WATER: 'City people will have a lot of water but no steak to eat'.

The theme of water has sustained the Brisbane Valley throughout its history. High rainfall levels have produced the best cattle fattening land in Queensland along the Brisbane and Stanley Rivers. These two rivers have both sustained and flooded Brisbane periodically since white settlement in 1824. Ironically Brisbane interests have now claimed those cattle areas to provide water and prevent floods in Brisbane.

The Wivenhoe Dam, with an area of water twice that of Sydney Harbour has brought both controversy and opportunity to the Valley. The other major dams, Somerset, Cressbrook Creek, and Atkinson's Dam were constructed in a different economic climate and in more natural terrain for dam construction. As well the water supply projects of the Esk Shire Council have been achieved through careful financing.

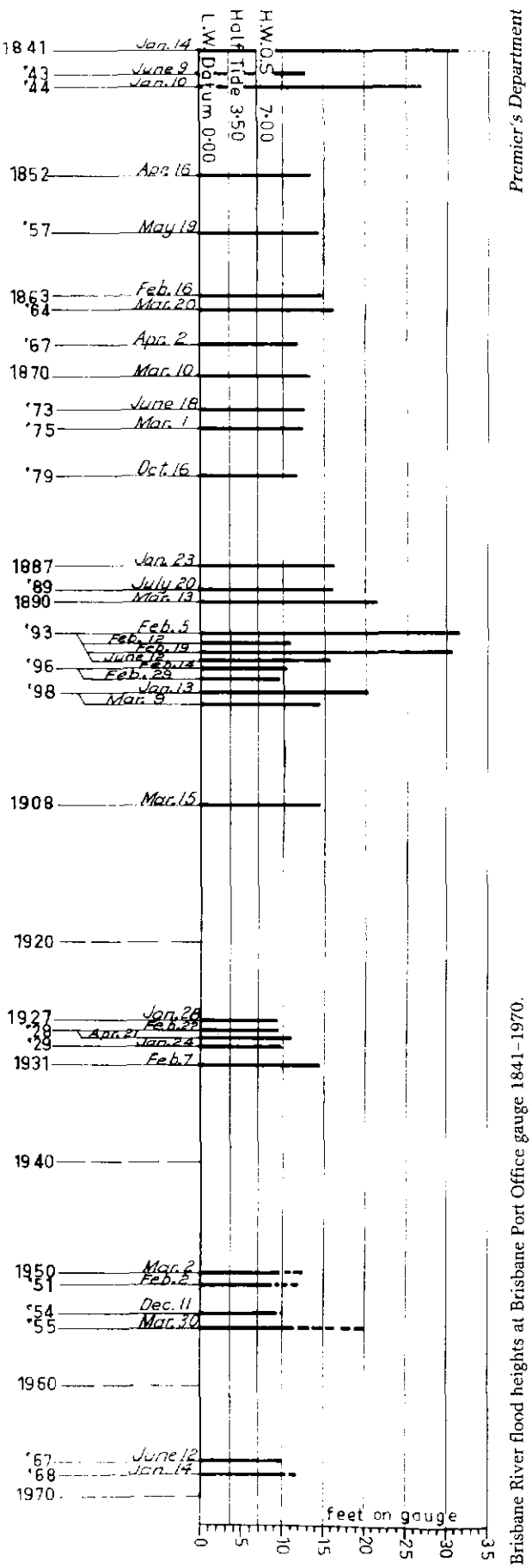
The first water conservation efforts in the Brisbane Valley were the pastoralists' excavations covered with a bark roof, done during a severe drought at the time of Separation. Major droughts have retarded development in the Brisbane Valley in 1877, 1895, 1902, 1919, 1936, 1957, 1968, 1977 and 1982. 'Green Christmases' were welcome but the damaging floods of the 1860s and 1890s destroyed huge acreages of agricultural crops and pastoral land which took years to overcome. Yet within two years of the disastrous 1893 flood cattle were starving in the Mt Beppo area, because few farmers had any permanent water supply; children regularly drove the cattle to the water reserve near the school.

1900 was similarly dry and extremely hot in the summer. There were virtually no maize or potato crops around Esk and the Brisbane River was the lowest it had been for twelve years. Those conditions pertained for another two years. As the drought worsened graziers were unwilling to purchase cattle. Lowood farmers drove their cattle daily to the river for water. Farmers in the Cressbrook area drove their cattle daily to Wheeler's Crossing, owned by McConnels, for water and grass. Families came to do their washing as well and it was rather a picnic atmosphere. Fires in the spring in the D'Aguilar Ranges destroyed the fodder. There were heat waves in December 1902 and January 1903. The severity of the 1902 drought forced graziers to reduce the size of their pastoral holdings and to diversity into mixed farming.[1]

The floods were the most devastating economically. In 1857 F. North's and John Smith's public house at Wivenhoe was completely inundated in the June 1857 flood. People were forced to shelter in tents. Further north, Balfour's station was washed out and an employee, William Whittaker, was drowned. The floods of 1865, 1870, 1880, 1887 and 1889 were portents of future record floods, as warned by the Aborigines.

The flood in July 1889 was the worst flood in the living memory of local selectors. The Brisbane and Stanley rivers and Lockyer Creek met and rose twelve feet above the 1875 level. Otto North, mustering cattle, was suddenly surrounded and had to be rescued by a boat put out by a neighbour. Peter Thompson's garden was swamped and the house covered to the eaves. He and his family escaped to the hay loft. Haystacks, tons of pumpkins, pigs and poultry were swept away in the Vernor area and many selectors had narrow escapes.[2]

The March 1890 flood in the Bremer River was higher, and backed up in the Brisbane river. Lowood and Wivenhoe areas also received heavy rain and there were three slips near the rail line at Lowood. Selectors, Berhnhagen, Lindemann and several others were flooded out, while a number of people on Tarampa road had to 'roost' in trees. £300 worth of J. Flewell-Smith's lucerne and corn crops were washed away. Wivenhoe was surrounded by a vast sheet of water. Selector, Anderson's house was swept off its blocks and carried down to Cameron's Crossing and John Reid and family had to leave their house and lost nearly everything. John Donald was flooded out, sheltering with Mrs McIntosh, together with Mrs Ferguson and her family. The Shines family also sheltered in the state school, along with John McDonald and family who just managed to escape when water rose to the eaves of their house. The Joneses and Aldhams were the only families whose houses were not flooded. The high winds took toll of all crops not flooded and large numbers of stock were drowned as well. While Captain Vernor's



Brisbane River flood heights at Brisbane Port Office gauge 1841–1970. *Premier's Department*

maize crop was saved he and his family had to shelter at Aldham's.[3]

The 1893 flood, ingrained indelibly in Queensland folk-lore had a devastating economic effect on the entire Brisbane Valley; Fernvale, Lowood, and Wivenhoe farmers were devastated. Numerous stories of bravery survive; two in particular have excited generations — the rescue of the Vernor family at Lowood and H.P. Somerset's despatch of Harry Winwood to Esk and Bill Mateer to Petrie with a telegram to warn Brisbane of the imminent flood which was the highest ever recorded in the Brisbane Valley, in Ipswich and in Brisbane. They were caused by five cyclones which crossed the coast near Noosa, deluging the Brisbane and Stanley River watersheds. The total rainfall at Crohamhurst was seventy-seven inches in four days, with 35.7 inches on 2 February 1893. The flood damage and the economic effects of the 1890s depression changed Brisbane Valley land use patterns permanently.

