
Heron Construction Co. Ltd.

# CAPABILITY STATEMENT

2018

www.heronconstruction.co.nz

Heron Construction Co. Ltd.

# OUR COMPANY


## CONTACT US

Heron Construction Company
PO Box 72561
Papakura 2244
New Zealand
P | +64 (09) 299 9767
E | info@heronconstruction.co.nz

www.heronconstruction.co.nz

**Heron Construction Company has been proudly family owned and operated since 1964, and specialises in backhoe dredgers for marine works throughout New Zealand, Australia and the South Pacific.**

Heron Construction Company Limited (Heron) was established in Auckland, New Zealand in 1964 by the late Mr. Willem Kroef.

Today, it remains a family owned company, with Willem's sons Hein and Leon, and his grandsons Greg and Matt the current directors and shareholders.

Third generation family members are employed as managers, superintendents and operators, and work alongside a growing team, that currently employs 35 personnel.

In the 1960's Heron forged a reputation on concrete construction projects including pumping stations and bridges, and is recognised as a pioneer in horizontal pipe thrusting and trenchless technology in New Zealand and the South Pacific.

Over the past 54 years, Heron has grown its capacity and reputation to become one of Australasia's premier dredging specialists, now involved mainly in dredging operations and marine construction works.

Heron faces an exciting future with the awarding of landmark dredging projects in Australia and New Zealand, and is continually updating its dredging fleet to one of the most modern and technically advanced in the region.

# OUR SERVICES

## Backhoe Dredging

The backhoe dredger (BHD) is a stationary, hydraulic excavator mounted on a dedicated dredging pontoon that often has a rotating table. The word "backhoe" refers to the action of the bucket, which digs by drawing earth backwards.

All BHDs regardless of size have a similar dredging cycle. The bucket is lowered into the water, the bucket is filled by cutting and tilting and is then hoisted out of the water. The excavator then swivels toward a nearby barge and the dredged materials are emptied into the barge. The BHD then swivels back and starts the process again. The barge may be a standard, flat-bottomed vehicle that needs to be towed or a self-propelled, split-hopper barge, although in most cases the BHD discharges its load into a barge moored onto the pontoon, in some cases the excavated material will be placed on-shore. When a BHD is being used for trench excavation the dredged material may be side-cast.

To ensure stability and counter the large digging forces of the BHD at work, the pontoon is anchored and its position maintained by three spud poles. A spud is a large pole that can anchor a ship while allowing a rotating movement around the point of anchorage.

Heron Construction own and operate four backhoe dredges (BHD); Machiavelli, GPK, Kimahia and Combi.

The Machiavelli fitted with a Liebherr P994 is the largest of Heron Construction's backhoe dredges; she was built in 2005 by De Donge in Turkey and towed to New Plymouth for the Port Taranaki Capital Dredging Project. Machiavelli has completed an ocean outfall in Christchurch, and capital and maintenance dredging in New Plymouth, Tauranga, Timaru and Lyttelton. In 2010 she was mobilised to Newcastle Australia and since then has dredged in Sydney, Geelong and Melbourne and Eden.

GPK is the latest addition to the Heron fleet, launched in 2017 the GPK is equipped with a Liebherr P9150 excavator that has a maximum dredge depth of 19m. The GPK's first project was on the Chatham Islands, a small group of islands 700km off the east coast of New Zealand.

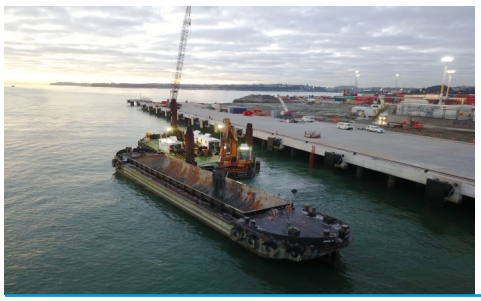
Kimahia with its Liebherr P984 is predominantly based in New Zealand she has completing capital and maintenance dredging projects in most of New Zealand ports, as well as marine infrastructure projects such as wharves and outfalls in Newcastle Australia and Rarotonga in the Cook Islands.

