GOLD FIELDS IN THE GOLDFIELDS

A SHORT HISTORY OF GOLD FIELDS IN AUSTRALIA
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A SHORT HISTORY OF GOLD FIELDS IN AUSTRALIA
Gold Fields in the goldfields
– a short history of Gold Fields in Australia
ISBN 978-0-9942355-1-0

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Designed by ScruffyDog Designs
Printed by iPrintPlus

Front Cover: Historic battery and headframe at Agnew

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FOREWORD

BUILDING ON HISTORY
I have always been fascinated by the lure of gold, and decided early in my career to accept the challenges of mining gold.

While the quest to find the “mother lode” has been elusive, there have been many worthwhile finds along the way – not only in mines I have worked on, but the pleasure of the outstanding people I have met during that time.

I believe it is the type of individual that stays within the gold industry that has made it more interesting. There is never a day that passes without a different challenge or opportunity arising. While most would shy away from this type of pressure, true gold miners remain and overcome any issue that they confront.

That is why it is such a great industry – the people who work in it!

Gold has always had value as a commodity and currency, but it is one commodity that can be transformed into an object of great beauty, and this beauty has been enduring throughout the centuries.

Gold jewellery was used to adorn Egyptian Pharaohs, Roman Emperors and Aztec Kings and continues to be used as a symbol of marriage across the world.

While the price of gold may fluctuate, its future use and applicability will continue.

While the lure of riches and opportunity to make fortunes have been associated with the industry it is not without operational hazards.

The old timers had to contend with the raw elements of the outback. Water and food as you found it, and no shops for supplies, as these would only come later. As early mines developed and the wealth increased, investments were made into roads and services, making mining in the remote areas of Western Australia possible, if still uncomfortable. The miner of today would take these services for granted.

One important aspect of gold mining that has greatly improved over the years has been workplace safety. While open pit mining has some hazards, the level of hazards faced with underground mining has been much greater, and it was tough and dangerous in the early days! Nowadays, good regulations and training of employees to improve awareness of these risks has been instrumental in improving the safety in mines.

In addition there has been significant technical improvement since the early miners hand dug their shafts. Exploration has become more sophisticated, while greater
understanding of the geology and orebody structures has improved ground control below surface. There has been significant improvements in explosive safety and initiation systems, and the innovation and application of highly mechanised equipment and mining methods has reduced the level of human interface underground.

In terms of occupational health, there is now greater awareness and prevention of respiratory diseases both from the increased use of personal protective equipment and also improved ventilation.

The current challenge for the industry is in delivering worthwhile cash margins for its investors, which can be achieved through further improvements in productivity rates and in controlling costs. This requirement to deliver cash is not confined to mines in Western Australia, but an imperative world-wide. This must be done while operating in a safe and environmentally responsible manner.

It has been a career highlight for me to have been associated with Gold Fields during this period of growth and this publication recognises the mines and miners that have made our success possible.

I thank you all for your contribution, and in particular my management team, to our success and request that you continue to ensure our activities remain safe.

Richard Weston
Executive Vice President, Australasia
Gold Fields Limited is a globally diversified producer of gold, with eight operating mines, four of which are in Western Australia – Agnew/Lawlers, St Ives, Granny Smith and Darlot. These Australian operations represent 46% of the company’s 2014 global production, and make Gold Fields Australia the largest underground gold miner in Western Australia.
CHAPTER 1

GOLD FIELDS IN AUSTRALIA
The Perth team
How we do business

Gold Fields Limited has a vision to be the global leader in sustainable gold mining, with a clear strategy of focusing on cash generation over production levels. However, all this is wrapped up in our overarching mantra of “If we cannot mine safely, we will not mine”. In other words, we will only pursue production opportunities when it is safe and environmentally responsible to do so.

Our Australian operations live and breathe this ethos every day. In over a decade of operation in Australia, Gold Fields has become a respected miner, a sought-after employer and a significant supporter of the communities surrounding our operations.

A rich history

The history of gold mining in Western Australia dates back to the 1880s, heralding the gold rush period which prevailed until 1910, and which was revived in the 1930s. During this period, 120 town sites and settlements were born – of which only around 20 exist today.

The economy of the State was based on wheat, meat and wool until gold discoveries saw prospectors swarm across the land in their tens of thousands. Early discoverers included Paddy Hannan at Kalgoorlie and Tom Cue at the town which now bears his name.

Gold Fields’ Australian mines – in particular Agnew/Lawlers and Darlot – have long and fascinating histories going right back to the very early days of the gold rush. They have survived to the present day after various ups and downs along the way.
However, in many cases, the early boom was short lived, with towns and mines in the goldfields disappearing as fast as they appeared once surface deposits were depleted. Only where large companies developed underground operations did towns survive.

The First World War saw the industry decline to a third of what it had been at the height of the gold rush, with a large number of mines closing due to both a lack of available personnel and dwindling overseas investment.

Ironically, the advent of the Great Depression in the 1930s saw the gold price rise, the government commit to a gold bonus, and an increase in foreign investment. The discovery of the Golden Eagle nugget in Coolgardie in 1931 – at the time, the largest ever found in Western Australia – attracted many prospectors to return. However, the devastation of the Second World War wreaked havoc on the industry once more, which never really showed a sustained recovery until the 1970s.
The mining industry in the goldfields was saved by the discovery of nickel in the region at this time. This renewed interest in the area and saw the reopening of many gold mines which were now able to operate profitably on low grades due to the new technologies available.

The rest is history, with the industry going from strength to strength over the past few decades, with workforce accessibility being enhanced by fly-in fly-out employees and, to a lesser extent, residential staff.

**Sustainability in our State and our country**

As Western Australia’s largest underground gold miner, Gold Fields is proud to be a major contributor to both the State and Australia, with Western Australia accounting for over 60% of the country’s annual gold production.

In addition to this direct contribution to the economy, gold mining also provides a number of flow-on benefits. One of these is that the majority of gold mines are located in regional or remote areas, providing an important source of income and employment in these regions.

Gold Fields Australia is committed to contributing to the long-term sustainability of the communities in which we operate, nurturing relationships with key stakeholders and providing funds for the social and economic upliftment of people, with a focus on the disadvantaged and underprivileged. We actively support projects in the areas of education, health and small business development, and have a strong focus on employment and educational opportunities for Indigenous people.

**Our sites**

In 2001, Gold Fields acquired the Agnew and St Ives mines from Western Mining Corporation (WMC), marking the start of the global miner’s presence in Australia. Then, in 2013, Gold Fields acquired what were known as the “Yilgarn South” assets from Barrick Gold – the Lawlers, Granny Smith and Darlot gold mines.

This acquisition changed the face of Gold Fields in Australia, as well as elevating its position to one of leading importance in Gold Fields’ global portfolio.

Gold Fields has been able to add value to these assets through the application of our proven, low cost operating model, and by consolidating Lawlers and the adjacent Agnew into one operation, providing significant long-term benefits through rationalisation of processing, infrastructure and administrative expenses.

Gold Fields Australia has completed the process of integrating these assets into its portfolio and the expected synergies and benefits are starting to be realised with uplifts in performance and results. The company is at the cusp of an exciting future – a fitting time to look back and appreciate and understand where we have come from.
The Agnew/Lawlers gold mine is located approximately 20 kilometres west of Leinster and around 610 kilometres north-east of Perth. It comprises the Agnew gold mine and the adjacent leases of the Lawlers gold mine, located in the highly prospective Norseman Wiluna Greenstone Belt.

Current mining operations are underground, and are focused on Agnew’s Waroonga complex and the Genesis and New Holland ore bodies, originally part of Lawlers. The Lawlers processing plant closed in 2013 and ore from both mines is now processed at Agnew.