In the first February 1893 flood H.P. Somerset saw a fifty foot wall of flood waters strike the 120 foot cliff at Caboonbah. The force of it shook the house, 180 yards away. The water was fifty foot deep at Bessie's Nook at the junction of the Brisbane and Stanley Rivers and the Stanley River broke over Sapphire Gully. Somerset immediately sent horseman, Harry Winwood to Esk with a telegram to warn Brisbane of the flood; ironically it remained pinned to the General Post Office noticeboard until its significance became a reality. When the second flood was imminent Somerset rowed a horseman, Bill Mateer, with two horses to high land adjoining the stock route up Reedy Creek and over the range to North Pine with a second telegram. Subsequently Caboonbah was made an official flood warning station with a telegraph line from Cressbrook. Somerset suffered £7,000 of damage in the floods, such a serious setback that he divided the Mt Stanley holding into grazing farms and sold them to redevelop Caboonbah.[4]

Those worst affected in the floods were the immigrant selectors, ignorant of flood heights or their regularity, and struggling against high interest rates and an envelopping depression. Contemporary reports indicated that the water was twenty feet above 1890 levels at Lowood and nearly all the houses on the river bank were swept away. Captain Vernor and his family were miraculously rescued by Ernest Nunn, Major J.F. Flewell-Smith, Malcolm Smith and William Russell. The Vernors had not been concerned because the 1890 flood had not come near their house; and when the water came into their house Captain Vernor rowed his wife, three daughters,

son, brother and an orphan boy to a stable loft. Water soon reached it so they tied the boat to a tree and planned to ride it out. They could not manoeuvre to catch a tree so they tried to go to the other side of the river. They hit a gum tree and capsized. One daughter, the son and the orphan boy managed to catch hold of the tree. The remainder caught a branch of another tree further downstream. They were then down near Fairney View and as the water was still rising they used their clothes to make a rope to move to a higher branch. They stayed there for almost twenty-four hours until seen by Heers late in the afternoon. He had to go back to obtain a boat. The rescue team set out in two boats from below the showground at Lowood. The family was rescued before dawn and taken to T. Adermann's near Fernvale. When they went back to their property after the water subsided they found it was a wreck of furniture and dead animals (a horse, four calves, pig and fowls). The rescue team subsequently received medals for bravery, presented at a public function at the railway station at Lowood by the Governor.

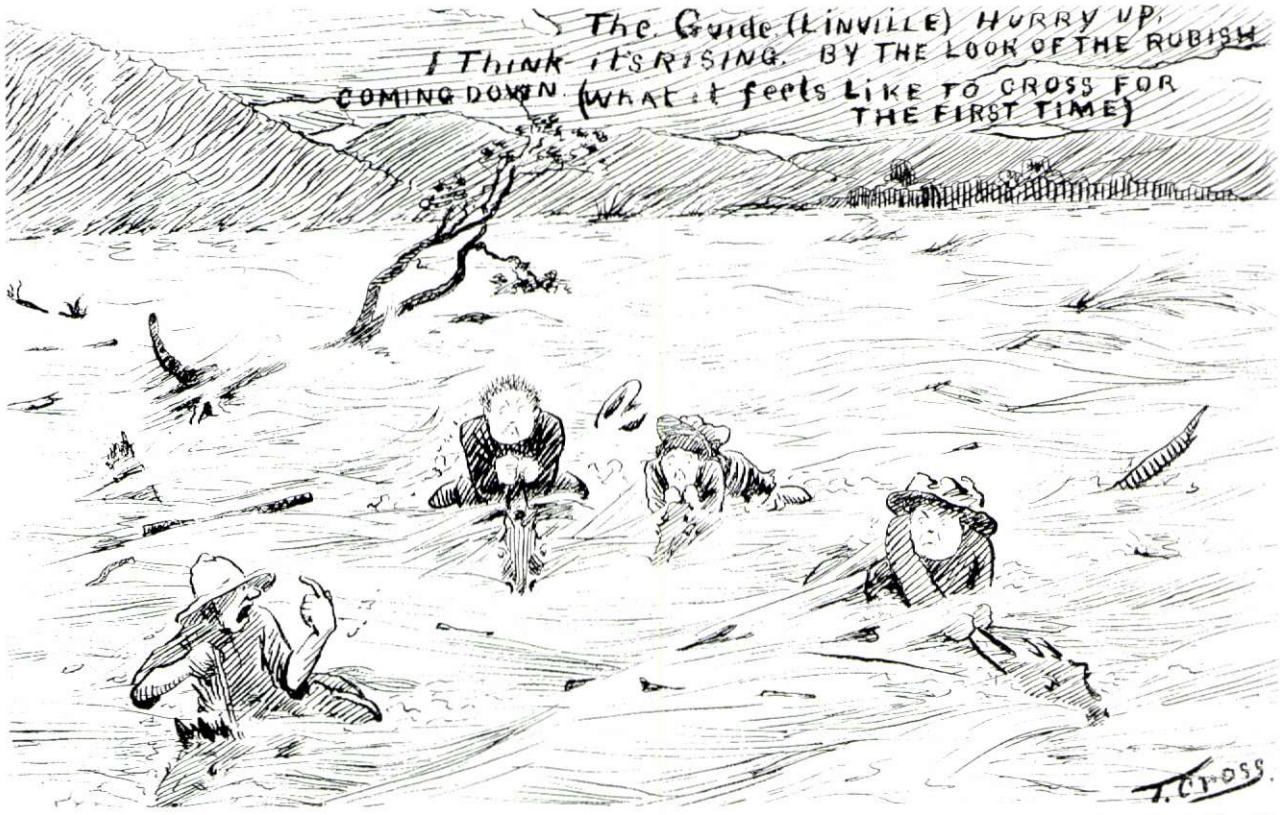
The Smiths also rescued the Noonans from the top of their house, on ten foot stumps. Seventy-five people sheltered at the Lowood school, including nearly all the people from The Pocket. The brand new farm buildings at Noonan's were washed away. The Smith's lost their hayshed. Eight houses of F. Baumann, W. Litzow Snr, C. Litzow, J. Bischoff, A.W. Sturmer, F. Reick, W. Dameow, and W. Boyce were completely swept away, along with their outbuildings. F.Chapman, the thirteen Aldhams, Welldons, and Balds lost houses, farm buildings, and stock. Edward Thomas, W. Myers, John McDonald, and Edward Donald made several boat trips to rescue the large Aldham family. Hundreds of cattle were drowned and two bullocks were washed from Cressbrook all the way down to Lowood. Rations were conveyed from Cribb and Foote's store by W. Saunders and Gulliver to families at Vernor's Siding, and Robert North butchered a bullock for the farmers, which they cooked in Mrs McGregor's kitchen.

Noonans, Smiths and Patricks were camped on a ridge in Noonan's paddock. D. Patrick lost 150 horses and 200 cattle, Noonan's thirteen horses. Handleys, who rented from Chislett, anticipated the flood and saved their stock but lost their crops. Another tenant of Chislett, W. Russell, lost his maize crop and was destitute, along with Schlect, Manthey, Zielinski, Hahn, Marquartz, West, Bruns, and Ludlow. Sailor's farm lost its house, outbuildings, and crops. Water was two feet through Link's kitchen, a tragedy to him as he had moved his house after the 1890 flood. Farmer, P. Francis woke on the morning after the water receded to find eight black snakes in his bed.

