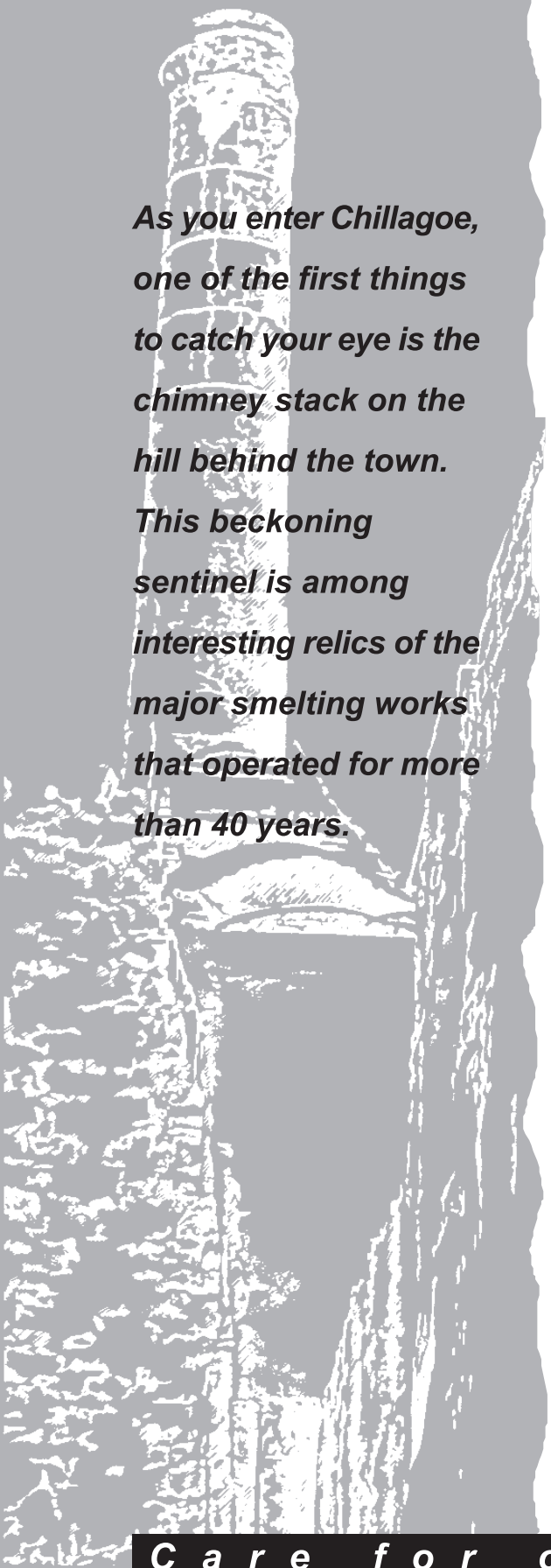
Visitor information

Historical Chillagoe Smelter



As you enter Chillagoe, one of the first things to catch your eye is the chimney stack on the hill behind the town. This beckoning sentinel is among interesting relics of the major smelting works that operated for more than 40 years.

The Chillagoe Smelter

The Chillagoe Smelter operated in the early 1900s. At this time it was the centre of a thriving mining industry that brought wealth and development to the Chillagoe area.

Early mining

Following the establishment of 'Chillagoe' by William Atherton in the late 1880s, deposits of copper, silver, lead, mica and some gold were found in surrounding areas. Fortune-seeking prospecting did not occur here, perhaps because gold was not the predominant ore. Most ore found around Chillagoe required smelting to extract the minerals.

At first, small blast furnaces were used at mine sites in the surrounding area - Muldiva, Calcifer and Mungana - to process the ore. Mining magnate, John Moffat, was the driving force behind this early development. Heavy machinery and supplies were transported by horse-drawn wagons from the coastal town of Port Douglas. The rough terrain and distance made large-scale ore treatment impractical.

The Chillagoe Company

In the late 1890s, the railway was extended from Mareeba to Chillagoe. By June 1901, when the railway was completed, Chillagoe was a flourishing town. The railway enabled the large, innovative Chillagoe Smelters to become operative by September 1901.

The Chillagoe Company equipped its work sites with the most up-to-date machinery and surrounding mines - Girofla and Redcap - became large scale. At times, the mines, railway and smelter provided employment for up to 1 000 workers. The townships of Arbouin (also known at different times as Bedford, Klondyke and Cardross), Mungana, Ashtonville, and Nightflower, sprang up. Old miners recall the Chillagoe railway throbbing from the roar of loaded ore trains until 1943. The railway line was perceived as the main artery of a once great mining field.

Politics

In 1919, after fluctuating fortunes and closures, ownership of the smelter was transferred to the Queensland Government. This acquisition by the Labor Government brought allegations of political corruption which persisted for many years. Closures plagued the smelter again in the late 1920s. When the Labor Party lost power in 1929, the new government ordered a Royal Commission into the incident. The political careers of two former Queensland Premiers, Theodore and McCormack, were ruined by the Commission's report.