**Mining and processing today**

The underground workings at Waroonga are accessed from the previously mined Waroonga open pit, via the Kim decline which extends to more than 1,000 metres below the surface. Stopes are mined by mechanised sub-level stopeing and backfilled using paste fill.

Underground access at Lawlers to the Genesis and New Holland orebodies is by two respective declines and the mining method employed is dependent on ore body geometry. To date both long hole open stoping and inclined room and pillar methods have been used.

The Agnew processing plant has a capacity of 1.3 million tonnes per annum, with the crushing and grinding plant feeding a gravity circuit and a conventional carbon-in-pulp (CIP) circuit. The gravity circuit includes a Knelson concentrator and an in-line leach reactor which recovers approximately 40% of total gold production. Metallurgical recovery averages over 93%.
CHAPTER 2

AGNEW/LAWLERS – A CENTURY OF SYNERGY
Gold Fields’ acquisition of the Lawlers gold mine in 2013 – adjacent to its Agnew mine – brought back together two mines whose histories have been intrinsically linked since the late 19th century. Originally part of the East Murchison Goldfield, the fortunes of both Lawlers and Agnew have risen and fallen and risen again with the change of owners since their respective discoveries in 1894 and 1895.

Over the next hill

The story of Agnew/Lawlers can be traced back to Ned Heffernan, a prospector from Cue who was “always eager to see over the next hill”\(^1\). Ned set off from Cue in November 1892, undertaking a gruelling trip of 240 miles. He found traces of gold in the Lawlers region, but decided that the area was too dry for further consideration.

Patrick Lawler also set out from Cue in June 1893, covering similar ground to Heffernan the previous year. He too found gold in the region, at a spot called Lame Horse Creek, but had to return to Cue due to lack of provisions.

Lawler returned in 1894, making straight for Lame Horse Creek, where he and his party identified the source of the alluvial gold and pegged it as the Donegal Reef – the first mine to be established in the region.

Within weeks, others began arriving and this was when Lawlers was truly born. There was a sudden influx of prospectors into the region, and the East Murchison Goldfield was declared on 28 June 1895, with A.C. Clifton appointed Warden.

The journey for Clifton was not an easy one – he described it as “a severe journey by camel train” and “the weather being dry and water long distances apart; the camels were three days without a drink”\(^2\).

Right on Cue

Early in 1895, legendary prospector Tom Cue set out from Cue along what was, by then, a well-travelled route. By this time, wells had been dug and soaks developed so that there was no more than a day’s travel between water sources.

On 3 October 1895, Cue and his party filed a claim about six miles north of Lawlers, including a 21-acre lease known as ML58, which they named The Woronga – which by 1902 was known as Waroonga – and so the origins of Agnew began. Waroonga proved to be Tom Cue’s richest find in his fruitful prospecting life.

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1. Agnew, Alex Palmer
2. Ibid
Chapter 2: Agnew/Lawlers – a century of synergy

Lawlers Hospital committee and staff 1899
State Library of Western Australia 024545PD
The rapid ascendance of Agnew-to-be and Lawlers on the prospecting map ensured that the district did not remain isolated for long. Bicycle couriers from Coolgardie were operational by 1896, a mail run was established between Cue, Lawlers and Darlot, and there was a weekly coach from Mt Magnet.

Early coach driver Alf Wigzell documented a total of 102,000 miles on the Mt Magnet-Lawlers route over the course of six years.

All alluvial gold had been collected on ML58 by the end of 1895, so Tom Cue – as a prospector rather than a miner – sold half his interest in Waroonga in January 1896 to Duncan Fraser McAulay of the Great Eastern mine.

Agnew/Lawlers quickly became more connected to other centres, with weekly coaches running from Cue, a Cobb and Co. mail coach service from Leonora, and the opening of a telegraph line to Coolgardie in 1896.

Most of the early finds in the region were alluvial, and once exhausted, the prospectors did not have the money or machinery to dig further. However Tom Cue and his party sank an underlay shaft to 95 feet, which proved to be a highly prospective lode, leading to the 1897 sale of Waroonga to the London and Western Australian Exploration Company (LWAEC).

**Going underground**

LWAEC was very active in the early days of Lawlers, bringing in a winding and crushing plant from Geraldton via bullock teams, with crushing commencing on site at the 10-head battery in September 1896. A number of its leases in the area, including the original Donegal Reef, were collectively known as the East Murchison United Limited (EMU) group of mines.

A telegraph line from Menzies to Lawlers was completed in 1897, passing within half a mile of the Waroonga leases and alongside the western perimeter of the future town of
· Lawlers townsite map 1901
Agnew. In 1901, EMU constructed a light steam tramway, bringing ore from its leases to the Great Eastern mine plant as well as firewood.

The *East Murchison News* in July 1901 reported that “The first loco to penetrate the interior of Western Australia, as far as the East Murchison is concerned, put in an appearance in Lawlers on Wednesday. The engine is a small one about six tons and is destined to haul the wagons to and from the... EMU leases on the tramway now in the course of construction.”

The following year EMU extended the tramway to the ML58 lease at Waroonga. In May 1902 another *East Murchison News* article read: “Saturday was the official opening of the Waroonga tramway. The loco was decorated and the trucks fitted with seats... A truck of Waroonga ore was hooked on and amid hearty cheers the train pulled out. Speeds of 10 mile per hour were obtained. On arrival at the EMU battery, a bottle of champagne was broken...”

Remains of the rail embankment are still visible in some places although the rails and sleepers are long gone.

By 1903 there were four locos on the line and 20,000 tons of ore had been hauled to the battery. By August of that year around 80 per cent of the ore carted to the battery was coming from the Waroonga leases – over 200 tons per day.

And so the region continued to be mined – with various ups and downs – throughout the early 1900s and the community surrounding the mines grew. By 1906 there was a football team, the Waroonga Warriors, and regular cricket matches were played between teams from the district and surrounds. Tennis was very popular and a court was put in.

However, the community also bore the sadness of early mining fatalities – one of the worst instances of which occurred in April 1907 in the shaft of the Waroonga mine, claiming three lives. One man was jammed between the timbers and cage, and the other two men were thrown out of the cage and down the shaft. The burial service at Lawlers cemetery was attended by over 200 mourners.
A few years later, Northern Mines Ltd was created, consisting of Waroonga, Waroonga South and other properties, under the ownership of LWAEC. Difficulties around shortage of skilled labour and high operational costs began surfacing around 1911, and the company was put into liquidation in 1913.

Between 1897 and 1912, the Waroonga leases had provided 894,800 tons of ore, resulting in the production of 311,600 ounces of gold.

**A fresh start**

Messers Langford and Finch acquired the Waroonga Mine in 1913, in the name of Waroonga Gold Mining Co. Ltd. The Finch family already had a strong presence in the area, having taken up residence in Lawlers in the mid-1890s.

John Finch had been the chairman of the Lawlers Hospital Committee when the town of Lawlers was gazetted in 1896, and by 1899 was managing the 10-head battery on site. He built a large house close to the battery, and the
Chapter 2: Agnew/Lawlers – a century of synergy

Gold Fields in the goldfields – a short history of Gold Fields in Australia
house was long remembered for its beautiful garden, with all types of fruit trees, grapevines and vegetables.

The small workings at Lawlers had closed by 1913 so Finch re-erected the battery at his newly acquired Waroonga mine. At the same time, his son Leslie, known as Jim, registered a lease known as Rajah on the same reef line as Waroonga.

In 1915 Waroonga was properly formed as a company, with John Finch as Company Secretary and with paid up capital of £2,000.

Mining operations at Waroonga often featured in the mining news of the day. The *Western Argus* in March 1916 reported: “The Waroonga gold mine cleaned up for January and February. 1,014 tons for a yield of 359.30 ounces over the plates. The 10-head battery is now employed two shifts on fair quality dirt.”

