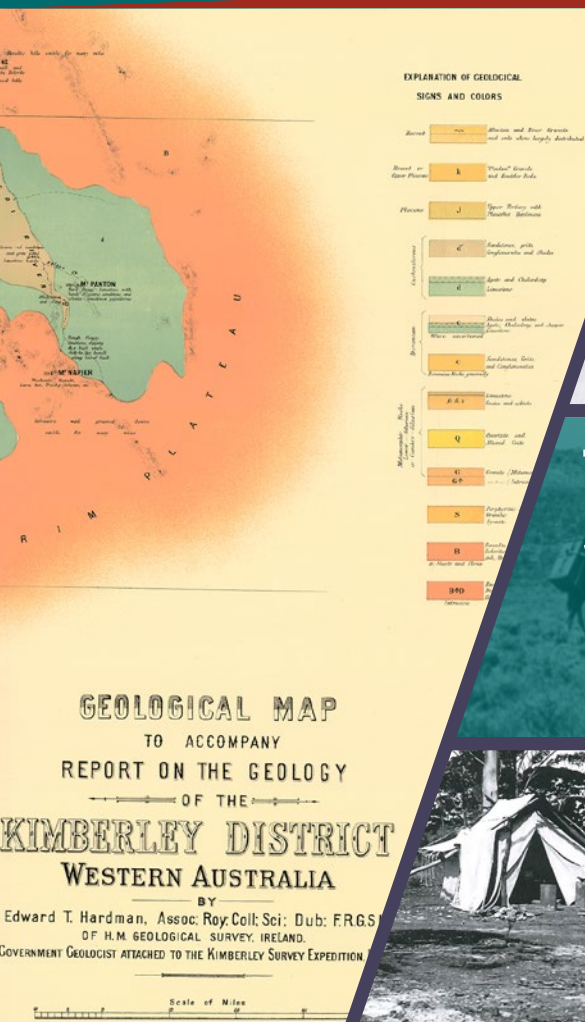




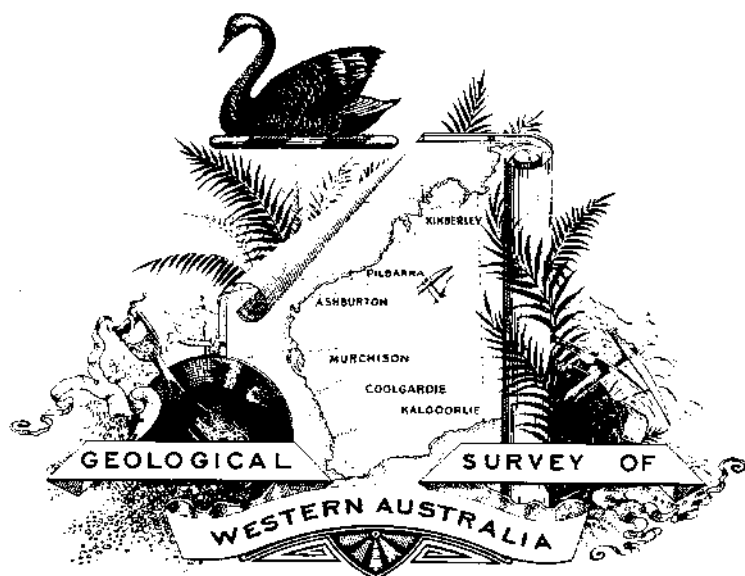
Government of Western Australia  
Department of Mines, Industry Regulation and Safety



# The Geological Survey of WA

130 years of geological excellence through the lens of its directors





This special booklet commemorates the 130th anniversary of the establishment of the Geological Survey of Western Australia.