It rained again from Sunday to Friday, with the water rising quickly again, to peak at Fernvale on Friday midnight, two feet above the 1890 level. Fernvale was a lake — six miles from land to land. The river branched around Round Mountain and backed up into Cribb and Foote's paddock as in 1890. Schrureck, Jenson, and Bulow's businesses were completely inundated. The water was three feet deep in Cribb and Foote's store and Brightwell's hotel. It rose so quickly that little was rescued. Goods were stacked high at Cribb and Foote's until volunteers were forced to leave. People fled with only the clothes they were wearing. J. Redmond and J. O'Brien and family shifted and then had to move again. O'Brien and Gracies moved into the Oddfellows Hall. F.C.A. Heers, J. Hunter, G.H.E. Heers, W. Suchting, A. Phelps, J.A. and T. Ferguson and John Poole worked tirelessly helping people evacuate, wading continually into water three to four feet deep. Suchting brought his boat late on the Friday afternoon to help evacuate more people and to shift goods out of Schureck's store. As water rose near the Oddfellows Hall the Gracies and O'Briens moved to the railway goods shed. The Phelps, Suchting and Jensen families sheltered in the Wesleyan Church. Brightwells and Schurecks went into a railway box truck and Mrs Ferguson and family into the railway waiting room. The Poole, Rees, and Denman families moved to Muckerts.

At Wivenhoe the police barracks, Church of England and Peter Thompson's house were all washed away. Residents sheltered in the hotel. Several houses were dropped in Shine's Gully. When the water subsided there was a scene of utter desolation wreaked by the odour of mud, decaying vegetation and animal matter.

At Cressbrook the houses had three feet of water inside and people moved to the stables. Bridges were down and the road between Esk and Colinton was washed out in numerous places. The McConnels and H.P. Somerset arrived in Cressbrook from Mt Brisbane by boat. At Colinton the water was six feet higher than any previous flood. The mail, going by boat, stopped because of the water flow of twelve miles per hour. The mailman eventually got through swimming the horses and carrying the mail over what was left of the Emu Creek bridge. Two hundred bullocks were marooned at Colinton and fourteen hundred at Cressbrook. The second flood was higher at Cressbrook and McConnel watched the river all night to warn people to leave the buildings again.



Drawing by Tom Cross of typical floods in Brisbane River near Linville. *Mrs Jean Davis, Linville*

There was little damage at Mount Brisbane station itself, though the water was sixteen feet above the 1890 level and over the stables and workmen's hut. On the eastern side of the river, Parsons lost everything at the old Mount Esk station, Macfarlanes and Browns lost their houses, and Brown's hayshed was smashed against Blank's house at Coal Creek and they lost everything. Nicholson's house and the Moombra school were completely covered. Conroys lost seventy bullocks and twenty-four horses and Tolson two hundred bullocks. But for James Macfarlane and his brothers hauling people and their boats across the river selectors there would have been many in serious difficulty.

F.T. Russell of Northbrook, his wife, and three months old baby survived an extraordinary adventure. Russell tried to wade across Northbrook Creek but it was flowing too fast and they lost the baby in the water for two minutes. They returned to their house and Russell 'blew my breath into his mouth and this appeared to restore him'. As the water was rising fast they made a raft of the tops of two tanks but these washed away. The Russells with a farm labourer and his wife and four children took refuge on the roof and stayed there from 2pm Friday until 5pm Saturday watching the water rise twelve feet inside the house and a tree went through the kitchen window. They had no food and had to give the baby muddy water. In the second flood they took refuge under a canopy on a ridge. After two days there without food they were able to cross the creek. John Conroy and his family including a young baby were also maroond in a tree on their property at Bellevue. Their baby fell out of the tree and was rescued.

The third flood took final toll on 18 and 19 February, the level being only three feet six inches below the first flood. Schurecks had just shifted their salvaged goods back into the Fernvale shop and had to quickly remove them again. Altogether Schurecks lost £1,000 of goods. Large landslips made the roads impassable. The final flood washed remaining soil away, completely ruining the maize.

Sandy Creek bridge was swept away in Esk and the bank near Lawlor's shops was scoured out. The Gore family moved out of their home because the bank was so precarious. A footbridge had to be hastily erected by the Council so children could attend school.

The floods in the Bremer river were equally disastrous. Ipswich, Goodna, Bundamba and Blackstone were almost submerged. Stories of heroism abounded amidst the havoc. The damage in Brisbane was estimated at two million pounds worth. Financial assistance came from all over

Queensland and overseas including from Canada. Farmers quickly commenced rebuilding — higher up, some purchasing land from neighbours to build their houses.[5]

Flood mitigation schemes were proposed in 1894 to modify the runoff from the Brisbane and Stanley Rivers. Henderson, a state government hydraulic engineer, scouted the Mount Beppo area in 1894 'for a nice place to dam up the Brisbane River'. Surveyors from the Hydraulic Engineer's Department examined the river in 1898 and proposed a dam site seventeen miles below the junction of the Brisbane River. J. Lovekin suggested in 1900 the cheaper alternative of annually burning all fallen timber in the region to allow free flow of flood waters. However it was H.P. Somerset, MLA for Stanley, who in 1906 suggested selecting a site on the Stanley River for both water supply and flood mitigation purposes.

The 1931 flood accelerated the need for a dam on the upper reaches of the Stanley River. The Metropolitan Water and Sewerage Board had investigated cutting large channels through the river crossings at Fernvale but the idea was rejected by Council in 1915. The first local suggestions of a dam over the Brisbane River came from W.H. Vernor in 1921. The Commission of Enquiry on Brisbane Water Supply by Alan Gordon Gutteridge in 1928 reported that a dam on the Stanley River or Middle Creek would provide flood mitigation and an increased water supply for Brisbane. Gutteridge suggested that an immense reservoir be constructed on Brisbane River at Middle Creek supplemented by further storage on the Stanley River at Little Mount Brisbane. The Brisbane Flood Prevention League campaigned hard throughout the 1920s for the selection of the Somerset Dam site and the immediate construction of the dam. Following the 1931 flood their ideas were vindicated by the selection of the Somerset Dam site by the Bureau of Industry in 1932.[6]

Preparatory work on the Stanley River dam site was started in January 1933. The state budget allocated £100,000 for water and sewerage works, £3,000 for construction of a road, clearing work, and geological tests for foundations. During the depression Somerset Dam provided enormous employment opportunities; men converged on Esk and the dam site from everywhere in south-east Queensland. When butter price plummetted in 1931, many farmers and their sons were in poverty and the dam project offered good pay and hope for young marrieds.

The exact dam site was selected in 1934 by a committee comprising John Kemp, D. Fison, W.H.R. Nimmo, M.B. Salisbury and chaired by J.B. Brigden. In 1935 the commonwealth government approved a grant of £125,000 for the project. Tenders were called in June for ringbarking and poisoning of the vegetation on the three hundred acres, Lars Andersen and his timbergetters having removed the millable timber beforehand. Glenister Sheil, of Melbourne, who had experience with the Victorian State Rivers and Water Supply Commission, was appointed Resident Engineer in July. Within two months a hundred men were engaged in diverting the Stanley River and accommodation was being erected for nearly a thousand men. Scores of powerful six wheel trucks lurched over the uneven tracks and through deep cuttings at the site. They churned the ground to powder, running in relays carrying bags of clay to the diversion site. Others brought equipment from Esk railway station, passing each other every seven minutes on the road. Tractors clung like flies to the hillsides, removing stumps. Further up the valley jack hammers clattered all day, testing rock foundations.

