

Waihi Gold Mine's community story

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Abstract

Waihi Gold Mining Company Limited, a wholly owned subsidiary of Normandy Mining Limited, operates the Martha gold mine, located in the township of Waihi, New Zealand. The operation, an unincorporated joint venture comprises Normandy Mining Limited (67.07%) and Otter Gold Mines (32.94%).

Since gold was first discovered at Waihi in 1878, it has formed a key part of the region's economy. In 1909 the Waihi mine was described in a report to Parliament as "the most important gold mine in Australasia and one of the greatest in the world." That was a record year for production, with 416,813 tons of ore mined and some 1,120 men employed.

Today the mine produces up to 1,250,000 tonnes of ore annually, and the project employs some 234 men and women. In 1999 the value of the gold and silver produced (\$59 million) made up 47% of Waihi's estimated GDP. Waihi Gold has made significant contributions to the Waihi economy, community and the Hauraki region as a whole. Since the mine was re-opened in 1987, thousands of local people have benefited from the mine. In 1999, consents were granted allowing an extension to the mine life (the Extended Project) and this will result in a further seven years of economic benefits resulting from mining activity.

The Company has undertaken extensive consultation throughout project planning, construction, operations and rehabilitation. Ongoing liaison and involvement with all community sectors, including Tangata Whenua and Iwi, local residents, recreational groups and schools remains an integral part of the operation. Throughout the life of the modern Martha Mine, the Company has actively supported the local community in the form of donations, sponsorships, the provision of amenities, and by participating in community events.

A well established environmental team exists at the site. Environmental and community performance is measured by an independent five-assessment process, and the Company is committed to achieving excellence through ongoing improvement programmes and staff awareness.

When the mine is closed, the open pit area will be transformed into a recreational lake, and the tailings storage facilities will be rehabilitated to become a combination of wetlands, grassed areas and ponds. Resources will be provided by the Mine to ensure the rehabilitated site remains in a safe and self-sustaining, stable condition in perpetuity.

The mine is regarded as a showcase on a world standard of how a modern mining operation can successfully co-exist with the nearby community.

Introduction

Waihi Gold Mining Company Limited, a wholly owned subsidiary of Normandy Mining Limited, operates the Martha gold mine, located in the township of Waihi, New Zealand. The operation, an unincorporated joint venture, comprises Normandy Mining Limited (67.07%) and Otter Gold Mines (32.94%).

With a population of around 4,700 people the town of Waihi is situated on the east coast of the North Island of New Zealand. The surrounding area supports horticulture and dairy farming. Waihi is an important service centre for these activities as well as playing an increasing role in tourism. Waihi is within 90 minutes drive of half the population of New Zealand including the major cities of Hamilton, Auckland, Rotorua and Tauranga.

The climate of Waihi is affected by its topography. The rainfall in Waihi is relatively high, averaging in excess of 2100 mm per year. The township lies at the northern end of an elevated basin which is the source of the Ohinemuri River and its tributaries.

The Martha project was the first major hard rock mining project to be commissioned following the resurgence of the gold mining industry in New Zealand in the late 1970s. The Martha Mine is situated in the township, and the Processing Plant, Waste Disposal Area and Water Treatment Plant are located 2 km away in a rural area. Because of its location the mining operation has received a high level of public scrutiny. This is reflected by the stringent conditions set for the project.

Mining is by open pit methods. Ore and waste rock is crushed at the Surface Facilities Area prior to transportation along a 2.7 km conveyor. On arrival at the Processing Plant, gold and silver are extracted from the ore using conventional carbon in pulp treatment methods. Waste rock is used to construct an engineered earth embankment to contain the tailings. The Water Treatment Plant treats excess water prior to discharge into the Ohinemuri River.

Today the mine produces up to 1,250,000 tonnes of ore annually, and the project employs some 234 men and women. In 1999 the value of the gold and silver produced (\$59 million) made up 47% of Waihi's estimated GDP.