Chillagoe Smelter operated until 1943 and in its lifetime treated 1.25 million tons of ore, yielded 60 000 tons of copper, 50 000 tons of lead, 181 tons of silver and 5 tons of gold. By 1943, other smelters were built closer to major ore producing areas such as Mount Isa. Easy access to these areas outweighed the economic usefulness of the Chillagoe Smelter. In 1950, the buildings and equipment were auctioned. Today the site is managed by Queensland Parks and Wildlife Service.

Access

Chillagoe is 215km by road from Cairns via Mareeba and Dimbulah. The road is bitumen as far as Dimbulah with a further 65km of bitumen and 30km of gravel to Chillagoe. Take the Mungana Road out of Chillagoe and turn right at the 'Chillagoe Smelters' sign.

Exploring Chillagoe Smelter

A touring route, indicated by directional arrows, is provided at the smelter with seven information signs located at key sites along the way. Additional information is supplied in this brochure.

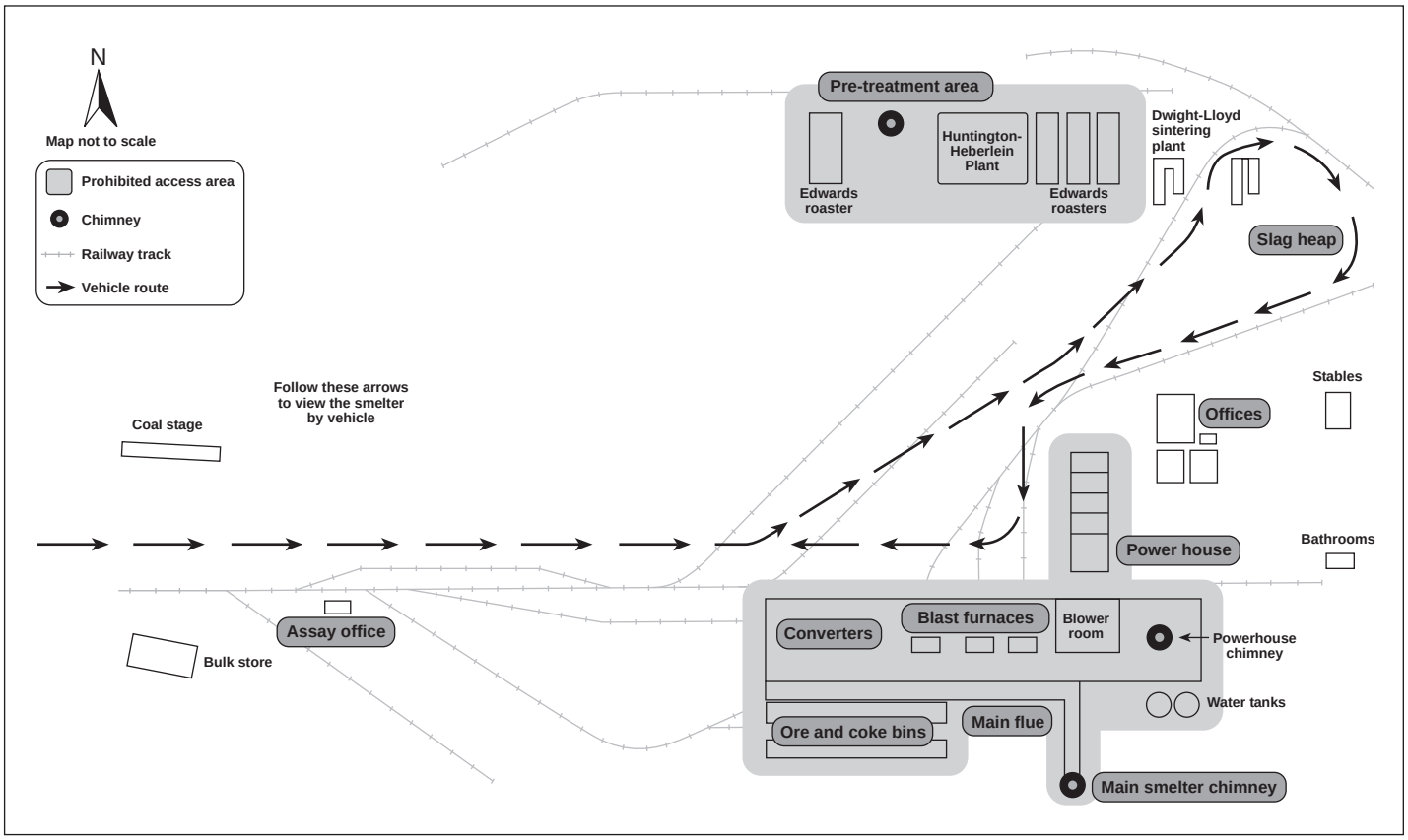
To get to the smelter site the track curves around a privately owned lime works and crosses the railway. Remnants of the old railways and loading embankments can be seen to the right and left. As you approach the smelter works you will see the three large brick chimneys. From left to right, they are the pre-treatment plant chimney, the powerhouse chimney with the octagonal section, and the main smelter chimney on top of the hill.

