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# A SURVEY OF HISTORIC COALMINING FEATURES ON THE HUNTLY COALFIELD

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## INTRODUCTION

As part of the Department of Conservation Waikato Conservancy's historic resource management programme, field surveys and associated archival research have been initiated or continued on the major historic extractive industries in the region, viz. goldmining and logging in the Coromandel, and coalmining in the Huntly area. At this point in time, the goldmining inventory work is largely completed (Broad et al 1984; Ritchie 1990; Ritchie in press), and the research and survey work for the coalmining site project has just been completed (Ritchie in prep.). For a glossary of mining terms refer Ritchie and Hooker (in prep.). No systematic field recording has been undertaken in connection with logging yet (owing to funding limitations), but thorough historical research by Bob Young on the Conservancy's behalf has revealed that no less than 70 sawmills have operated at some stage over the past 150 years on the Coromandel (B. Young research, on file, DOC Hamilton).

This paper concerns the Huntly coalfield survey, during which Warren Gumbley and the author recorded 33 historic mining sites and their associated structural remains (Ritchie in prep.) (Fig. 1). The survey was limited to surface features. Dwellings were excluded.

Despite the widespread distribution of coalfields in New Zealand (there are mineable deposits in virtually every province) and the fact that mining commenced on most of them in the 1870s-1880s, to date coalfields have been somewhat neglected by New Zealand archaeologists. The majority of previous coalmining site work has been undertaken on the West Coast - notably: the excavation and restoration of the Brunner industrial complex (coal, coke and brickmaking - Oliver and Wood 1981); recording of historic coalmining sites at Rewanui by Jim Staton (site records only produced); documentation of the Energetic Goldmining Company's coalmine within the Murray Creek goldfield (Hooker 1984); a survey of the Stockton coalfield (Hooker 1989); reports on Albourne's coal mine near Reefton (Wright in prep.) and the Coalbrookdale fan-house (built in 1906 and reputed to be the largest in New Zealand - Staton in prep.); and a recent survey at Millerton for Coalcorp (Hooker n.d.). Edson (1986) recorded coalmining sites in the Mokau valley, North Taranaki (see