History of the Martha Mine

Gold was first discovered at Waihi in 1878 and the original Martha Mine operated between 1879 and 1952. The ore was extracted by underground mining methods following the major vein systems. The mine was developed by sinking seven vertical shafts and driving 175 km of horizontal tunnels which were spaced at regular vertical intervals on fifteen levels.

Since gold was first discovered at Waihi in 1878, it has formed a key part of the region's economy. In 1909 the Martha mine was described in a report to Parliament as "the most important gold mine in Australasia and one of the greatest in the world." That was a record year for production, with 416,813 tons of ore mined and some 1120 men employed. During its seventy year life, Martha mine produced 5.6 million ounces of gold and 37 million ounces of silver.

The relatively high gold price in the 1970s sparked renewed interest in exploration at Martha Hill. Following extensive environmental impact studies, and granting of a Mining Licence and Water Rights, construction for the new open pit Martha Mine commenced in July 1987. Further exploration identified additional ore, which would extend the life of the mine for a further seven years to 2007. Following permitting under the Mining Act (1971) and the Resource Management Act (1991), the Mining Licence conditions were varied and resource consents and conditions issued. Construction for the extended project commenced in 1999.

Overview

Community liaison, consultation and support have always been, and continue to be integral to the operations of Waihi Gold Mining Company throughout project planning, construction, operations and rehabilitation.

The Company recognises that the provision of factual and timely information is of the utmost importance in building relationships with the community and stakeholders, and for this reason, the Company has always maintained an open door policy, and provided an opportunity for operations to be viewed first hand.

The Company set up an Information Centre within Waihi Township in 1984. In addition, walking tours of the exploration drilling operations took place, and as interest grew more in-depth tours commenced, with viewing platforms established. Following the submission of the Mining Licence application in 1985, local objectors to the Mining Licence application were visited to allow their concerns to be discussed and addressed where possible.

Following the granting of the Mining Licence and Water Rights in 1987, the Company continued its commitment to the community as construction operations and then mining took place. In 1990 the Company built the Waihi Information Centre at its current location adjacent to the Cornish Pumphouse. The Company has continued to provide information to describe the mining process, environmental monitoring and progressive rehabilitation. In July 1999, the Martha Mine Education Centre opened, and this facility provides a venue for activities and display space for the many school groups that visit the site.

In 1995, an extensive program of consultation commenced prior to the lodging of applications for a variation of the Mining Licence and for resource consents to allow an extension of the mine (the Extended Project). The guiding principles of the consultation were to provide information, and to gain an understanding of any concerns raised so that, as far as possible, these could be addressed either through design changes or mitigation measures. Prior to lodging the applications the Company consulted:

- landowners and occupiers within, adjacent to, and in the vicinity of the application areas;
- the local community and community groups;
- Tangata Whenua and Iwi authorities;
- the local and regional councils;
- Government departments and agencies; and
- other interested parties.

As part of the Extended Project consultation, the Company opened a second Information Centre, called Martha 2000, in the main street of Waihi. This operated between May 1995 and October 1999 to provide an informal and readily accessible

place where the community, visitors to the area and interested parties could view videos, plans and reports relating to the Extended Project.

Following the granting of the variation to the Mining Licence and Resource Consents, construction activities associated with the Extended Project commenced in January 1999. A dedicated Company Liaison Officer continues to provide information to the public in the form of "Update" newsletters and personal visits, and also responds to complaints and concerns as they arise. In 2000, the Company developed a web site, and updated brochures and videos continue to be produced.

Throughout the life of the modern Martha Mine, the Company has actively sought to support the local community in the form of donations, sponsorships, the provision of amenities and by participating in community events. While some of these are described in this paper, further details can be found on the web site.

Economic benefits and employment

The Company engaged Brent Wheeler Advisory to prepare a report on the Economic Impacts of the Project for 1999. Economic benefits consist of direct impacts, made up of money invested in new plant and day to day operations, and indirect or flow on impacts. Identical logic applies to employment and job creation.

