendent of Port Phillip, Charles La Trobe, visited Geelong and proposed the construction of a dam at the west end of Malop Street (and later part of Johnstone Park).⁷⁵² The dam was to be thrown over the western Gully and La Trobe instructed William Weekes, Geelong Town Surveyor, to carry out the necessary survey work. The proposal was reported in the *Geelong Advertiser* at this time:

The dam is to be made 16 feet high, and will be the means of retaining an immense reservoir of water which would otherwise run into the bay. A bridge will be built in proximity, from which two great advantages will be derived first, an easy ingress and egress to and from the town for carts and drays, as well as foot passengers; and second, to allow the surplus water, which in wintertime and during heavy rain may rise above the level of the dam to run off.⁷⁵³

Laborers commenced excavations on the dam on 21 December 1848 and in July 1849 a contract for building the dam embankment and roadway was awarded to Thomas Stevens.⁷⁵⁴ The completion of the dam, with its soft base and unstable embankment, led to drownings and several accidents, the initiative being mired in controversy and inquests. In December 1850, steps were taken to fence in the dangerous portions which was completed in January 1851.⁷⁵⁵ Yet loud criticism of the dam continued. In July 1851 the *Geelong Advertiser* quipped that 'the object was to form a useful and ornamental reservoir of water, it should have been constructed higher up the gully, where the banks are shelving and the bed of moderate depth—not where the sides are precipitous and slippery, and the depth greater than in the ship channel of Corio Bay!⁷⁵⁶ The extent of the dam was shown at what was then the eastern end of Johnstone Park and took in much of the intersection known today as Malop, Gheringhap and Mercer Streets (Figure 4.111).

Despite the drawbacks, in 1855 the dam was recognised for its benefit (and potential benefit) to the Geelong citizens:

... in affording a ready supply of water in the direst summers, for horses and cattle, for saw mills, and for domestic purposes where extreme purity is not essential; but it is as a ready source of the wherewithal to extinguish fires, although happily we have never yet had occasion to draw upon it for that purpose, that the Dam assumes it full important.⁷⁵⁷

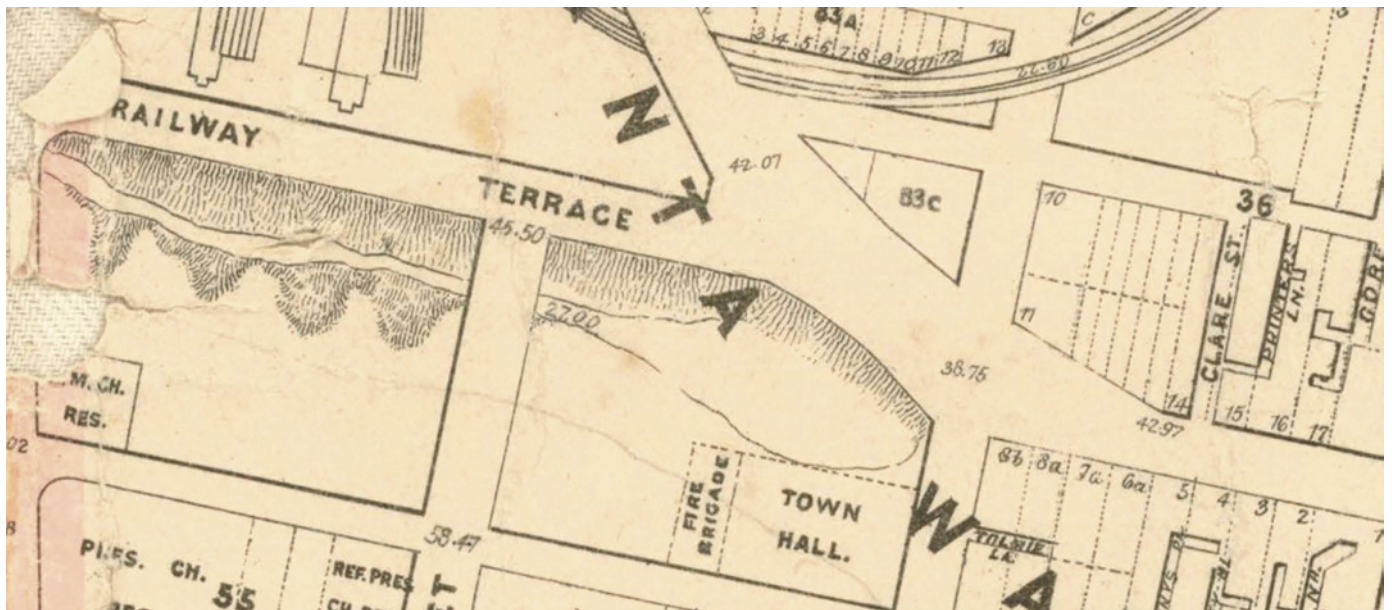


Figure 4.112: Reduced size of La Trobe's Dam in R. Balding, Map of the Town of Geelong & Boroughs of South Barwon & Newtown & Chilwell, 1864. Source: City of Greater Geelong.

In April 1857, the Geelong Town Council resolved 'to increase the width of that part of Malop-street which intersects the Dam leading to Mercer-street, to the extent of 99 feet, by filling in a large portion of the reservoir.'⁷⁵⁸ These works were subsequently completed and the road intersection and reduced dam were shown on Robert Balding's Map of the Town of Geelong of 1864 (Figure 4.112):

UNDERGROUND TANKS

Ubiquitous throughout Greater Geelong as private water supplies were underground brick-lined water tanks. These spherical subterranean structures were a receptacle for rainwater collected from residential rooftops. The tanks were either stuccoed or finished with plaster of Paris, the upper portion being exposed above the ground. An inner-city example is the brick tank at former Wesleyan Minister's residence, 1 Little Ryrie Street, Geelong, built before 1854⁷⁵⁹ (Figure 4.113). At 'Laura Villa' (known today as 'Claremont'), 17 Drysdale Street, Portarlington, a rendered underground tank was built in 1875-76,⁷⁶⁰ the iron lid being the work of the prolific iron founders in Geelong, Humble and Son (Figure 4.114).

TOWARDS A RELIABLE & SUSTAINABLE WATER SUPPLY

PRIVATE AND PUBLIC INITIATIVES

Geelong was to experience the formation and disbandment of a number of private and public organisations whose ambit was to secure a more reliable and fresh water supply for Geelong. Several proposals were put forward throughout the 1850s before a scheme was eventually agreed to by both locals and the Victorian Government.

On 6 July 1852 at the Royal Hotel, Malop Street, a group of townspeople held a meeting 'to take into consideration the best means of supplying the town of Geelong with pure water.'⁷⁶¹ It was from this meeting that the Geelong Water Company was formed, a provisional committee was established comprising Messrs. James Ford Strachan, Alexander Thomson, John Cumming, W.H. Baylie, T. Edols, J.S. Carver, J. Wallis, A. Gregory, Thomas Kerr, William Roope, T.C. Riddle, J. Towle, J.B. Hutton, William Timms, F. Champion, James Harvison, T. Curle and James Cowie.⁷⁶² The capital of the company was to be £30,000 with a Mr. Wallace appointed secretary.⁷⁶³ The need for a new water supply, according to the new company, was because the existing water at the breakwater was 'more or less deleterious in its use.'⁷⁶⁴ It proposed 'work necessary for the introduction of water either from Buckley's Falls, or from the Barwon River.'⁷⁶⁵



Figure 4.113: Excavations exposing underground tank at rear of 1 Little Ryrie St, Geelong, 1998. Source: David Rowe.



Figure 4.114: Detail of cast iron cap to underground tank at 'Claremont', Portarlington, 2011. Source: David Rowe.

While the Geelong Water Company was beginning its investigations, the Geelong Town Council appointed a committee and engaged John S. Henry, local civil engineer, architect and surveyor to carry out surveys and cost estimates for an alternative water supply to the existing breakwater in the Barwon River.⁷⁶⁶ By January 1853, Henry's concept was to extract water from Buckley's Falls:

A filter will be fixed at the Falls, and on the crest of the Fall will be raised a dam four feet high, furnishing two water powers. The expenses of steam will be got rid of – the main supply being procurable by the action of its own power, the descent from the summit of the Fall affording the requisite declination, and economising outlay and labour. This plan would leave the Barwon open to industrial pursuits, and make the river what it ought to be, the drain of the southern side of the Geelong and obviate that which it is fast becoming – a reservoir of impurities and stagnation.⁷⁶⁷

While new and improved water supply was therefore anticipated by private and public initiatives in the early 1850s, both the Geelong Water Company's objectives or the plans of the Geelong Town Council committee were never realised as originally intended but they did provide a basis for further deliberations.

On 12 April 1855, J.H. Taylor, Assistant Surveyor, furnished a report on the potential for the construction of a breakwater at Barwon Heads near the mouth of the Barwon River. The basis of Taylor's report was to investigate a breakwater as a potential new water supply for Geelong. He concluded:

The best position for the construction of a breakwater would be about half-a-mile from the estuary; any site selected nearer the mouth would be greatly exposed to tidal wave, and a greater extent of sand hummock would have to be protected; and any site above the proposed one, the river increases in width, with a bed of soft black mud to a great depth, and the banks being nearly level with the tide would have to be protected for a considerable distance. The proposed site is 1076 feet across from bank to bank, great difficulties would have to be overcome from the shifting nature of the sand hummocks, every inland flood tending to waste them away. It would be impossible to construct a breakwater of any use at the mouth of the river without protecting the banks on both sides, both above and below, and the cost of such an undertaking would be great.⁷⁶⁸

The overall cost of Taylor's scheme was £75,000.⁷⁶⁹ It never eventuated.