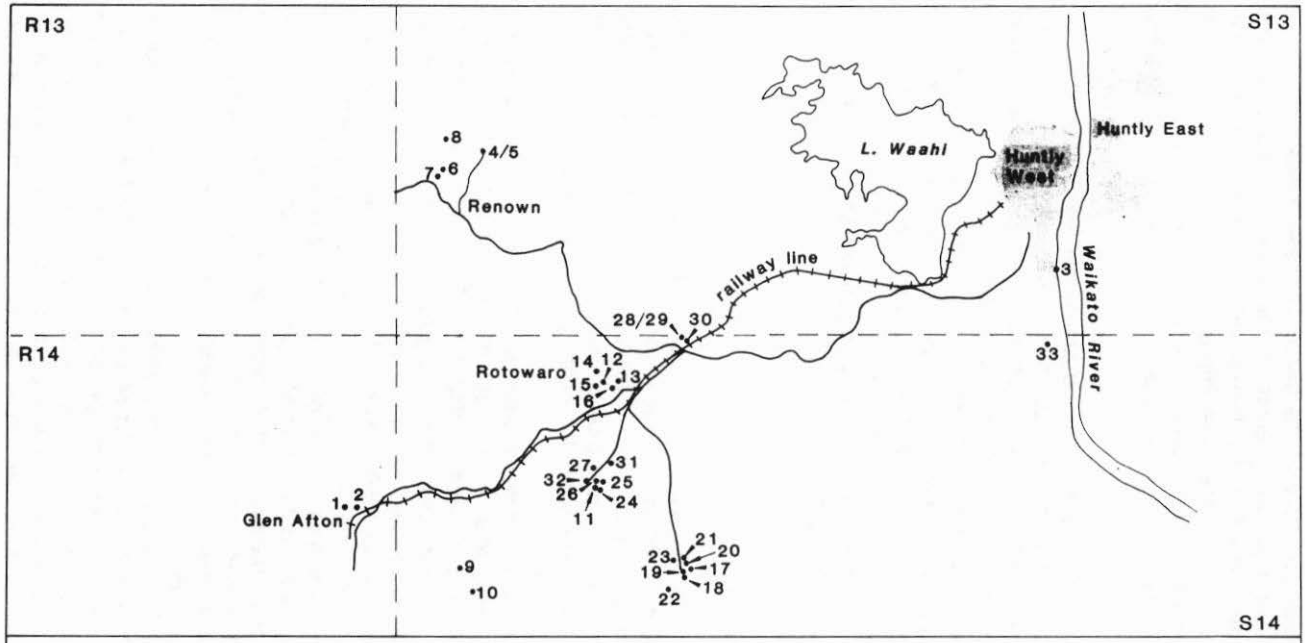


Fig. 1. Historic sites, Huntly Coalfield (see Appendix 1 for details).

Stokes 1988 for a concise summary of the history of these mines).

There are two major coalmining areas in the Waikato centred around Huntly, and the southern King Country (which will be the subject of future surveys). Huntly was and still is the most important coalmining centre in the North Island. Coal deposits in the area have been worked more or less continuously since the 1860s. It is the focus of the current survey work for several reasons:

1. Its socio-economic importance as an industry within New Zealand.
2. The widespread adoption of opencast mining is resulting in largescale landscape modification which is rapidly obliterating original landscape and mining features, many of which are poorly documented.
3. The identification and assessment of remaining site features with a view to securing the long-term preservation of specific sites. Related to this objective is on-going liaison with the coalmining industry (particularly Coalcorp) to persuade them that there is some merit in preserving (or at least not going out of their way to destroy) significant sites and structures associated with past mining eras.

## HISTORICAL PERSPECTIVE

The first coalmining in New Zealand is believed to have occurred at Shag Point (Otago) in the 1830s, when whalers are reported to have used coal broken from beach outcrops to fuel trypots (State Coal Mines 1987: 15). In the 1840s coal was collected from outcrops at Kupakupa (southwest of Huntly) by staff of the Taupiri mission station and used for heating. The mission station was established in September 1842.

The earliest recorded commercial shipment of coal was by the vessel 'Jewess' in September 1840, when it was used to convey 50 tons of coal from West Wanganui to Wellington (Thornton 1982: 99). There is some uncertainty as to where and when the first systematic underground coalmining occurred in New Zealand. A mine established at Saddle Hill near Dunedin in 1849 was certainly one of the first. In the 1850s Ferdinand von Hochstetter visited many parts of New Zealand and documented its physical geography and natural resources, including the coalfields then known to exist. With the exception of a small mine exploiting beach outcrops at Motupipi in Golden Bay (from 1854 to 1858), they were largely unworked at that stage (von Hochstetter 1864). Von Hochstetter's report, however, made potential mine developers aware that considerable coal reserves existed in New Zealand. Within twenty years mines were opened in many areas.

Von Hochstetter (1864) was particularly enthusiastic about the potential of the coal outcrops he had observed at Kupakupa (i.e. the one the missionaries had picked at earlier). The Government opened the seam at Kupakupa during the Waikato Campaign (1863-64) to provide fuel for steamers which were used to convey troops and supplies and for bombarding the Maori fortifications on the Waikato River. Ironically Maori labourers were employed to mine the coal.

The exploitation of the Kupakupa seam is generally regarded as the first systematic and successful working of a coal seam in the North Island. Although seams were known in other locations, some years elapsed before they were worked. The coal was loaded directly into vessels via an inclined chute from the mine to a riverside wharf. The coal in this area has been mined by various companies ever since, the most notable being the Waikato Coal Co. (1877-1899) and Rooses' Shipping (1923-43). Today the area is being worked as part of O'Reilly's opencast (1957-present).