Presently some 234 people are employed at the mine and for each person directly employed, 3.4 more are indirectly employed in full time equivalent occupations servicing the mining industry and in business as a result of the mine.

Waihi Gold Mining Company and its main contractor pay approximately \$10 million per annum directly to their employees in wages and salaries. In addition to this, last year the value of goods and services purchased locally by the Mine was around \$19.2 million per annum. In 1999 the value of the gold and silver produced (\$59 million) made up 47% of Waihi's estimated GDP.

Martha Mine and the gold industry

Martha Mine is recognised internationally as a leader in environmental management. It is assessed annually against the environmental performance of over a dozen mining operations in Australia, Indonesia, Eastern Europe, and Africa. The operation is proud of its environmental achievements and is determined to further improve its performance during the year 2000.

An annual environmental report is published for public circulation that discloses the site's strengths and weaknesses and is a measure of how it has performed in terms of environmental management during the year. Normandy Mining developed its five-star assessment process in 1998 to address the status of environmental management systems and

performance at all of its operations. The assessment is measured against a set of standard criteria applicable to all sites.

The process forms part of Normandy's broader risk management system. All sites are assessed by a qualified external auditor (Quality Society of Australia registered senior environmental auditor) with extensive experience in the resources sector. By using the same auditor for all mine assessments a high level of consistency is achieved.

This year, for the first time, Normandy Mining has introduced a Community Relations five star assessment of management systems and performance. While the site scored very well, the assessment provides an opportunity to develop strategies to improve on past performance.

The Martha Mine is committed to addressing the concerns of the community by providing open, transparent information and ensuring the opportunity exists for community feedback.

The Martha Mine community team

Martha Mine encourages all employees to be ambassadors of the mine in the community. Staff and contractors are provided with information about all aspects of the mine including environmental and community issues through environmental inductions, and ongoing liaison. In addition the Martha Mine has a well-established environmental and public relations team.

The General Manager has overall management responsibility for that team and, like all employees, has specific community objectives detailed in his job description. These objectives include formulation of policy and plans, ensuring sufficient resources are provided for and to communicate to all employees their responsibilities towards the community.

Directly reporting to the General Manager is the Environmental Superintendent who has the management responsibility for the environmental and community liaison team. The role requires the Environmental Superintendent to oversee the monitoring of all the impacts of the operation on the environment and the community. In particular water management, noise, dust, and blast vibration are monitored through an integrated network of monitor stations located around the mining operation and all monitoring results are collated and made available to the authorities and public. Environmental technicians are employed by the Company to undertake the stringent monitoring on the site and within the community.

Established within the team is a dedicated Company Liaison Officer. A lifetime resident of Waihi who is a well-known and respected member of the community fills this position. The Liaison Officer is the first contact in the company available to the public through a 24-hour phone service. The role of the Liaison Officer is to listen, investigate, respond to and record concerns raised by the community, and to provide

information to residents via the monthly "Update" newsletter published in the regional newspaper. This position is seen as the key to ensuring that effective communications are maintained between the company and the community. The officer has regular contact with the local authority Council Liaison Officer and they often work together on issues relating to the mine.

A Senior Environmental Officer is also in the team whose prime focus is ensuring all the reporting requirements, under the Resource Management Act, are met by the site. Annual management reports are required under the site's consent and licence conditions and require significant input from the other more traditional mining aspects of the operation including geotechnical, geological, mining engineering, mine planning and mineral processing.

Because of the mine's accessibility and open door policy, it receives many visitors – both recreational and educational groups. An Education Officer assisted by an Information Officer also makes up part of the community team.

Martha Mine and the community

Information Centre

Waihi Gold operates the Waihi Information Centre in conjunction with local volunteers. The centre houses displays, models, videos and a range of other material. The Information Centre provides a venue for the dissemination of factual and up to date information as well as promoting the local area, and is the starting point for guided tours of the mine. Approximately 36,000 people visit the Waihi Information Centre each year, and around 12,000 people are conducted on guided tours. The Martha Mine is recognised as a major tourist attraction for the area.

