

Bowen Coke Works: State Enterprise or State Subsidy? *

By DIANE MENGHETTI

In 1932, a conservative Queensland Government initiated a new state enterprise, the State Coke Works, at Bowen. On the face of it, this was a remarkable action for a government led by the Country Party's Arthur Moore a man described by his biographer as having: 'an almost naïve faith in the efficacy and morality of the private enterprise system.'¹ Indeed, it would have been a surprising undertaking for any political party in the depressed 1930s. The government claimed its intention was to relieve unemployment, though the works employed very few. Further, it is unlikely that the State expected much of a return on its investment; if it did, it was surely disappointed. While Bowen eventually monopolised coke making in the state, it provided Queensland with very little in the way of technological advancement, employment or public profit. Had the coke works been built in the second half of the 1910s it would be possible to see them as an expression of Labor ideology, but they were built in 1933. They were, perhaps, less a state enterprise than an example of ongoing state subsidisation for the Queensland mining industry.

The Bowen district is rich in minerals; it has magnetite, limestone, asbestos, red oxide, graphite, copper, silver-lead, zinc and bismuth;² miners won gold from Mount Wyatt, Normanby and Mount Coolon. However, many of its ore bodies posed problems for their millers; problems that were wide spread in mineral-rich north Queensland. From Ravenswood to Chillagoe and out to Cloncurry, many ferrous and non-ferrous ores needed smelting. In 1901 the Melbourne-based Chillagoe Company built smelters on the Atherton Tablelands. They treated ore from a plethora of independent mines and were soon crucial to the northern economy. But the smelters used a huge amount of fuel; by 1910 Chillagoe burned nearly 40,000 tonnes of firewood a year - a rate that the sparsely-timbered district had no chance of sustaining.³ Seeking alternative fuel, the company bought the Mount Mulligan coal leases from Irvinebank in 1911, but development and mining proved very expensive. The Chillagoe smelters closed down in 1914.

Further south, the Bowen Basin promised a prolific supply of fossil fuel. Richard Daintree had reported coal near to Bowen as early as 1866 and, from the 1880s, miners chipped away at the western edge of the Basin, though transport problems kept

production low. Other geologists mapped and prospected the Collinsville-Scottville area between 1887 and 1889, but the eastern deposits did not attract much attention until 1912-13 when tests revealed huge coal reserves on the Bowen River Coal Company's leases. The news spread and, by the end of 1915, five syndicates had registered 17 leases over the deposits.⁴

That was the year that Queensland elected Labor's Thomas Joseph Ryan, a Premier committed to state enterprises. His government was determined to keep the northern mining industry alive and began a four-year negotiation to buy the Chillagoe smelters. It made no attempt to buy the coalfield, but did lend the Chillagoe Company £60,000 to finish building its coke works at Mount Mulligan. At the same time, on the Collinsville coalfield, it reserved four square miles for a future state coalmine⁵ and promised a railway to the coast. Therefore, in 1919 two coalmines opened: Bowen Consolidated, an amalgamation of the surviving private leaseholders,⁶ sank at Scottville. At Collinsville, the State Coal Mine opened. It aimed to raise 1,000 tons a day to power two new state enterprises.⁷

These industries depended on the new Premier, ex-miner and Member for Chillagoe, Edward (Red Ted) Theodore, who replaced Ryan in 1919. He promised a state steel works⁸ at Bramston on the shores of Port Denison to use Collinsville coal to smelt iron ore from the Yampi Sound deposits in Western Australia. He also pledged state coke works to turn local coal into coke to feed the north's ore smelters. Later that year British financial houses refused to float the Queensland State Government Loan and Theodore had to shelve these projects,⁹ even though north Queensland mines still desperately needed smelters and smelters had to have coke. Chillagoe reopened as a state enterprise in 1920, but its furnaces were blown in with coke from Newcastle.¹⁰