Published 2018 by GSWA, this booklet is available in digital format (PDF). [www.dmp.wa.gov.au/ebookshop](http://www.dmp.wa.gov.au/ebookshop)

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**Information Centre**

Department of Mines, Industry Regulation and Safety  
100 Plain Street  
EAST PERTH WESTERN AUSTRALIA 6004

**Telephone: +61 8 9222 3459 Facsimile: +61 8 9222 3444**

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## THE GEOLOGICAL SURVEY OF WA

### 130 years of geological excellence through the lens of its directors

#### In the beginning

What do Lawrence of Arabia, composer Irving Berlin and the inventor of the television, John Logie Baird, have in common with the Geological Survey of Western Australia (GSWA)?

They were all born in 1888.

GSWA was given its official title in 1896, but the geological community holds that the appointment of Western Australia's first permanent Government Geologist two years after the Legislative Council resolved in 1886 to create a Geological Survey, marked the real beginning of this hallowed institution.

One hundred and thirty years ago, Harry Woodward followed in the footsteps of three previous temporary Government Geologists appointed to undertake specific investigations to discover minerals of value – principally coal and gold – for the colony of Western Australia.

The first was a man of mystery from Germany.

Ferdinand von Sommer awarded himself the aristocratic title of “von”, although he had no right to it.

However, despite passing himself off variously as a Doctor of Philosophy, Medicine and Mathematics, he seemed to know a thing or two about geology.

The government of the day employed Mr Sommer to look for lead and copper in Cole's Shaft, the first recorded mining shaft in WA, drilled in the Darling Range near Armadale.

He found neither, but managed to land the job as temporary Government Geologist in 1847 and travelled far and wide from Hutt River to Bremer Bay, finding nothing of any value whatsoever.

Mr Sommer, however, made some good maps, and some bad enemies in the press of the day, who were scathing about his lack of accomplishments.



*Mr "Geology" Brown.*

He disappeared amid claims of a deserted wife back in Prussia and left behind a poisoned chalice for his successor 20 years later, a real geologist called Mr Henry Brown, complete with qualifications from London's Royal School of Mines.

That cut no ice with the press and a parliamentary cabal opposed to hiring another Government Geologist.

Future Attorney General Septimus Burt nicknamed him Mr Geology Brown and he was hounded from the job despite preparing three maps and issuing 10 reports in just two years.

The Canadian-born geologist also discovered the first artesian water near Perth and his explorations included the discovery of the Weld Range, named for the then Governor.

The Perth Gazette and W.A. Times applauded the government of the day for replacing the despised scientist by a party of "practical mining men" from Victoria – 16 imported miners from Ballarat who found nothing in WA.

### **The painter with a pith helmet and monocle**

Next up to the plate was Mr Edward Hardman, a respected Irish geologist who struck an imposing figure during his Kimberley expeditions with his pith helmet and monocle as he explored for gold and painted and sketched historic scenes from WA's far north.

Embittered by the Legislative Council's refusal to continue paying him for his work or take up his idea of creating a permanent Geological Department, Mr Hardman returned to Ireland in 1885.

Meanwhile, Surveyor General John Forrest, the renowned explorer who became WA's first premier, led the push for a Geological Survey against determined opposition from MP Septimus Burt, who ridiculed Mr Brown, his mapping, and his exploration in the Kimberley.



*One of Mr Hardman's sketches in the field. The figure kneeling and sketching in the foreground is believed to be Mr Hardman.*

Mr Burt said he would defy any man in the world, unless a trained geologist, to understand Mr Brown's map and that people did not want to know whether "it was Eocene, Miocene or Pliocene or any technical rubbish like that".

He also opposed appointing another Government Geologist, saying that he would only roam the Kimberley in a horse-drawn trap, "eating bacon and eggs" like Mr Hardman.

However, a gold find in 1885 near what is now known as Halls Creek, in an area Mr Hardman had reported as "decidedly auriferous", triggered the Kimberley gold rush, vindicating him in the eyes of a number of MPs and prompting a successful vote on 26 August 1886 in favour of establishing a Geological Survey.