Education Centre

Martha Mine is a popular destination for a variety of educational groups. The study of gold mining is part of the secondary school syllabus for geography, history, science, economics and technology. Pre-school, primary and intermediate schools study aspects of gold mining as centre of interest topics. Students from universities and polytechnics use the mine as a resource in courses in geology, environmental science, environmental law and tourism. A wide range of educational resource material is provided by the Company and in the Education Centre, visiting groups can participate in various classroom activities relating to the mineral industry that are relevant to their ages and interests. The quality of the education programmes at the Martha Mine and their value to the minerals industry was praised in the recent five star community assessment.

Donations and Sponsorships

Over \$60,000 a year is donated or sponsored to various community groups and organisations. In addition to this:

- \$25,000 has been donated annually to the Waihi College/Waihi Gold Education Trust Fund since 1992;
- \$50,000 was donated to the Waihi Events Centre fundraising committee in 1996;
- \$15,000 was donated to Waihi Community Marae in 1999 to assist in the building of a new wharenui; and
- \$250,000 has been donated to the Waihi Streetscape 2000 development for a full sized replica of the Martha Mine No 4 shaft poppet head, and two bronze statues of mining related figures.

Other Community initiatives

The Company sponsors educational and community projects as follows:

- Gilmour Lake Reserve was developed by the Company and handed over to the District Council in 1993;
- Martha Mine Open Days held in 1994, 1995, 1996, and 1998 raised around \$60,000 for Waihi Lions sponsored projects and attracted over 20,000 visitors;
- An annual Miners Reunion is held for miners who worked at the Martha Mine prior to its closure in 1952; and
- The Company also participates in a variety of business and tourist promotions.

HELP is the Habitat Enhancement & Landcare Partnership, a Martha Mine initiated and supported partnership program aimed at promoting sustainable land use practices. Businesses, schools and community groups have worked enthusiastically together to improve the local environment through educating school children about habitat protection and land care principles. The students learn how to evaluate their local environment and plan and work on developments to rehabilitate and improve riverbanks and waterways and selected sites in the Waihi area. The HELP project has received Environment Awards from Environment Waikato in 1995 and 1996, and was runner-up in the Department of Conservation's National Young Conservationist of the Year in 1998.

The New Zealand Dotterel is a rare shorebird found only in New Zealand. It is a threatened species, with a total population of around 1500. Their usual environment is on sandy beaches, often near river mouths where food is plentiful. Since 1994, the Dotterels have been attracted to the Martha Mine tailings storage facility. It is the bird's first known inland nesting site in the North Island. A sponsorship arrangement has been entered into with DoC fostering protection and assistance to DoC officers for the Dotterel at both the mine and Opoutere on the East Coast of the Coromandel Peninsula, which is also a regular nesting site for this species.

The Company is working in conjunction with the District Council's Streetscape 2000 Project to provide landscaped areas, viewing points and walkways to link the open pit to the town. The establishment of these areas will provide a

community asset for the present and in the future when the lake is filled and forms part of the Company's progressive rehabilitation plans.

Martha Mine and the local authorities

The Company has regular liaison with both the Regional and District councils and other government agencies as required. Council officers regularly visit the site and view monitoring data and the relevant reports and management plans.

Martha Mine and the Iwi

The management at the Martha Mine acknowledges the unique and special relationships of the Tangata Whenua and Iwi and accordingly, consultation with various Iwi groups within the local and regional communities is undertaken. Waihi Gold Company recognises that some topics of discussion are of a sensitive nature and therefore are confidential to the parties involved.

The Company seeks to establish and maintain long term relationships between local iwi groups, the mine operations its employees, and mining contractors. A cultural awareness programme is being established to improve cross-cultural awareness at all levels of staff. The Company is committed to recognising and respecting the importance of protocols, heritage, traditional rights, and spiritual values of the Maori people. The objective is to build a relationship of strength with the iwi to enhance the environment including the well-being of the tangata whenua and the community via the consultation process.