In 1920, *The West Australian* reported: “The Waroonga mine at Lawlers is reported to be looking well. The 14-head battery is kept going constantly and the owners are about to erect a cyanide plant.”

In 1922, Jim’s Rajah was transferred to the Waroonga Gold Mining Co. Ltd., giving the company control along the whole line of the reef. Press reports in 1922 and 1923 gave the Waroonga some hope for an extended life.

By 1925 they had worked out all the payable ore above the number 6 level at Waroonga, and had spent some £8,000 on pumping and haulage. A further £2,500 pounds was required to dewater the number 7 level. John Finch attempted to secure finance as he believed that there were many years of profitable production ahead, however he was unsuccessful.
New hope

The dwindling fortunes of Waroonga in the 1920s were coupled with a general market downturn during that decade. However, the situation changed rapidly after the abolition of the International Gold Standard in 1931, leading to a doubling of the gold price by 1935. While the rest of the country was in the grip of depression, there was a resurgence of exploration and activity in goldfields towns.

In 1932, the promoter and entrepreneur Claude de Bernales registered 13 gold mining companies including East Murchison United (EMU) Gold Mines Ltd. The Finch family were paid £5,500 in 1934 for GML1236, the location of the Waroonga shaft. A capital raising by de Bernales provided funds to develop the old Waroonga mine, now called the EMU, and the mine was operational again from 1935.

In 1935 dewatering and drilling commenced and housing was created for miners and their families. The town of Agnew was gazetted in 1936, taking its name from John A Agnew, a local mining executive who had been active in the area since 1906. The main shaft was extended to 700 feet with 120 men employed. In 1938, a 20-head battery and cyanide plant was completed with a capacity of up to 5,000 tons per month. In 1940, the main shaft was down to 956 feet, and gold production was going well until the mine flooded on Christmas Eve and all work stopped.

Although mining resumed in 1941, the mine was plagued with problems related to the war years – labour shortages, disputes, breakdowns and falling production. The mine closed in 1948 when all available ore was exhausted and funds were unable to be secured for development work. From 1937 to 1948, 342,000 tons of ore had been mined for 82,000 ounces of gold.

Over 80 men found themselves without work, and the Agnew township school closed when enrolments plummeted. The population of the town reduced from 150 to 25.

A long period of inactivity in the region followed where the price of gold remained in the doldrums.

Agnew reborn

Western Mining Corporation (WMC) exercised an option in 1976 over 12 leases which included the old Waroonga main shaft, and commenced exploration. However it was another seven years before WMC began development, under the title of EMU Gold Operations. In 1984, the restoration of the main shaft posed numerous problems and was abandoned. The headframe of the main shaft was relocated near the Agnew Hotel as a museum exhibit in 1991 where it can be seen today, along with an almost complete 10-head battery of the same era.

A trial pit was started in 1985 with large-scale open pit mining of the Waroonga Pit commencing in 1986. Exploration by WMC’s EMU Gold Operations in joint ventures led to the discovery of the Redeemer, Deliverer and Crusader orebodies, in close proximity in the area, from 1985-1987.
Chapter 2: Agnew/Lawlers – a century of synergy

1941
Mining resumes but plagued by wartime problems

1948
EMU closes, Agnew town population plummets

1976
Western Mining Corporation (WMC) exercises option over 12 leases including old Waroonga main shaft

1983
Forsayth Oil and Gas registers leases in the Lawlers district

Waroonga pit and EMU mill

EMU main shaft 1983

EMU battery still standing 2014
The EMU project was renamed Leinster Gold Operations in 1988, as part of the nearby Leinster nickel operations. Sub-economic grades coupled with large development dimensions saw all operations at EMU cease in 1992, with the mine allowed to flood.

In that same year, WMC purchased the Cox leases adjacent to EMU from Asarco Australia Limited. In 1994, WMC’s nickel and gold operations separated, with the latter being renamed Agnew Gold Operations.

With the development and growth of Leinster township, the old town of Agnew never revived to its heyday, however the Agnew Hotel still stands.

Focus turned back to the EMU deposit in 2001, where plans were developed to extend the existing open cut and deep drilling was successful, confirming that Agnew had significant life left.

In December 2001, Gold Fields Australia acquired Agnew Gold from WMC and formed Agnew Gold Mining Company Pty Ltd (AGMC). Gold Fields undertook a new drilling phase leading to recommencement of open pit operations and renaming EMU to Waroonga.
In 2002, a decline was developed to access the Kim and Main lodes beneath the Waroonga open pit. Underground operations also recommenced in March 2002 with decline access from the pit ramp. Ore production from Songyang pit, the southernmost orebody, commenced in 2004 and continued for seven years.

The Waroonga Underground Complex today consists of numerous lodes with current mining of the Kim, Main and Rajah Lodes.

Since the commencement of modern mining operations at Agnew in the 1980s, the life of the mine has been significantly extended with exploration programs delivering millions of new ounces during that time.

Improved understanding of the geology and the controls on gold mineralisation continue to deliver the necessary target generation in an area that is considered mature in exploration terms and well tested.

The Waroonga and New Holland mineral systems have provided the majority of the gold ounces produced in the Agnew/Lawlers area and look set to continue to deliver further as we move into 2015 and beyond. Currently there are a large number of exploration targets identified in the Agnew tenement footprint, ranging from mature targets in and around existing mine areas, to conceptual targets, generated using good geological interpretation techniques. The focus for the next five years and beyond is to continue to convert the area's potential into gold produced.
Latter day Lawlers

In March 1983, Forsayth Oil and Gas registered a number of leases covering the Lawlers district and entered into a joint venture with Mintaro to explore the Great Eastern mine area further, conducting extensive drilling of the Donegal and McCaffery’s mines.

By 1984, all that remained of the town of Lawlers were a few signs of where it had been – with the exception of the old police station, which was taken over by Forsayth and used as their exploration office.

By mid-1985, a proven reserve of 1,820,000 tonnes at 3.25g/t had been established, including 628,000 tonnes of grade 6.58 g/t, sufficient to warrant trial mining. To optimise cash flow at an early stage of development, the company decided to concentrate on mining the richer central core.

Full scale mining at Lawlers pit began in September 1985, with a 220,000 t/a gold ore processing plant commissioned in January 1986. The treatment plant was upgraded to 550,000 t/a in 1987, which included the addition of a second ball mill. That year 220,000 tonnes were treated for 31,819 ounces of gold.

To meet the capacity of the upgraded plant, new areas were opened up, including the McCaffery tenements covering 510 hectares, of which Forsayth had a 70% interest. Mining first began there at Weight Hill where testing showed 212,150 tonnes at 4.1 g/t.

Camp personnel were accommodated on the site of the old Lawlers town, 2.5 kilometres west of the plant. It provided all meals, accommodation, a licensed mess and many recreation facilities. The camp was operated on a fly-in fly-out basis right from the start.

By the late 1980s, the plant was operating at a little above design and ore grades were satisfactory. However, the following year most of the ore obtainable by open cutting had been exhausted and what was left was low grade, jeopardising future operations.

The closure of the mine seemed certain, until one afternoon results came in of a major drill intersection into a promising new deposit in what was known as the Ogilvie area. The company decided to go ahead and finance the opening up of this new find. It was called Genesis – a new beginning.
Open cutting of Genesis began in 1991 with the ore haulage road from the treatment plant extended to the pit, and mining centred on Genesis for the next 12 months.

Plutonic Resources Ltd, an Eastern States company which was operating the Plutonic Gold Mine in WA, acquired Forsayth NL in December 1992.

More drilling of the Ogilvie area showed sufficient reserves and Plutonic began open cutting old workings including New Holland. In 1997 a decline was started at the bottom of the New Holland open cut and this became a major source of Lawlers ore for the next few years.