Combi is a small demountable backhoe dredge that can be setup in several configurations. Combi can be configured with a Hitachi ZX470-3 loads hopper barges, or with a Hitachi ZX200-3 longreach excavator to dredge and carry up to 100m$^3$ for material on its pontoon - this configuration is ideally set up for marina maintenance dredging. The size of the Combi's pontoons mean that this backhoe dredge can be readily transports to inland waterways such as rivers and lakes and also be shipped overseas for smaller dredging projects. Combi has completed dredging projects in Suva, Fiji as well as Tau and Ofu in American Samoa.

Heron Construction has a team of dedicated and experienced superintendents, operators, masters and engineers who manage, supervise and operate our fleet of backhoe dredges, tugs and barges.

Machiavelli

GPK



Kimahia

Combi

# Cutter Suction Dredging

Heron Construction commenced cutter suction dredging operation in 1971.

The current cutter suction dredges, Kotuka and Beaver have been used to complete port dredging, river crossings, marina construction and maintenance, river and channel desedimentation, sand mining projects throughout New Zealand and the South Pacific.

Both cutter suction dredges are demountable and as such are easily transported for project to project whether by road of sea.

Kotuku is a cutter suction dredge that has evolved over a period of approximately 35 years, each and every modification has been completed in Heron Constructions Papakura or Tauranga workshops.

Today, Kotuku is fitted with a 12/10 Warman underwater dredge pump and is able to dredge to a depth of -16m.

The dredge Beaver started life as an IHC Beaver Cub. It have been extensively upgraded and modified and currently can dredge to 8.0m with a 550hp 12/10 Warman inboard dredge pump.

Both dredges are ably supported by the workboats Buka and Rua which are used to tow and manoeuvre the dredges, move anchors, transfer fuel and crew transfer.

Heron has available over 280m of 350mm diameter floating dredge hose, 120m of floating pipeline, over 2000m of flanged steel pipeline and an extensive range of rubber flexible landline hoses.

Heron owns a range of standard reach and longreach excavators, bulldozers and front end loaders for pipeline handling and to construct and manage disposal and reclamation areas.

**From top**:
Heron's first cutter suction dredge;
Kotuku; Beaver.

# OUR SERVICES

## Hydrographic Surveying

To complement its dredging operations Heron Construction can provide a complete hydrographic survey service. This includes pre and post dredge surveys, interim progress surveys, LINZ clearance survey, volume calculations and supplying reports and plans in either paper or digital format.

Heron Construction has two dedicated survey vessels; White Pointer and Kaiwea - both vessels were purpose built by White Pointer Boats in Gisborne.

White Pointer is equipped with the latest Reson 7125 SV Multibeam Echosounder and Applanix Pos MV inertial motion sensor while Kaiwea is fitted with a Reson 215 single beam echo sounder. We also have available portable survey equipment that allows us to convert almost any craft in a survey vessel.

As well as having our own in-house survey team, Heron can and has worked in conjunction with independent registered hydrographic surveyors in both New Zealand and Australia for auditing and QC purposes and to provide navigational channel clearance surveys when required.

Heron's range of survey equipment includes: vessels; multibeam; portable kit; GPS equipment; electronic tide gauge transmitter and receiver; and software.


White Pointer

Kaiwea

Multibeam surveying

## Tug and Barge

Heron has a wide variety of tugs, from the dredge tenders Buka and Rua to the ocean going tugs Kurutai and Pacific Way.

The Kurutai and Pacific Way have been used to mobilise backhoe dredges and hopper barges from project to project both locally and internationally; tow split hopper barges to dredge disposal grounds; assist with the installation of ocean outfalls pipelines; and respond to requests for assistance from stricken vessels that required either towing or escorting to a port for repairs.

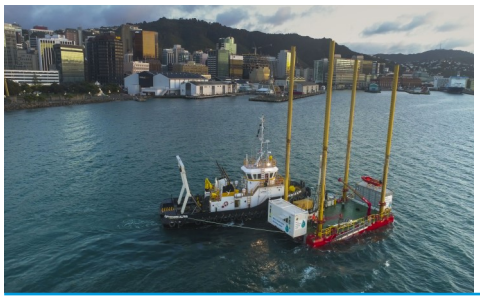
All our vessels are maintained to the highest level and they all comply with Maritime New Zealand (MNZ) Maritime Operator Safety System (MOSS). The crews all hold relevant MNZ qualifications and are highly experienced with tugs and towing operations.