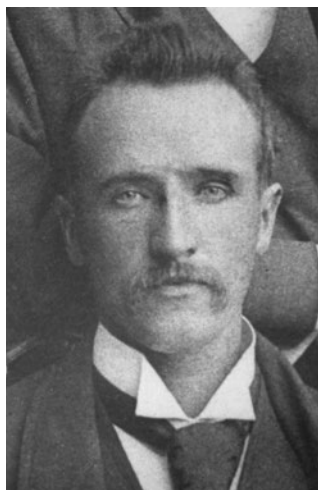
The position of permanent Government Geologist was offered to Mr Hardman in mid-1887, but he had unfortunately died of typhoid fever in Ireland months earlier.

Second choice Mr Harry Woodward was offered the position and arrived in Perth in January 1888 to be the one-man team of the new Geological Survey of Western Australia until the appointment in 1893 of his first professional staff member, Hungarian geologist Stephen Göczel.

Landing in Perth just as the colony's gold rushes were gaining pace, Mr Woodward hit the ground running and headed off almost immediately to the Northam fields.

Mr Woodward eventually visited every goldfield in the colony, and before resigning in 1895 he published 21 reports and six geological maps.

During his tenure and against his wishes, GSWA became part of the Department of Mines in 1894, an association that continues today.



*Andrew Gibb Maitland.*

### **The 'father' of the Survey**

Mr Woodward's departure created an opening for the Survey's most famous and longest-serving leader, Mr Andrew Gibb Maitland, recognised as the "father" of the modern Survey. He was the inspiration for the coveted Gibb Maitland medal awarded by the WA Division of the Geological Society of Australia for outstanding contributions to geoscience in Western Australia, which has been awarded to eight GSWA geoscientists since its inception in 1986.

Over 30 years, Mr Gibb Maitland forged the fledgling Survey into an efficient organisation with a self-sufficient system capable of producing geological maps for geologists supported by a chemist/ assayer, draftsman and office staff.

Regarded as one of the last pioneer geologists of Australia, Mr Gibb Maitland led from the field, but unlike many men of adventure, he did not neglect office work.

His *Bibliography of the Geology of Western Australia* published in 1898 was the first of 91 Survey bulletins issued under his direction.

By November 1926 when Mr Gibb Maitland retired, about half the State had been geologically investigated by Survey staff travelling on horses and camels, enduring extraordinary conditions.

Ken Spillman, who authored *A Rich Endowment, Government and Mining in Western Australia 1899–1994*, wrote that from the start, Mr Gibb Maitland was an “economic geologist” who told Mines Minister Frank Wittenoom: “In a country which depends so much upon its mineral wealth, the Survey must devote itself to those problems in economic geology which are essential to be solved.”

The autocratic Mr Wittenoom was mightily impressed with his politically savvy new Government Geologist and within a year Mr Gibb Maitland had a staff of nine.



*Major Patrick Pelly, aka Captain Starlight.*

### **Captain Starlight**

One of these men, hired on the recommendation of Premier John Forrest, was none other than the notorious Captain Starlight, an ageing former bushranger masquerading as Major Patrick Pelly, a cultured man with a prominent moustache remembered by Survey staff as being “a courteous, obliging old fellow”.

He was also a cold-blooded killer and a conman born as Frank Pearson in Mexico in 1837, who committed a series of robberies and murders in Queensland and New South Wales before serving 16 years in prison where he assumed the name of a fellow prisoner after his release.

World War I, the Great Depression and World War II formed the timeline for a long decline for the Survey, which didn’t start to recover until the post-war mineral booms.

The number of professional staff dwindled to two field officers, a clerk and a messenger during the term of Mr Gibb Maitland’s successor, Mr Torrington Blatchford.





*A camel train expedition led by Henry Talbot.*



*Mr Torrington Blatchford.*

### **Camels, the bush and Lasseter's Reef**

Mr Blatchford became the Government Geologist in 1926 after stints as a geologist with the Mines Department, as a metallurgist, surveyor and mining engineer in private industry, and on rejoining the department, as Assistant State Mining Engineer.

He is chiefly remembered for his geological work searching for oil in the Kimberley, and taking part in the 1931 expedition to find the fabled Lasseter's Reef with his friend Mr Henry Talbot.