In 1998, Plutonic Resources sold its interests to Homestake Mining Company in 1998, one of the great gold mining companies. That same year, underground operations commenced at the New Holland deposit.

A new gravity plant was installed in 2000, and the following year Homestake sold the mine to Barrick Gold, when the Genesis and New Holland underground areas were combined into one single resource.

In 2002, Lawlers achieved the milestone of its one millionth ounce of gold, and, only eight years later, produced its two millionth ounce in 2010, showcasing the “noughties” as a very fruitful decade for the mine.

The mine was certainly in very good shape when acquired by Gold Fields in 2013, and the proximity of Lawlers to Gold Fields’ existing Agnew mine allowed for operating synergies to be maximised by integrating the two operations.

Since acquisition, the Lawlers process plant has been mothballed and all ore trucked to the Agnew mill.

The community continues…

In addition to the community support activities of the Gold Fields Australia Foundation, the Agnew/Lawlers of today has its own sponsorship committee which supports local community initiatives, known as the Agnew Community Involvement Team (ACIT).

ACIT is committed to helping charitable projects, which will contribute long-term meaningful outcomes to local communities specifically and society generally. This has included financial and in-kind support to organisations and activities such as the Leinster Primary School, the Royal Flying Doctor Service, the Leinster Sport and Recreation Association and the Leonora Golden Gift.

The Leonora Golden Gift carnival is a unique event in the small outback town of Leonora, attracting elite athletes vying for a share of $50,000 in prize money. The main races are a one-mile open event, a one-mile elite event and 120-metre sprint events.

The carnival is held each year over the June long weekend and involves the whole community. Not only does it offer the spectacle of the foot races but also dirt track horseracing, fireworks, market stalls, bands and street entertainment.

Leonora Golden Gift 2013
Chapter 2: Agnew/Lawlers – a century of synergy

Agnew General Managers

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<td>2009</td>
<td>Tim Gilbert</td>
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<td>2012</td>
<td>Garry Mills (Agnew/Lawlers)</td>
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<td>2013</td>
<td>Jason Sander (Agnew/Lawlers)</td>
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Jason Sander

2000
- Lawlers gravity plant installed

2001
- WMC extension drilling at Agnew confirms significant life left
- Gold Fields Australia acquires Agnew from WMC and forms Agnew Gold Mining Company Pty Ltd (AGMC)
- Homestake sells Lawlers to Barrick Gold
- Gold Fields recommences operations at EMU and renames pit to Waroonga

2002
- One millionth ounce of gold produced at Lawlers
- Decline beneath Waroonga pit developed to access Kim and Main lodes
2003
Open pit mining ceases at Waroonga
Lawlers transitioned to owner mining
and crusher upgraded

2004
Ore production from Agnew’s Songvang pit commences

2010
Two millionth ounce of gold produced at Lawlers

2013
Gold Fields Australia acquires Lawlers

2014
Lawlers fully integrated into Agnew
St Ives gold mine is located near Lake Lefroy in the prolific gold-producing Eastern Goldfields region of Western Australia, around 80 kilometres south of Kalgoorlie near the town of Kambalda and 560 kilometres east of Perth.

St Ives is a complex and dynamic mix of both open pit and underground mining operations, currently producing from three underground mines, Athena, Hamlet and Cave Rocks, and several open pits including Neptune and Invincible.

**Mining and processing today**

Gold mineralisation at St Ives is mined using open-pit and underground methods. Open pit mining is conducted using conventional drill and blast/truck and shovel methods.

The underground mines are all accessed by declines from the existing open pits and are predominantly mined by conventional long-hole open stoping.

Ore is processed by a combination of conventional semi-autogenous grind (SAG) milling and carbon-in-pulp (CIP) technology. The Lefroy Mill treats medium-to high-grade ore through a 4.8 Mtpa, 13.5 MW SAG mill. Overall gold recovery is around 95%.
CHAPTER 3

ST IVES – REALISING LONG-TERM POTENTIAL
Although its history spans over 90 years, the full potential of St Ives as Australia’s second largest gold mine would not start to be realised until 1981, when gold production began.

A story of discovery and abandonment, St Ives has endured the cycles of the mining industry to become a world class gold producing region.

**Red Hill rush**

It was 1896 and the Western Australian gold rush was well and truly in full flight as gold prospectors arrived in their thousands to the Eastern Goldfields hoping to find their fortune. One of these prospectors was Pierce (Percy) Larkin who was working out of Coolgardie. Having already been involved in a discovery at Kanowna, Larkin continued to prospect through the Goldfields and in December 1896, on the northern shores of Lake Lefroy, he found alluvial gold in the gullies at the base of Red Hill.

He returned with 106 ounces of gold to Coolgardie in January 1897. News of the find spread like wildfire and within a few months hundreds of men had left Coolgardie for the shores of Lake Lefroy. By April 1897, between 400 and 500 people were on the site of Larkin’s find at what became known as the Red Hill Camp.

Whilst the area around Red Hill was the centre of mining, prospecting south of the lake uncovered other gold bearing locations that became known as the Victory-Orchin area.

The township was officially gazetted as Kambalda on December 1897 by Surveyor-General William Rowley. No-one can be sure of the origin of the name, which took a while to take hold as residents continued to refer to it as Red Hill or Red Hill Camp for several years.
Salt lake city

The iconic salt lake which sits at Kambalda’s doorstep was named by the explorer Charles Cooke Hunt in 1864, after fellow explorer Henry Maxwell Lefroy. Lefroy led the first expedition in 1863 through the area that would later become the Eastern Goldfields.

Whilst the lake itself was a sight to behold, so too was the strange form of transport used to ferry equipment and people across its surface. As noted by a writer for the Leader, a Melbourne-based newspaper of that time, “a novelty on the lake is a cleverly constructed, fully rigged boat used for carrying timber and goods from point to point on the lake.” The land yacht was the creation of the Sorrenson Brothers, two blacksmiths at Red Hill.

The town flourished for almost 10 years. As the alluvial workings became exhausted, Red Hill (WA) Gold Syndicate was formed to encourage underground mining in the region but by 1905 ore grades started to drop off and the company was forced to withdraw from the area with serious financial problems. By 1907 the once thriving community with a population over 1,000 had been abandoned. The one remaining memory of the original town is the old well which still stands in George Cowcill Street to this day.

New discoveries

As mining at Red Hill diminished, prospecting turned to the south of Lake Lefroy around the small workings that began in the Victory-Orchin area in 1897. In December 1919, a prospector by the name of Pat Ives discovered gold in the area south of the Victory-Orchin workings and pegged a reward claim. Regarded as a highly diligent prospector, Ives made the discovery using the technique of loaming, a meticulous and time consuming method. By 1920 over 200 claims had been pegged and surveyed.
The Minister of Mines named the district St Ives. There were two broad groups of claims in the area – the northern block centred on the Victory-Orchin area and, about 1200 metres away, the southern block centred on the Ives Reward claim. A small township formed north-east of the Ives Reward claim.

Although there were many small workings scattered throughout the area, it was the main Ives Reward mine that became the centre of activity. However water shortages, coupled with financial difficulties, saw the mine cease operation with a total production of 22,210 tons of ore for 7,115 ounces of gold. The small township was deserted as its members moved on to other mining camps.

Mining was discontinued in the area for many years until resumed by Western Mining Company (WMC) Limited in 1981, when gold production from St Ives began.

**Nickel reforms a town lost**

After the Great Depression the industry underwent a revival in 1939 only to be crippled again by the Second World War. Conditions in the Goldfields were dire and most companies were losing money.