Mining really got under way in the Huntly area in 1876 when the Ralph family established a traditional shaft-accessed mine, known as Ralph's mine, in the centre of Huntly township. Their company was registered in Auckland in 1874 (Innes and Lynch 1989: 78). Shortly after Ralph's opened two more underground mines nearby: the Extended (1889-1924) and the Kimihia Reserve mine (1887-1910). In 1899 Ralph amalgamated his interests with those of the Waikato Steam and Navigation Co. to form Taupiri Coal Mines Ltd. The latter became the main mining company in the area. Mining continued in most of the mines around Huntly until accessible coal reserves were considered worked out. In reality the contemporary bord and pillar mining practice (see below) resulted in the recovery of less than 20% of the coal in the underground seams (leaving plenty available for opencast mining at a later date). During this period Auckland, Waikato, Coromandel, the Bay of Plenty and the volcanic plateau were the main markets for Huntly coal. There are three main coal seams in the Huntly area - the Renown, Kupakupa, and Taupiri. All of of the seams were and are still worked, although the bulk of the coal from the field is derived from the intermediate Kupakupa seam (Kear and Waterhouse 1978: 6).

(As an aside, Alexy Simmons has had pieces of coal uncovered during her Buried Village excavations tested by Coalcorp at Huntly. They confirmed it was derived from the Kupakupa seams at Huntly. Coalcorp are able to test coal samples and source them to virtually any coal seam in New Zealand. With further testing they can pinpoint specific mines.)

World War One created a demand for increased coal production. This lead to the opening of the nearby Rotowaro field about 10 km west of Huntly and the gradual winding down of the mines around Huntly township. Pukemiro Collieries Ltd had started prospecting near Pukemiro in 1910 and began production in 1915 after a branch railway from Huntly had been constructed. Shortly after Taupiri Coal Mines established a mine at Rotowaro (using the screens and associated gear transferred from their then closed Ralph's mine at Huntly). The new mine was called the Awaroa Colliery when it opened in 1917, but it soon became known as the Rotowaro No. 1 mine. In 1920 the Glen Afton mine was established by the New Zealand Dairy Company, which also opened the McDonald mine, on a state-prospected area to the northeast in 1931. Other companies began prospecting and proceeded to open major mines and establish new townships west and north of Rotowaro. The mines included Pukemiro Collieries (1915-1965), Glen Afton Collieries (1923-1969), and the Renown mine (1927-1973). The last large underground mine, the Alison mine at Rotowaro (1940-74), was opened by Taupiri Coal Mines in 1940.

Opencast mining in the Huntly-Rotowaro area began in a small way when

Glen Afton Potteries established a mine in 1936, but became a regular feature of the field with the opening of the Kimihia opencast at Huntly East in 1944 (this project involved draining half of Lake Kimihia). This was followed by a succession of opencast mines around Rotowaro - notably the Alison in 1947 (now part of Maori Farm opencast), the Summit (1948, now part of the McDougal opencast), Barker's and Thompson's (1951-64), Devlin's (1950-58), the McDonald (1953-early 1980s), Smith's (1956-present), Callagan's (1973-77), Waipuna (1957-present), and Maori Farm (1975-present). Coalcorp are planning a massive new opencast mine which will threaten some of the historic structures at Rotowaro.

In the early days at both Huntly and Rotowaro considerable stockpiles of 'slack' (fine powdery coal) accumulated, there being little market for the material at this stage. In the early 1930s four companies working different parts of the Huntly coal measures (Taupiri Coal Mines, Pukemiro Collieries, Renown Collieries, and Waipa Rail and Colleries) jointly established the Waikato Carbonisation Works, a massive plant to convert slack coal into briquettes and produce byproducts such as coal tar and creosote (Plate 1). The briquetting plant was the second of its type in the country. The first briquetting plant was established at Westport in 1907 to increase the utilisation of slack coal from the Seddonville Colliery. However, the West Coast plant was shortlived. It ceased production in 1912 because the pitch used to bind the briquettes made them prohibitively expensive (Morgan and Bartrum 1915: 45). The Waikato Carbonisation plant, which employed imported German technology (specifically a Lurgi Spulgas retort), was the first coal carbonisation plant in the southern hemisphere. Carbonisation involves the distillation of coal to produce coke, gas and liquid byproducts. While the Carbonisation Works successfully converted the massive quantities of slack coal into marketable briquettes (Carbonettes and Raycarbo), there were problems with the disposal of some of the byproducts, especially highly toxic phenols. As a consequence massive volumes of phenols began to accumulate in open reservoirs adjacent to the plant and a nearby stream. In 1985 the company went into receivership. The plant was abandoned; the phenol ponds were covered and left. After five years of wrangling over who should clean up the site, in late 1990 the Government reluctantly accepted responsibility. The Waikato Regional Council is now overseeing the clean-up.