Mr Talbot was a legendary camel driver and bushman who survived being speared by Aborigines in the early 1900s and later became an accredited field geologist, thanks to training in the field by Mr Gibb Maitland.

Mr Gibb Maitland praised Mr Talbot highly, saying that few men had contributed more to the knowledge of the arid and inaccessible regions of Western Australia.





*The famous bushman, Mr Henry Talbot.*



*Mr Frank Forman.*

Mr Frank Forman was the 30-year-old geologist who took over as Director from Mr Blatchford in 1934, the first graduate of The University of Western Australia (UWA) to do so.

A great deal of his time was taken up working on an aerial survey of the north of Australia as part of a project between the Commonwealth, Queensland and WA Governments and most of his administrative duties fell to Mr Matt Ellis, a no-nonsense, tough-talking geologist who succeeded Mr Forman when he resigned in 1945.



*Miss Florence Armstrong.*

### **The 'First Lady' of the Survey**

Mr Forman had started with GSWA five years earlier as a field geologist at the same time as a woman called Florence Armstrong became its clerk at a salary of less than half of Forman's.

Only one year older than Mr Forman and with her own Bachelor of Science in Geology, Miss Armstrong was remembered by colleagues as a woman of great spirit and talent.

Mr Blatchford was highly impressed by her and allowed her to organise exhibitions, edit maps and even run the Survey during his absences.

She was promoted to technical assistant and her salary was increased by less than 10 per cent, but she was never relieved of her clerical duties, which she carried out even while conducting petrological work for GSWA.

Miss Armstrong built a distinguished career in geology after leaving GSWA and was the first woman to be admitted to the Australasian Institute of Mining and Metallurgy.

The bullish Mr Matt Ellis took the helm of GSWA at a critical time and rebuilt it in the post-war years.

Despite a prickly relationship with WA's longest-serving Under Secretary for Mines, the equally forceful Mr Bert Telfer, the two men shared a commitment to the "economic geology" espoused earlier by Mr Gibb Maitland.

They had enormous faith the WA's potential to export minerals and succeeded in increasing staff numbers at the Survey up to full strength by 1948.

Mr Telfer also supported Mr Ellis's push to make the Survey a "flying squad", complete with a fleet of eight vehicles – one for each staff officer instead of the two battered Dodge utilities he inherited as the new Director – to assist prospectors in the field.

His passion for speed in all things nearly brought him undone in 1950 when he rolled his vehicle on the outskirts of Southern Cross, but he suffered only a few cracked ribs and injured pride.



*Mr Matt Ellis.*

### **Iron ore and irony**

Mr Ellis knew about WA's yet-to-be-discovered iron ore riches.

Distinguished geologist Mr Ewen Tyler, who helped discover diamonds in the Kimberley at what would become the Ellendale and Argyle mines, was a young UWA undergraduate exploring the Pilbara in the 40s who remembered Mr Ellis telling him: "Don't come back saying you've seen mountains of iron ore. We all know it's there, but it will never be exploited – it's too far from the coast, and the government would never permit it."

Times have certainly changed. This was when the Commonwealth Government considered Australia so short of iron ore that exports were banned – a policy which remained in force until 1961.

Mr Ellis was described by a successor as "a down-to-earth man who always called a spade a spade except he usually called it a bloody spade or worse".

Mr Joe Lord took over from Mr Ellis in December 1960 just as Western Australia was revving up for the boom in iron ore, coal and gas.

Mr Lord had worked for the Survey from 1947 to 1953, travelling throughout the State and helping to delineate the extensive coal resources in the Collie Basin, before joining the Commonwealth Bureau of Mineral Resources, the predecessor of Geoscience Australia.

Returning to the fold as deputy to Mr Ellis, he only had to wait six months to take over the reins.



*Mr Joe Lord.*

### **The modern Survey emerges**

Over the next two decades, Mr Lord's title changed from the time-worn Government Geologist to Director of the Geological Survey and he welded it into the modern scientific organisation it is today.