To complement our backhoe dredging operations Heron Construction have three pairs of split hopper barges; Kaheru and Kahara (240m$^3$), WH761 and WH762 (750m$^3$) and H1201 and H1202 (1200m$^3$). These barges can be used to transport everything from rock to marine sediment and this material can either be disposed of at sea or removed from the barge at a wharf by an excavator for use on land.

The modular backhoe dredge Combi and cement stabilisation barge Mesenge can both be reconfigured to flat top spudded construction barges for operations such as piling, salvage, bridge or wharf construction, fireworks displays, and temporary Dangerous Goods (DG) container storage for visiting ships in port.

As with our tugs all our barges are maintained to the highest level and they have Maritime New Zealand Barge Safety Certificates (BSC).

Kurutai



Capricorn Alpha and Tuhura

# Specialised Machine Hire

To support our dredging and marine activities Heron Construction have a wide variety of specialist equipment such as longreach excavators, cement stabilisation plant, environmental and traditional grabs, dredge booster pumps, sand screw augers, small discharge pipeline laying barges.

Heron has a fleet of long reach excavators all meticulously maintained and operated by experienced long reach excavator operators. All long reaches can be operated from either one of Heron's many barges or from land as per a traditional excavator. The longreach fleet includes:

- 1 x Liebherr R9250; 30m reach (270 tonne)
- 2 x Hitachi ZX670-3; 23m reach (70 tonne)
- 1 x Hitachi EX700-1; 21m reach (70 tonne)
- 1 x Hitachi ZX470-3; 20m reach (50 tonne)
- 1 x Hitachi ZX330-3; 18m reach or 21m reach (30 tonne)
- 1 x Hitachi ZX200-3; 15m reach or 18m reach (20 tonne)

Assembled on the deck of the spudded flat top barge Mesenge is a Cement Stabilisation Plant or Pugmill.

The pugmill mixes dredged marine sediment with cement to form an engineered fill (Mudcrete) that is used to create reclamations, seawalls, embankments etc. The pugmill configuration includes: Liebherr R944 excavator, double deck vibrating grizzly, 1000SS pugmill, 100 tonne cement storage silo, 300 kva generator and the EX 700 longreach.

To enable our backhoe dredges to remove contaminated sediment from harbours, channels and waterways Heron Construction has four environmental dredging grabs.

Compared to a normal dredging grab, these have low turbulence when lifting the grab through the water, it has a bigger foot print and because the grab is closing almost horizontally it is possible to remove mud from the bottom very accurately.

The cutter suction dredges Kotuku and Beaver have the ability to pump material a distance of 800m without the assistance of booster pumps.

Heron has three booster pumps ranging from 450hp up to 800hp. These booster pumps can be either placed directly behind the dredge and remote operated from the dredge, or placed in the pipeline and manned and operated by a booster pump operator.

Liebherr R9250 Longreach

Hitachi ZX670 Longreach

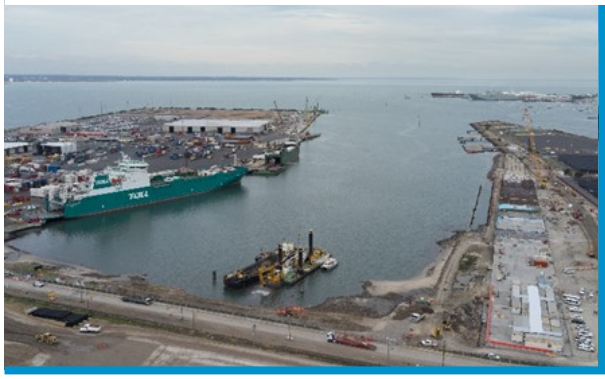
Hitachi ZX670 Material Handler

50T Crane with Booster Pump

# OUR PROJECTS

# PORT CAPACITY PROJECT

## Maritime Works Package, Webb Dock




The Port of Melbourne is Australia's largest and busiest container port, and also one of Australia's largest general cargo ports. Forty two container lines, and several general and bulk cargo carriers make more than 3,200 ship calls a year to Melbourne, and the Port operates 24 hours/day, 365 days per year.

The Maritime Works Package was awarded to McConnell Dowell and Heron Construction in March 2014, and that October Heron mobilised the Machiavelli and two split hopper barges to Webb Dock and commenced dredging 1.1 million $m^3$ of material to a design depth of 13.5 and 15.5m. Dredging of the first area was completed on schedule and the first 500m of wharf was handed over to the Port of Melbourne Corporation on time.