Iwi protocol

Before the Company disturbs new areas for mining operations or exploration, an archaeological survey is undertaken by an archaeologist agreed to by the relevant iwi for the area.

The Company has protocols in place should any skeletal material, cultural artefacts, or evidence of Maori occupation be unearthed on site. Similarly, the Company has protocols in place in the event of a death on site, either by accident or by natural causes. All work would immediately stop in that location. Kaumatua would be invited to carry out karakia (blessings) and any other religious or cultural ceremonies which may be considered appropriate in accordance with Tikanga Maori (Maori custom and protocol).

The Treaty of Waitangi claims

Some of the land within the Company's area of interest is subject to the Treaty of Waitangi Wai 100 Claim and Tribunal Hearing. The Company acknowledges and recognises the principles of the Treaty of Waitangi and the existence of the claims, which are being brought against the Crown. The Company stands outside the Treaty grievance process as a third party.

Future relationship

The Mine accepts that Iwi have cultural concerns which must be addressed by the company. As policy, the company makes senior personnel available to liaise and consult with Iwi over issues and has an ongoing commitment to open discussion and mutual respect.

Martha Mine and rehabilitation

Rehabilitation and closure

Rehabilitation at the modern Martha Mine site has always been a major part of the planning for the mine. Rehabilitation proposals and concept plans were developed well before the commencement of construction in 1987, and those plans were revised as part of the planning process for the Extended Project. In preparing these plans, the advice and skill of a large range of experts, including soil scientists, hydrologists, engineers, aquatic biology and water quality specialists were sought. The rehabilitation concept plans were made publicly available during the process of gaining the necessary approvals to operate the mine.

The "corner stone" of the plans is progressive rehabilitation of disturbed areas wherever possible. Progressive rehabilitation offers a number of advantages:

- improving the visual appearance of the disturbed areas;
- establishing a cover to provide erosion control;
- improving runoff water quality by minimising silt loads;
- dust control; and
- early re-establishment of soil systems and reduced storage of "living" top soils.

Progressive rehabilitation is a major part of the Martha Mine's day to day operations. While some disturbed areas can be rehabilitated on a progressive basis while the mine is operating, some areas cannot be rehabilitated until mining is complete. For this reason, although a significant amount of progressive rehabilitation will have been completed by the time the mine closes, some rehabilitation will be required at cessation of mining activities.

Each year, the Rehabilitation and Closure Plan is updated and describes the proposed method of rehabilitation and closure of the site. The overall objective of this plan is to ensure rehabilitation and closure of the site is undertaken such that in the long term the site, and any structures on it, will remain stable. Any water discharging from the site, and any groundwater under the site, will be of a quality such that it will not adversely affect aquatic life, or other users of the water resource.

The Mine is committed to ensuring that when the mine is closed, the land is left in a safe and self-sustaining, stable condition. Extensive rehabilitation and planting has already

taken place to improve the appearance of the disturbed areas, to provide erosion control and to improve the quality of the water runoff.

From open pit to recreational lake

The closure period commences once mining stops, and continues for a number of years while rehabilitation activities are undertaken. A recreational lake will be created in the open pit while the adjacent Surface Facilities Area, where the crushers and conveyors currently are, will be turned into a park. Walkways will be created around the lake, and a boat ramp, amenities block, access road and car park will be established. The lake will cover an area of some 29 ha and be 195 m deep with a shallow area at the eastern end of the lake.

Dewatering of the open pit will stop when mining ceases and inflows from both surface water and ground water mean the water levels will begin to rise. Additional water will be pumped from the Ohinemuri River, at times of medium to high flow, so that approximately five years after closure, the lake will be filled.

The lake's water quality will be monitored during filling and also for at least five years afterwards. The monitoring program includes assessments of the quality of the runoff from the pit wall, and the aquatic life in the lake.