While worrying, this was hardly a new situation. North Ipswich colliers had introduced beehive ovens into Queensland in the 1870s; they shipped small batches of coke to Mount Morgan, Mount Perry, Glassford Creek and other smelters, but the big treatment plants, Chillagoe, Irvinebank and Cloncurry, had always relied on coke from New South Wales. In the early years of the twentieth century the Burrum coalfield (near Maryborough) installed a few coke ovens, but Queensland still imported around 50,000 tonnes of coke a year.¹¹ The government's support for the coke works at Mount Mulligan coalfield was part of its bid for an independent fuel supply¹² but the investment was a mistake. Mount Mulligan coal produces far too much ash for successful coking,¹³ and the company began to install expensive by-product ovens

before it had any conceivable use for the by-products. The cokers struggled on for about six months before a massive explosion devastated the coalmine in September 1921. The company wound up in 1923 and the government took over both mine and coke works.¹⁴ It managed to produce a little coke, all of which went to the railways. The coke ovens last fired in May 1924, while the mine itself survived precariously until 1951.¹⁵

Bowen River was very much a part of this search for an independent fuel supply. However, the Collinsville field produced very little until the state-built rail link, five years in construction, finally reached Bowen in 1922. The next year John Campbell Miles discovered the huge silver-lead-zinc deposits of Mount Isa. These attracted a rush of prospectors, but by late 1925, Cloncurry miner, William Corbould, trading as Mount Isa Mines Ltd (MIM), had gained control of almost the entire field. He won the support of the Queensland government, at that time led by another ex-miner turned Premier, William McCormack. The government was keen to see the deposits developed and agreed to build a rail link between Mount Isa and Duchess (which connected to Townsville).¹⁶

So in the mid-1920s the Queensland Government was deeply committed to both Collinsville and Mount Isa. The link between the two fields became more than theoretical when the government began practical tests of the coking qualities of Collinsville coal¹⁷ in the hope that MIM would build coke works at Bowen or Collinsville to provide fuel for its lead smelters. In 1925 James Conway, manager of the State Mine, installed a single beehive oven at Collinsville. He found he could produce useable coke for under £2 a ton (1.01604 tonne).¹⁸ The Department of Mines ordered the state-owned Chillagoe smelters to conduct further trials.¹⁹

Up north, Corbould's capital proved unequal to developing Mount Isa and Leslie Urquhart's London-based Russo-Asiatic Company negotiated a controlling interest in 1927. In Europe for a Premiers' Conference, McCormack publicly stated that his government 'was anxious and willing' to assist the enterprise.²⁰ As soon as he closed the deal, Urquhart wrote to the Premier to remind him of his commitment²¹ and when he visited Australia at the beginning of 1928 he quickly cemented his relationship with McCormack. Before he left in February, he had negotiated reduced rail charges for metals freighted from Mount Isa to Townsville, for equipment railed from Townsville to Mount Isa and for coal sent from Bowen.²² It is likely that he had also persuaded the Queensland Government to build a coke works at Bowen or Collinsville in exchange for MIM building a dam at Rifle Creek to serve Mount Isa township.²³

Understandably, McCormack kept news of this part of the deal under wraps. It was even a secret from the Department of Mines which, in February, advised MIM to build the coke works and told engineering company, Evans Deakin, to approach Mount Isa about any construction contract.²⁴ But when Leslie Urquhart visited Australia for the second and last time, in mid-1929, it would appear that the bargain still held. While he considered the new premier, Arthur Moore, less supportive than its ALP predecessor, Moore assured him that his government would honour McCormack's pledges.²⁵ In the meantime, Mount Isa was still gobbling up vast amounts of development capital without going into production and in March 1931, the state mine found itself dealing with Julius Kruttschnitt when minerals giant, American Smelting & Refining Company (ASARCO), took control of MIM.

The company finally blew in its lead smelters in June 1931 and urgently needed coke. In particular, MIM needed coke that burned at very high temperatures; that is, it required a porosity level of at least 45%. Happily, its analysts could report that: 'Our tests of the coke sent up here in bags shows a porosity of 53.3% and the coke appears to be of good physical quality'.²⁶ Mount Isa's endorsement confirmed that the coke works would be built. The next stage was to decide on the type of ovens required and involved sending, on the *SS Burwah*, another 193 tonnes of coal to BHP's modern Semet-Solvay by-product ovens at Bellambi, north of Wollongong, and 81 tonnes to test whether the cheaper non-recovery ovens at Mount Pleasant (Illawarra) would do the job.²⁷ Both managers reported favourably;²⁸ there would be no advantage from using the more expensive process. From then on it was clear that the Bowen plant would not involve any technological innovation.