Like Mr Gibb Maitland and Mr Ellis before him, Mr Lord was a passionate believer in economic geology, writing in 1979 what today might be called a mission statement for the Survey:

"One of the policies instilled into the staff has been that of service to industry ... The critic may ask, 'what mine did they find?'. The answer is none, simply because it is not the task of the Survey to find mines."

Mr Lord said that it was the Survey's duty to "assist prospecting and exploration by providing geological advice, maps and services to encourage the search for new deposits, and at the same time to advise government on development".

"The people of Western Australia should not have their taxes used for the very high-risk activity of exploring for mines", he added.

Mr Lord was at the helm for the Survey's complicated move from five different Perth CBD buildings to its new home in Mineral House in 1970.

On his retirement from GSWA, he set up and initially directed the Western Australian Minerals and Petroleum Research Institute, now known as the Minerals Research Institute of WA (MRIWA).

During Mr Lord's tenure, the Survey embarked on a campaign to systematically map the whole State at 1:250,000 scale – an epic task that was completed in 1979, producing 103 standard series geological maps.

This was part of a national program carried out with the help of the Bureau of Mineral Resources, particularly in northern WA.



*The Joe Lord Core Library in Kalgoorlie was name in honour of the Survey's first Director.*



*Dr Alec Trendall.*

Dr Alec Trendall took over from Mr Lord in 1980 after 11 years as his deputy.

Dr Trendall studied at Imperial College in London under one of the world's greatest field geologists, Robert Shackleton, who supervised the young geologist's honours thesis and PhD.

He took part in two expeditions to South Georgia in the 1950s with adventurer and actor Duncan Carse to survey the sub-Antarctic island before joining the Geological Survey of Uganda, staying for nearly a decade before joining GSWA as a petrologist in 1962.

Dr Trendall received worldwide recognition for his work on banded iron formations in the Hamersley Group in the Pilbara, at a time when its vast iron ore resources were finally being unlocked following the lifting of the iron ore export embargo.

During his term as Director from 1980 to 1986, Dr Trendall also presided over a technological achievement that has contributed greatly to isotopic age dating in WA.

Realising that mapping the ancient Precambrian rocks of Western Australia depended on accurate geochronological data, he worked with Professor John de Laeter, head of the Western Australian Institute of Technology's (now Curtin University) Applied Physics department, to establish a close partnership with GSWA in 1968 that is still firmly in place today.

"In the beginning, GSWA provided rock samples for isotopic age dating using the rubidium-strontium dating method, but the need for greater accuracy led to the development of uranium-lead zircon geochronology using a Sensitive High-Resolution Ion Microprobe (SHRIMP) at the Australian National University (ANU) in Canberra," GSWA Geoscience Director Dr Ian Tyler said.

"Dr Trendall and Professor de Laeter were instrumental in GSWA joining with UWA and Curtin University in purchasing the first of two SHRIMPs which, over the past 25 years, have revolutionised our understanding of the geological evolution and mineralisation of WA. To this day, isotope geochronology remains integral to GSWA's ongoing task of mapping the State.

"The great antiquity of the West Australian crust was borne out by the discovery of the oldest mineral grains on Earth at Mount Narryer and in the Jack Hills, together with the oldest rocks in Australia, during a joint ANU-GSWA-Curtin project looking for Earth's oldest rocks."

During his time as Director, Dr Trendall also embarked on the production of an updated account of the geology and mineral resources of the State.

He was commissioned after his retirement by successor Dr Phil Playford to oversee the completion of this massive task, which culminated in the publication in 1990 of GSWA Memoir 3 – Geology and Mineral Resources of Western Australia – along with a new State geological map.

Dr Trendall was awarded a Doctor of Science by the University of London for his work on banded iron formations, the Clarke Medal of the Royal Society of New South Wales in 1977, and the Gibb Maitland Medal by the Western Australian Division of the Geological Society of Australia in 1987.