Whilst WMC had gold mining operations in the Eastern Goldfields, their attention turned to other base metal deposits. In 1965 they were approached by two part-time gold prospectors, George Cowcill and John Morgan, who had been working in the Kambalda area.
The two men presented mineral specimens analysed at the Western Australian School of Mines some 10 years earlier, which identified nickel in an area close to the old Red Hill mine. WMC began diamond drilling in the area in January 1966 and soon after intersected a significant nickel sulphide ore body.

And so Australia’s nickel boom began. From 1966 to 1996 the region produced approximately 34.0 Mt of ore at an average grade of 3.1% nickel.

As WMC moved from development to full-scale production, the Kambalda township re-emerged on its previous site. The town plan was drawn at a time when no-one quite anticipated how big the size of the operation would become. By the end of 1967 it was clear the town was too small to house the growing workforce so planning for an additional site, Kambalda West, began four kilometres away from the original site, Kambalda East.

A community thrives again

The year 1968 saw the communities of Kambalda East and Kambalda West develop rapidly and become a major player in the Eastern Goldfields. The collective population of the twin towns had reached about 2,000 with a workforce of 666.

The Kambalda Primary School came into existence on 12 February 1968 and was attended by 69 students from grades one to six. The rate of growth in the community was mirrored by the increased number of enrolments which reached 226 by the end of the year. The primary school in Kambalda West opened in May 1969.

The original plan to expand Kambalda East was constrained by the discovery of nickel ores of Fisher Shoot, located under the proposed town expansion area. So in the years to come Kambalda West became the larger community. By that time, building a home in Kambalda West cost between $10,400 and $13,000. In 2015, the cost would be many times that amount.

Community sporting activities continued to develop. A Kambalda football team was formed to take part in the Goldfields National Football League adopting the name “The Eagles”.

Land sailing on Lake Lefroy became a fond recreational activity for the community, paying homage to Sorrrenson’s land yacht and its mining town roots. The first purpose-built land yacht was constructed in May 1970 and could reach speeds of up to 80 kilometres per hour across the salt-encrusted surface of Lake Lefroy.

- Land yachting 1970
Gold revival

In late 1971 the United States suspended the direct convertibility of the US dollar to gold at a fixed rate. As a result, the price of gold began to increase leading to the re-evaluation of the old gold prospects in the Kambalda region.

In February 1980 significant gold mineralisation was identified at both the Hunt and Lunnun Shoot. WMC began an exploration program to test underneath the two major mines in the St Ives area, Ives Reward and Victory.

In September 1980 diamond drilling below the old Victory main shaft indicated the area could potentially contain over one million tonnes of gold-bearing ore. Construction began in March 1981 to build a 0.5 Mtpa treatment plant, which was later expanded to 1.2 Mtpa, at the Kambalda nickel concentrator site.

The plant was commissioned on 23 October 1981 and gold production commenced at St Ives.

As major mining and milling activities continued at Victory, exploration activities to the west of the open pit uncovered a major new zone of mineralisation which was later called the Defiance orebody. By the end of 1982, Kambalda had established itself as one of Australia’s largest gold producers, with most of the output from the St Ives area. There was no sign of it slowing down.

After the discovery of the Revenge deposit, the first gold mine found underneath Lake Lefroy, drilling at the Junction area in 1986 indicated a gold resource that exceeded the Victory-Defiance area.

Construction of a new gold plant began just one kilometre south of the original Ives Reward mill. The plant was commissioned in early 1988 and the first gold bar was produced in April that year. The end of 1989 marked

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<tr>
<td>Victory Defiance complex discovered; gold production commences</td>
<td>Significant gold intersection discovered at Junction</td>
<td>New 3.1 Mtpa CIL facility constructed</td>
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<tr>
<td>0.5 Mtpa treatment plant commissioned</td>
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</table>
St Ives facilities and Lake Lefroy
10 years of gold production at St Ives. Within that time the operations had produced one million ounces of gold.

In mid-1998, production started at the Santa Ana mine, and in December 1998 development began on the new Leviathan open cut.

**Changing hands**

In 2001, a 2.0 Mtpa heap leach facility was commissioned. In December that same year, Gold Fields Australia acquired St Ives from WMC.

In 2004 the new Lefroy 4.8Mtpa gearless drive mill was constructed and fully commissioned at a cost of A$125 million, with first gold bullion from the new mill produced on 31 December 2004.

In 2006 Gold Fields embarked on an aggressive exploration program with full field aircore drilling and saw the start-up and establishment of Cave Rocks and Belleisle underground mines in 2007.

The Belleisle and Cave Rocks underground mines achieved full production in September and December 2008 respectively, as did the Leviathan open pit mine, which achieved full production in January 2009. This was also the year of another exciting new discovery, the Athena-Hamlet deposit, located adjacent to the Argo underground mine.

During this time, all mining activities were performed by contractors – GBF underground and Leightons in the open pits.

Construction of the Athena underground mine commenced shortly after with the first ore intersected in May 2010. As the fourth underground mine at St Ives, Athena reached commercial levels of production in September 2011. As for the Hamlet deposit, first ore was intersected in October 2011, and the new Formidable pit commenced mining in April 2011.
Around this time, the decision was made to move away from contract mining in both the underground and open pits, with the conversion completed in 2012. The decision was also made to close the St Ives’ heap leach operation, a process which commenced in the fourth quarter. Processing currently takes place through a CIL plant.

During 2012 stoping commenced at Hamlet, which achieved full production in 2013. Exploration at St Ives is focused on the Invincible resource, which was discovered in 2012.

A community thriving

Gold Fields’ St Ives mine and its personnel are an important part of the fabric of the Kambalda area, immersing themselves in local activities and creating their own particular brand of fun during down times.

Since 1996, the annual “Geos vs Rest of the World” football match has seen two teams from the mine battle it out for the Golden Boot award. Originating from some friendly banter between a geologist and a surveyor, the match pitches the on-field skills of the mine’s geologists against all other professions at the site, and has proven to be a popular fixture on the annual calendar for players and spectators alike.

St Ives also takes part in the annual St Barbara’s Festival in Kalgoorlie, which recognises the great partnership that exists between the mining industry and the local community.

Through both the Gold Fields Australia Foundation and St Ives’ Community Endeavour Team (CET) sponsorships, numerous community facilities, groups and events near the St Ives mine have benefited from Gold Fields’ support.

These contributions have included assisting in the construction of the Kambalda Community Recreation Facility; establishment of a child-care centre; helping to re-establish a doctors service at the local Nursing Post; and sponsoring land sailing championships, an international tennis tournament, swimming pennants and a local basketball team.

Gold Fields’ mascot at the 2014 St Barbara’s Festival

The annual Geos vs Rest of the World footy game is a highlight of St Ives’ social calendar
Chapter 3: St Ives – realising long-term potential

Gold Fields in the goldfields – a short history of Gold Fields in Australia
A lake for land-lubbers

Lake Lefroy is considered one of the best places to sail a land yacht, even lending itself to Australian and world land speed record attempts. In 2008, Britons Dale Vince and Richard Jenkins spent two weeks hoping to see their carbon-neutral vehicle, Greenbird, beat the world record of 187kmph. Continuously delayed by rain and no wind the Greenbird team eventually had to give up.

The Lake has also played host to major land yachting events such as the Pacrim Land Sailing Championships in 2006, and the WA State Championships most recently in 2014 – both of which were supported by the St Ives mine’s Community Endeavour Team.

Lefroy is also infamous for having the video for Midnight Oil’s 1997 hit “Blue Sky Mine” filmed on the lake.