Cabinet approved funding for the coke works in March 1932. By then, Queensland had a conservative government led by the Country Party politician, Arthur Moore. His was hardly a government to underwrite a new state enterprise. Moore's biographer wrote that he:

conceded that while Government did have a role to play in economic management, that role was restricted to encouraging and facilitating the profit-making ventures of private individuals.²⁹

And he was certainly interested in encouraging and facilitating the mining industry. Moore honoured his predecessor's agreement and earmarked the necessary funds for the project some three months before his government's defeat at the State election in June

1932. It was only at this stage, following discussions with MIM, that the government finally decided on Bowen (rather than Collinsville) as the site for the works.³⁰ On 30 May 1932, the government contracted Evans Deakin Co. to build the complex at a cost of around £50,000.³¹ The plans involved considerable cannibalisation of the scarcely used Mount Mulligan coke works. Six railway trucks of plant, including brick-making machines, a ram, some conveyor chain, a coal bin and the office building, arrived in Bowen.³² Work began on 13 June 1932.³³

Figure 1: *Bowen Coke Ovens 1935*



Source: James Cook University, 08321

Even before the plans arrived the team began to dig the railway siding and the oven foundations. These massive foundations consisted of more than 550 cubic metres of local granite blocks set in lime mortar. Between the granite and the oven floors they laid about 38 centimetres of bricks.³⁴ Bowen had no brick works but the Supervisor of State Coal Mines, Jack Stafford, carted the Mount Mulligan brick plant to Collinsville, where there was good fire-clay.³⁵ The first consignment of 50,000 Collinsville bricks arrived on site early in August and, from then, the plant produced 50,000 bricks a week.³⁶ The 45 ovens eventually cost the government £55,000.³⁷ The first manager, William F. Rees, was recruited from the Coledale Coke Works, 40 miles south of

Sydney. He arrived in Bowen in March 1933 and drew his first oven on 15 April. It took several weeks and 167 tonnes of coal to get all 45 ovens working;³⁸ the first shipment of coke left for Mount Isa in late May.³⁹ On 15 June, Mount Isa Mines signed an agreement to purchase all of its coke from the State Coke Works.⁴⁰

The original State Coke Works comprised 45 McLanakan coke ovens or retorts, each 9 metres long by 2 metres wide, with 76 centimetre thick walls. Every oven had a single flue in one side wall so that the flues in each pair of ovens were back-to-back. There was one chimney stack (with dampers) for every two ovens.⁴¹ The entire battery was 122 metres long and 9 metres wide and the tramway siding ran along its full length.⁴² Even in the early 1930s, the plant could hardly be considered advanced technology. The McLanakan was a 'rectangular beehive': that is a top-loading oven that did not recover any of the gases and tars driven off during the coking process. Collinsville workers hand-picked the coal and the Bowen labour force pulverized it in a disintegrator (later a hammer mill). The oven canister cars travelled along the top of the oven battens every Monday and Tuesday and charged each oven with a bit more than 10 tonnes of finely ground coal. On Thursdays, because the baking time could be prolonged over the weekend, they increased the charge to 14.2 tonnes.⁴³

Next they levelled the coal by hand using a long and a short bar. In the ovens, the coal ignited and released its volatile components. These burned off in the flues or spaces between the walls of adjacent ovens, keeping them hot. After 72 hours, a metal pipe inserted into the oven through a wicket gate in the oven door sprayed water on the coke to quench it and the old Mount Mulligan ram blade pushed it out over the coke loader and on to a conveyor belt. This took the coke up the gantry from where it tipped down a chute into rail trucks.⁴⁴ The last job was to lower the ovens' hydraulic doors and hose away any waste coke. Then they put in the chocks that held the doors in place and, finally, hand-daubed (sealed) them with a clay mixture. The ovens were ready for another charge.⁴⁵ The Bowen works could produce about 6-tonnes of coke from every 10 tonnes of coal. They employed 16 men, most of whom were paid £4.6.0d a week.⁴⁶

H.H. Bruce, the Minister for Public Works in the Forgan-Smith Labor Government, officially opened the works on Tuesday 4 July 1933. Opportunistically, he claimed the decision to build the works for his government and said it had done so to:

pave the way towards industrial decentralisation which in its turn would extract full advantage from Queensland's wide spread resources ... [and] relieve unemployment and keep money in the State.⁴⁷