This complex project required the use of lockout systems on the dredge to prevent contacting with underwater structures including a submerged combi-pile structure. In a world first, a dredge spud system was also used to improve the material model for the project, and all wharf faces were water jetted using an underwater pump attached to the bucket of the Machiavelli.

During the project, Heron took delivery of two new 1,200$m^3$ split hopper barges, and the innovative addition of stern thrusters significantly improved the turnaround for barge changes.

All material placed in the Port's dredge material ground (DMG) required tracking and pinpoint accuracy of placement. In total, more than 2,700 barges of material were placed on underwater bund walls or in the DMG. Four kilometers of bund wall was trimmed by the Machiavelli, vastly improving the storage capacity of the DMG for the Port of Melbourne Corporation.

Three additional stages of the project were handed over as scheduled or ahead of time, with a total dredge volume of more than 1.8 million $m^3$.

At handover all dredge areas and disposal areas met the stringent design criteria of the Port Capacity Project, and the project was completed with 150,000 man hours LTI free.

**Location**
Port Melbourne, Victoria

**Client**
Port of Melbourne Corporation

**Duration**
2014 - 2016

**Value**
AU $76M (total project AU $400M)

**Contract Structure**
McConnell Dowell Constructors - Head Contractor
Heron Construction Company - Dredging Subcontractor

**Project Manager**
Jim Millller

AUSTRALIAN CONSTRUCTION ACHIEVEMENT AWARD

**Winner: Australian Construction Achievement Award 2017**

www.acaa.net.au/2017-winner

Heron Construction Co. Ltd.

# VICTORIAN REGIONAL CHANNEL AUTHORITY

## Dredging Program 2015

The Victorian Regional Channels Authority (VRCA) is responsible for the management of the waterways providing access for ships to the Port of Geelong. The waterways generally consist of berth pockets and dredged channels.

The channels have been progressively enlarged and developed over a period of 150 years, the most recent change being a major deepening project carried out in 1996–97.

In 2015 the VRCA called for tenders to undertake localised dredging adjacent to Refinery Pier No.4 Berth, at the northern end of the Corio Channel with the purposes of reducing operational risks arising from the increasing size of vessels gaining access to the berth, and to facilitate the future development of Lascelles Wharf No.4 berth.

In September 2015 Heron mobilised the Machiavelli, three tugs, a survey vessel and two 1,200m$^3$ split hopper barges to Geelong from Webb Dock in Melbourne following the successful completion of the Port Capacity Project's Stage 1 works.

The scope of works involved the removal 265,000m$^3$ of silt and clay from an area adjacent to Refinery Pier No.4. This material was placed precisely within an existing designated dredge material ground (DMG) in Port Phillip Bay.

The DMG was sub divided into barge size cell to increase the accuracy of the placement. With dredging complete, the area was swept with sweep bar and tug.

Additional works also included rock trials area Wilsons Spit and the extensive sweeping of the Geelong shipping channel to remediate areas of siltation throughout the channel.

Following the completion of the Geelong works the Machiavelli returned to the Port Capacity Project at Webb Dock.

**Location**
Refinery Pier, Geelong, Victoria

**Client**
Victorian Regional Channel Authority

**Duration**
September - December 2015

**Value**
AU $8M

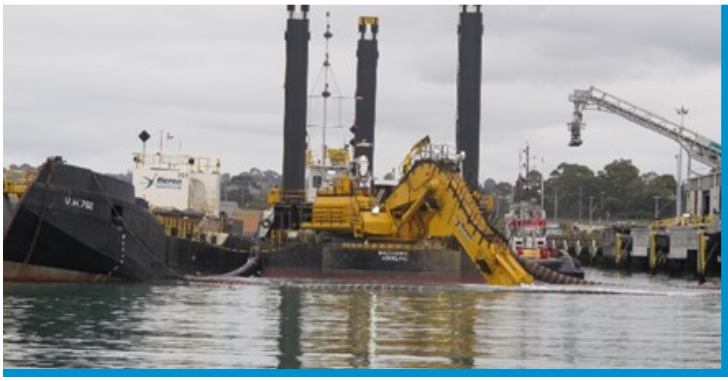
**Contract Structure**
Heron Construction Company - Dredging Contractor

**Project Superintendent**
John Milne

Heron Construction Co. Ltd.