*Dr Phil Playford.*

### **The Playford legacy**

Dr Phil Playford, who became Director in 1986, had an outstanding career in government and the oil exploration industry.

He joined West Australian Petroleum Pty Ltd (WAPET) soon after it discovered oil at Rough Range in 1953, luring the young UWA graduate away from the Commonwealth Bureau of Mineral Resources.

His work with WAPET took him to Shark Bay where two encounters changed the course of his life and career.

First he came across the stromatolites at Hamelin Pool, leading to his lifelong interest in these strange living fossils and the geology of the area.

Around the same time, he met Tamala Station stockman Mr Tom Pepper who told him of silver coins he found 27 years earlier at the foot of coastal cliffs, a clue that led Dr Playford to discover the wreck of the Dutch trading ship, the *Zuytdorp*.

In 1956, his field work took him to the Kimberley where he was introduced to the Devonian reef complexes, starting a lifelong love affair with these rocks and the Aboriginal cave paintings they hosted.

The paintings triggered an intense interest in Aboriginal history and mythology that encouraged him to join an expedition to the Gibson and Great Sandy Deserts in 1964 which successfully located the last known Aborigines who had never before seen Europeans.

After completing a Fulbright Scholarship that earned him a doctorate from Stanford University, Dr Playford returned to Australia and joined GSWA in 1962, as Supervising Geologist of the newly created Sedimentary (Oil) Branch.



*Dr Playford gets up close and personal with some fauna in the field.*

## **The beginning of Barrow Island**

One of Dr Playford's first recommendations as a member of the Survey was to ask the Minister for Mines to encourage WAPET to drill the anticline below Barrow Island in the Carnarvon Basin.

The subsequent discovery of oil in commercial quantities in 1964 marked the dawn of petroleum production in Western Australia.

Dr Playford rose through the ranks steadily, but with an ongoing condition of accepting administrative roles that he be allowed to devote time each year to geological research, primarily field work on the Devonian reef complexes.

His scientific achievements and work throughout his career promoting the petroleum prospectivity of Western Australia have been recognised with several awards.

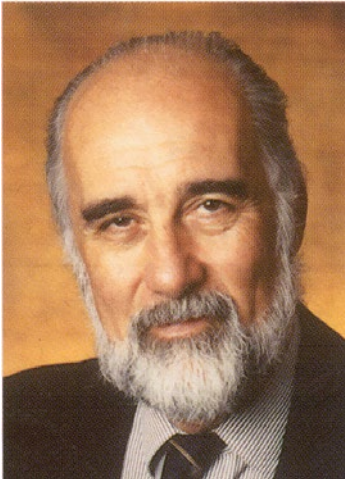
These include: American Association of Petroleum Geologists Special Commendation Award, the Lewis G. Weeks Gold Medal of the Australian Petroleum Production and Exploration Association, the Gibb Maitland Medal, Honorary DSc from UWA, Honorary Membership of the Royal Society of WA (RSWA), Royal Society Medal from RSWA, and Distinguished Honorary Membership of the Petroleum Exploration Society of Australia.

Dr Playford was recognised as an Honorary Associate of the Geological Survey and the WA Museum, a Fellow of the Geological Society of Australia, and a Fellow of the Australian Academy of Technological Sciences and Engineering.

He was also Chairman of the Board of the WA Museum of Natural Science, Curtin University Adjunct Professor of Petroleum Geology and University of Notre Dame Adjunct Professor of Geology.

Dr Playford was made a Member of the Order of Australia in 1998 for his contributions to knowledge of the geology and history of Australia.

His geological legacy is of great importance, but he will also be remembered for his contributions to WA's history, principally the early Dutch explorers and aspects of Aboriginal art and heritage.



*Dr Pietro Guj.*

### **Getting down to business**

The man who stepped into big shoes to replace Dr Playford after his retirement in 1992 was Italian-born Dr Pietro Guj, who worked for two decades in Afghanistan, Pakistan, South Africa and Namibia as a geologist, miner and explorer before coming to WA in 1970 in the wake of the nickel boom.