The Stanley River Works Board administered the whole resumption area of approximately twenty thousand acres which was removed from the control of the Esk Shire Council. Town planning principles were applied in setting out the township for construction workers, which was to be dismantled at the end of the project.

It was the first large works for which a complete town was built by the constructing authority and it was named Somerset after H.P. Somerset of Caboonbah, Member for Stanley in the Queensland Parliament. It was provided with a water supply, sanitation, electricity from Brisbane, post and telephone services, medical services, school and police station. There were staff quarters and administrative offices, 100 small cottages for families, and barracks for two hundred workmen. An avenue of Jacaranda trees was planted. A large reception hall was provided for the community but although 'talkie' shows were screened twice a week, it ran at a loss. A billiard saloon and newsagency conducted by J. Chapman was the first business to open in the town. Every Friday night the service car operator, Joe Bailey, used to take a car load of dam workers to Brisbane for the weekend.[7]

Somerset was a pretty town beside the Stanley River and had many sporting facilities — tennis courts, swimming pool in the river, nine hole golf course, a sports ground on the site of Tom Cutler's stables. There were two community halls — Coronation Hall and Hunter's Hall (originally a billiard room). The Methodists held church

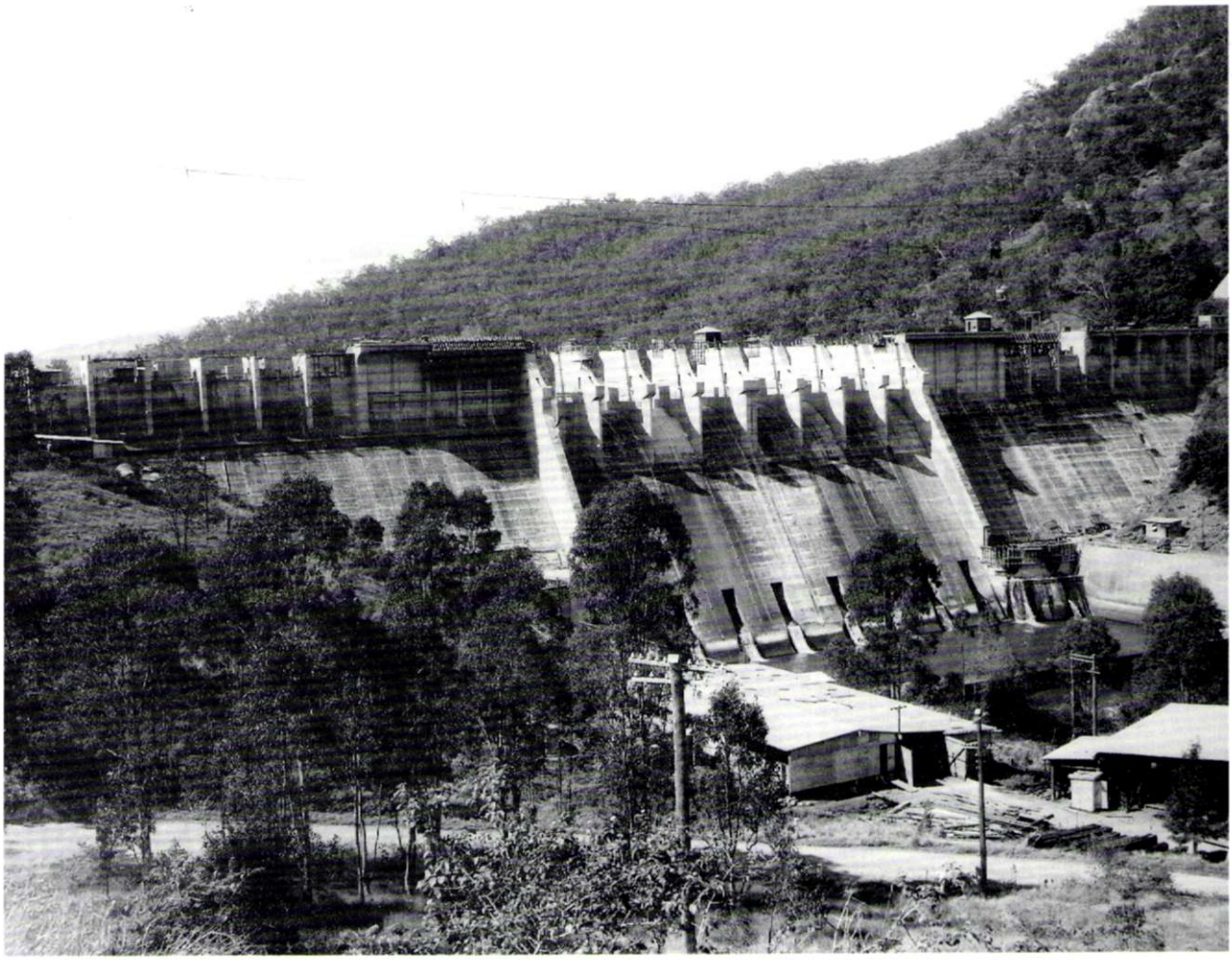
services in Hunter's Hall while the Anglicans and Roman Catholics built their own churches. The Red Cross and Comforts Fund flourished under Mrs Sheil. The CWA were very active and ran a well-stocked library for many years under the guidance of Mrs Laurie George. Mrs Sheil also edited and produced a weekly newspaper printed on office paper. Sales were in aid of the Red Cross. The Silverton school had four teachers at its peak.

The centre of attraction for sightseers was the 80 ton electric shovel capable of lifting twenty tons. The first bucket of cement was poured at 2pm on Thursday, 28 October 1937. Free liquid refreshments were served at the canteen to mark the occasion of the first pouring. An electric motor drove the giant jaw crusher which reduced the rocks to blue metal which was then hauled by diesel locomotives on a narrow gauge tramway to the mixer. The cement was carried by flying foxes to the pouring site, where the operations were co-ordinated by engineer, Evan L. Richard, later a Brisbane City Council drainage engineer. Full production was twelve buckets per hour. The pouring of cement continued for four years except during floods.[8]

The number of employees at the Stanley River dam reached a maximum 450 in August 1937. The Stanley River Works Board considered transforming the dam surrounds into a tourist resort, one thousand ornamental trees were planted and a guest house with the 'country club' atmosphere was proposed.

The Governor, Sir Leslie Wilson, visited in 1940, inspecting the works with the engineer and the Board. He saw three giant monoliths of concrete rising ninety feet from the river bed and they still had to go another eighty-five feet. The dam was expected to cost £1,850,000 when finished. The new Somerset to Kilcoy tourist road was planned to skirt the lakeside for fourteen miles with a recreational facility planned for a clearing along Beam Creek. A hydro-electric plant and tunnels were constructed. Walkers Limited of Maryborough manufactured the sluice gates. A huge hydraulic dredge operated in the river bed

Somerset Dam wall under construction. 1930s. *Main Roads Department*



obtaining sand for the concrete. The final gap in the dam wall was closed on 16 September 1941. Engineer, G. Shiel then took an appointment with the Tasmanian Hydro-Electric Commission. Enlistments to the second World War quickly depleted technical staff but at that time the dam was capable of holding 375 million gallons of water.