From the 1870s until the 1930s the coalmining industry in New Zealand expanded rapidly. Coal was the major energy source during this period. However, the expansion was halted by the 1930s depression. The decline was shortlived, as World War Two ensured that local energy production was given priority over exports. Coalmining was declared a strategic industry. Those working in it were exempted from military service. After the War, the industry suffered a further decline in the face of stiff competition from relatively cheap electricity and fuel oils. From 1947 onwards private owners increasingly abandoned coalmines as profitability diminished. The government of the day embarked on a programme of acquisition of mines thoughout New Zealand to maintain employment and competence in mining skills. Underground mines were also facing competition with the advent of high production opencast mines

in several areas. By 1950 State Coal Mines (created by the passing of the Coal Mines Act in 1901) was the largest coalmining concern in the country (State Coal Mines 1987).

In the 1960s the Government adopted a policy of shutting down uneconomic mines. Between 1961 and 1973 more than 3000 people left the industry. In the process many small mining settlements were virtually depopulated. In recent decades the industry has received two major boosts: the development of New Zealand Steel Ltd in the late 1960s provided a market for a large regular supply (over 80% of the output of the Waikato mines), and the 1973 oil crisis made the government reassess the industry. As a consequence two fully mechanised mines were developed in the Waikato to meet increased demand - Huntly East (1977-1992?) and Huntly West (1977-present). Much of the output of the latter feeds the Huntly power station.

## SITE FEATURES ASSOCIATED WITH COALMINING

In coalmining, as in most forms of mining, there is some degree of uniformity with regard to the types of machinery and structures used at various contemporary mining locations. However, there are several significant differences between the equipment, mining techniques, and terminology used in underground coalmining and that employed for the mining of metallic ores. One of the most notable is the traditional bord and pillar mining pattern used in underground coalmines (a grid pattern of 'roads' (bords) and unworked blocks (pillars) left to support the roof and reduce surface subsidence.

On the Huntly coalfield, good examples of most of the types of structures and equipment associated with underground coalmining can now be found only around Rotowaro, and most postdate 1930 (Fig. 1). Virtually all traces of the equipment and structures associated with the first 50 years of mining on the coalfield, i.e. in the days when mining was centred under and immediately around Huntly township, have been removed or obliterated. These include the traditional pitheads (poppetheads/headframes) which were a feature of the early mining at Huntly, along with pit ponies (used in some of the mines), and coal wharfs along the Waikato River (the main archaeological evidence of pit ponies is the presence of stables near the pitheads).

A compact cluster of buildings located near a mine mouth is a distinctive feature of underground mines. The buildings are the surface manifestation of an industry working underground coal measures varying from five to 500 hectares in extent. There is considerable similarity in these structures (described below) from one mine to another, in terms of number, function, form, and materials.

Prior to the advent of opencast mining (which became economically feasible with the advent of modern earthmoving machinery) the only way to access an underground coal seam or other mineral deposits was by means of shafts or tunnels driven from the surface. Once an access has been created, it is necessary to establish a means of conveying the coal from the seams to the surface. Machinery associated with this work (Plate 2) includes headframes

Plate 1. The Waikato Carbonisation Works site (S14/156) at Rotowaro.