Bruce praised Evans Deakin for using almost entirely Queensland-made materials in the construction. He claimed that, because of the contract with MIM, 240 Collinsville miners would get an additional day's work each week and earn, between them, £15,000 more each year. He said that the state would keep an extra £50-60,000 a year within its borders when Queensland smelters stopped importing coke.⁴⁸ Julius Kruttschnitt, proposing a toast to the 'Bowen Coke Ovens', answered a question that had not been asked, at least on this occasion, when he said that:

If anyone had the impression that the Government entered into these undertakings for the benefit of private concerns they were mistaken The agreement which had been put through would be of mutual benefit to the industry and the State.⁴⁹

It is likely that the State Government saw little conflict between 'the benefit of private concerns' and benefit to the mining industry and the State.

The plant could produce 635 tonnes of coke a week; that is 30,481 tonnes (30,000 tons) in a 48-week working year.⁵⁰ This level of coke-making would only be reached once before the 1950s.⁵¹ Production at State Coke Works, as at all mineral processing plants, did not depend solely on the efficiency of its workers and machinery. They could only produce coke if coal arrived from the State Coal Mine at Collinsville and if the 'private concern' at Mount Isa wanted to buy it. MIM's original contract stipulated only that the company buy all its coke requirements from Bowen. If Mount Isa did not *require* coke, it did not have to buy. At this stage, Mount Isa Mines produced silver and zinc, but mainly lead. The company used Bowen coke to fire its lead blast furnace. Through the early 1930s lead prices, fixed on the London base metals market in pounds sterling (then worth £1.5.0d in Australian money), were extremely low.

When the coke works opened, the price of lead was still an abysmal £10.2.6d a ton, Mount Isa's workforce was ravaged by plumbism (lead poisoning) and the company was trying to reduce wages by 7 shillings a week.⁵² A strike was almost inevitable. Mount Isa's miners had stopped work in August 1932 and in February 1933. In October, management and workers again faced up to each other. The miners went out on 5 November and the company used the strike as an excuse to close the mine until the end of the year. 1,200 men were out of work and many of them left town. So, while the 16 employees of the State Coke Works produced good quantities of excellent coke in the works' early months, the poor state of the market ensured that the first year's tally was

not up to expectations. Indeed, it became clear that the stipulation in the agreement that the smelters buy only what coke they needed was not good for the coke works. MIM did not need coke when its blast furnace closed, so it bought none. With sales cut off, Bowen's production for the eight months to the end of 1933 amounted to 12,650 tonnes of coke from 21,783 tonnes of coal.⁵³ While the State Coke Works under-produced, despite Bruce's predictions, the state smelters at Chillagoe were still importing coke from New South Wales.⁵⁴

The price of both silver and lead began to rise during 1935,⁵⁵ and Bowen renegotiated its contract to stipulate a fixed minimum purchase, but Mount Isa's problems still prevented capacity production at Bowen. MIM had used up most of its accessible lead carbonates and was beginning to treat the more complex silver-lead-zinc sulphide ores. The company had to change treatment processes to suit the new ore during March and April and, throughout the year, never had more than two smelters working at the same time.⁵⁶ Bowen's labour force dropped to 15 and the plant coked 32,500 tonnes of coal to produce 21,118 tonnes of coke that it sold for about £1.14.0d a tonne.⁵⁷ The future began to look brighter in the second half of the 1930s. Lead prices continued to rise; they averaged £18 in 1936 then shot to a sensational £36.7.6d sterling in March 1937. MIM made its first ever profit. Bowen increased its workforce to 17 and went into full production for most of that year.⁵⁸ Although lead prices dropped in 1938⁵⁹ the coke works finally hit capacity: turning out 30,481 tonnes.

That year the problem shifted to the supplier: the Collinsville coalfield. Miners struck at the State Coal Mine late in 1938,⁶⁰ and Bowen started the next year with a coal shortage. Buyers began to import coke from New South Wales and coke works manager, Rees, trimmed production to factor in these imports.⁶¹ Then a fire interrupted work at the State Mine.⁶² While Rees turned out 27,329 tonnes of coke, this was only 88 per cent of Queensland consumption for 1939 - a shortfall of 12 per cent that the works could have met.⁶³ Collinsville, like most Australian coalfields, lost eight weeks production from a national coal strike late in 1939,⁶⁴ so the works started 1940 short of coal and Bowen sold only 19,453 tonnes of coke that year.⁶⁵ But as WW2 spread into the Pacific, Miners' Federation members engaged with the war effort and stabilized coal production until 1945.⁶⁶ With coal supplies secured, the works could produce coke.