By September 1942 excavation was completed and by December 1941 91% of the concreting had been done. The war effort meant that it was hard to obtain large valves for the sluice gates and the heavy machinery to operate them. Heavy timber bulkheads and two thirty inch valves were obtained to operate the gates. The major work was suspended in November 1942 and the workforce was diverted to the Brisbane Graving dock construction project for the war effort. Water could be stored to a depth of ninety feet in Somerset Dam then and twenty million gallons of water was being provided daily to Mt Crosby for Brisbane and Ipswich. However, in 1943 the dam was not yet fully operational for flood mitigation purposes.[9]

Work resumed on the dam on 8 February 1948 on construction of piers, trash racks and other reinforced concrete structures in the upper portions of the dam. However materials and labour were in short supply. Steel had to be imported — some from Japan even. 'Make do' was the catch cry. Migrants from Great Britain and the Baltic States were employed. The spillway, anchorages and main pins supporting the sluice gates were constructed in 1948. The net cost of the fully constructed dam was shared by the Queensland government 40 per cent, Brisbane City Council 56.6 per cent and Ipswich City Council 3.4 per cent after a commonwealth government grant totalling £125,000. The water storage reached 46,000 million gallons on 1 March 1950. The whole of the dam's catchment area was declared a fauna reserve. When the dam was completed in 1953 it was capable of reducing Brisbane's flood height by ten feet but not of totally avoiding a Brisbane flood, as was clearly evident in 1974. When the dam was opened by Premier, Hon. V.C. Gair, MLA, it was considered sufficient for Brisbane's water requirements until at least 1970, the year that inaugurated the public debate in the Brisbane Valley over the Wivenhoe dam project.[10]

In 1955 the 3,200 KW hydro-electric turbo-alternator set was completed. A 100 ton travelling gantry crane was installed for gate operation. The March 1955 flood tested the dam wall, the spillway was topped for the first time and eight spillway crest gates and two low level sluice gates were opened for the first time. The Esk Shire Council took over administration of the Somerset town and a number of surplus cottages were sold as private residences. In 1958 two of the Mclaren Berry three foot gauge diesel locomotives used in the construction of the dam were located at Boone's sawmill near Esk. 'Jack' and 'Archie' were not in use but 'Lucy' was sent to Yungaburra for work on construction of the Tinaroo dam. All three had come from Wyangala dam in New South Wales in the 1930s. In 1956 a limpet coffer dam was constructed under water level to run the emergency coaster gate tracks. Two way radio flood warning systems were also installed. All works were completed in 1958 and on 15 November 1958 a memorial plaque was unveiled by the Premier, Hon. G.F.R. Nicklin, MLA for Landsborough. The plaque reads:

'Somerset Dam
is named after the late
H.P. Somerset, MLA
who was the first to suggest
the use of the Stanley Gorge
as a Dam Site, and who
rendered valuable service
in warning Brisbane
of Impending Floods.
Unveiled by
The Honourable G.F.R. Nicklin M.M., M.L.A.
Premier of Queensland
1958.'

The control of the dam was handed over to the Brisbane City Council on 1 July 1959 but the Esk Shire Council was still able to obtain water for Somerset Dam town and its sanitation.[11]

The 1955 and 1974 floods had catastrophic effects on the region. Two thousand acres of farmland in the Mt Stanley area was flooded in 1955, with haysheds, irrigation plant, and windmills being destroyed; sand washed into irrigation channels. The railway bridge at Colinton was washed away. Both ends of the bridge over the Brisbane River on the Kilcoy road were scoured out. The Cooeeimbardi area suffered total crop losses on many farms where water was thirty feet deep in some places. The Brisbane River rose to sixty-one feet six inches at Wivenhoe bridge.[12]

The 1974 flood was twenty feet below the 1893 flood levels in the Lowood — Fernvale area. Brightview and Patrick's Estate residents were evacuated, as were some Toogoolawah people when Cressbrook Creek entered the town. So many roads were cut that farmers fed milk to pigs because there was no hope of getting it to factories. Total damage to roads, bridges and culverts in the Esk shire was $280,000. Maronghi Creek and Gregor's Creek bridges had to be replaced.[13]

The nineteenth century floods heights

Year	Date	Height at Port Office
1841	14 January 1841	30 feet 7 inches
1843	9 June 1843	ca 12 feet 0 inches
1844	10 January 1844	ca 26 feet 0 inches
1852	16 April 1852	ca 12 feet 6 inches
1857	19 May 1857	30 feet 8 inches
1863	16 February 1863	13 feet 10 inches
1864	20 March 1864	15 feet 4 inches
1867	21 April 1867	ca 11 feet 0 inches
1870	10 March 1870	12 feet 5 inches
1873	18 June 1873	11 feet 9 inches
1875	1 March 1875	11 feet 6 inches
1879	16 October 1879	11 feet 0 inches
1887	23 January 1887	15 feet 4 inches
1889	20 July 1889	15 feet 3 inches
1890	13 March 1890	20 feet 5 inches
1893	5 February 1893	30 feet 4 inches
	12 February 1893	ca 10 feet 10 inches
	19 February 1893	29 feet 6 inches
12 June 1893	14 feet 10 inches	
1896	14 February 1896	9 feet 6 inches [14]

The dams on the Brisbane River tributaries were built to provide water for Toowoomba and irrigation for Lockyer farmers. Cressbrook dam had been suggested eighty years before it was built. More spectacular dam sites and financial constraints hindered the proposal. It was first mentioned in 1900 as a flood prevention idea, rather than a water conservation project. The idea was ignored until February 1937 when, after the disastrous mid depression drought, the Esk Shire Council advocated that a dam be built on Cressbrook Creek for water conservation and irrigation purposes. However the priorities of the Stanley River dam and the war effort precluded any decision on the Cressbrook area. After the second War the Department of Irrigation and Water Supply selected a dam site at Pinecliffe on the Upper Cressbrook and in 1953 did preliminary designs for the dam. The proposal was re-activated. in 1965, in conjunction with a project for the Perseverance Creek dam for the Toowoomba city water supply. Preliminary investigations were made at 36.2 miles on Cressbrook Creek in 1969 and in 1972 a contract was let for 1,300 feet of exploratory diamond drilling.