On 30 April 1856, the Victorian Commissioner of Public Works appointed a Board 'for the purpose of reporting on the most eligible mode of supplying Geelong with water, and for other purposes connected therewith.'⁷⁷⁰ Appointed as Commissioners to the Board were Alexander Thomson, James Ford Strachan, John Henry Mercer, W.G. McKellar and Edward Willis.⁷⁷¹ Mercer was appointed chairman at the Board's preliminary meeting on 8 May 1856.⁷⁷²

Chemical examination of waters and engineering investigations of supplying a scheme were carried out by the Geelong Water Commission's Engineer-in-Chief, John Millar (1807-1876).⁷⁷³ A 'man of extravagant claims, exuberant schemes and quixotic behaviour,'⁷⁷⁴ Miller had been an architect in Belfast, Northern Ireland, prior to going bankrupt and coming to Melbourne (temporarily in 1854 and more permanently in 1855).⁷⁷⁵ His appointment

to the Geelong Water Commission appears to have been his first foray primarily as an engineer, a role he continued as engineer to the Town of Dunedin, New Zealand in 1864.⁷⁷⁶

Millar's examinations and proposed water supply scheme were based on a plan and reports for a scheme prepared for the Government by Assistant Surveyors of the Victorian Department of Lands and Survey, George Darbyshire and John Hamlet Taylor prior to the establishment of the Geelong Water Commission, and a plan and report of a very similar scheme prepared by John Henry (who had earlier been engaged by the then defunct Geelong Water Company), were considered.⁷⁷⁷

Initially, the Barwon River above Buckley's Falls at Fyansford had been examined given its natural advantages and the less expensive outlay. However, it was found the proposed reservoir would be too low and so 'a very limited portion only of the town could be served on the comparatively inexpensive principle of gravitation, and recourse to steam power would be imperative', thereby requiring a 'constant working expense and liability to casual disarrangement.'⁷⁷⁸ Ultimately, the Geelong Water Commission extended its investigations considerably further south-west, and with John Millar, devised a scheme involving the construction of a reservoir on John Henry Hopkins' station at Wormbete near Winchelsea, where water would be piped overland for 30 miles and traverse the Barwon River at the Fyansford Reserve, extend along Noble Street to Shannon Avenue, where it would be laid northwards to Aberdeen Street, and then extend eastwards along Aberdeen Street before connecting with a pipe along Moorabool Street that was to have outlets at Corio Bay and the Barwon River (Figure 4.115).

The Commission, while carrying out much preparatory work, fell under heavy criticism at a public meeting in January 1858.⁷⁷⁹ Additionally, a memorial was presented to the Victorian Legislative Assembly indicating that the £200,000 voted by a former Legislative Assembly for water supplies for both Melbourne and Geelong had not resulted in any expenditure for the latter, the 25,000 inhabitants being 'still dependent upon the precarious supply of water by carts from the River Barwon.'⁷⁸⁰

In February 1858, being disgusted at the treatment they had 'so long received at the hands of the Government', the chairman and other Board members of the Geelong Water Commission resigned.⁷⁸¹ This brought to an end the third water supply body in Geelong.

On 4 February 1858, yet another committee was formed to investigate the best means of supplying Geelong with water.⁷⁸² This time, a select committee had been appointed by the Legislative Assembly. A report by

Captain Pasley, Commissioner of Public Works, and M.B. Jackson, engineer of the Sewerage and Water Commission concluded that 'the water of the Barwon, near Geelong, is not a desirable water for the supply of a town', and 'the water of the Barwon, below its junction with the Leigh, has become perceptibly worse and more turbid and disagreeable during the last few months.'⁷⁸³ Pasley and Jackson suggested that the best and cheapest method of establishing a water supply was by Mount Buninyong, Lal Lal and Warrenheip 'impounding the same in one or more reservoirs, as may be required.'⁷⁸⁴ Again, nothing immediately was realised from this scheme.

A REALISED SUPPLY: THE STONY CREEK SCHEME

UPPER STONY CREEK RESERVOIR

On 16 March 1862, the *Geelong Advertiser* reported on 'one of the most disastrous visitations by fire ever experienced in Geelong' with the destruction of 'Singapore Terrace', Geelong's 'greatest ornament of the Esplanade overlooking the Eastern Beach' (see Theme 6).⁷⁸⁵ While water from Gray's fountain in Market Square was carted in a vain attempt to save the building, the disaster yet again highlighted the lack of a reliable, reticulated water supply.⁷⁸⁶ Just two days after the demise of Singapore Terrace, the Geelong Town Council appointed a select committee 'to consider upon the best and most economical mode of supplying Geelong with water.'⁷⁸⁷ The committee consisted of the Mayor William Bell, Aldermen Parker, Hedrick and Knight, and Councillors McWilliams and Gundry.⁷⁸⁸

Motivation for finding a solution was not immediate. However, in June 1864, the committee had appointed the recently-arrived civil engineer from New South Wales, Hendrick (Henry) Oscar Christopherson (1834-1892) to prepare a report on the possibilities of a suitable water supply scheme.⁷⁸⁹ It appears that Christopherson first acquired his mathematical and engineering interests from his father, Irving Carlyle Christopherson, a teacher who patented 'an invention for various mechanical purposes and for manufacture and use of certain instruments with which to extract balls, bone, or other substances, from gunshot wounds or deeply incised wounds; for dilating contractions in the same, and in the oesophagus, and in the urethra; and for extracting liquid and calculi, or other substances, therefrom.'⁷⁹⁰ H.O. Christopherson had been appointed to a position in the Colonial Government in July 1856 and in January 1857 he had taken up a position as architectural and mechanical draftsman in the Victorian Railways Department.⁷⁹¹

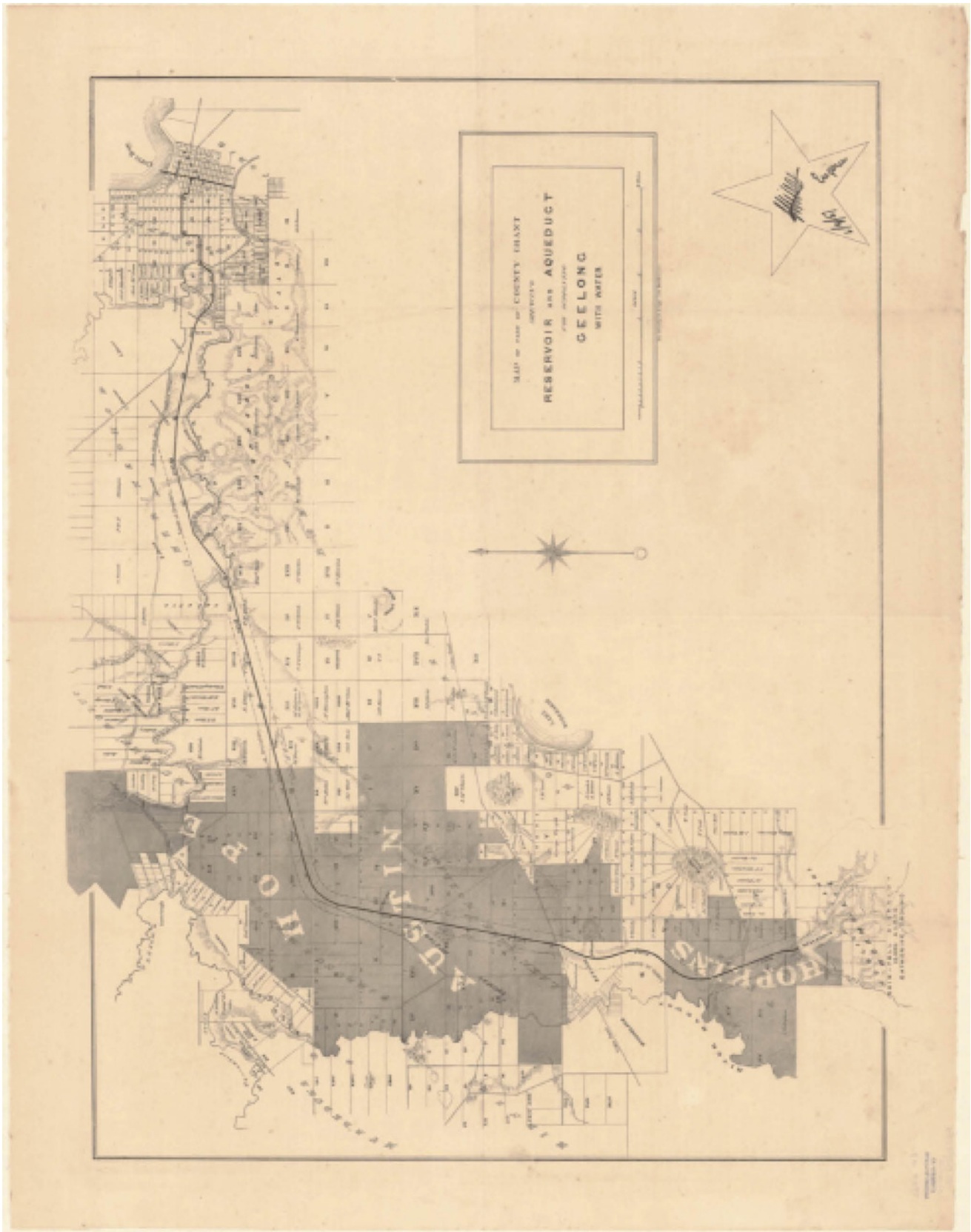


Figure 4.115: J. Millar, Map of Grant showing Reserve & Aqueduct for supplying Geelong with Water, Ge Gruchy & Leigh lithographers, Melbourne, 1857. Source: Bib ID 4977661, National Library of Australia.