Bowen's problems shifted back to its market at Mount Isa. While the British government promised to buy any amount of lead at a fixed price of £31.5.0d (£25 sterling) a ton for the duration of the war,⁶⁷ shipping shortages left a great deal of

Mount Isa's lead on the wharves in Townsville.⁶⁸ Market uncertainty was exacerbated by Mount Isa's war effort. After the fall of Singapore, the Australian munitions industry badly needed copper and the Commonwealth put money into the development of copper reserves. In 1942 MIM began to work its Black Star copper ore body,⁶⁹ and in January 1943 Kruttschnitt decided to convert the company to copper production. He stopped mining and treating silver and lead on 4 February 1943 and blew in the furnaces for copper on 7 April. This did not help Bowen. While MIM smelted its copper in the lead blast furnaces⁷⁰ (fuelled by Bowen coke) actual production was not particularly high. Over the three years MIM produced less than 35,000 tons of blister copper.⁷¹

At the end of the war, the coke works saw their first ever change of management. William Rees' son, Ron, spent his whole working life in coke starting in New South Wales before moving to Bowen to work with his father in May 1933. In 1939 he left to serve with the AIF in New Guinea. William died suddenly in 1945 and Ron went back to Bowen to take over the works. The changeover was seamless. Rees junior maintained his father's management style until his retirement at the end of 1979.⁷²

The year after Ron Rees took over, MIM abandoned copper production and reverted to silver-lead. This was when the capital-hungry mine began to show its true colours. In 1947, when lead prices averaged £80 a ton, MIM paid its shareholders their first dividend and began to plan for a £2 million investment in new, separate smelters with the idea of going back into copper at the end of 1952.⁷³ Unfortunately for the coke works, the copper smelters would be heated with fine coal rather than coke and the company bought a controlling interest in Bowen Consolidated mine at Scottville to secure coal supplies.⁷⁴ So while lead and zinc prices soared to unprecedented heights through the late 1940s and into the 1950s, Mount Isa's blast furnaces still burned only 40.6 tonnes of coke a day.⁷⁵

More problems were in store for the district. In 1951 the government appointed Athol Lightfoot as General Manager of State Coal Mines and Coke Works.⁷⁶ He immediately targeted the Bowen area. His plan was to 'restructure' work at the coke plant and mechanize the state mine. He put the coke works restructure into place in October 1951 and, while one worker lamented his 'bombastic' personality and unpleasant way of making changes, he did no damage there.⁷⁷ The Mining Inspector claimed that production at the works increased immediately⁷⁸ and, in 1952 and 1953, it rose above what was previously considered capacity.

At the State Coal Mine, Lightfoot was a disaster. He planned to use the Number One Tunnel, with its steep grades and constant leakage of carbon dioxide from the Bowen seam, as a prototype for the mechanisation of state mines. He rushed expensive plant to Collinsville with little or no local consultation. As mine manager Albert Winstanley later told the Mines Department:

It is bad mining engineering to have a coal-loading machine of eight to ten tons [a minute] capacity operating and loading coal on to a scraper chain conveyor with a maximum capacity of three tons a minute.⁷⁹

Lightfoot resigned in September 1954 but a month later the coalfield was in even bigger trouble. At 5.30pm on 13 October 1954 an outburst of carbon dioxide in the Number One Tunnel dislodged between 400 and 600 tonnes of coal and killed seven miners.⁸⁰ Management reopened the Number Two Tunnel and worked it by hand,⁸¹ but between the accident and constant machinery breakdowns in the Number One, coal supplies had been badly disrupted. Coke production fell to 22,504 tonnes, the lowest since 1949.⁸²