The Toowoomba city water supply aspect was the cause of continued controversy over the amount of irrigation water available to farmers and the costs to them. The Toogoolawah Town Water Action Committee was formed at a public meeting on 27 November 1980 to object to the management strategy of the Perseverance dam and to the construction of the Cressbrook dam on the grounds that it was biassed in favour of Toowoomba residents and the costs to Toogoolawah ratepayers would be far too great compared to the benefits. The Esk Shire Council and Toowoomba City Council agreed on release of water downstream for irrigation. The contract for construction of the dam was let to the Sydney engineering company, G. Abignano Proprietary Limited and was completed in 1982.[15]

Further south the O'Reilly's dam was built at Noonan's bridge on Lockyer Creek in 1946. The site had been selected near Cr. Lewis's farm in 1941. Twenty-five men were employed under Foreman W. Kennedy. They had a 'flying fox' bucket to collect cement and take it to the centre of the wall where they poured fifty cubic yards of cement per day. The wall was built twenty-five foot high with a ninety foot wide spillway, with nine inch sluice valve. 100,000 gallons of water twenty-five feet deep was stored over seven miles.[16]

The Department of Irrigation and Water Supply investigated new dam sites for irrigation purposes in the Lockyer area in the 1960s — Lake Clarendon, Seven-Mile Lagoon, Atkinson's Lagoon and Dyer's Lagoon. Atkinson's Dam site was selected and the dam was completed in 1970 at a cost of $2.3 million. The amazing success of the dam has been its recreational facilities for boating and gliding.[17]

The **Wivenhoe Dam** commands 40 per cent of the Brisbane River's total catchment and has a storage capacity of 1,150,000 megalitres. The $450 million project comprises a dam on the Brisbane River, a dam higher up on Split-Yard Creek, and a 500 megawatt pumping station and hydro-electric power station situated between the two storages. Lake Wivenhoe will hold twice the volume of water in Sydney Harbour.

The Wivenhoe Dam project has had the greatest effect of any government policy in the Moreton region since white settlement. From the early 1950s there was a certain inevitability in the planning by Brisbane City Council and the Queensland government for another dam in the Brisbane Valley to supply water and provide flood mitigation for Brisbane and Ipswich. The dam demonstrated the intrusion of urban demands on an adjacent region and affected the economic viability of the Brisbane Valley cattle industry.

Since the original announcement in 1969 a number of well known generalizations about the project's effects have become folklore in the region. However, before the decision to construct the dam was announced, the dairying industry had

already declined enormously and was being rationalized as butter factories closed. Therefore the Wivenhoe dam land resumptions were both traumatic and financially beneficial to the last generation of dairymen. Numerous families retired to the coast or rebuilt in Esk and Toogoolawah; several experienced dairymen died suddenly.

One of the crucial arguments throughout the debate was the selection of a yardstick for valuation of the land. A very active Landholders' Committee was very successful in protecting landholders' interests and this has produced one of the fairest land resumptions for any government project in Queensland, with a total of $22.68 million spent on resuming two hundred properties. The working out of the social, economic, and engineering issues has produced a world standard water conservation project and recreation attraction almost in the outer suburbs of Brisbane-linked to the city by a road up Northbrook Creek and over Mount Glorious, which Brisbane Valley landowners have sought for over 140 years. The dam also provides a significant flood mitigation protection for Brisbane. Nevertheless future generations may question the aesthetic values and environmental effect of the sublimation of the most productive cattle fattening country in Queensland in preference to the selection of a major city water-recycling installation or a dam site south of Brisbane without the flood mitigation advantages.

The selection of the Wivenhoe dam site was preceded by investigations of at least three other dam sites on the Brisbane River — at Linville, on Brisbane River at Middle Creek, and on Cooyar Creek. The Middle Creek dam site on the Brisbane River was first suggested in the late 1890s. It was also recommended by the Gutteridge Commission in 1928.

On 15 May 1950 the Stanley River Works Board was empowered to investigate sources for the water supply for Brisbane after 1970. Throughout the 1950s the Brisbane and Ipswich City Councils and the Co-ordinator General's Department continued to investigate the economic and statistical considerations of the population growth,

Atkinson's Dam. May 1974. *Premier's Department*

hydrological and engineering studies, and flood mitigation and irrigation requirements. Proposals to form one Water Authority to deal with water supplies for the whole of the Moreton region were discussed in the 1950s and a committee rejected the proposal in February 1958 but a Brisbane Water Supply Planning Committee was formed comprising the Brisbane City Council Engineer for Water Supply and Sewerage as Chairman, an engineer from the Local Government Department and the Deputy Chief Engineer of the Co-ordinator General's Department. There was a strong presumption that the next development should be a major dam on the Brisbane River. In December 1963 the committee recommended that the specific proposals be investigated for dams on the Brisbane, Albert, Coomera and Logan Rivers and Stradbroke Island. Progress studies showed that a survey of the water resources of the whole of the Moreton region was necessary. The Queensland Cabinet approved this and decided in January 1967 that a Technical Advisory Committee (changed to Moreton Regional Water Supply Advisory Committee in June 1967) of the Co-ordinator General, the Brisbane Water Supply Planning Committee and the Commissioner for Irrigation and Water Supply be formed to investigate and recommend the best use of all fresh water resources in the Moreton region. The Co-ordinator General's Department undertook seismic traverses of the Wivenhoe and Middle Creek dam sites in March 1966. The committee recommended that the Wivenhoe Dam be built because of the flood mitigation advantages and it had the smallest earliest investment costs compared to Wolffdene, an alternative proposal.

The Esk Shire Council's initial reaction was total opposition to a dam on either Middle Creek or at Wivenhoe and in April 1968 they voiced this opposition strenuously to the Local Government and Co-ordinator General's Departments; Council believed that Esk town may become economically nonviable. The deputation of Crs P.M. Conroy, F. Varley, and the Shire Engineer was the first of a parade of Brisbane Valley deputations to Brisbane public authorities opposing the dam or arguing for more equitable compensation. A group of landholders along the Brisbane River formed a Landholders Committee to study the future development in the area with an emphasis on the dam proposals. Initial office bearers were Jim Conroy of 'Tooloorum' (President), Ross McConnel of 'Inverstanley' (Secretary), and Val Crowe of 'Bellevue' (Treasurer). The Landholders' Committee became known as the Wivenhoe Dam Association, and, after the death of Jim Conroy, Ross McConnel became President. Members argued in favour of the Linville or Cooyar Creek sites. Whilst Co-ordinator General, Charles Barton's public statements on the project emphasised his department's even-handedness on proposed resumptions, departmental priority was undoubtedly finance. In this situation the Association knew that it could not argue against flood control or engineering aspects of the dam but that equitable compensation was a reasonable goal.[18]

The Queensland Cabinet established the Wivenhoe Dam Co-ordinating Committee in August 1972 and acquisition of land commenced. $1,025,913 had been paid in compensation by June 1973. The initial intention was to compensate farmers and allow them to remain on the properties for another eight years. 128 landholders were involved and 28,000 hectares were to be resumed.[19]

The Wivenhoe dam required the most land resumptions of any developmental project in Queensland and the remarkable success of the Wivenhoe Dam Association was due to their unemotional assessment of the resumptions and the achievement of their rights under the Acts. In every sense their activities were conducted professionally, especially in lobbying the government. The Association comprised the descendants of some of the earliest pastoralists to settle in the Brisbane Valley, making it very knowledgeable on land values and the long history of land resumptions without compensation made in the Brisbane Valley over more than a century of time.

The Association promptly appointed a land valuer to advise on the process of resumption and the landholders' entitlements under the *Acquisition of Land Act of 1967*. The United Graziers Association had already had experience in land resumptions for water conservation dam and irrigation projects in other areas of Queensland. One of the pitfalls for unwitting landholders was to be quietly bought out by the Co-ordinator General. However the basis for resumption was that the landholder should be compensated at the land valuation *before* the announcement of the dam. The landholder was also entitled to compensation for the value of improvements, severance, particularly fencing and rearrangement of watering points, as well as farm buildings made redundant by resumption, and disturbance, including forced sale of stock. Interest was also to be paid by the resuming authority from the date of the resumption notice.

The primary object of the committee was to obtain a fair land valuation for each landholder.