Having investigated the country around Geelong, he concluded that 'the head of the Stony Creek (the southern branch of the Little River) possesses advantages far outweighing those of any other place within reasonable distance of Geelong.'⁷⁹² It was Christopherson's proposal that formed the basis of the Upper Stony Creek Reservoir transforming part of Stony Creek and adjacent gullies and swamps in the Brisbane Ranges (located immediately outside today's municipal boundary) into a large water storage catchment.

Christopherson was complemented for his proposal by Government officials.⁷⁹³ He was subsequently appointed Chief Inspector of Waterworks and in 1866, the Victorian Water Supply Department commenced the construction of Christopherson's scheme at Stony Creek. A ceremony for the turning of the first sod was held on 15 June of that year.⁷⁹⁴ Jonathan Chappel of Geelong was awarded the contract to construct the storage reservoir at a cost of £42,572/17/9, a contract for cutting a trench on the site of the dam for the reservoir having been given to William Fallon at a cost of £261/18/4.⁷⁹⁵ A Mr Cuthbert was appointed assistant-engineer to the scheme, with stonemason, Nicholas McCann of Ceres, occupying 'a post of some responsibility.'⁷⁹⁶

Details on the proposed reservoir were documented by the *Geelong Advertiser* a few months after the commencement of construction in October 1866:

The Stony Creek reservoir, it should be understood, as marked out by contour lines on the ground itself is, in form, like a monster square-headed fish, the tail of which is rather more than a mile up the Creek, in the direction of the Burnt Station, the head being formed by a hug dam. ... The dam itself is a remarkable specimen of native industry. As we approached it from the office, our road was in a direction transverse to the creek, and in a line with the great wall, so that what met the eye was a large clay colored triangular patch on the opposite bank of the ravine, 150 yards at the base, rather more from base to apex, which latter was 15 feet wide. This triangular patch was cut in steps two feet in height from bottom to top. On nearing the work, it was seen that our side of the creek was similarly prepared, and we were able, by the steps that had been dug, to make an easy descent. Along the centre of these triangles and transverse to the creek, was a trench not less than six feet deep in most parts, and in one place, as much as 70 feet in depth. This was the foundation of the great earth wall that is to stretch across the valley forming a straight roadway at the top, 15 feet in width and sloping on each side so as to cover the patches we have described. The steps

are designed to give stability to the superincumbent earth, which as a quasi-fluid would have a tendency to step out of its intended place. The trench is to be filled with puddled clay prepared by a machine, which was unfortunately not at work. The deep part of the trench was made necessary by a fault in the rock ... the Length of the wall will be 18 ½ chains, or nearly a quarter of a mile, the cubical contents half a million yards...⁷⁹⁷

In 1868, Jonathan Chappel was awarded a contract for additional works for the construction of the reservoir.⁷⁹⁸ In the following year, 1869, tenders were called by the Board of Land and Works for the construction of an aqueduct, flumes and tunnels from the Stony Creek reservoir to Anakie (to a pipe head reservoir), and outlet works for the Stony Creek reservoir.⁷⁹⁹ The contract for the cast iron outlet was awarded to Langland's Foundry Co. Ltd. at a cost of £5,685/5/2.⁸⁰⁰ This outlet tower (Figure 4.116) was supplied with valves to admit water to flow in at different levels. Prefabricated in England⁸⁰¹ before being erected by the Langland's Foundry, the tower was to be 80 feet high.⁸⁰² In May 1871, the completed tower was described in the *Geelong Advertiser*:

Its total height out of the water is between twenty and thirty feet, the dome being surrounded by a gilded lightning conductor. On approaching the structure it was found that the depth of water registered was a little over 63 feet, there being indications that at some previous time it had been a foot higher. The Mayor and his companions having gladly accepted Mr Henderson's invitation to inspect the inside of the tower were agreeably surprised at the very clean and perfect state in which the machinery and place are kept. There are two chambers in the tower, the lower one being well filled with archimedian screws and other machinery used in opening and closing the valves, the machinery being easily set in motion by a capstan in the chamber – overhead, from whence, by slipping outside on to a small balcony, a fine view can be obtained.⁸⁰³

Construction of the aqueduct, tunnels and flumes 'from Stony Creek to Anakie Gap' was awarded to Young and McGuigan at a cost of £18,869/19/6.⁸⁰⁴ In 1870, a contract for the construction of an aqueduct from Wallace's Swamp (north of the Stony Creek Reservoir) was issued to John Butler Dwyer⁸⁰⁵ while George S. Evans and Co. carried out the lining of the tunnels 'on the line of Aqueduct between the Stony Creek reservoir and the Anakies' for £3134/4/0.⁸⁰⁶ They completed additional lining works in 1871 at a cost of £3360/18/4.⁸⁰⁷ Their work involved lining the invert and walls with concrete blocks (composed of one part cement and five parts gravel) and the arch of brick construction.⁸⁰⁸

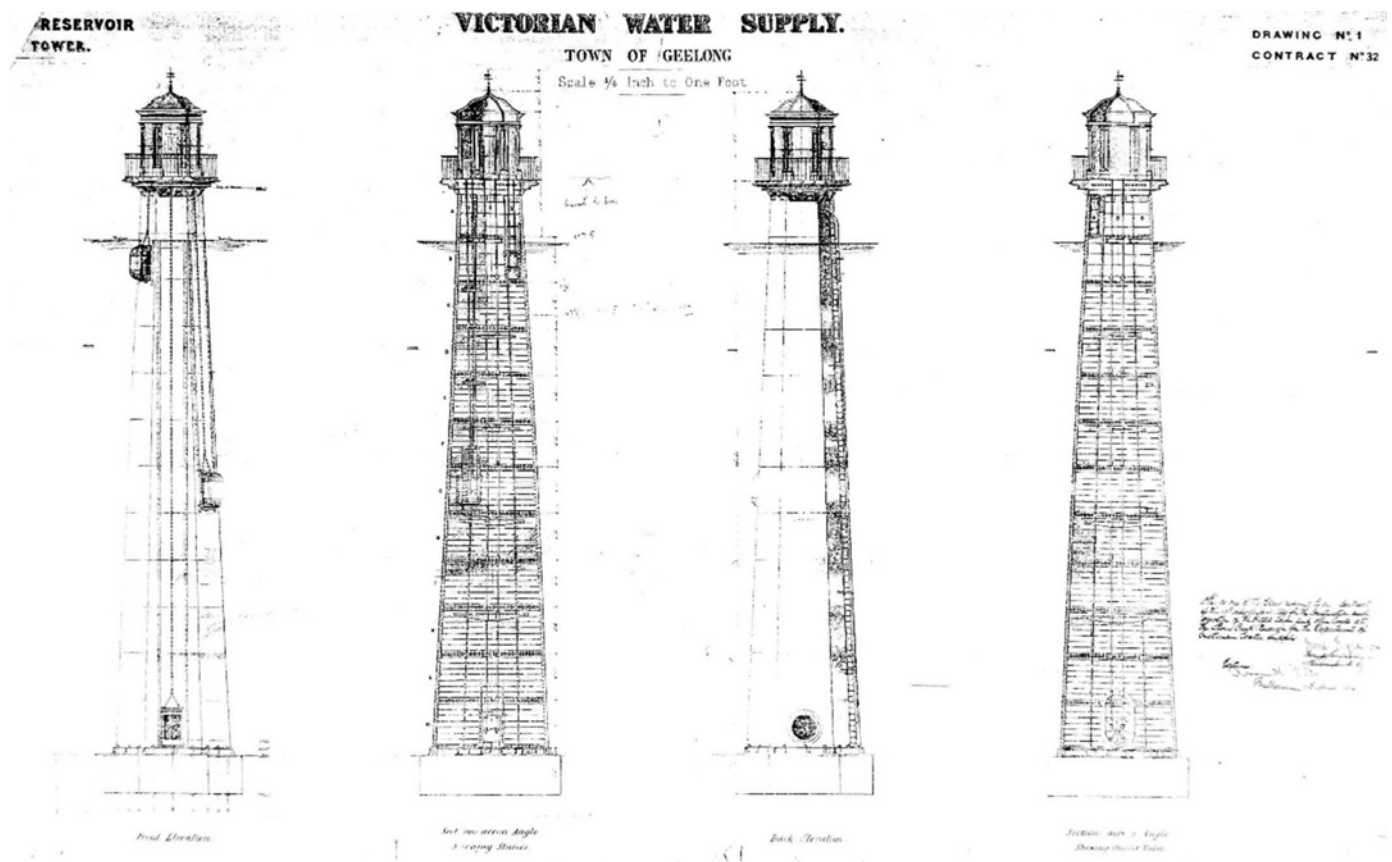


Figure 4.116: Victorian Water Supply, Town of Geelong, Elevation & Section Drawings of proposed Reservoir Tower, n.d. [c.1869]. Source: Barwon Water.