Plate 2. Winding gear and motor, Rotowaro No. 1 mine (S14/149).

for raising and lowering cages in shafts, and endless ropes (rope-roads) for hauling skips in and out of mines via inclined haulages. Belt conveyors have replaced rope-roads in newer mines. Archaeological evidence of surface haulages includes return wheel carriages, creeper loops (usually sited at the end of rope-road haulages, creepers are endless chains with hooks which catch onto the axles of skips and pull them along to a point where they can be clipped on to a main haulage again), and back balances (heavy counterweights to maintain tension on the ropeway - see Ritchie and Hooker in prep. for detailed explanations of mining terms). Cableways are often used to convey coal from mines, but were not used extensively at Huntly (the twin cableway which conveys coal from the Kopuku mine (North Waikato) to the Meremere power station is a good extant example). The only cableway located during the survey was used to convey limestone to the Pukemiro colliery railhead. Some coalfields, probably the most notable being that at Denniston on the West Coast, transported coal from the mines to loading facilities via substantial self-acting inclines (there were no similar self-acting inclines on the Huntly field).

Auxiliary surface structures associated with haulage include clipping sheds (where skips are attached to the endless ropes); weigh bridges, and tipplers. The latter are machines for inverting skips and tipping their contents into bunkers from which the coal is loaded (usually via a conveyor) into road or rail transport (Plate 3). Other surface coal-handling facilities include screens and bins for grading and storing coal. The latter are usually the most imposing mine-head structures.

Among the mine-head buildings (which cover 0.5-2.0 ha.) there are numerous structures common to most underground mines. They include a bath-house (built to a similar design throughout the Huntly field), a lamphouse (in which the safety lamps are recharged between shifts), workshops, offices, and auxiliary facilities such as loco sheds and explosives magazines.

Fan-houses, established at the mouths of tunnels called return airways, are an essential aspect of underground coalmining. As coal is mined highly inflammable hydrocarbon gases are released and without adequate ventilation accumulate in mines and can cause considerable loss of life by either oxygen deprivation (causing suffocation), or by ignition. Multiple fatalities caused by these means have occurred in the Huntly mines, notably in the original Ralph's mine at Huntly in 1914 when 43 died in a firedamp/coaldust explosion (triggered by a naked flame; the mine closed shortly thereafter), and at Glen Afton in 1939 when eight died from carbon monoxide poisoning. The gas build-up was caused by a fire, but reached lethal levels as a result of inadequate ventilation (Lovell-Smith 1990). There are two main types of mine ventilation fans - Sirocco and coaxial - usually used in conjunction with an evasse, a funnel-like cowling which improves the airflow from a return airway and greatly reduces the energy needed to drive a ventilation fan. An efficient evasse can result in huge cost savings over the lifetime of a mine.

All coalmines require a source of power. Despite the proximity of tonnes of coal most mines adopted electricity as their principal energy source for powering winches and other mechanical and electrical equipment. When mining commenced at Rotowaro in the 1920s there was no reticulated power in the

Plate 3. Renown mine rope-road tippler, Rotowaro (S14/152).

area. As a consequence State Mines established their own DC power supply. To improve its efficiency, the DC current was converted to AC in distinctive rectifier buildings, of which two (the Alison and Mahon's rectifier-houses) still exist at Rotowaro.

There are many former miners' houses and cottages scattered throughout Huntly and in the small settlements in the surrounding hills (viz Pukemiro, Glen Afton, Waikokowai, and Renown). As most are still occupied they were considered outside the scope of this survey. One of the more elaborate examples now serves as the Huntly Museum. It was built for the manager of Ralph's Extended Mine in 1889. The Glen Afton mine manager's house still stands at Glen Afton, arguably the finest house in the village. The manager's residence at Renown, near the Renown mine rope-road upper terminal and weighbridge complex (site S13/93), is also still in use.

Without going underground, one can often ascertain the type of underground mining by the evidence on the ground surface, especially if the underground workings are at a relatively shallow depth. Traditional bord and pillar mining often produces a hummocky ground surface with occasional sinkholes created by roof slumps. The more recently adopted 'wangawilli' system (which involves removing coal in a herringbone pattern from a central bord) creates broad shallow depressions on the ground surface as the ground subsides. After heavy rain the surface depressions fill with runoff, creating distinctive small shallow linear 'lakes'. Not surprisingly, coalmining companies usually purchase the properties under which they mine so that they are not sued for damage due to subsidence.