Assay office

At the assay office, ore was tested for quality and content in a small laboratory. A concrete bench, which provided a vibration-free base for weighing mineral samples, is still evident.

Pre-treatment area

The pre-treatment plant was built later than the main smelting plant as part of an ambitious expansion project in 1906-7. The first system installed was an eight kettle Huntington-Heberlein plant, which roasted ore in large copper kettles. Later ore was also roasted in an Edwards roaster which consisted of a long steel oven, heated from beneath by a furnace. Ore was moved slowly through the oven by a series of mechanical paddles. The Edwards roaster was used in conjunction with Huntington-Heberlein plant but both proved to be inefficient and were replaced with two Dwight Lloyd sintering machines. These machines consisted of a long wide conveyor made of perforated interlocking plates or pallets. Super heated air was sucked through the perforated conveyor, upon which the ore was carried. This pre-treatment process which effectively roasted the ore was necessary due to the ore's high sulphide content.



Slag heap

The slag heap is an accumulation of waste produced by the smelting process. Millions of tons of slag were carried to the slag heap in horse drawn trolleys, the top of which could be rotated so that both pots of slag could be emptied over the side of the heap. If the trolleys were delayed, the slag would solidify in the containers producing the solid bell shaped plugs of slag which can be seen at the bottom of the heap. As the slag heap expanded, the trolley rail lines had to be re-positioned. The slag contains a lot of minerals and heavy metals as the ore extraction process was fairly inefficient compared with today's standards.

Offices and power house

South-west of the slag heap are the stumps of the main office and the remains of the strong room which was located at the rear of the office. The strong room was used to store any gold produced by the smelters as well as the employees' pay. With more than 400 employees at times, the pay roll could be substantial. Beyond the office can be seen a raised stone-pitched base on which stood the trade shops of carpenters, boilermakers, fitters, moulders and pattern makers. Closer to the base of the octagonal powerhouse chimney were the boilers, powerhouse and blower room. The chimney produced draft through the boilers which in turn generated steam. The steam was used to drive blowers for the blast furnaces and to power the electricity generators.

Blast furnaces

West of the powerhouse chimney are the remains of the two blast furnaces. The main body of the furnace had a double iron skin with a space between. Water flowed through the space to cool the inner skin and stop it melting. These two furnaces were used to produce copper matte. Charges of ore, fuel and flux were poured into the furnace from the charging floor, which was supported at about the level of the "I" beams which can be seen at the top of the brick work. The large diameter branching pipes to the left of the furnace stands are part of the ducting system through which air was forced to the furnaces.

The large metal chimney lying to the right of the furnace stands is the remains of the 'gooseneck flue' which once was mounted vertically above the steel hood at the top of the right hand furnace. Only two furnaces had this type of flue; this one and another further to the right. These variations in design are evidence of the amount of experimentation and alteration carried out until about 1907 after which there was little alteration in this part of the plant.

Main flues and chimney

Although some gases from the furnaces were withdrawn by overhead hoods and emitted into the atmosphere through the gooseneck flues, most fumes were collected in the brick flue still visible along the rear of the building which ended at the main chimney. Because the smelters were installed at the hill's base and the chimney was on the summit, an effective natural draught was provided by the 73m rise from smelter floor to chimney top. This was among numerous technical innovations at the smelter.

Ore and coke bins

The hillside allowed materials to flow through the smelter by gravity. Ore was delivered by rail to bins on a platform behind the smelter (visible at the rear on the right) and tipped into the furnaces as required. Coke, or fuel for the smelting, was stored in two lines of bins at the rear.

Converters

The molten matte copper was delivered to the converters from the furnaces in a large crucible that was carried by an overhead crane. The molten material was poured into the upturned mouth of the converter. The tunnels in the wall indicate where the converters were mounted. The tunnels were to allow the copper moulds which were supported on small rail trolleys, to be moved back behind the converter when they were full. This enabled the converter to be emptied in one continuous pour. It is believed that generally two converters were in use while others were being relined.

Safety

This industrial site includes pits, tanks and contaminants. The structural reliability of the ruins cannot be guaranteed. For your safety and to preserve this historical site, please:

- follow the instructions on the signs;
- keep to the route indicated by the arrows;
- do not walk or climb on the structures; and
- do not remove historical relics.

For further information contact:

Queensland Parks and Wildlife Service
Queen St, PO Box 38 CHILLAGOE Q 4871
Telephone: (07) 4094 7163

Queensland Parks and Wildlife Service
Northern Regional Centre, 10-12 McLeod St
PO Box 2066 CAIRNS Q 4870
Telephone: (07) 4046 6600

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