While the *Geelong Advertiser* glowingly reported on the Stony Creek reservoir in April 1871 as ‘a splendid sheet of water, the tunnels, flumes, &c,’ and the genius of the work,⁸⁰⁹ and yet in the following month a portion of the dam wall had subsided and the open aqueduct leading from the reservoir had the potential for contamination.⁸¹⁰ With Christopherson’s dismissal in 1870 due to insolvency and issues surrounding the construction of the Malmsbury water supply (in which he was involved)⁸¹¹ the Victorian Government commissioned Lieutenant-Colonel Richard Hiram Sankey (1829-1908), an Irish engineer then assistant to the chief engineer in the Mysore territory, southern India, to review the construction of the Stony Creek system.⁸¹² He declared:

With reference to the reservoir, no sufficient allowance having originally been made for natural subsidence, the crown of the embankment sank some 4 $\frac{3}{4}$ feet in the highest part. This will therefore now require to be dealt with, The bye-wash, moreover, being in great measure cut through soft schist (almost pipeclay), it would be undesirable to allow more water than is necessary to pass over till the whole has been remodelled and paved. In view to complete both works, it appears

desirable not to allow the water in the reservoir to rise higher than within 15 feet of the bye-wash level, and to maintain this for about two or three years, till all subsidence has ceased. There is, I should say, no present or prospective danger to be apprehended if this precaution be observed.

... As regards the open channel from Stony Creek Reservoir to the Pipe-head Reservoir, near Mount Anakie, I consider that it will be desirable, on the whole, to fall back on the plan originally proposed by Mr. Christopherson, namely, to carry the water by pipe the whole way, as, although there would be no engineering impossibility in completing the portion of the work as at present designed, there can be little doubt that the open channel, where carried on moved soil, would be a continual source of anxiety (from the risks inherent to a design of this nature) and of expense.⁸¹³

At this time, the Stony Creek embankment was one of the highest in the world.⁸¹⁴ Originally intended to hold 2839 megalitres, following the subsidence it could only hold 636 megalitres⁸¹⁵ (Figure 4.117). In 1873, Edward Dobson



Figure 4.117: Aerial View of Upper Stony Reservoir, 1930. Source: *Geelong: its advantages and opportunities*, Geelong Publicity Council, Geelong, 1930, p.34.

(c.1816-1908), resident engineer for the Geelong Water Supply Works (with training in architecture and engineering and experience as a railway engineer near Nottingham, England), sought to reduce the height of the embankment by 8.5m, the earth to then be placed in front of the dam to strengthen it.⁸¹⁶ This therefore permanently reduced the water capacity of the reservoir. The work was carried out by Alfred Chitts at a cost of £468/5/3.⁸¹⁷

LOWER STONY CREEK RESERVOIR

In January 1873, a new concrete dam was proposed to be constructed to supplement the Stony Creek Reservoir.⁸¹⁸ A month later the *Geelong Advertiser* reported that 'the additional storage is proposed to be secured by building a masonry or concrete dam on the creek about four miles below the present reservoir.'⁸¹⁹ The site was considered ideal, with four square miles of steeply sloping country 'available as additional gathering ground', yielding 878 megalitres a year.⁸²⁰ Given the lowness of the proposed reservoir location, a tunnel over a mile in length through the ridge was also required.⁸²¹

The engineer for the proposed works was George Tindal Gordon (1829-1907), a Scot who had been apprenticed to a consulting engineer in England and who had gained experience in Holland (with four years as chief engineer of the Amsterdam Water Company) and in India (as chief district engineer of the Madras Irrigation and Canal Company).⁸²² In May 1872, Gordon was appointed chief engineer of the Board of Lands and Works.⁸²³ The Lower Stony Creek Reservoir – constructed of Portland cement⁸²⁴ – was one of Gordon's major engineering achievements.⁸²⁵ The proposal was described in the *Geelong Advertiser* in January 1873:

A walk down a cart track [from the Upper Stony Creek Reservoir] made down a side gully brought us to where the new dam or weir is to be built. It would be almost impossible to find a place where a dam could be so cheaply constructed to hold so much water, nature having almost formed the dam. The ranges at this place converge together, forming a narrow gorge not ten yards wide at the bottom, the ranges rising almost perpendicular from the bottom of this gorge. Immediately in front of the proposed dam or weir the

creek opens out into an immense basin, fully a quarter of a mile wide and nearly level, the south side of the range forming a huge natural buttress to retain the water, which will be retained by a weir 60 feet high, formed of concrete, as the stone on the sides of the ranges cannot be got in blocks of sufficient size to make good masonry. The cost of this work will be very moderate, as three large reefs rise upon each side of the ranges through the site of the weir, and no expensive works will be required to carry off the surplus water, which will be allowed to flow over the top of the weir.⁸²⁶

Work began following the acceptance of the tender of George Patrick for clearing the site for the proposal.⁸²⁷ The foundations of the new dam had been constructed by early May 1873 and the building of the concrete wall – with pointed-arched valve houses projecting from the base (Figure 4.118) - commenced soon after. It was reported that ‘as a proof that Mr Dobson intends to have the work done well, it may be mentioned that he has already condemned 600 barrels of cement, and positively refuses to allow any to be used that will not set quickly.’⁸²⁸ Upwards of 50 men were employed in the construction of the reservoir, but delays occurred due to difficulties carting the large quantities of cement required through the poor roads in winter.⁸²⁹ Half the work had been completed by the end of 1873.⁸³⁰ Completed March 1875 at a cost of £17,306/12/-,⁸³¹ the Lower Stony Creek Reservoir was a major engineering feat. It was the first mass concrete gravity dam in Australia and in the southern hemisphere; the third in the world (at the time); an early use of Portland cement for a substantial construction; and an early utilisation of stability engineering analysis.⁸³²

Unlike the open aqueduct for the Upper Stony Creek Reservoir, the new Lower Stony Creek weir was serviced by an elevated cast iron flume⁸³³ (Figure 4.119).

SERVICE RESERVOIRS

Christopherson’s original scheme for the Stony Creek water supply also involved the construction of a service reservoir (now known as service reservoir no. 1) and filter beds (settling pond) at Lovely Banks. A contract for the work was awarded to George Simmie and Co. in April of that year at a cost of £8,868.⁸³⁴ A lime house/ inlet tower was also constructed and a timber caretaker’s cottage erected.⁸³⁵ A second reservoir was built in 1910-11 (Figure 4.120) and a third in 1926.⁸³⁶ ‘Ornamental trees’ had been planted in 1893 and again in 1896 while the reservoirs were stocked with fish.⁸³⁷ While some alterations have been made to the service basins at Lovely Banks in recent years, the site still functions for its original purpose.

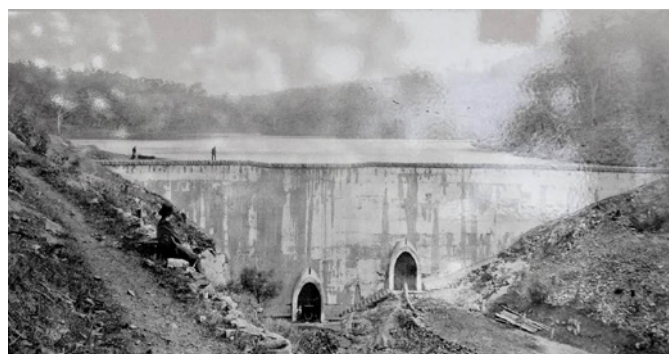


Figure 4.118: Lower Stony Creek Concrete Wall, 1906. Source: *News of the Week*, 6 September 1906, GRS 2121, Geelong Heritage Centre collection.

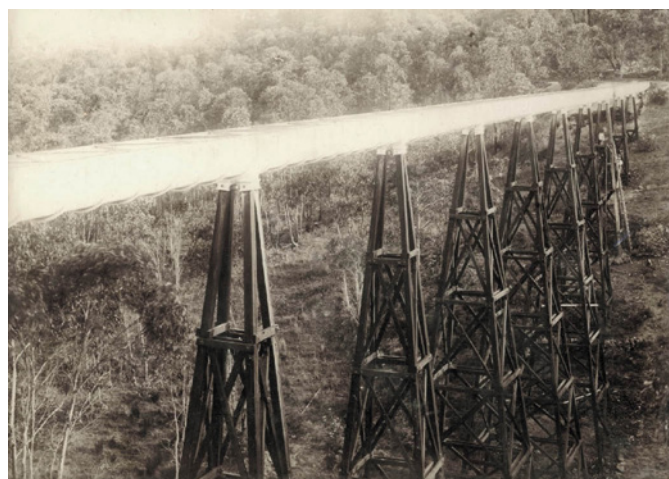


Figure 4.119: Elevated cast iron flume, Lower Stony Reservoir, c.1873. Source: State Rivers & Water Supply Commission photographer, accession rwo/u1, State Library of Victoria.

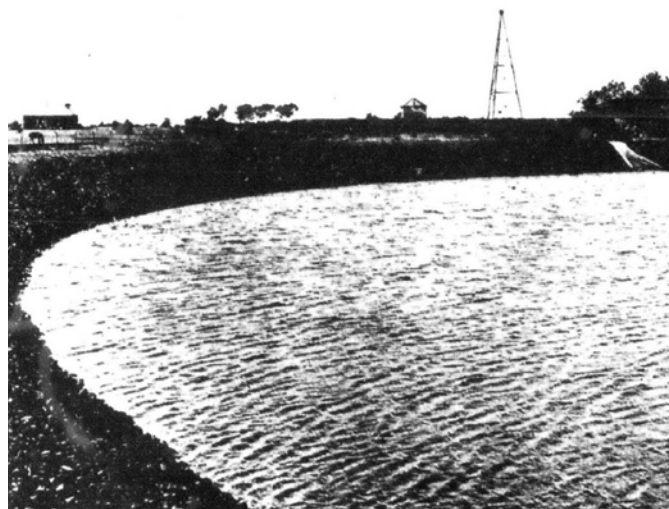


Figure 4.120: Portion of reserve no.2, Lovely Banks, 1913. Source: *News of the Week*, 4 December 1913, GRS 2121, Geelong Heritage Centre collection.