He joined Mount Isa Mine Holdings as a senior geologist and, after being injured in a helicopter crash, he moved into financial and strategic planning, becoming the company's senior commodities analyst in Brisbane, before returning to Perth as chief financial planner with the then newly-formed Water Authority of Western Australia.

His successor, Dr David Blight, paid tribute to Dr Guj's management skills, saying that during his time in charge of the Survey, its State Budget allocation had doubled and its output of quality maps and reports had tripled.

Academically highly qualified, with a Bachelor of Science in geology from the University of Rome, a PhD in geology from the University of Cape Town, and a Masters degree in business administration from UWA, Dr Guj returned to academia after leaving the Survey and the Department of Minerals and Energy, where he also served as Deputy Director General.

He is still involved with the resources industry as a Research Professor at UWA's Centre for Exploration Targeting and an Adjunct Professor in Mineral Economics at Curtin University, where he has lectured for the past 10 years.



*Dr David Blight.*

The appointment of Dr David Blight as Director in 1998 marked the high point of a return to the fold by this highly respected petrologist and geoscientist.

Dr Blight had left the Survey in the early 80s to work in industry during more than a decade of aggressive exploration for gold but returned as GSWA Deputy Director in 1995.

Remembered fondly in his early days at the Survey for a lively sense of humour that included a suspected role in a spate of garden gnome disappearances around Perth, Dr Blight saw his role as building on Dr Guj's legacy of a revamped and revitalised Survey and maintaining its reputation for world-class geoscience.

Dr Blight returned to his home State of South Australia in 2000 to become Executive Director of the Minerals and Energy Division.

### **Delivering data to industry**

GSWA veteran Dr Tim Griffin began his 10-year stint as Executive Director of the Survey at the turn of the century.

Dr Griffin, who won the Gibb Maitland medal in 2010, had much in common with the pioneering economic geologist.

Both men spent time mapping in New Guinea, both set the highest standards for mapping while at the Survey, and both shared the view that it was the Survey's duty to encourage prospecting and exploration through providing industry with first class maps and geoscience information.

Delivering Dr Griffin's citation for the Gibb Maitland medal, prominent Australian geologist Mr Jeff Gresham paid tribute to his "clear understanding of industry requirements".



*Dr Tim Griffin.*

"He has been a leader in the provision of pre-competitive geological, geochemical and geophysical data to industry, and there is little doubt that this has facilitated important mineral and petroleum discoveries in the past 20 years," Mr Gresham said.

"His continued advocacy of the importance of an expanding petroleum and mineral industry in Western Australia to the highest levels of government, and the respect with which he is held by relevant Ministers, have played a significant role in the granting of a major funding boost to the GSWA under the Exploration Incentive Scheme."

Dr Griffin's 37 years with what is now the Department of Mines, Industry Regulation and Safety (DMIRS), included a great deal of highly valuable fieldwork in remote areas of the State, including an adventure dodging the attention of a rogue gunman in the north Kimberley near Derby.

He became a Deputy Director General in 2010 and is widely recognised as the driving force behind a number of important efficiency reforms, including speeding up approvals, and cross-government co-operation.



*Dr Rick Rogerson.*

### **The birth of the Exploration Incentive Scheme**

Dr Rick Rogerson took over the Survey that year and also took command of what he considered to be his finest achievement, the Exploration Incentive Scheme (EIS) that he wrestled into shape as Dr Griffin's deputy.

Like Dr Griffin and Mr Gibb Maitland, Dr Rogerson also honed his geological career in Papua New Guinea.

"What a great place for a geo," he said. "It's a place where you can see plate tectonics in action because the country is so young in terms of its crust."

It's also where Dr Rogerson learned his way around the corridors of power, becoming Director of the PNG Geological Survey before moving to WA in 1995 as Chief Geoscientist of GSWA's Mineral Resources Branch.

## **Spreading the word**

An economic geologist in the mould of Mr Matt Ellis, Dr Rogerson was also a persuasive and relentless promoter of Western Australia, travelling often in Asia to spruik the State's resources to potential investors.