Earlier dam constructions had indicated that where there was no landholders' organization lands were virtually frozen in anticipation of resumption and little was gained by taking cases before the Land Court. Unity under one solicitor and one valuer was crucial to negotiations. At the same time the committee stated forthrightly that they did not intend to object to the engineering aspects of construction of the dam. They knew that it was in their own interests to have the dam built as soon as possible and to have resumptions proceed promptly. In this way remaining landholders would be able to continue to operate on a comparable land market.

Immediately after the announcement of the dam the bargaining was ruthless. On the one hand there were the struggling, marginal dairyfarmers close to retirement and keen to sell. Alternatively, the larger established landholders would not have sold their land; for them the economic viability of their freehold land depended on the viability of their leasehold land. If the smaller farms sold cheaply, it would affect all landholders' values; small landholders' desire to buy remnant areas back was considered unwise as none of their services such as electricity, access roads, or telephone would be restored by the resuming authority. Land investors were also angered at the likely stabilization rather than increase in their capital.

There was a marked difference in response between old and young farmers. W.H. Wolff, aged 68, of Esk, fought strongly against the idea of the dam as a flood prevention measure. Leofric North, a member of the pioneer North family, had to abandon farming on the century-old North property in the Brisbane Valley because of the dam. He had 900 hectares of mostly river flats, breeding and fattening cattle, and was growing sorghum, barley, corn and soy bean. His cousin Roger North, sold his nearby property and moved to Goondiwindi. Numbers of elderly farmers died before their land was actually resumed — Leofric North's father, Johnny Loughran, Malachi and Jim Conroy, and Stan Lee. The reputation of Johnny Loughran's fine river flats cattle fattening country, known as 'Mountain View', was legendary in the Esk district and he could not bear to leave it. Six weeks after recognizing this he died.[20]

The Esk Shire Council's greatest concerns in 1972 were the effect of the dam on the relocation of roads and bridges and the maintenance of its rate revenue. The Council readily agreed to the relocation of the Brisbane Valley Highway over the dam wall. However they objected to the downgrading of any roads and requested compensation for any roads rendered useless. The

Leofric North, 1898–1972. *Leofric North, Wivenhoe*

council was also emphatic that it wanted to be responsible for administering any new town — the memory of the Stanley River Works Board administering Somerset Dam town was bitter.

Queensland government approval for the $450 million project was officially granted in November 1971. Acquisition of land commenced in March 1973, detailed investigations and design of the dam works began in 1974 and the first construction contract was let in March 1977. Storage of water commenced in September 1983 and the dam structure was completed by August 1985. The Brisbane and Area Water Board established under legislation in 1979, was the funding authority and the project received no commonwealth government finance.

The Queensland Electricity Commission was responsible for the Split-Yard Creek Dam and Wivenhoe Power Station built to augment the Queensland electricity supply in peak demand periods. It was the first pumped storage hydro-electric power station built in Queensland. The power station is equipped with two machine sets, each consisting of a pump turbine and a generator plus control and auxiliary equipment, and each

Wivenhoe Dam flooding during construction in 1983. *Premier's Department*

unit has a nominal generating capacity of 250 megawatts. The pumps were the largest in the world at the time of their installation and are capable of pumping a volume of water equal to the daily water consumption of Brisbane in less than one hour . John Holland (Constructions) Pty Ltd did all the construction of the embankment and excavation of the inlet and outlet channels to the power station. The dam and power station were opened by the Premier and Treasurer, Hon. Sir Joh Bjelke-Petersen, MLA, KCMG, on 5 October 1984.

Built by the Queensland Water Resources Commission, the Split-Yard Creek dam has an available storage capacity of 23,300 megalitres and is the highest earth and rock fill dam in Queensland. The dam's control structure consists of two concrete silos above the intake and diffuser facilities. Each of the generator/ pumping units is connected to the Split-Yard Creek dam by a 420 metre tunnel which varies between 7.6 and 11.5 metres in diameter. There is very little of the power station visible since it is below the Wivenhoe dam water level. The contracts for pumps and turbines were won by Mitsui and Co. (Australia) Ltd and design and construction work subcontracted to Toshiba International Corporation Pty Ltd in Japan; Mitsubishi Corporation Pty Ltd in Japan won the contract for the generators, motors and controls.

The Wivenhoe **Power Station** is a multi-purpose power station using the most advanced power generating technology to generate power quickly during the state's peak periods. It has four main operations — peak load generation, off-peak pumping, spinning reserve, and automatic startup in twenty seconds. In the generating mode water flows down through the tunnel from the Split-Yard Creek dam to the Wivenhoe dam. The spinning turbine controls the flow and drives the generator to produce electricity.

Electricity output of the generators is controlled by regulating water flow through the turbines by adjustable vanes. During the pumping phase water is drawn from the lower reservoir and the pump forces it up along the tunnel to the Split-Yard Creek dam. The power station also operates as a synchronous condenser to control the electricity

system voltage. The fast automatic response to a Queensland system power loss is a special feature of the Wivenhoe power station.

The major contractors for the Wivenhoe Dam were Thiess Contractors Pty Ltd, Thiess, Codelfa-Cogefar Joint Venture, Samsung Heavy Industries Co. Ltd, SIF Bachy, Evans Deakin Industries Ltd, Poon Bros. (WA) Pty Ltd. as well as the Queensland Water Resources Commission. Thiess Contractors Pty Ltd excavated for the foundations, the spillway, diversion channel and saddle dams. Samsung Heavy Industries constructed and installed the spillway gates. These gates are the key to the flood mitigation benefits of the dam. These five steel radial gates installed on the dam's concrete crest can be opened in programmed sequence and release water over an extended period of time at a discharge rate far less than flood discharge. SIF Bachy provided the foundation grouting and Evans Deakin Industries the gantry crane. Poon Bros (WA) Pty Ltd did the camp catering.

Construction commenced in earnest in mid 1976. The diversion of the Brisbane River through a channel in the right bank was achieved in February 1978 and the construction of the embankment across the river was then 20 per cent complete. A township and accommodation for 750 personnel was completed in June 1979. The children of those families swelled the numbers on the school bus to Fernvale. Many of the people travelled from one dam construction site to another in Australia and were well seasoned in dam building; the women were so well organized in looking after their 'dongas' that they had spare time for small town meddling in social and welfare activities.

During 1981-1982 the right-hand diversion channel was closed, the spillway concreted, and the earth embankment and rock facings construction up to 59 metres high undertaken. The total rock fill placed in the embankment was 4,269,718 cubic metres. The principal work done in 1984-1985 was the installation of the spillway gates and installation of the 79 tonne gantry crane to operate efficiently. Certain aspects of the electrical and hydraulic control circuitry had to be redesigned. The water sampling system was upgraded and construction of sixty-five kilometres of roads was completed. The Premier and Treasurer, Hon. Sir Joh Bjelke-Petersen MLA KCMG, performed the official opening of the dam on 18 October 1985 before 300 invited guests and four hundred local people. The Queensland Electricity Commission has already resumed land for a future pump storage scheme in the Diana's Bath area.