Coke prices rose consistently through the 1950s to £11.1.4d a ton⁸³ but the price of production, like everything else, more than kept pace. Copper was booming, but US government import regulations, imposed in 1959, held back the lead market.⁸⁴ There were no clear prospects for improvement when the Auditor General reported that the State Coke Works had an accumulated loss of £150,000.⁸⁵ In 1959 the coke works installed a new coal handling plant, which ended hand-picking and should have improved efficiency.⁸⁶ But despite the new plant and the Lightfoot restructure, the original workforce of 16 rose to an average of 30 with no corresponding rise in production. The works were still the biggest coke producer in the state; the only other, Haightmoor near Ipswich, produced about 1,000 tonnes a year.⁸⁷ At Bowen, by the early 1960s they were still making some 22,000 tonnes of coke a year from about 37,000 tonnes of coal.⁸⁸ The recovery rate was fairly stable at 60 per cent metallurgical coke (as well as the smaller nut and breeze coke).⁸⁹ In other words, there had been virtually no progress since 1933.

At Collinsville, the mines were still turbulent and the conservative government, led by George Francis Reuben (Frank) Nicklin, decided it had had enough of state mining. In 1959, it began to enhance the State Coal Mine's attractiveness as a private enterprise. The first stage was to start to build a coal-fired powerhouse at Collinsville to

provide another market for Collinsville coal. This soon became the state mine's best customer.⁹⁰ The next year, the government started to reconstruct the Collinsville-Mount Isa railway. Then, in April 1961, Cabinet bravely met at Bowen in recognition of the town's centenary. At that meeting, on 10 April, the government announced it would dismiss its mining workforce and close down the mine. It would then call tenders for the purchase of both the mine and the coke works. Despite protests, the State Coal Mine sacked its 260 workers and the mine closed on 19 April 1961. The sale, sweetened by the new powerhouse and railway, was never in doubt. In July the government disclosed that it had sold its Collinsville mine to Dacon, the firm that operated Bowen Consolidated opencut under contract to MIM, for a total price of £200,000 on £50,000 deposit.⁹¹ The property then shifted by internal regrouping to Collinsville Coal (Wood-Hall & MIM) and then to being a direct subsidiary of MIM Holdings. By 1975, Mount Isa controlled the whole coalfield.

In the meantime, the State Coke Works remained in public hands. The premises received a long over-due face-lift in 1966 and 1967. This eliminated the drip-buckets that had to be negotiated by visitors to the manager's office and also allowed him to remove the sugar bags from his windows. The plant had to wait another three years for its first increase in capacity since 1933.⁹² Five new coking ovens helped the State Coke Works achieve a new record production of 32,930 tonnes in 1971, as Mount Isa geared up for a period of astonishing growth. Also in 1971, Bowen became Queensland's only coke supplier when Haighmoor, whose annual production averaged below 150 tonnes over the last five years of its life,⁹³ finally closed down.⁹⁴ There would be no more coke-making at Ipswich. Then, in 1972, the Minister for Mines, Ron Camm, approved more than a quarter of a million dollars for a new coke handling plant at Bowen. The plant produced a new record amount of coke during 1973.⁹⁵

Then the Queensland Government reverted to form. In May 1978, Rees reported the arrival of a mechanical leveller and ram, a hot coke car and a large number of oven doors from Mount Pleasant Coke Works, near Wollongong.⁹⁶ Mount Pleasant, as a non-recovery operation, was the original model for Bowen's State Coke Works, but it was not a stand-alone plant. The mine it was attached to closed in 1955, most of its equipment going to Osborne Wallsend Colliery, also on the Illawarra field. The company went into voluntary liquidation in 1978.⁹⁷ At this stage part of its coking plant travelled north. This acquisition is interesting. Certainly Bowen's original plant was nearing its use-by date. The normal working life of a coking plant is between 35 and 40

years; Bowen started up in 1933. On the other hand, the Mount Pleasant equipment was even older. It needed considerable repairs, which delayed installation for at least a month.⁹⁸

Figure 2: *Oven doors from Mount Pleasant Stacked at the State Coke Works. The design of these doors is clearly different from that of the original Bowen ovens. In 2004 there was evidence of the two types being used side by side*



Source: Courtesy of Bowen Coke

Figure 3: *Daubing at Bowen Coke Works, 2004 (that's right, they were still hand daubing in 2004). The dauber wears a lined rubber glove to hand seal the oven with a mixture of clay and ash. At this stage, the outside of the oven would be about 101 degrees Celsius.*



Source: Courtesy of Bowen Coke

In 1980, the year after Ron Rees' retirement, the government announced an allocation of some \$676,000⁹⁹ to upgrade workshop equipment, renovate the charging plant and build a quenching tower. In 1984, four new ovens brought the total battery to 54 and increased production of +25mm coke by 8 per cent. At the same time, the plant would begin to install a new system for handling oven emissions. Longworth and Mackenzie won the contract for design and project management and construction began in February 1984. The 1984 changes cost \$1.4 million dollars.¹⁰⁰ Such expenditure suggests that the government had plans for Bowen coke.