In 2012, the lake was used for a Virgin Australia advertisement, taking over a week to film and involving 50 Virgin staff, 40 working crew and a helicopter. The resulting ad was used on television and in Virgin in-flight magazines.
Drilling at St Ives on Lake Lefroy
Chapter 3: St Ives – realising long-term potential

St Ives General Managers

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
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<tr>
<td>2001</td>
<td>Brad Simpson</td>
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<tr>
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<td>Corey Atiyeh</td>
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<tr>
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<tr>
<td>2009</td>
<td>Ted Lambourne</td>
</tr>
<tr>
<td>2012</td>
<td>Ross Calnan</td>
</tr>
<tr>
<td>2014</td>
<td>Graeme Ovens</td>
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</tbody>
</table>
Chapter 3: St Ives – realising long-term potential

Athena and Hamlet underground mine decline
Granny Smith gold mine is located approximately 20 kilometres south of Laverton and around 710 kilometres east-northeast of Perth on the Laverton Greenstone Belt.

**Mining and processing today**

Ore at Granny Smith is mined in an underground operation from the Wallaby deposit, about 10 kilometres west of the Granny Smith processing plant. The mining method is dependent on ore body geometry with long hole open stoping and inclined room and pillar being used.

Ore is processed using carbon-in-pulp (CIP) technology. Ore from the Wallaby underground mine is hauled around 10 kilometres to the plant which consists of a two-stage fresh ore crushing circuit that utilises closed circuit screening and a single-stage oxide ore crusher, a semi-autogenous grind (SAG) mill in closed circuit with a cone crusher, and an agitation leach CIP circuit. There is also a fine grind retreatment plant, a carbon reactivation gold recovery facility and a tailings thickener.

The Granny Smith processing plant has an overall capacity of 3.4 million tonnes per year, but is currently operating on a reduced throughput of approximately 1.5 million tonnes per year on a campaign milling strategy, due to underground production capability.
CHAPTER 4

GRANNY SMITH
– A MINE FOR THE FUTURE
Chapter 4: Granny Smith – a mine for the future
While the Granny Smith gold mine is the youngest in Gold Fields’ portfolio, it too developed in an area which had its own taste of the gold rush in the late 19th and early 20th centuries.

Since the mine opened in 1981, numerous owners have come and gone, however the region remains underexplored and highly prospective – leaving Gold Fields Australia with a very exciting asset for the future.

A promising region

The Laverton region has seen extensive exploration, development and production over more than a century, with around 28 million ounces of gold having been produced from its mines.

Gold was first discovered by prospectors from Coolgardie in the area around Laverton in 1886. As news of the find made its way back to Coolgardie, prospectors packed up and left old gold finds behind in the hope of finding richer ones. As more and more people arrived at the site a settlement was formed and named after the region’s first successful gold mine, British Flag.

Craigiemore was another successful mine in the area and by 1897 had become a hub of activity. On the west side of the mine a developing residential and business area became known as Laverton – named in honour of British doctor and keen prospector Charles William Laver in recognition of his contribution to the development of the region.

Dr Laver had ridden his bicycle from Coolgardie to the area of Laverton in the hope of finding gold – an event commemorated to this day by a statue of Laver and his bicycle which stands proudly in Laverton’s main street.

Laver was a passionate supporter and promoter of the region, travelling back to Britain a number of times to raise funds to finance various mining ventures. It is believed that without the assistance of Laver’s funding, the Laverton area would not have played a role in the gold rush era. He was much loved by his peers and the local Indigenous population alike, for his devotion to his goldfields patients; he was known as “Mr Doctor” to the many Aboriginal people he treated.

The residents sought to have the town of Laverton surveyed in 1899, however its original location was deemed unsuitable. A new site, located about three kilometres away, was surveyed in July 1899 and the town of Laverton was gazetted in July 1900. Residents from many close settlements, including British Flag, moved there soon after.
Chapter 4: Granny Smith – a mine for the future

Statue of Dr Charles William Laver in Laverton’s main street 2013

Michael Sofoulis

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1956</td>
<td>Closure of train line</td>
</tr>
<tr>
<td>1969</td>
<td>Nickel discovered at Mt Windarra</td>
</tr>
<tr>
<td>1979</td>
<td>Granny Smith gold deposit discovered</td>
</tr>
<tr>
<td>1981</td>
<td>Site optioned to Teck Exploration</td>
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</table>
## Dwindling fortunes

Many mines operated successfully in the area in the early 1900s, until – similar to other gold rush locations in Western Australia – a declining gold price and the onset of the depression caused many hardships for the miners, prospectors and residents in and around Laverton.

Declining popularity of the area saw the closure of the train line from Perth in 1956, further threatening Laverton’s future and presenting a real possibility that it could join Western Australia’s ever-growing legion of mining ghost towns.

But when nickel was discovered at nearby Mt Windarra in 1969 by Poseidon NL, the town gained a new lease of life, and in fact was catapulted into world prominence thanks to the stock market boom in Poseidon shares. By the time the Mt Windarra deposit was exhausted, Laverton’s future had once again been secured by gold, with a number of its mines being reopened as the gold price surged in the latter part of the 20th century.

## Granny comes to life

The Granny Smith gold deposit was discovered in 1979. Founded by Raymond Smith, he named the deposit after his wife Laurende who had recently become a “granny”. In that same year, the Goanna deposit was also discovered.

In 1981, the property was optioned to Teck Exploration, which completed preliminary gridding, costeasing and surface sampling before withdrawing in September that year. The property was then acquired by Canyon Resources Pty Limited, which transferred it to Delta Gold NL, an Australian public company floated by Canyon in 1983.

In 1985, CSR Limited entered into a joint venture agreement with Delta Gold, whereupon it outlined four soil-gold anomalies and conducted drilling programs in 1987, which delineated the Windich, Goanna and Granny Smith ore zones.

In 1988 Placer Pacific and Delta Gold NL acquired CSR’s 60% interest in Granny Smith, with the mine managed by Placer (Granny Smith) Pty Ltd.

Following a feasibility study by Placer, mining at the Granny Smith gold mine commenced in the Granny Smith pit in 1989. The first gold was poured on 16 January 1990, and in 1992 the Keringal and Sunrise deposits were discovered 18 and 34 kilometres south of Granny Smith. In 1994, ore production began from the Keringal deposit and development at the Sunrise deposit began.

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<th>Year</th>
<th>Event</th>
<th>Notes</th>
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<td>1981</td>
<td>Acquired by Delta Gold NL</td>
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<tr>
<td>1985</td>
<td>CSR Ltd becomes JV partner; delineates Windich, Goanna &amp; Granny Smith ore zones</td>
<td></td>
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<tr>
<td>1988</td>
<td>Placer Pacific becomes JV partner and mine manager</td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>Mining commences in Granny Smith pit</td>
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</table>
The process plant was designed to process the high tonnages from the open pits up to 3.4 mtpa, however with low tonnage available from underground, campaign milling was undertaken.

The original Granny Smith deposit, which consisted of three discontinuous zones (Granny, Goanna and Windich), was mined out in 1995. Five satellite deposits (including Keringal, Jubilee and Sunrise) have also been depleted.

In 1998, the Wallaby deposit was discovered 11 kilometres south-west of Granny Smith, with development commencing in 2000. In November 2001 the first Wallaby ore was hauled to the Granny Smith mill for processing.

Barrick Gold acquired Granny Smith gold mine on 20 January 2006. Open pit mining at Wallaby ceased in September 2006, followed by a ramp up of underground mining at the location. Today, Granny Smith’s ore is supplied entirely from the Wallaby deposit.

Fire assay in Granny Smith laboratory
Chapter 4: Granny Smith – a mine for the future

1998
Wallaby deposit discovered

2001
First Wallaby ore processed

2006
Barrick Gold acquires Granny Smith
Open pit mining at Wallaby ceases; underground mining ramped up

Granny Smith mine 2013
Chapter 4: Granny Smith – a mine for the future
Chapter 4: Granny Smith – a mine for the future

Granny Smith camp and recreation area
Gold Fields acquired Granny Smith gold mine on 1 October 2013 from Barrick Gold as part of the purchase of the Yilgarn South Operations.