Figure 4.121: Former valve tower to the Bell Post Hill basin, Heritage Drive, Hamlyn Heights, 2019. Source: David Rowe.

As the population grew and demand for water increased, additional service basins were constructed in the ensuing years. At Highton flanking Scenic Road, the first of the Montpellier service basins (no.1) was constructed in 1900.⁸³⁸ The basin was named after John Highett's home Montpellier as the ruins of this home are located nearby. (see earlier subsection & Theme 6), The pipelines that formed part of the Montpellier Service Basin site were transported using an innovative aerial tramway across the Barwon River from Camden Road to Montpellier by the carrying firm of J. Bannister and Son.⁸³⁹ The tramway was in operation on 6 August 1900, when pipes were successfully hauled over the 900 feet of cable span above the river by a donkey engine.⁸⁴⁰ The inlet pipe took water into the new reservoir for the first time on 14 November, 1900. Service basin no.2 was constructed in 1919, whilst basins no.3 and no.4 were built in 1926 and 1970 respectively.⁸⁴¹

In 1926 a service basin was also laid out at Bell Post Hill on a 12-acre site between 'Glenpanyall' and 'Morongo', south of the Ballarat Road.⁸⁴² It was designed to hold up 41 megalitres of water. Alterations were carried out in 1963 and by the mid-1980s the reservoir was no longer

in service.⁸⁴³ It was partly filled with soil although the valve house remained in place until the site was sold as part of a residential estate in 2002. The area of the previous water reservoir was created into a public reserve and named Sharland Park in 2003⁸⁴⁴ after James Sutherland Sharland (c.1867-1948), inaugural secretary and engineer of the Geelong Municipal Waterworks Trust in 1908,⁸⁴⁵ and first engineer of the Geelong Waterworks and Sewerage Trust from 1910 (and later engineer in chief 1917-1935).⁸⁴⁶ Sharland had been appointed secretary, engineer and rate collector to the Kilmore Shire Council in 1894⁸⁴⁷ and subsequently held similar positions with the Yea Shire (from 1897), Springfield Shire (from 1900), Alexandra Shire (from 1901) and Corio Shire (from 1902) before being appointed Town Survey and Treasurer to the Geelong Town Council in 1905.⁸⁴⁸ Sharland continued in his engineering position with the Geelong Waterworks and Sewerage Trust until 1935.⁸⁴⁹ A trademark of his association with the Trust was the battlemented designs of the outlet towers to the water reservoirs,⁸⁵⁰ the former tower to the Bell Post Hill basin now a feature in a road reserve in Heritage Drive (immediately south of the Road Ballarat Road), Midland Highway (Figure 4.121).

GEELONG WATER SUPPLY NETWORK OUTSIDE GREATER GEELONG

In addition to Upper Stony Reservoir, much of the water supply for the City of Greater Geelong was established beyond today's municipal boundaries. In 1900, they included a diversion weir at Bolwarra north of Ballan with water supplied by an open channel (known as the Ballan channel).⁸⁵¹ In 1908, work began on a reservoir at Korweinguboora. Completed by June 1910, it had a capacity of 1741 megalitres.⁸⁵² In 1927, work commenced on the building of a reservoir at Wurdee Buloc near Winchelsea to service towns on the Bellarine Peninsula, Barwon Heads, Torquay and Anglesea.⁸⁵³ In 1953, work began on a reservoir across the Eastern Moorabool River south of Korweinguboora. With a capacity of 6208 megalitres, it was named the Bostock Reservoir after Thomas Edward Bostock, Mayor of Geelong (1905-08) and connected to the Moorabool system by an aqueduct 5.5 miles in length.⁸⁵⁴ To the south-west between Forrest and Gellibrand in the Otway Ranges, the West Barwon Reservoir was opened in November 1965. It could hold 18,170 megalitres.⁸⁵⁵

RETICULATION PIPES

The gravity feed system established by Christopherson also involved the laying down of reticulation pipes throughout the central Geelong city area and inner suburbs. In April 1869, Robert Walton Carrick had been



Figure 4.122: Water Tower, East Geelong, c.1930. Source: T.T. Holmes collection, Authentic Heritage Services.

issued a contract for the transportation of pipes between Anakie and Geelong.⁸⁵⁶ A few months later in December 1869 and again in January 1871, Humble and Co. were awarded the contract for supplying cast iron pipes and other castings for the Geelong Water Supply.⁸⁵⁷ Other water pipes were supplied by Oppenheimer and Co. soon after and by James McEwan and Co. in February 1872.⁸⁵⁸

The digging up of Geelong's streets was to be delayed. By September 1869, Garrick had almost completed his contract in carting and distributing the pipes to the desired locations. Yet, the *Geelong Advertiser* bemoaned the lack of progress in having them laid:

The water pipes are now pretty well distributed throughout the town, and much dissatisfaction is expressed that steps have not been taken to lay them the places they will henceforward occupy in the reticulation of the town. ... But as we understand it, the work is too particular a one to be entrusted to contractors, who in bustling along with the work might crack a pipe or two, and the accident would not perhaps be discovered until the water was let on, and then it would be a serious nuisance to have to take up the pipes and stop the supply, and this at a great cost. ... The reason why we particularly urge that the pipes be hidden from view is to prevent accidents; several slight ones have already occurred ...⁸⁵⁹

Further delays came from the workmen employed in digging the trenches for the laying of the pipes.⁸⁶⁰ By late September 1869, satisfactory progress had been made in laying the pipes in Moorabool Street.⁸⁶¹ Most of the pipes within the Geelong city had been laid by November 1870⁸⁶² but delays in the opening of the mains came from the inadequacies in the embankment at the Upper Stony Creek Reservoir. Water was first

supplied to the Geelong Infirmary and Benevolent Asylum by November 1873 and the first domestic supplies commenced from 13 January 1874.⁸⁶³

WATER TOWER AT EAST GEELONG

In 1927 to improve the water supply for residents at East Geelong, St. Albans (now Whittington and St. Albans Park) and other neighbouring districts, a round, reinforced concrete water tower (Figure 4.122) was built 'near Hinchcliffe's corner', on the north side of Ormond Road, west of Boundary Road.⁸⁶⁴ Officially known as a water stand pipe, it was erected to a height of 18.75m and with an external diameter of 7.62m. It held 168,600 gallons of water. The structure was constructed at a cost of £2000 by B. Murphy of Geelong.⁸⁶⁵ Under construction in June 1927, the *Geelong Advertiser* reported on the proposed water facility:

From almost any elevated position in Geelong, from Belmont, and other localities on the outskirts of this city, may be seen rising up in the east a structure in shape and form not unlike a tower. This imposing pile has been the subject of comment amongst numbers of people attending recent football matches at Corio Oval, where a full view of the structure is obtained.

... The design shows straight, vertical lines, the variations in thickness in the walls being made inside the stand pipe. At a position eleven feet from the top of the structure there is a balcony with a pre-cast balustrade. Its purpose is purely utilitarian, as it is to be used for inspection purposes, but it also invests the structure with a certain amount of architectural dignity. In face the whole appearance of the stand pipe adds a peculiar charm to the locality in which it was been erected.⁸⁶⁶

The tower was removed in the late 20th century.

GEELONG OCEAN OUTFALL SEWERAGE SCHEME

SANITARY CONFERENCE

With a large increase in the population of Geelong in 1854 came the considerable deterioration in the local water supply and sanitation. However, it was not until after the passing of the Water Act in 1890 when agitation increased for a proper sewage disposal system.⁸⁶⁷ In December 1906, a Sanitary Conference was held at Geelong to explore the options for the establishment of a sewerage scheme for the town.⁸⁶⁸ At the Conference were members of the Geelong Town Council and representatives of the Borough of Newtown and Chilwell, Borough of Geelong West and the Shires of South Barwon and Corio.⁸⁶⁹

A critical outcome of the Conference was the securing of the services of the Sydney Civil Engineer, J. Hayden Cardew.⁸⁷⁰ He visited Geelong and prepared a report that was published in 1907 on the possibilities of establishing a sewerage system in Geelong. Cardew 'reported on three schemes the basis of which was sewers draining to septic tanks on the foreshores of Corio Bay near Limeburners' Point and on the Barwon River at the foot of Swanston Street.'⁸⁷¹

ESTABLISHMENT OF THE GEELONG MUNICIPAL WATERWORKS TRUST & GEELONG WATERWORKS & SEWERAGE TRUST

GEELONG MUNICIPAL WATERWORKS TRUST & THE FIRST COMMISSIONERS

In that same year in 1907 following the proclamation of the Geelong Municipal Waterworks Act, five Commissioners were appointed in 1908.⁸⁷² Two were to represent the Geelong Town Council, with one each from the Borough of Newtown and Chilwell and Borough of Geelong West, and one Commissioner to represent the Shires of Corio, Bellarine and South Barwon.⁸⁷³ Those appointed to represent the Geelong Town Council were I.G. Hodges and J.P. McCabe Doyle. Other Commissioners appointed were H. Blomfield Brown (Newtown and Chilwell), H.F. Christopher (Geelong West) and H.M. Sutherland (South Barwon, Corio and Bellarine).⁸⁷⁴