Figure 4: *New ovens and flue system. Taken on 27 August 1984, the photograph shows the beginning of the common flue system and the bottom half of the southern stack*



Source: Courtesy of Bowen Coke

The new ovens looked very similar to those built in 1932. Indeed, unlike most industrial processes, the fundamental method of turning coal into coke had changed remarkably little in half a century. But there were differences. In the first place, the ovens sat on concrete buttresses; no locally-quarried granite supported them. The ovens were still built with bricks: they used 74,000 refractory bricks especially manufactured at Bulli, NSW. While the government continued to stress that most of the materials came from Queensland, economic rivalry between the states was nowhere near as strong as it had been in the 1930s. This time there were no bricks from Collinsville.¹⁰¹

A major difference was that no short brick chimney stacks linked each pair of ovens. Instead, the flues connected to a metal pipe running along the top of the battery linking the four new ovens with the next 14. The 18 linked ovens drew off waste gas emissions to a 28.5 metre chimney stack which discharged them high into the air.¹⁰² This was the first stage of the common flue system that would engage the plant for the next decade.¹⁰³ By 1984, industrialists had a legal obligation to protect the air above their works. This caused significant angst for some company boards, but the government, as owner of the State Coke Works, clearly had a moral obligation to meet its own statutory requirements. The Minister for Mines and Energy, Ivan Gibbs, stressed this when he officially opened the extensions on 16 October 1984. He promised future upgrades including the redesign of oven canister cars to improve working conditions for the drivers and oven-top men and the completion of the common flue.¹⁰⁴ In fact, the Queensland government would never complete the emissions control system. Stage One still had a number of unresolved problems in 1984 and further work went on to the back burner. Only ovens 33 to 54 were connected to the single stack when it sold the works four years later.¹⁰⁵

In 1988, the Queensland Government put the State Coke Works on the market. The then Minister for Mines and Energy, Brian Austin, said the move was in line with State and Federal privatisation policy. He claimed that the works were making a small, but fairly consistent profit from a committed annual production of 40,000 tonnes of 25mm to 50mm coke. He said they had capacity to produce 52,000 tonnes.¹⁰⁶ The government received three expressions of interest in buying the plant, but two of the companies pulled out. The remaining offer came, of course, from Mount Isa Mines Holdings, which bought the works for \$2.1 million in September 1988.

The company that bought the State Coke Works (renaming them Bowen Coke) was a far cry from the Mount Isa Mines that benefited from their erection nearly 60 years earlier. In the 1988-89 financial year, MIM Holdings treated nearly six million tonnes of copper ore and over four-and-a-half million tonnes of silver-lead-zinc.¹⁰⁷ Its tentacles reached out to mining and processing operations in Papua New Guinea, the United Kingdom, Germany, Singapore, Canada, the United States and Chile.¹⁰⁸ The company described Mount Isa as 'one of the world's largest mining and industrial complexes'.¹⁰⁹ In the year that it bought Bowen Coke, MIM declared a profit of \$328 million. The average price of refined copper was \$3,565 a tonne; lead fetched \$801 and zinc \$2,029.¹¹⁰ Where ASARCO had a controlling interest in Mount Isa in the 1930s, in

the 1980s it owned only 14 per cent of the shares, while MIM had nearly 25 per cent of ASARCO.¹¹¹ Locally, the company owned 75 per cent of the Abbot Point deep water coal shipping port, opened in 1984 and used exclusively by MIM-controlled Newlands and Collinsville coal mines.¹¹² The company's net assets were valued at \$2,381million.¹¹³

Figure 5: *Quenching tower. The coke arrives at the tower at a temperature of about 600 degrees Celsius and is immediately sprayed for about two minutes with some 47,000 litres of water. The quenching plume shown in the photograph is steam from the quenching process.*