Granny Smith has mined a total of 12 open pits in its lifetime, and the move underground presents huge potential upside for Gold Fields. The already large deposit presents significant expansion probability in both width and depth.

Granny Smith originally had a planned life of eight years, however in 2014 celebrated 25 years of operations. Gold Fields’ confidence in the mine’s future is reflected in the major investment undertaken into the processing plant, building a foundation for growth.

### Settling into the community

Gold Fields’ Granny Smith mine has become part of the community in Laverton and surrounding districts by supporting local events and initiatives.

As a proud member of the Laverton Leonora Cross Cultural Association (LLCCA), the mine works collaboratively with the Laverton Shire, police, community services and visiting agencies to provide support to children and youth in the area. This has included working with the Laverton and Mt Margaret schools to provide programs and activities to improve literacy, numeracy and computer skills.

Other community support initiatives have included the donation of gym equipment to the Mt Margaret Aboriginal Community, and involvement in the Laverton School Holiday Program where local children have had the chance to experience life at the mine site first hand.

School children get a taste of Granny Smith as part of the Laverton School Holiday Program.
Donation of gym equipment to the Mt Margaret Aboriginal Community
Chapter 4: Granny Smith – a mine for the future

Granny Smith processing plant 2013
Chapter 4: Granny Smith – a mine for the future

Granny Smith General Managers

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<td>2013</td>
<td>Stuart Mathews</td>
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<td>Ian Suckling</td>
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Ian Suckling
Wallaby underground access from open pit
The Darlot gold mine is located approximately 55 kilometres east of Leinster and around 810 kilometres north-east of Perth. It is situated on the southern end of the Yandal Greenstone Belt.

Ore at Darlot is mined in an underground operation from the Centenary deposit.

**Mining and processing today**

Underground access is by three interconnecting declines from the Darlot pit and the mining method is predominately sub-level open stoping with paste fill used in some areas.

Darlot mine ore is treated by conventional carbon-in-leach at the on-site mill. The processing plant consists of a three-stage crushing circuit, two-stage milling circuit, gravity circuit and a carbon-in-leach circuit.
CHAPTER 5

DARLOT – A FAMOUS RUSH
Chapter 5: Darlot – a famous rush

Darlot mine and facilities 2014
The Darlot mine joined Gold Fields’ Australian assets in 2013, having been the site of one of the most famous gold rushes in Western Australia nearly 120 years earlier.

Although records are incomplete, it is estimated that over half a million ounces of gold have been produced from the Darlot field – worth around $700 million in today’s values.

A difficult start

The Lake Darlot Goldfield, in the 1890s, was situated in one of the most remote and dry parts of Western Australia, presenting many challenges to the early pioneers.

Gold was first discovered in the area in late 1894 by Jim Cable from Victoria, heralding the rush which started in early 1895. Jim happened upon a five ounce slug of gold and could see a lot more lying around. He is famously quoted as saying “I must have found Aladdin’s lamp”.

Over the next few days, Jim and two fellow prospectors picked up over 200 ounces of gold. However, their joy was short-lived, as altercations with local Aboriginal people resulted in Jim being speared right through the stomach – miraculously surviving. While resting in camp to recover, he is even reported to have continued to prospect on his hands and knees. Eventually he realised he would not recover without medical attention, and the party set forth for Coolgardie, some 200 miles away.

Unfortunately for Jim, tales of the Darlot finds had spread, and while he was recuperating, other prospectors rushed the area and secured large finds of alluvial gold.

Crowds of prospectors were purchasing stores and horses at Cue and setting out for Darlot, despite unreliable water supply on the road. However good rains in March 1895 allowed for many heavily laden drays, pack horses and camels to make the journey. Many prospectors also came to Darlot from Lawlers.

Around 1,500 men were on the field by April 1895, by which time it is estimated that 10,000 ounces had been sourced. The richest alluvial patches had now been almost exhausted, and daily takings began to decline.

The troubles didn’t end there. Prospectors continued to have altercations with the local Aboriginal people, and then typhoid hit the community in May 1895, causing a number of deaths. Most of these unfortunate prospectors are buried.
Chapter 5: Darlot – a famous rush
at the head of Horsemans Gully and many grave sites are still visible today.

Things were looking up by mid-1895 with horse teams arriving from Cue and Coolgardie with substantial provisions, although various prospectors by this time were being lured to other new finds in Lake Cowan, Mount Black and Pendennie – many not surviving the trips due to inadequate preparation.

Focus on the Darlot field now turned to reefs, as the alluvial gold dwindled. However, newspaper reports at the time noted that prospectors who were not of a “certain background” were being treated unfairly while trying to lodge claims for Darlot at Coolgardie.

Warden Clifton, Mining Registrar, was appointed to Lake Darlot, bringing law and order and ensuring that leases were much easier to register and disputes could be settled on site.

Early registered leases included Monte Christo 1 and 2, Ballangarry, British King, Amazon, Pride of Darlot, St George, King of the Hills, Lass O’Gowrie, Zangbar and Filbandint.

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**Diprotodon uncovered**

In 1895, Mr R F Arthur – while sinking a well for water about 30 miles west of Lake Darlot – discovered a portion of the lower jaw of a diprotodon, an extinct giant marsupial. This specimen is held in the WA Museum.

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1896 drawing of a diprotodon jaw compared to a human skull
Chapter 5: Darlot – a famous rush

Darlot workers 2014
Chapter 5: Darlot – a famous rush

Darlot Battery 1899
- State Library of Western Australia 209927PD
**Battery brings prosperity**

Members of the Darlot Progress Committee formed around this time were convinced that a public crushing battery in the town would pay handsomely, and they reported to the Royal Commission on Mining in 1897 that they were “prepared to procure a satisfactory guarantee for all expenses, interest etc. for 12 months or to form a cooperative syndicate of leaseholders to rent same at fair rental”.

The battery was opened on 19 February 1898 by Leslie (Jim) Finch, son of John Finch who was instrumental in the development of Lawlers. Over 1,000 tons of ore were crushed from March to October that year, for an average yield of 1.75 ounces per ton.

The State Government purchased the Darlot battery in 1901, and relocated it to the Ballangarry mine. Over the next eight years, over 15 million tonnes of ore was milled for a return of over 25,000 ounces of gold – the highest of any State Battery in WA at the time.

**A community grows**

The Woodarra township began to develop in the vicinity of the Darlot minesite, however it was commonly referred to as Darlot or Lake Darlot. Woodarra was surveyed in March 1897 and gazetted in January 1898, the name being taken from the Aboriginal word for a granite rock formation located near the town’s water supply.

Early businesses in Woodarra included a butcher, a baker and the Dew Dropp Inn – the first hotel. In 1901, the Ballangarry Hotel opened followed shortly by the Woodarra Hotel, and mail services commenced to and from Magnet and Lawlers.

The Darlot Progress Committee had approached the government on a number of occasions to improve the town’s facilities, in particular the water supply. In March 1903, a water boring plant arrived, which the townsfolk were disappointed to find was a little older than expected. A rumour started that the plant was brought to Australia by Captain Cook – and they thought that by its appearance, this may well be true!
Long before Darlot and Lawlers were brought back under the same ownership through Gold Fields in 2013, there was a strong relationship between the two fields. The first of many annual cricket matches was played between the two communities in 1897, and these grew into week-long affairs held twice a year – once in each location. In 1902, Mr M Green was presented with a pair of ducklings by the Lawlers Cricket Club for making the lowest possible score on the Darlot side. There was also a rifle shooting competition between the two towns.

Banquets and balls were planned around these events, and a tennis court brought further inter-field competition and social occasions.

In 1908 the Lake Darlot Race Club was formed under WA Turf Club rules, following a public meeting at the Ballangarry Hotel where a committee of seven was elected. The last entry in the Club’s cash book was April 1929.