Isaac George Hodges (1860-1930) was appointed the inaugural Chairman. He was the son of the Isaac and Isabel (nee Smart) Hodges.⁸⁷⁵ Isaac junior following his father in the brewing business.⁸⁷⁶ Hodges contributed much to public life, holding the seat in the Geelong City Council for 17 years and chairmanship of the Geelong Municipal Waterworks Trust – and later Geelong Waterworks and Sewerage Trust – for 21 years.⁸⁷⁷

John Patrick McCabe Doyle (c.1869-1941), the son of Patrick Aloysius Doyle and Ellen Mary McCabe.⁸⁷⁸ He attended St. Francis Xavier's College and studied law at the University of Melbourne.⁸⁷⁹ After admittance to the Bar, he worked for Messrs. King and Duffy before he relocated to Geelong in 1898 to established a legal practice under the name of Doyle and Picket (which later became Doyle and Kerr).⁸⁸⁰ He married Miss. M.J. Ryan in 1903. McCabe Doyle was a staunch Catholic, being 'a vigorous and effective lay spokesman.'⁸⁸¹ He was also prominent in community affairs including holding office with the Geelong Town Council, Geelong Hospital, orphanage and community club committees,⁸⁸² and he was associated with the Gordon Institute of

Technology where he suggested the Institute's motto: '*Meliores Priores – The Better Man, The Pride of Place.*'⁸⁸³

Henry Blomfield Brown (1851-1923) was born at Boreham, Country Kent, England, the son of the Rev. Henry Brown, Rector of Woolwich and Canon of Rochester Cathedral.⁸⁸⁴ His mother was Maria Blomfield. Brown came to Australia around 1880 and subsequently settled in Geelong and worked as an auctioneer and estate agent for W.F. Ducker at his auction rooms in Little Malop Street.⁸⁸⁵ Brown was later appointed a partner and later acquired the business which he renamed H. Blomfield Brown and Co.⁸⁸⁶ He was active in public life as a Councillor for the Borough of Newtown and Chilwell (serving as Mayor for three terms) and from 1885 he was a Councillor with the Geelong Town Council.⁸⁸⁷ Other community roles included secretary of the Geelong Hospital Committee, secretary of the Geelong Club, president of the Newtown and Chilwell Fire Brigade and president of the Geelong Auctioneers' and Estate Agents' Association.⁸⁸⁸ He married Minna Spencer Wills in 1883, the daughter of Horatio Spencer Wills, who had been regarded as 'one of Victoria's best known pioneers.'⁸⁸⁹

Henry Frederick Christopher (c.1870-1941) was an engineer.⁸⁹⁰ He married Miss Marianne Elizabeth Warner in 1892.⁸⁹¹ Christopher also contributed substantially to community life, serving as a Councillor with the Borough of Geelong West between 1903 and 1915 (including three terms as President); correspondent for the Geelong West Board of Advice from 1905, member of the Geelong West Free Library Committee from 1906, President to the Geelong West Fire Brigade in 1909, member of the Geelong West Progress Association in 1909, and Secretary of the Geelong West Park Committee from 1912.⁸⁹² In 1916 he was appointed a Justice of the Peace and in 1922 he was patron of the Geelong West Bowling Club.⁸⁹³

Hugh Mann Sutherland (1848-1916) was an auctioneer and at the time of appointment to the Trust a breeder of pure Border-Leicester sheep at 'Elcho' homestead (see earlier subsection for further details).

GEELONG WATERWORKS & SEWERAGE TRUST & ITS SUCCESSORS

Following the proclamation of the Geelong Waterworks and Sewerage Act in 1909, the name and constitution of the Geelong Municipal Waterworks Trust was altered to the Geelong Waterworks and Sewerage Trust in 1910.⁸⁹⁴ A basis for the change of name was the focus on providing an adequate sewerage scheme for Geelong (following the sanitary conference and appointment of Cardew in 1907) in addition to ensuring a reliable water supply.



Figure 4.123: Laird & Buchan Architects, Sketch of the proposed Geelong Waterworks & Sewerage Trust Offices, 1911. Source: *News of the Week*, 9 March 1911, GRS 2121, Geelong Heritage Centre collection.

The importance of the Geelong Waterworks and Sewerage Trust as a public body was to be reflected in the construction of a contextually elaborate Federation Free styled, two storey masonry office building at the west end of Ryrie Street neighbouring the Presbyterian Church. Designed in 1911 by the local architects, Laird and Buchan,⁸⁹⁵ the building (Figures 4.123-124) was constructed by F. Apted.⁸⁹⁶ On its opening in July 1913, the *Geelong Advertiser* gave a description of the interior spaces:

The Revenue Department is in the left passage at the main entrance, and most of the water administration is on the ground floor. Upstairs the sewerage draughtsmen will be located, and two special rooms

have been built on the roof for the copying of drawings and designs. The building is heated by a steam pipe system attached to a small boiler in the basement. Generally one stoking first thing in the morning with coal will keep the radiation warm for the rest of the day. A private telephonette system keeps the whole of the apartments in touch.⁸⁹⁷

The office building was replaced with a new Brutalist design in the 1970s, and in recent years this replacement building has been transformed into a nationally award-winning design (see Theme 6).

In 1983, the Victorian Government passed the Water and Sewerage Authorities (Restructuring) Act. Consequently, the Geelong Waterworks and Sewerage Trust was replaced



Figure 4.124: Geelong Waterworks & Sewerage Trust Offices, Ryrie Street, c.1930s. Source: Wynd collection, Authentic Heritage Services.

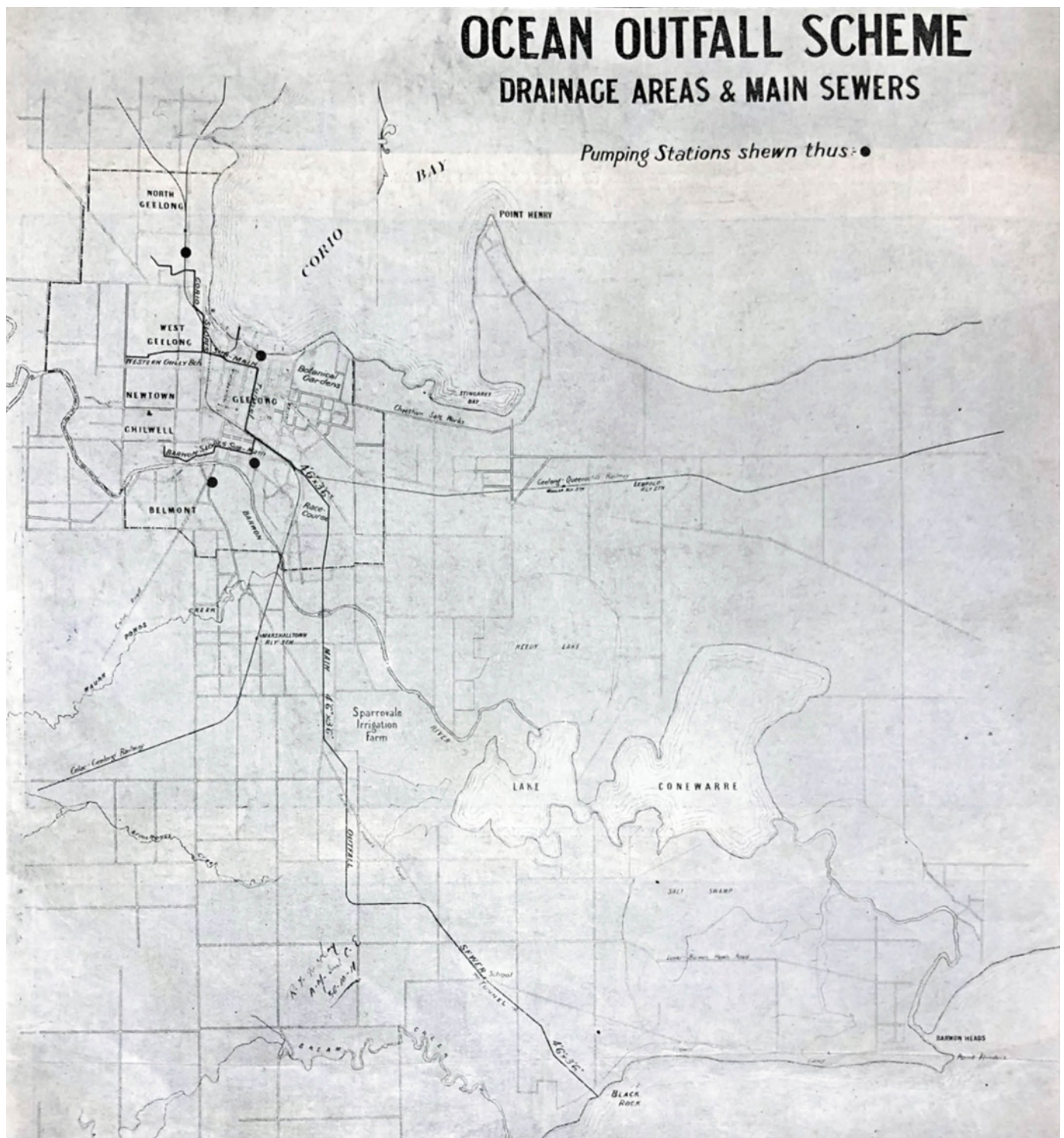


Figure 4.125: R.T. McKay, Plan of proposed Ocean Outfall Scheme Drainage Areas & Main Sewers, 1911. Source: *News of the Week*, 2 November 1911, p.14, GRS 2121/3, Geelong Heritage Centre collection.

with the Geelong and District Water Board in 1984.⁸⁹⁸ Raymond Wallace (Wal) Whiteside was appointed its inaugural chairman for a four year term and he served in this capacity until 1992.⁸⁹⁹ On 23 January 1994, the Geelong and District Water Board was reconstituted and its name changed to the Barwon Region Water Authority (Barwon Water).⁹⁰⁰ This Authority continues to manage Greater Geelong's water supply to the present day.