Some of the Survey's finest recent achievements in geoscience and mapping, including fully-digitised and 3D mapping, the complete coverage of WA by airborne magnetics and radiometrics, and many long and deep seismic traverses, were made possible by the EIS funding that Dr Rogerson pioneered.

During his tenure, an independent economic impact study of the EIS found that every \$1 million invested in the scheme returned \$23.7 million to Western Australia.

As part of his work at the former Department of Mines and Petroleum (DMP), Dr Rogerson took on contracts for the World Bank and AusAID to provide technical assistance to developing countries, mainly in mineral policy and strategic management areas.

Dr Rogerson, who holds a PhD in geoscience and an MBA, was presented with the prestigious Australian Institute of Geoscientists Service Award in 2015.

The award is presented occasionally to people who have made an exemplary contribution to the institute and few have been given out, underscoring the esteem in which it and its recipients are held.

Dr Rogerson is now Executive Director of DMIRS's Resources Tenure division.

The current Executive Director of the Survey, Mr Jeff Haworth, who took over the role in 2018 after DMP merged with the Department of Commerce to become DMIRS, is a department veteran who has brought a wealth of petroleum geology experience to GSWA.





*Mr Jeff Haworth.*

Mr Haworth started his career in nickel mining near Norseman before moving to diamond exploration in the Kimberley during the diamond rush of the 70s.

In 1979, he “saw the light” and moved into oil and gas exploration, working in Australia on the North West shelf and Browse projects, Barrow Island, and in the Northern Territory, Queensland and Victoria.

Mr Haworth has worked overseas in the Norwegian sector of the North Sea, the Arctic Ocean, New Zealand and the United States.

He has vivid memories of his time working as a contract well site geologist in the North Sea and Arctic Ocean.

“I particularly remember it being so cold I snapped a door handle off,” Mr Haworth recalled. “And I will never forget when I first arrived in the Arctic, watching men sunbathe on the helideck by the light of the midnight sun.”

In the US, Mr Haworth was involved in gas analysis research that resulted in the publication of several papers on improved interpretation techniques.

This research was recently used as an evaluation tool by Buru Energy in the Canning Basin.

Mr Haworth is a member of the Society of Petroleum Engineers, the American Association of Petroleum Geologists (AAPG) and the Petroleum Exploration Society of Australia (PESA).

## **From camels to 3D mapping, the Survey's spirit is unchanged**

A rich vein of history runs through the Geological Survey of Western Australia and its timeline is signposted by a succession of talented individuals at the helm who all share an abiding love for geology.

The pioneers rode on camels and horseback, risking their lives in the State's outback.

In recent years, others travelled in relative comfort by four-wheel drives, with laptops and onboard GPS technology, but the journey has been the same: the pursuit of knowledge of WA's hidden mineral treasures.

Maps were drawn with pen and ink, and now we have 3D digital maps complete with the datasets from which they were built.

Outcrops and landforms were studied by eye, and still are, but now geologists can study incredibly detailed data from satellites, airborne surveys and seismic lines.

The technology used by the Survey has grown almost exponentially, but the passion – some would say obsession – of the men and women who work for it is unchanged after 130 years.



## **GSWA Gibb Maitland Medal roll of honour**

The Geological Society of Australia's Gibb Maitland Medal is awarded for outstanding and substantial contributions to geoscience in Western Australia, with particular consideration given to contributions that relate to the discovery or documentation of mineral and petroleum resources in the State.

The Geological Survey of WA has racked up an impressive tally of eight awards since the first medal was awarded in 1986.

When it is considered that there have been five years when no award was made, the Survey can claim to have earned nearly a third of all Gibb Maitland medals.

### **GSWA winners**

2017: I. M. Tyler

2010: T. J. Griffin

2009: D. P. Commander

2003: K. Grey

1998: W. K. Witt

1990: P. E. Playford

1989: R. D. Gee

1987: A. F. Trendall