Darlot dwindling

Most leases at Darlot continued to produce significant amounts of gold until the outbreak of World War 1. However from this time onwards – until the 1950s – minimal mining was conducted in the area. Many prospectors left to take up farming, and a number of leases were forfeited as conditions rendered them uneconomic.

The population of Darlot dwindled during the early part of the 20th century, and for a long period, there were just two hotels – the Woodarra and the Ballangarry – one store – Watsons – and several old camps. The remaining prospectors resided in an area called Fisher’s camp, about five miles north of the Woodarra township.

By 1930 both the hotels had closed, and the proprietors of Watsons store were the last residents in the area, and they finally left in 1952. Small prospectors continued to be active in the area, with some continuing right through to the 1990s. Records exist for intermittent battery crushings in the 1950s, 1960s and 1970s, however it is understood that the tonnages and yields were small.
Life at Darlot – a prospector’s daughter

Mel Gray and his sons David and Marcus spent four years in the Darlot area between 1981 and 1984. Most of the prospecting was done using a Groundhog metal detector, but at one stage they bought a bulldozer. As it came off the low-loader, the blade scraped the ground, uncovering enough gold to pay for the purchase. David Gray even dug up an eight ounce nugget while idly kicking the ground with his thong.

Mel’s daughter Ainslea accompanied them and lived on Melrose Station – on which the Darlot goldfield is situated and the Darlot gold mine operates. Ainslea wrote this poem for her father while he prospected at Darlot:

DARLOT – for Dad

Drifting through the desert mulga
Reaching into crystal skies
Soft as birdsong in the dawning
Do you hear the spirits calling?

“Come –
Return once more
And make your camp
For here we hold your captive heart –
Here – in Fishers wide embrace”

And well we know this country
You and I
Each jutting outcrop and campsite thicket
Her saltbush flats and ironstone ridges

Look there – a single fragile flower!
And there – the distant breakaways
On a blue horizon’s sweep

Darlot
Ancient land of Blackman’s Dreaming
Timelessness
And Peace
Bejewelled landscape
Yours to share –
By day – sunwarmed nuggets of molten gold
By night – a diamond swag of stars

Last hotel closes in Woodarra

Last residents leave Woodarra
Four new owners in nine years

Sundowner Minerals NL came under the control of Forsayth NL in late 1987, progressing to 100% ownership by 1992. Later that same year, Forsayth was taken over by Plutonic Resources, which operated the Darlot mine for the next six years.

By 1994, Darlot was a high-strip ratio open pit mine, some 1.3 kilometres long and 120 metres deep. The pit had evolved from a number of smaller pits and cutbacks, comprising the original Monte Cristo, Zangbar and Filbandint leases.

Long time Larry

In the 1980s, Larry, an architectural designer, decided to take a break from work and try his hand at prospecting full time. His father had been a prospector all his life so he had learned the craft at a young age.

Following extensive research at the Department of Mines in Perth, Larry concluded that Darlot had a history of rich alluvial fields, hadn’t been overworked, and was remote enough to have presented difficulties to many aspiring prospectors.

His method of prospecting combines traditional methods with new technologies and he has continued to be a familiar face in the area, his health permitting.

Time for a Sundowner

Sundowner Minerals NL acquired the Monte Cristo and Zangbar leases in 1985, and the Mt Fisher tenements in 1986. Milling commenced in 1987 at Mt Fisher with a newly constructed treatment plant costing $7 million, at which time the Mt Fisher reserves totalled 252,000 tonnes and the Darlot proven and probable resource was 512,000 tonnes.

Mt Fisher ceased operation towards the end of 1988 after unforeseen metallurgical problems, at which time the treatment plant was moved from Mt Fisher to Darlot – a process which took over three months. It was estimated at the time that the Darlot reserve would last for more than two years and yield an estimated 73,000 ounces of gold.

1985
Sundowner Minerals NL acquires Monte Cristo and Zangbar leases

1987
Forsayth NL begins process of acquiring Sundowner Minerals

1987
Open pit mining commences

1992
Forsayth achieves 100% ownership, and is then taken over by Plutonic Resources

250,000oz gold pour 1994
In 1995, open pit mining ceased in favour of underground mining, and the Centenary deposit was discovered in 1996 – the site of mining at Darlot ever since. Production commenced from Centenary in 1998, with plant facilities upgraded the following year.

Homestake Mining Company purchased Plutonic Resources in April 1998 and, in turn, Homestake was acquired by Barrick Gold at the end of 2001. During 2001 and 2002 the mine converted from contract to owner mining.

A period of stability ensued with Barrick operating the Darlot mine for the next 12 years up to Gold Fields’ acquisition of three of Barrick’s gold assets, including Darlot.
Chapter 5: Darlot – a famous rush

2001
Barrick Gold acquires Homestake

2002
Conversion from contract to owner mining completed
Chapter 5: Darlot – a famous rush

Darlot General Managers

<table>
<thead>
<tr>
<th>Year</th>
<th>Manager</th>
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<tbody>
<tr>
<td>2013</td>
<td>Andrew Bywater</td>
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Gold Fields acquires Darlot from Barrick Gold

Darlot makes cash
Darlot processing facility
A GOLDEN FUTURE
When Gold Fields invested into Australia in 2001 – with the acquisition of the St Ives and Agnew mines – it signalled our globalisation after years of confinement to Africa. We could genuinely claim to be a globalised gold company again.

In 2013, we identified an opportunity to extend our footprint in Australia with the successful acquisition of the three Yilgarn South operations from Barrick Gold – the Darlot, Lawlers and Granny Smith gold mines. Now the Australian mines are the heart of Gold Fields, having achieved the one million ounce a year target within a year of the deal and accounting for just under half of our global production portfolio. I am sure the Yilgarn South acquisition will go down as one of the most value accretive deals in recent gold mining history.

But our foray into Australia is not just one based on achieving quick financial returns; Australian mining presents the future of gold mining in many respects – not just for Gold Fields but gold mining in general. In many ways, it sets the standard to which we will move our other global operations over time.

Most obviously, Australian miners are at the forefront of mechanisation and innovation in the industry. They epitomise the shift from manual to computer assisted remote mining, which is crucial as the industry seeks to run its mines more efficiently and safely, and to attract talented individuals with the critical skills.

Our Australian mines are already well down this path; in terms of productivity there are few mining operations that can rival these mines when measured by output per worker. These mines are also among the most cost-efficient and our employees are amongst the best paid and enjoy some of the most attractive working conditions in the industry. In terms of safety, these mines are also amongst the industry leaders, but there is always room for improvement and
we will not rest until we achieve our goal of creating and achieving a culture of zero harm.

Innovation and mechanisation go hand in hand. Like mechanisation, innovation can help the industry enhance profitability, address skill shortages and develop technologies required in more difficult working conditions, such as in remote locations and kilometres underground. Again, our Australian operations excel in introducing new technologies and systems that enable safer and more productive mining.

The future of our Australian operations is also secured through the success they have shown in their brownfields (near-mine) exploration. In 2001, when we acquired the Agnew and St Ives mines, they had combined Mineral Reserves of 2.9 million ounces. Since then, these two mines have produced over 9.5 million ounces of gold and they still have 2.9 million ounces in Reserves. We are investing heavily in brownfields exploration on our four Australian operations over the next few years and we expect this to lead to continuing life extensions.

Operating in a politically stable environment like Australia is half a guarantee for business success. The other half relies on dedicated and skilled employees. I am grateful for the dedication shown by all our Australian employees – they provide me with the assurance that Gold Fields Australia will remain one of the important drivers for our Group for many years to come.

**Nick Holland**
Chief Executive Officer
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Gold Fields Australia archives and technical reports

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