## AN ANALYSIS OF THE FACTORS INFLUENCING SITE DESTRUCTION

I have analysed the differential survival of structures and machinery on former mining sites at Huntly, principally to ascertain the prospects for retention of at least some of the remaining structures. A clear understanding of the processes and factors which cause the destruction of coalmining (or other historic) sites is an essential element in any preservation effort.

The destruction of historic mining site features at Huntly is attributable to ten major factors, viz.:

1. The depletion of coal reserves or the cessation of coalmining in an area and the subsequent relocation of the plant to another site, often followed by the acquisition of the former mining properties and their use for another purpose (in so doing obliterating evidence of the earlier mining activity, e.g. there are several former mine sites in Huntly which have been built over).
2. The removal of plant and particularly the infilling of abandoned shafts and stopping (i.e. blocking) of mine portals for safety reasons.
3. The abandonment of mining plant after the completion of mining in an area and the gradual removal of structures by cannibalising parts as and when required. This appears to be a fairly common practice.
4. During the life of a mine, pithead equipment is often upgraded, in the

course of which some of the original features are removed or modified and others added. The resultant 'combination sites' can be difficult to interpret.

5. The removal and scrapping of obsolete plant.
6. The differential survival of structures owing to the durability of their construction materials. Wooden structures are understandably the least durable, but brick and steel structures are no less at risk due to the salvaging of machinery and structural remains for recycling or other purposes. Many of the pre-1960 mine facilities on the Huntly coalfield were made of locally produced Huntly bricks. While Huntly bricks have gone out of vogue as a building material, used Huntly bricks are highly prized for paving and other purposes. Consequently any abandoned structure made from them is at risk. One of the most notable historic sites on the coalfield, the New Haulage fan-house (site S14/151), was destroyed in 1988 by persons salvaging the bricks. All that is left on the site now is the remains of the huge Sirocco fan which ventilated the mine.
7. While many mine buildings at Huntly were built of bricks, typically cheaper, less permanent materials were used as cladding on mine-head structures, because it was realised at the outset that the structures would only be required until the coal reserves in a particlar mine were worked out. Consequently, structures made from these materials (e.g. corrugated iron, wood, and fibrolite) deteriorate rapidly after abandonment.
8. The advent of new mining technologies, especially opencast mining, which requires relatively minimal fixed plant on-site (mainly huge screens and bins) and results in major landscape modification which tends to obliterate earlier evidence of mining, or necessitates the relocation of plant.
9. A general lack of concern or interest shown by those associated with the industry in the preservation of past mining sites and associated technology.
10. The modern ethos concerning rehabilitation of mining sites, to the point where some regard any man-made structure as an eyesore and wish to see the environment restored to what they imagine it was like before mining commenced. While rehabilitation of mined land is commendable, the policy often needlessly results in the premature destruction of structures or machinery of historic interest. As a consequence, in my opinion, it elevates the significance of the remaining historic features on New Zealand coalfields. These days there is so little left on abandoned mining sites that there is not much which could be regarded as 'significant' in the future. In other words the existing stock of historic coalmining sites is finite. Very few 'new historic' coalmining sites are being created, other than rehabilitated opencast pits.

All these factors have a bearing on which historic mining features have survived on the Huntly coalfields and their distribution. In some parts of the coalfield, e.g. Kimihia, Glen Massey, and around Huntly township, they have resulted in the virtual complete obliteration of early mining sites and the associated infrastructure. Undoubtedly similar factors govern what has survived on other New Zealand coalfields, although the weighting is likely to be different.

The destruction of sites and features associated with early mining periods

is not surprising. Until relatively recently there was little interest in preserving significant industrial sites in New Zealand, especially those which most regard as messy industries such as coalmining, gas production, etc. The general disinterest of those associated with underground mining is also understandable - it's tough and dangerous work and most of the men who were involved in it are more than happy to be out of the pits and turn their attentions to something else.