Kammholz's water drilling team near Lockyer Creek at Clarendon. 1987. *John D. Kerr*

The multi-purpose nature of the Wivenhoe dam project is an excellent example of a national water policy for recreational facilities, urban water supplies, and flood prevention. Additionally, the project has changed the landscape and scenery which increase opportunities and demand for use of the lake, for recreation and environmental education along four hundred kilometres of shoreline. A tastefully designed and constructed shoreline restaurant completes a pristine scene on Brisbane's perimeter.[21]

Appendix
Wivenhoe Dam Technical Data

River distance from mouth	150.2 km
Catchment Area	7020 sq km
Full Supply Level (FSL)	EL 67.0
Storage Capacity	1,150,000 ML
Inundated area at FSL	10,820 ha
Length of shoreline at FSL	400 km
Maximum Water Level	EL 77.0
Temporary flood storage available	1,450,000 ML
Area of Flood Reserve	10,700 ha
Level of fixed concrete crest	EL 57.0

No. and size of radial spillway gates	Five 12m wide X 16.6m high
Embankment crest level	EL 79.0
Embankment length	2.3 km approx
Volume of embankment fill	4 X 1,000,000 cu m
Volume of concrete in spillway	110,000 cu m
Volume of spillway excavation	2 X 1,000,000 cu m approx
Original bed level	EL 23.0
Lowest foundation level	EL 20.0 approx.[22]

ENDNOTES

1. The statement in the chapter title about the Wivenhoe Dam was made as a public statement by Cr F. Varley in the early 1970s; MBC 10 December 1859; QT 10 August 1895, 3 April 1900, 18 December 1900, 28 January 1902, 20 March 1902, 29 July 1902, 20 September 1902, 10 and 13 January 1903 and 14 March 1903; Reminiscences of Mrs Margaret Schultz in 1971 (Esk Shire Library Local History Collection).
2. MBC 13 June 1857; Q 27 July 1889 p178.
3. QT 15 and 18 March 1890.
4. Inigo Jones, 'The Floods of the Brisbane River' RHSQJ Vol 2 No 5 (November 1935) pp288-295; M.G. Turnor, D.H. Wait, and E.A.M. Drane, *The Late Henry Plantagenet* Somerset (JOL) pp14-16; BC 16 November 1935 in *S. W. Jack's* Cutting Book No.9 p236; *Australian Rodeo Country Music* April 1983 p.28; *Esk Shire Directory* Vol 1 No 1 (July 1985).
5. *Esk Shire Directory* Vol 1 No 1 (July 1985) p8; QT 4,9,11,16,18, 21, 25 and 28 February 1893, 4 and 11 March 1893, 3 March 1950.
6. QV&P 1899 Vol 3 pp1,049-1,056; QPP 1928 Vol 2 pp747-751; J. Lovekin, *Clearing the Brisbane River* (Brisbane, Drinkwater, 1900); Jack's *Cutting Book op.cit* Vol 9 p23b; Q 24 December 1898 p801; QT 2 June 1894; ESKM 17 November 1915 p145, 13 July 1921 p97 and 6 December 1933 p245.
7. Bureau of Industry *Annual Report* 1934-1935 p14, 1935-1936 p13; QPP 1934 Vol 2 p853; ER 7 January 1933, 9 February 1935, 8 June 1935, 27 July 1935, 14 September 1935, 16 November 1935, 11 January 1936 and 18 April 1936; ESKM 5 August 1936; Reminiscences of Ann Ryan, Taringa, 12 August 1971, in Esk Shire Library Local History Collection.
8. ER 21 August 1937, 30 October 1937 and 6 November 1937; Bureau of Industry *Annual Report* 1936-1937 p13.
9. Bureau of Industry *Annual Reports* 1937-1938 p16, 1938-1939 p17, 1940-1941 p3, 1941-1942 p2; Co-ordinator General of Public Works *Annual Report* 1944-1945 p21; ER 18 November 1940, 10 January 1941, 19 and 26 September 1941, 12 December 1941; *Telegraph* 24 January 1940; Reminiscences of Dr Glenister Sheil, Senator for Queensland, on Somerset Dam, 12 August 1986.
10. Co-ordinator General of Public Works *Annual Report* 1947-1948 p25, 1948-1949 p24, 1949-1950 p18; CM 4 March 1953; QT 3 February 1955 p2.
11. Co-ordinator General of Public Works *Annual Report* 1954-1955 p10, 1956-1957 p11, 1957-1958 p10, 1958-1959 p9, 1959-1960 p9; ESKM 10 June 1959 p1,738; *Here and There in Australian Railway Historical Society Bulletin* January 1959; E. Erikson, 'H.P.Somerset' (unpublished manuscript held by Brisbane Valley Historical Society).
12. QT 1 April 1955 p2; BVR 19 January 1968.
13. QT 28 January 1974 p8, 31 January 1974 p3, 2 February 1974 p10, 5 February 1974 p13 and 15 February 1974 p14.
14. QPP 1928 Vol 2 pp747-751.
15. JLC 1900 Vol 3 pp1,549-1,550; ESKM 10 February 1937 p5, 15 April 1965 p2539, 25 September 1980 p1,482; QT 6 March 1946 p5; Irrigation and Water Supply Department *Annual Report* 1952-1953 p45, 1968-1969 p15, 1971-1972 p.20.
16. ER 17 October 1941; QT 10 September 1946; CM 10 September 1946.
17. Irrigation and Water Supply Department *Annual Report* 1963-1964 p16 and 1971-1972 p42; *Queensland Newsletter* 3 September 1970 p1; QT 22 August 1970 p5 and 23 February 1971.
18. ESKM 6 December 1933 p245, 20 October 1966 p2,712, 18 April 1968 p5,911,19 June 1969 p9,092 and 19 February 1970 p9,177a; BVS 11 March 1966; BVR 28 November 1969; SM 14 November 1971; QT 4 October 1985; Irrigation and Water Supply *Annual Report* 1965-1966 p13, 1966-1967 p13; Co-ordinator General's Department *Annual Report* 1968-1969 p9; Report on Proposed Dam on the Brisbane River at Middle Creek or alternatively Wivenhoe and Flood Mitigation for Brisbane and Ipswich (Co-ordinator General's Department, June 1971) (Vols 1 & 2); In volume of water stored, Lake Wivenhoe is surpassed by the Burdekin Dam which stores four times the volume of water in Sydney Harbour. (*Weekend Australian* 14-15 March 1987 pp1 and 12).
19. Co-ordinator General's Department *Annual Report* 1972-1973 p11; QT 24 August 1972 p21, 1973-1974 p11.
20. *Telegraph* 5 March 1974 p8 and 5 May 1974 p8; CM 9 October 1974 p5; Private interviews by author in 1986 with Ross McConnel of 'Inverstanley'.
21. Wivenhoe Power Station Official Opening Booklet and *Wivenhoe Dam Official Opening:* Souvenir Booklet (Brisbane, Queensland Government, Premier's Department, 1984 and 1985); *Wivenhoe Dam and Pumped Storage Hydro-Electric Project Leaflet* (Co-ordinator General's Department, July 1980); Irrigation and Water Supply Department *Annual Report* 1977-1978 p19; Water Resources Commission *Annual Report* 1979-1980 p19 and 1984-1985 p21; Co-ordinator General's Department *Annual Reports* 1978-1979 p22 and 1981-1982 p16; CM 6 October 1984 p14; QT 19 October 1985 p18; *Daily Sun* 19 October 1985 p3; SM 20 October 1985 p44.
22. *Wivenhoe Dam Official Opening op.cit.*