OCEAN OUTFALL SCHEME

Upon its formation, the Geelong Waterworks and Sewerage Trust concentrated on obtaining information about sewerage schemes in other parts of Australia and in New Zealand, following on from the sanitary conference and appointment of Cardew in 1907.⁹⁰¹

On 1 June 1910, the Trust appointed Charles Campbell Breen, an experienced surveyor from the Melbourne and Metropolitan Board of Works (M.M.B.W.).⁹⁰² His role was to carry out surveys and ground tests to ascertain where the proposed sewers should be laid.⁹⁰³ Calder E. Oliver, engineer of M.M.B.W. also reported on the feasibility of a sewerage farm for Geelong at Point Henry at this time.⁹⁰⁴ This latter proposal was however not recommended.

In May 1911, the Trust appointed R.T. McKay, civil engineer of the Public Works Department in Sydney, to design and carry out a sewerage scheme. His first task was to review the other reports and recommendations by the previously appointed engineers and surveyors.⁹⁰⁵ In his report to the Trust in 1911, McKay 'dealt exhaustively with various methods of sewage disposal' and submitted schemes for Septic tanks, Sewerage Farm and Ocean Outfall.⁹⁰⁶

In the *Chairman's Fifth Report for year ended 30 June 1912*, the Trust reported on McKay's findings and it was the ocean outfall scheme that he found to be the most practical and economical (Figure 4.125). The Trust had accepted McKay's recommendation for an ocean outfall scheme in October 1911.⁹⁰⁷

On 23 February 1912, tenders were called for the manufacture, supply and delivery of oviform reinforced concrete pipe sewers and for the construction of the main outfall sewer from Marshall to the ocean at Blackrock.⁹⁰⁸ The successful tenderer for both contracts was the newly formed partnership of Messrs. Stone and Siddeley, specialist concrete engineers.⁹⁰⁹ Stone had designed the Dennys Lascelles Austin store in Brougham Street, Geelong, in 1909, which was built on the Considère system – a French system of concrete construction.⁹¹⁰

Edward Giles Stone (1873-1947) was born in Strathfield, Sydney (the son of J.J. Stone, a civil engineer),⁹¹¹ and he was educated at Sydney University.⁹¹² Stone gained

experience in the engineering of sewerage systems after his employment with the N.S.W. Public Works Department.⁹¹³ There, he was inspired by the recently-completed aqueduct at Annandale, the first major aqueduct of Monier concrete construction.⁹¹⁴ He transferred to the Sydney Harbour Trust in 1900 as Chief Designing Officer and resigned in c.1907 to practice as a consulting engineer and structural architect, specializing in reinforced concrete.⁹¹⁵ Before the end of 1909, Stone designed the highly innovative Dennys Lascelles Austin store in Brougham Street, Geelong. Until its controversial demolition in the late 1980s, this building represented just one of two known structures in Victoria built using the exotic reinforced concrete construction system: the French Considère system (the other being the Barwon ovoid sewer aqueduct – see later subsection). On his death, the Dennys Lascelles Austin store was regarded as having 'the greatest area of floorspace without supports of any building in Australia.'⁹¹⁶

Ernest Joshua Siddeley (1872-1965) was born at Kew, Victoria, the son of William and Emma Catherine (nee Forward) Siddeley.⁹¹⁷ Educated at the Melbourne Grammar School, he later trained in engineering at the Working Men's College in Melbourne.⁹¹⁸ Siddeley first worked as an engineer for Austral Otis in South Melbourne and subsequently at the Smelting Company of Australia before taking up a position as mining engineer in South Africa in 1902.⁹¹⁹ Following his return to Australia in c.1905, he was appointed Chief Engineer of the Chillagoe Mine and Railway in Queensland and later moved to Sydney.⁹²⁰ With the calling of tenders for the Geelong Waterworks and Sewerage Trust's Ocean Outfall Scheme in 1912, he entered into partnership with E.G. Stone.⁹²¹

CONSTRUCTION OF THE OCEAN OUTFALL SCHEME

In June 1912, Stone and Siddeley commenced the establishment of a pipe making factory 'at the Marshalltown Railway Station, where a lease of Railway property alongside the siding' was granted by the Railway Commissioners. The *Geelong Advertiser* reported on 6 June 1912 that:

Mr. Stone, one of the contractors for the ocean outfall sewer, is expected in Geelong this week to make preparations for the erection of the pipe making plant at Marshalltown. Some of the material is ready on the site adjoining the Marshalltown railway station.⁹²²

By August 1912, the factory was virtually completed. A tram line had also been laid along the former racecourse railway reserve (see Theme 3) for the purpose of transporting the pipes from the factory to the excavation



Figure 4.126: Pipe factory, Marshall, n.d. [c.1012]. Source: Barwon Water.

sites and for handling the materials for the manufacturing process and excavation (including the removal of surplus soil).⁹²³ On 24 August 1912, the *Geelong Advertiser* favourably reported on the factory complex:

Messrs. Stone and Siddeley's best enterprise in the contract is the construction of the pipe factory at Marshalltown, adjoining the railway station, at a cost of £8000. It is an iron building 180 ft. long by 50 ft. wide, and has a railway platform siding immediately at its doors.⁹²⁴

The large, two storey, gabled, unassuming pipe factory building was clad in lapped galvanised corrugated steel, with a timber and steel structure (Figure 4.126). At both ends were large, hinged timber doors that allowed for the factory tramline. There was also a round chimney stack for the boiler at one end.

Adjacent to the factory building were rudimentary open skillion sheds clad in galvanised corrugated steel, testing equipment and structures, and the curing yard for the pipes on the former racecourse railway reserve (Figure 4.127).

Nearby the pipe factory and along the route of the sewer to Blackrock, poppet heads, 'reminiscent of the mining days, were erected' 'as miners from the recently closed deep lead mines in central Victoria and elsewhere, sank shafts and commenced tunneling operations.'⁹²⁵ A further reference to the earlier central Victorian goldfields were the tents which the *Geelong Advertiser* described as 'canvas towns.'⁹²⁶

The contract for the manufacture, supply and delivery of approximately 40,000 feet of 4 ft. 3 in. Oviform Reinforced Concrete pipes represented a departure from standard practice. The Chief Engineer of the Trust had specified a minimum length of 8 feet that was twice the length of



Figure 4.127: Curing yard for ovoid concrete pipes, Marshall, c.1912. Source: Barwon Water.

any pipes constructed in Australia.⁹²⁷ The Chairman's Fifth Annual Report described this unique specification as follows:

The use of the longer length of pipe makes for greater efficiency with the consequent lessening of the number of joints to be made on the sewer. This innovation on the part of the Chief Engineer is one which will have far-reaching effects, and is one to which all the pipe makers must subscribe in order to be able to compete for the large trade in Reinforced Concrete Pipes.⁹²⁸

The purpose of the oviform pipe was to reduce fouling. As the *Geelong Advertiser* described on 24 August 1912:

The selection of oviform pipes is the result of modern experience that this design means less fouling. The pipes will be laid with the smaller end down; it will be better understood by the illustration of an egg being stood on its point. When the flow of sewerage is at minimum there is less surface of pipe to be fouled than

in a spheroid, where the smallest section would be more flat than the oviform.⁹²⁹

Of further innovation was the method of pipe manufacture by E.G. Stone. Again, this was a departure from the accepted methods of the time and the factory and its equipment were claimed to have been unrivalled in Australia, dispensing with manual labour 'as far as possible'. The *Geelong Advertiser* gave a detailed description of the innovative manufacturing process as follows:

Sand, metal and cement can be landed [by rail] at the spot at a great reduction on road cartage, and once delivered go through the process of manufacture into pipes without any further handling by manual labor. In this respect the factory is unique. Elevators convey the materials into large bins, whence it gravitates in required quantities into the concrete mixer. Water is injected automatically into the huge iron concern – one

of the largest in Australia. The next stage of travel is into the concrete receiver, where compressed air steps in and forces the mixture into the steel mould in which reinforcement has already been placed. The mould is of Mr. Stone's own design, in fact, the whole system of manufacture is original, and has been patented by the firm throughout Australia. The mould is a massive steel structure, with inner and outer skins, the latter detachable so that after the necessary period of compression the pipe can be drawn out without damage. The process takes far less time than any other system and will turn out a better and longer reinforced pipe than any hitherto attempted in Australia. Each mould weighs three tons, and is mounted on wheels, so that they can traverse any part of the complete factory tramway. This tramway is another great economy of the undertaking. Road cartage would work out at 6/- per ton, and the bill would be immense. With the cost of locomotive and track thrown in the haulage bill under this modern method will not run into more than £8000. The engine is a sturdy midget, with mushroom-like boiler, and at the end of next week a track will have been laid for it to travel almost up to Black Rock. It is only a surface track 2 ft. 6 in. gauge, without ballasting, and the tiny engine does not attempt speed records. Still it can haul pipes to any point along the sewer line, whose contour the rails follow. Power for the factory is furnished by a simple non-condensing engine with "Jackass" boiler. The plant, apart from the casting appliances, is simple though there is a very neat air compressor, which is an important feature. It might be mentioned that Mr. Stone has made tests with Fyansford concrete and several specimen blocks of concrete made from it have turned out remarkably well. He has, therefore, decided to use the Geelong article right through the works.⁹³⁰