The present Historic Places Act provides little protection for historic coal-mining sites because most surviving features are less than 100 years old. Consequently there is a greater than usual need to promote their preservation by other means. In my book this involves persuading the modern mining industry that there are good reasons (social benefits) and a technological rationale for preserving a representative selection of historic sites and landmarks associated with the coalmining industry and eventually interpreting them. In part it is necessary to try to instill a sense of pride in the endeavours of their predecessors (i.e. the pre-mechanisation underground miners). This is what we are endeavouring to do at Huntly. We have no illusions as to the difficulties of achieving success, especially with the economic situation as it is. The mining industry has shown little interest in preserving significant historic mining features in the past, and with the advent of SOE's like Coalcorp the prospects have not improved. Not only is Coalcorp very much maximum production and profit orientated, but many modern opencast mine operators are more akin to quarry operators than miners. Many have little knowledge or interest in past systems and technologies.

A case in point revolves around the retention of the former Carbonisation Works and briquetting plant at Rotowaro. This major industrial facility ceased production and was abandoned in 1985. Recently the NZHPT declared the site a historic conservation area (Plate 1), much to the bewilderment of some local people who would prefer to see the plant demolished and the site restored to a more natural state (McKenzie, Simmons and O'Keeffe 1991). While their feelings are understandable (some had to contend with fumes from the plant), there is little appreciation of the historic role of the facility or its technology. Prior to the advent of automatic fuel-injected boilers there was no market for slack coal. When the establishment of a combined briquetting and carbonisation plant was first mooted in 1930 there was no opposition. On the contrary, it was widely considered that it would give a tremendous boost to the local industry because it would enable the utilisation of the vast tonnages of slack coal which still had to be brought to the surface even though there was no market for it. The plant was purchased in 1931 after a worldwide investigation into slack coal usage and with a view to finding a technological solution to the problem of the growing coal dumps around the Huntly coalfield. Despite the pollution problems (which weren't recognised as such in the 1930s) the Carbo Works achieved its purpose for many years. Thousands of tonnes of dumped slack coal were remined and converted into marketable briquettes (2 tons of coal produced 1 ton of briquettes), and other marketable byproducts. The slack coal mined subsequently was also utilised. During World War Two the plant was considered a strategic asset (the operators were exempted from overseas

service).

The NZHPT's action is to stall for time. There is little possibility in the immediate future that the site can be interpreted and opened to the public (it is in a designated 'construction area'), but the Trust's initiative should ensure that it is not needlessly destroyed without due consideration of its historical and technological values. One of the difficulties with the site is that it is not ruinous enough. It has not had time to be reduced to a few key elements which people can more readily relate to and which would also make the ruins so much easier to maintain and interpret.

To conclude, the principal objectives of the Huntly Coalfield survey were to identify a representative range of historic structures (abandoned and obsolete rather than old) associated with earlier phases of mining on the Huntly coalfield and to seek their retention (i.e. exclusion from unnecessary destruction). The 33 recorded sites are now being evaluated with the intention of recommending to Coalcorp and Glen Coal that certain sites should be retained. It is hoped that a Huntly Coalfield Heritage Trail can be established centred around the concentration of surviving coal-sites in and around Rotowaro. In the interim we will be endeavouring to ensure they are not needlessly destroyed or further modified. Fortunately, there are still a number of retired mineworkers living in the Huntly area. Many provided firsthand accounts of activities and other useful information about the recorded sites. Some will be interviewed in the near future in the course of a separate Huntly coalfield oral history project.