# VICTORIAN REGIONAL CHANNEL AUTHORITY

## Corio Bay Channel Safety Adjustment Program




The Victorian Regional Channels Authority (VRCA) is responsible for the management of the waterways providing access for ships to the Port of Geelong. The waterways generally consist of berth pockets and dredged channels.

The channels have been progressively enlarged and developed over a period of 150 years, the most recent change being a major deepening project carried out in 1996–97.

In 2014 the VRCA implemented the Corio Bay Channel Safety Adjustment Program (CSAP) to make minor changes to the channel alignment and available water depth in the City Bend, known as Area B.

The four proposed Channel Safety Adjustment Program dredge sites in Area B were within the designated port waters of the Port of Geelong, adjacent the existing commercial shipping channels and in close proximity to the city of Geelong and its environs.

These changes were intended to reduce operational risks arising from the increasing size of vessels gaining access to the port. Material removed from Area B was placed in the existing outer dredge material ground (DMG) located east of Point Wilson.

In July 2014 Heron mobilised the Machiavelli, three tugs, a survey vessel and two 750m$^3$ split hopper barges to Geelong from Newcastle where all equipment had been extensively overhauled.

Dredging commenced with the removal of 110,000m$^3$ of soft silts clay from Corio Quay North 4 Berth and approach channel to a design level of 12.3m. This site was located adjacent to the berth structures at Corio Quay North Berth Nos 2 and 4, extending to Corio Channel in the east. The material was transported to an existing DMG 25 kilometres from the dredge area.

The dredge moved to City Bend and removed approximately 130,000 m$^3$ of seabed material from four narrow sections of the inside of City Bend within the designated port waters of the Port of Geelong, and placed the material within an existing designated Dredge Material Ground (DMG) in Port Phillip Bay.

**Location**
Corio Quay, Geelong, Victoria

**Client**
Victorian Regional Channel Authority

**Duration**
2014

**Value**
AU $10M

**Contract Structure**
Heron Construction Company - Dredging Contractor

**Project Superintendent**
John Milne

Heron Construction Co. Ltd.

# MARSDEN POINT PORT DEVELOPMENT

## Northport Stage 1

The new deep water port at Marsden Point, Northland for client Northport Ltd included a 400 metre long wharf and a 32 hectare reclamation adjacent to the Marsden Point Refinery.

After a major rebuild in the Papakura workshop, Heron's cutter suction dredge Kotuku was mobilised to Marsden Point together with a new 800hp booster pump, work boat, survey boat, 350mmØ floating dredge hose and 1500m of steel pipeline.

More than 1.8 million $m^3$ of sand was dredged to create the approaches, turning basin and berths for the new port.

Sand was pumped ashore to build the 32ha reclamation which would eventually be used for export log storage, wood chip export and dry bulk goods stores.

Careful management of the reclamation was critical to ensure quality of the return water back into the harbour did not exceed the limits set out in the Resource Consent Conditions, and to minimise the possibility of large silt pockets/lenses forming that may later cause settlement issues.

A major challenge on this project was maintaining 24/7 access for all vessels sailing past the project on route to Port Whangarei and the Golden Bay Cement works.

Heron achieved this by installing a 250 metre submerged pipeline on the seabed, allowing all marine traffic to navigate safely between the dredge and the new wharf and reclamation.

Other challenges included the intensive coordination, cooperation and programming required between Head Contractor Fletcher Construction and the Heron team to ensure the wharf was completed on time and on budget.

**Location**
Northland, New Zealand

**Client**
Northport Ltd

**Duration**
2001 - 2002

**Value**
NZ $6M

**Contract Structure**
Fletcher Construction Company - Head Contractor

Heron Construction Company - Dredging Subcontractor

**Engineer to Contract**
John Palmer

Heron Construction Co. Ltd.

# MARSDEN POINT PORT DEVELOPMENT

## Northport Stage 2

In 2004 Northport Ltd committed to building a third berth at the recently completed Marsden Point deep water port.

Heron Construction was appointed due to the success of its dredging operations during the construction of Berths 1 and 2 and the 32 hectare reclamation in 2002.

The cutter suction dredge *Kotuku* dredged more than 320,000 $m^3$ of sand to create the -14.5m CD deep berth pocket and turning basin for the new 220 metre long wharf.