The first pipe manufactured for the outfall sewer was on 5 September 1912. The Trust Commissioners Small and Christopher, together with R.T. McKay and J.S. Sharland, visited the factory for the event.⁹³¹ Manufacture of the pipes commenced slowly at first due to a lack of moulds.⁹³² Although the initial expectation was to produce 178 feet of pipe daily, the maximum daily length after additional moulds were made appears to have been 120 feet.⁹³³ This was from November 1912 when the employees worked double shifts once a small electric light plant had been installed.⁹³⁴

Separate tenders were simultaneously called for the laying of the reticulation pipes in the city and suburban areas.⁹³⁵ Initially residents were concerned that existing infrastructure that conveyed the stormwater were to be used for sewerage⁹³⁶ but their fears were quelled following



Figure 4.128: Sewerage shaft, Bellerine Street (near Myers Street), 1913. Source: *News of the Week*, 19 June 1913, GRS 2121, Geelong Heritage Centre collection.

laying of the pipes. From 1912, trenches were laid in the streets in readiness for the pipe layers.⁹³⁷ Throughout 1913, Stone and Siddeley were successful in securing contracts for supplying, delivering, laying and joining oviform concrete pipes for the construction of the sewer from the racecourse at Breakwater to Mercer Street, and from the Geelong Railway Station (Mercer Street) to the Abattoirs at North Geelong.⁹³⁸ Shafts also dominated the streetscapes (Figure 4.128). As reported in the *Geelong Advertiser*:

The shafts which are being sunk in connection with the sewerage scheme are the cause of much curiosity to passers by, who besiege the workmen with questions. The men at one shaft have hit upon the expedient of chalking a notice up, and now the enquirer is faced with the following bit of satire: "This is 60ft. deep. For further particulars enquiry within." As two men were working in one of the sewerage shafts in Bellerine-street a boy leaned over and threw an apple, which hit one of the men on the head, stunning him for a minutes; he, however, was able to continue his work.⁹³⁹

By August 1913, two new types of moulds were made of concrete for casting concrete pipes at the Marshall factory. Claimed to be 'the first of their kind in the world' with the inner surfaces being 'as smooth as planed wood', the moulds produced small pipes to be laid on the city side of the Barwon River.⁹⁴⁰ The laying out of the pipes brought on the demolition of dwellings in Russell Street and neighbouring streets in Chilwell that were 'almost past repair, and certainly not worth sewerage.'⁹⁴¹

Today, pipe remnants remain at the old factory site, now the carpark to the Marshall Railway Station.

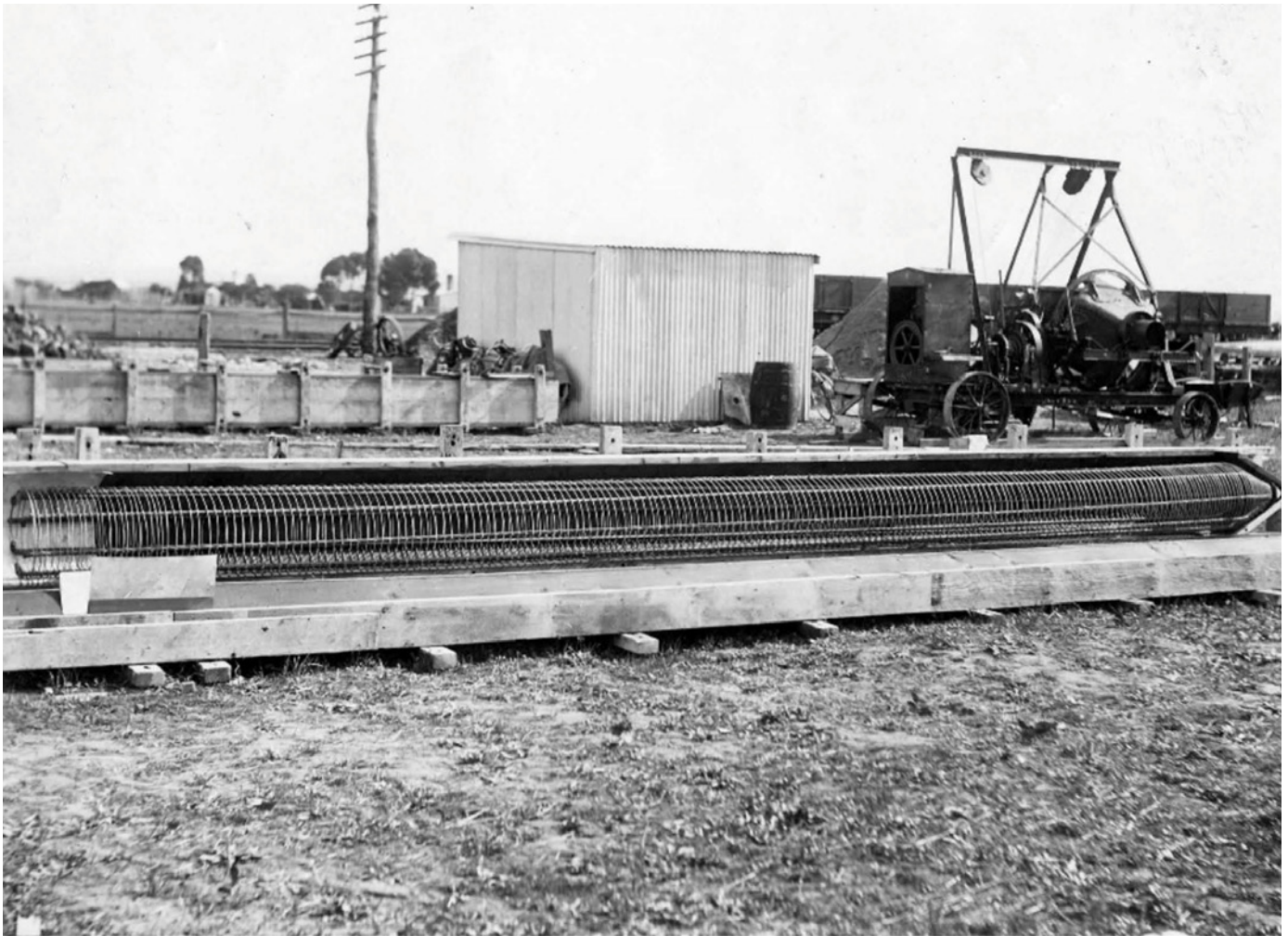


Figure 4.129: Wire reinforcement for a pile for the aqueduct, c.1913. Source: Barwon Water.

MANUFACTURE OF PILES FOR AQUEDUCT

On 17 July 1912, the Geelong Waterworks and Sewerage Trust called tenders for the construction of a sewer aqueduct over the Barwon River at Marshall in either steel or concrete.⁹⁴² The tender of Stone and Siddeley for £18,450 was provisionally accepted on 1 October 1912 for a reinforced concrete aqueduct, subject to working drawings and specifications being submitted for approval.⁹⁴³ They were accepted in February 1913.⁹⁴⁴

Stone's design for the aqueduct had a familiarity with the coathanger trusses found in the Fowler and Baker design of the iron Forth Bridge across the Firth of Forth near Queensferry in Scotland.⁹⁴⁵ While the design in itself was highly unusual, the method of reinforced concrete construction and manufacture was inventive for Australia at that time.

At the factory, eighty piles for the construction of the aqueduct were made in the early months of 1913.⁹⁴⁶ These piles were 'octagonal in shape' and measured '18 inches across the flats'.⁹⁴⁷ They were cast in various lengths to suit the varying depths of the rock line along the line of the aqueduct. Like the manufacture of other structural members of the aqueduct, these piles were based on the Considère system of reinforced concrete construction (Figure 4.129). Prof Miles Lewis has considered Considère construction to be the most exotic of all the reinforced concrete systems of the early 20th century.⁹⁴⁸ Named after the French engineer, Armand Considère, the system of reinforcing was confined to the compression members of the frame, the rest being derived from the Hennebique system, a well-known French reinforced concrete construction method.⁹⁴⁹ Lewis provided the following description of the Considère system:



Figure 4.130: Barwon Ovoid Sewer Aqueduct, 29 September 1916. Source: Barwon Water.

Considère's columns were octagonal or round, and the vertical bars were wound around spirally with a bar much heavier than would be required for simple ligature. The theory was derived from experiments by Considère in which he established that the compressive strength of the core concrete was increased by this peripheral constraint, and he introduced his helical winding wherever there was compression, such as sloping up the angles of haunched beams.⁹⁵⁰

The spiral reinforcing and completed piles for the aqueduct (Figure 4.130), based on the Considère system, were in early photographs. *The Commonwealth Engineer* described the reinforcing system for the piles in 1916:

The reinforcement is of ordinary commercial steel rods. The disposition of the bars throughout the structure is of interest, the full tensile strength being taken up by laps; in no place are they mechanically connected. The rods in the upper boom are arranged in concentric rings, the laps of which break joint along its length. The diagonals are in tension, and the ends of the rods through them are accurately bent around the rods in the upper and lower booms.⁹⁵¹

It was also at this time when the *Concrete and Constructional Engineering Journal* in London declared the aqueduct to be 'one of the finest reinforced concrete constructions in Australia.'⁹⁵²

Although no longer in service, the ovoid sewer aqueduct survives as testimony to the extraordinary engineering accomplishments of the engineers, Stone and Siddeley, and as a legacy of the early ocean outfall system adopted by the Geelong Waterworks and Sewerage Trust.

ENDNOTES

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