Source: Courtesy Bowen Coke

The sale to MIM was in line with the vertical integration policies of most mining companies in the 1980s. As the new Minister for Mines and Energy and Northern Development, Martin Tenni, put it:

The quality of the coke produced at Bowen is a significant factor in the efficient operation of the lead smelter. The purchase will allow MIM to integrate the plant fully into its overall operations on a long-term basis.¹¹⁴

Further, by 1988 industrial commentators were warning of an impending world shortage of coke as coking plants everywhere approached their use-by date.¹¹⁵ While the Bowen coke works were no longer youthful, their purchase did give MIM a monopoly on coke manufacture in Queensland at a time when lead prices were on the rise. On the other hand, in the 1988/89 financial year, the company successfully piloted a new copper and lead ore treatment process, ISASMELT. The next year it planned to build a 60,000 tonne capacity lead plant which would come into operation early in 1991.¹¹⁶ This was not good news for Bowen because ISASMELT used no coke. As it happened, the process was never successfully used to treat lead ores¹¹⁷ and the coke works continued to be a useful asset. One wonders what would have happened to Bowen had ISASMELT lived up to expectations?

The sale of the State Coke Works to MIM might, perhaps, have been expected. It is more surprising that the coke works had remained the property of the state for more than five decades. The last three of these were years of intense interest in all aspects of mining and metallurgy when, throughout the world, metal producers moved towards vertical integration. Huge mining consortia, in various permutations, controlled every phase of production across the various mineral sectors.¹¹⁸ That the ownership of the coke works remained separate from that of the coal and lead producers for so long is a tribute to the strength of the relationship between the Queensland government and MIM, and to Mount Isa's enormous importance to the Queensland economy. Indeed, even when it was government-owned, the State Coke Works operated almost as a subsidiary of the mine: as yet another state subsidy for Mount Isa Mines, and one of a succession of government subsidizations of the Queensland mining industry.

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Endnotes

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⁷ *Powell Duffryn Report*, 1951, p. 59.

⁸ *QGMJ*, December 1951, p. 913.

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- ¹² *Ibid.*, p. 8.
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- ¹⁸ Ron Rees, 'A History of the Bowen State Coke Works', unpublished manuscript held by the Bowen Historical Society and Museum, p. 3.
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- ²² *Ibid.*, p. 245.
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- ²⁴ Rees, 'History of the Bowen State Coke Works', p. 5.
- ²⁵ Kennedy, *Mining Tsar*, p. 261.
- ²⁶ *Bowen Independent*, 4 July 1933.
- ²⁷ Rees, 'History of the Bowen State Coke Works', p. 6.
- ²⁸ *Ibid.*, p. 7.
- ²⁹ Costar, 'Arthur Edward Moore', p. 376.
- ³⁰ Rees, 'History of the Bowen State Coke Works', p. 7.
- ³¹ *Ibid.*, p. 8.
- ³² *Ibid.*
- ³³ *Ibid.*
- ³⁴ H.H. Bruce's speech at opening reported in *Bowen Independent*, 5 July 1933
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- ³⁶ *Bowen Independent*, 18 August 1932.
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- ³⁸ Queensland Department of Mines, *Annual Report* [hereinafter QDMAR], 1933, p. 38.
- ³⁹ Rees, 'History of the Bowen State Coke Works', p. 9.
- ⁴⁰ *Ibid.*
- ⁴¹ *Ibid.*, p. 13.
- ⁴² Bruce's speech.
- ⁴³ Peter Anderson, informal communication, 11 and 20 March 2004.
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- ⁶² *Ibid.*, p. 18.

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- ⁷⁰ *Ibid.*, p. 533.
- ⁷¹ *Ibid.*, p. 425.
- ⁷² *QGMJ*, January 1980, p. 20.
- ⁷³ *QGMJ*, June 1950, p. 425.
- ⁷⁴ *QGMJ*, December 1951, p. 911.
- ⁷⁵ *QGMJ*, June 1950, p. 421.
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- ⁹⁷ www.illawarracoal.com
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- ¹⁰⁰ *Ibid.*, June 1984, p. 268.
- ¹⁰¹ *Ibid.*, August 1984, p. 286.
- ¹⁰² *Ibid.*
- ¹⁰³ *Ibid.*, p. 412.
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