## ACKNOWLEDGEMENTS

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APPENDIX 1

KEY FEATURES ON HISTORIC COALMINING SITES AT HUNTLY

| Site No. | Site/Mine Name | Main Surviving Features | No. on Map |
|---|---|---|---|
| R14/227 | Glen Afton | * hauler | 1 |
| | McDonald | * hauler, return wheel carriage<br>back balance winch<br>hauler shed demolished 1988 | |
| R14/228 | Glen Afton | portals: return airway<br>rope-road | 2 |
| S13/92 | Roose's | coaling wharf piles | 3 |
| S13/93 | Renown | * upper haulage clipping shed<br>brattice shed<br>electrical shop<br>* weighbridge<br>* back balance pit | 4 |
| S13/94 | Renown | * bath-house | 5 |
| S13/95 | Renown | New Drive fan house<br>Daylight shaft site | 6 |
| S13/96 | Renown | old entrance (filled) | 7 |
| S13/97 | Renown | * rope-road alignment | 8 |
| S14/133 | Pukemiro | colliery houses | 9 |
| S14/134 | Pukemiro | lime quarry<br>cableway pylons & carriers | 10 |
| S14/135 | Rotowaro | * old main magazine (brick) | 11 |
| S14/136 | Alison | * bath-house<br>* boiler-house<br>* lamp-room | 12 |
| S14/137 | Alison | * rectifier-house (concrete block) | 13 |
| S14/138 | Alison #1 | pithead area, remnant steelwork | 14 |
| S14/139 | Alison #2 | pithead features:<br>return airway portal & part evasse<br>fan mounting (concrete)<br>* loco sand-drying shed (c/iron)<br>electrical workshop (brick)<br>battery store (fibrolite)<br>workshop (concrete footings) | 15 |
| S14/140 | Alison | * screens<br>hopper & conveyor | 16 |
| S14/141 | Mahon's | pithead, Mangakotukutuku Valley<br>New Drive site features:<br>open area<br>mine portal (blocked with debris) | 17 |

| | | | |
|---|---|---|---|
| | | * clipping shed & weighbridge footings | |
| | | hauler shed footings | |
| | | remains of trestle bridge | |
| S14/142 | Mahon's #1 | * portals, haulage & airway | 18 |
| S14/143 | Mahon's | screens (remnant structure) | 19 |
| S14/144 | Rotowaro #5 | * portals, haulage & airway | 20 |
| S14/145 | Rotowaro #5 | * fan-house, part evasse (concrete) | 21 |
| S14/146 | Callagan's | * rectifier house (concrete) | 22 |
| S14/147 | Callagan's | * fan-house (all steel) | 23 |
| S14/148 | Rotowaro #3 | * New Drive portal | 24 |
| | | electrical shed | |
| S14/149 | Rotowaro #1 | pithead features | 25 |
| | | * 2 portals (left: New Haulage) | |
| | | (right: travelling road) | |
| | | electrical shed (fibrolite) | |
| | | * fan-house, Sirocco fan, evasse | |
| | | * motorshed for above | |
| | | hauler house (#1 & #4 mines) | |
| | | * New Drive hauler #1 mine | |
| S14/150 | Rotowaro | New Haulage screens | 26 |
| S14/151 | Rotowaro #1 | New Haulage fan (Sirocco) | 27 |
| | | brick fan-house destroyed c.1988 | |
| S14/152 | Renown | Screens Haulage features: | |
| | | * tippler | 28 |
| | | * subterranean coal bunker | |
| S14/153 | Renown | * screens hauler | 29 |
| | | * return wheel carriage | |
| | | back balance counterweight (concrete) | |
| | | bath-house footings (concrete) | |
| S14/154 | Renown | office strongroom (concrete) | 30 |
| S14/155 | Rotowaro | * workshops | 31 |
| | | * powerhouse building | |
| | | * loco shed | |
| S14/156 | Rotowaro | * Carbonisation Works | 32 |
| | | main surviving features: | |
| | | * Lurgi Retort building | |
| | | * coal bunker (steel) | |
| | | * briquette plant & machinery | |
| | | * associated machine house | |
| | | * boiler house | |
| | | conveyors | |
| | | old distillation plant | |
| | | creosote storage tanks | |
| | | crushed char bunker | |
| | | tar house | |
| | | reservoir | |

| | | | |
|---|---|---|---|
| | | power change shed | |
| | | control room | |
| | | fitters shop | |
| | | rail loading facility | |
| | | bath-house | |
| S14/157 | Kupakupa | inclined tramway (jig) alignment | 33 |

Notes:

1. * = most significant and complete surviving examples.
2. All the listed mine portals are plugged with concrete or clay.
3. Callagan's is part of the Rotowaro #1 mine.
4. With the exception of the Glen Afton and Pukemiro mines, all the mines were operated by State Coal Mines.