This sand was hydraulically placed in the new 4 hectare reclamation.

Throughout construction, Northport Berths 1 and 2 remained fully operational, and commercial and recreational traffic required continual transit through the dredge area.

The Heron team enabled these movements by installing a 200 metre submarine pipeline across the turning basin and the main channel to Whangarei, allowing all vessels unimpeded access.

Particular emphasis was placed on dredge sequencing and communication between the dredge crew and pilots; ensuring zero disruption to the operating port.

The construction sequence of the new wharf required certain areas to be dredged at specific times, and sand to be placed between the walls at critical times so as not to hold up wharf construction.

The Heron team realised these requirements by utilising open lines of communication and cooperation between the Wharf Contractor and the Dredging Contractor.

The project was completed on time and within budget.

**Location**
Northland, New Zealand

**Client**
Northport Ltd

**Duration**
2005 - 2006

**Value**
NZ $1.8M

**Contract Structure**
Heron Construction Company - Dredging Contractor

**Engineer to Contract**
John Palmer

Heron Construction Co. Ltd.

# ROSEDALE WWTP OUTFALL

To protect and improve the quality of Auckland's beaches, a new tunnel and outfall was constructed allowing treated water from the Rosedale Wastewater Treatment Plant to be discharged 2.7 kilometres offshore into the Hauraki Gulf.

Heron mobilised its backhoe dredge Kimahia and tug Pacific Way from the nearby Port of Auckland to Mairangi Bay to excavate the 2600m long trench for the 1.6mØ concrete weighted HDPE pipeline.

The first section of the trench was excavated through ECBF Sandstone with a UCS strength of 10 – 15 MPA; this material eventually gave way to a soft marine sediment which proved much easier to excavate.

Once the strings were firmly settled on the sea bed, divers joined the new pipe string to the previously laid string to form a continuous pipeline.

After pressure testing, the pipeline was buried by the Kimahia using material that had been side-cast during the excavation phase of the works.

To minimise the risk of backfilling between excavation and pipe laying, the trench was excavated in sections of approximate 400m and the dredging operation continued 24/7 until each section was complete.

To minimise the effects of night works additional noise attenuation was added to the Kimahia and lighting was modified.

Local weather and sea state influenced almost every activity on the marine phase of this project, and for activities such as sinking and connecting pipe strings an accurate 5-day forecast was required.

Heron turned to MetOcean Solutions in New Plymouth to deliver accurate forecasts to ensure the safe execution of the project.

**Location**
Auckland, New Zealand

**Client**
Northshore City Council

**Duration**
2007 - 2009

**Value**
NZ $2.1M

**Contract Structure**
McConnell Dowell Constructors - Main Contractor

Heron Construction Company - Dredging Contractor

**Marine Manager**
Kristian Nelson

Heron Construction Co. Ltd.

# CHRISTCHURCH OCEAN OUTFALL

The Christchurch Ocean Outfall project aimed to permanently avoid discharging the city's treated wastewater into the Avon-Heathcote Estuary. The new outfall transports wastewater underground from the treatment plant and discharges it 3 kilometres offshore.

The project's scope involved a 1.8m diameter by 4.8km long outfall pipeline comprising 2.3km of concrete pipeline onshore by microtunnel, and 2.5km of HDPE pipeline laid in a trench offshore.

Heron Construction Company mobilised backhoe dredge Machiavelli and tug Kurutai from the recently completed Port Taranaki Harbour Deepening Project to Lyttelton to undertake the dredging of the 2.5km long trench, to be backfilled after the pipeline sections had been sunk and connected.

Heron fitted a hopper, screw augers and dredge pump to the deck of the Machiavelli, and utilising floating flexible dredge hose from cutter suction dredges were able to excavate the trench while discharging the excavated material via the pump and pipeline on a previously laid section of outfall pipe. This system eliminated the need for hopper barges to transport dredged material from the backhoe dredge and greatly increased the operational weather window in which the Machiavelli could operate.

When forecasting indicated that weather and sea conditions would exceed the safe operational limited of the Machiavelli, the Kurutai would tow the Machiavelli from the site to the safety of Lyttelton Harbour. Kurutai also towed the 500m long pipe strings from Diamond Harbour to the site, complete with concrete saddle weighs ready for sinking. Heron's survey vessel White Pointer and surveyor undertook all hydrographic surveys including pre-dredge, progress, pre-pipeline sink, post-pipeline sink and backfill surveys.