The level of the lake will be set at RL1104. This means that most of the Waihi township within 200 m of the lake will be at least 5m above the lake level. An outlet built from the lake to the Mangatoetoe Stream will control the level of the lake.

The water treatment plant

The Water Treatment Plant is an integral part of the site's water management system. All surplus water, including water from the tailings pond, under drainage from the tailings storage facility, storm water runoff from various areas, and mine water is treated as necessary. The discharge limits are based on protecting the aquatic biology of the river and downstream users, in line with recognised international guidelines.

At closure, the Water Treatment Plant will continue to operate until water discharges to adjacent rivers and streams are totally safe. After closure, the Company will gift the Water Treatment Plant to the Post Closure Trust.

From waste disposal area to plantings, pastures and ponds

At the Waste Disposal Area waste rock is used to build engineered earth embankments to contain the tailings. The embankments have been designed to safely contain both tailings and waste rock in the short and long term.

As the embankments are built, they are progressively restored to pasture. Native trees and shrubs have been planted on selected areas as well. The new pasture is monitored and tests

carried out to confirm that the rehabilitated areas are performing to expectations.

When tailings cease to be deposited, the water quality in the tailings pond will continue to be monitored and treated for at least a further three years, at which time it is expected tests will confirm that the water is of a quality suitable for direct discharge into the Ohinemuri River.

Pond outlet structures will be built to allow fish to swim between the ponds and the Ohinemuri river. Fish such as eels and whitebait species that are good climbers will be able to enter the ponds from the River. Plants, insect larvae, eels and waterfowl are expected to make their home in the ponds. The planned planting will help maintain the quality of the ponds so they are suitable for a range of aquatic life.

Closure planning

Bonds (bank guarantees) are in place to ensure that sufficient funds are always available so that rehabilitation and closure are provided for. The bonds are reviewed annually, and provide security to the Councils and the community that the costs will be met in the unlikely event of default on the part of the Company. In practice the Company does not intend to walk away from the site and is committed to carrying out rehabilitation and closure, to be financed from its own funds. The Company sets aside money each year to fund the complete rehabilitation of the mine site. The cost of closure is currently estimated at \$19.1 million.

Closure is finally complete when all elements of the mine have reached a safe, stable, self-sustaining, rehabilitated state. This is defined to have been reached when:

- the pit slopes are shown to be stable;
- any water discharging from the site, and any groundwater under the site, will be of a quality that will not affect aquatic life, or other users of the water resource;
- the structures are shown to be stable;
- all revegetation is complete; and
- monitoring demonstrates that the site is sustainable.

The closure period therefore is estimated to be ten years in duration. In practice, however, much of the site will have been rehabilitated and will meet the closure objectives well within that ten-year period.

Once closure of the site is complete, the post closure period commences. At this point in time, a charitable trust known as the Martha Trust will manage and take title to the lake, the park land around the lake, the Tailings Storage Facilities and the Water Treatment Plant. The Trust will be responsible for monitoring and maintaining the facilities for general use by the public.

A sum of money will be handed over by the Mine to the Trust, and the interest generated from that money is calculated to

allow the Trust to manage, monitor and maintain the land in perpetuity, and provide the necessary insurance cover required for a public domain.

Both the Hauraki District Council and Environment Waikato will appoint two trustees each. The Councils, after consultation with Ngati Tamatera have the power to appoint a trustee to represent Ngati Tamatera. Ngati Tamatera has the power to appoint an Advisory Trustee.

The golden legacy

By the time the mine is closed, the Martha Mine will have contributed millions of dollars to the local economy, as well as providing employment for hundreds of people and making substantial donations to the local community.

The Mine has already completed 11 years of environmentally sound operations and promotes the use of best practice environmental management. The company is committed to performing better than the requirements of the mining license and resource consent conditions.

The Company will leave behind a recreational lake and adjacent park, as well as wetland areas, extensive native tree and shrub plantings, and walking tracks; in short, an invaluable asset in perpetuity for the community and the environment.

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