Accurate weather and sea state forecasting was critical, and influenced every activity on the project, e.g. sinking and connecting pipe strings required an accurate 5-day forecast.

Following the success of this project, Heron have continued to use MetOcean on projects throughout New Zealand and Australia to assist in the planning and safe execution of operations.

**Location**
Christchurch, New Zealand

**Client**
Christchurch City Council

**Duration**
2007 - 2009

**Value**
NZ $16M

**Contract Structure**
McConnell Dowell Constructors - Main Contractor

Heron Construction Company - Offshore Dredging Contractor

**Operations Manager**
Michael Buckland

Heron Construction Co. Ltd.

# CALTEX KURNELL WHARF BERTHING FACILITY
## Dredging Contract

In 2012 Caltex Australia made the decision to convert their Kurnell Refinery into a major import terminal.

As part of the Terminal Conversion Project, dredging was required to deepen the sub-berth, approaches and the berths at the Kurnell Wharf to allow larger ships access to Caltex's facilities in Botany Bay.

Dredging commenced in October 2013 with the backhoe dredge Machiavelli, 2 x 1,200m$^3$ split hopper barges and tugs Kurutai and PT Kythira.

More than143,000m$^3$ of sediment was dredged by the Machiavelli with the vast majority disposed at the Sydney Offshore Dump Grounds located 25 kilometers north east of Botany Bay.

Dredging was completed two days before Christmas, while minor seabed levelling and the post-dredge survey were carried out the following January.

The project was completed two months ahead of schedule, due to thorough planning, early engagement with the Sydney Port Corporation (SPC) Harbour Masters Office together with NSW Roads and Maritime Services (RMS).

Key to the success of the project was Heron's strict adherence to procedures and protocols to protect the heritage site of Botany Bay during dredging activities.

**Location**
Kurnell, Port Botany, Sydney

**Client**
Caltex Australia Petroleum Pty Ltd

**Duration**
2013 - 2014

**Value**
AU $20M

**Contract Structure**
Heron Construction Company - Dredging Contractor

**Project Superintendent**
Khaled Elomar

Heron Construction Co. Ltd.

# NCIG COAL EXPORT TERMINAL STAGE 2F

## Early Works and Dredging Main Works Contract

The backhoe dredge Machiavelli, along with 2 x 750m$^3$ and 2 x 500m$^3$ hopper barges and tugs Kurutai, Kotor and Nautilus were contracted to dredge 570,000m$^3$ of marine sediments, stiff clays and rock from the Hunter River for the new Kooragang Berth K10 for Newcastle Coal Infrastructure Group.

While the sediments and clays for Berth K10 were similar to those experienced in the Hunter River Southern Embankment Departure Channel Dredging contract, the project required the removal of 150,000 m$^3$ of rock.

A previous NCIG dredging contractor had mobilised Rock Cutter Suction Dredges to remove this material, but Heron opted to design and fabricate a 9 tonne ripper attachment for the Machiavelli.

This plant successfully ripped and dredged the rock, some of which had an UCS of 45MPA and a Point Load Strength of up to 9.5MPA.

Dredged material was loaded into Heron's two split hopper barges and two chartered split hopper barges and towed to the offshore dump grounds for sea disposal by the tugs Kurutai and Kotor.

A comprehensive Marine Works Management Plan was created in consultation with the Harbour Master, VTS and the pilots, detailing protocols and procedures to ensure zero incidents occurred between the huge bulk carriers that call at Newcastle, tugs, pilot boats, ferries, other dredgers, and recreational users.

**Location**
Hunter River, Newcastle

**Client**
Newcastle Coal Infrastructure Group

**Duration**
2011 - 2012

**Value**
AU $35.2M

**Contract Structure**
Heron Construction Company - Dredging Contractor

**Project Manager**
Brian Cole

Heron Construction Co. Ltd.

# HUNTER RIVER SOUTHERN EMBANKMENT
## Departure Channel Dredging


The backhoe dredge Machiavelli was used to dredge a combination of rock, stiff clays and marine sediments from the Hunter River for departure channel for the newly completed Newcastle Coal Infrastructure Group's Kooragang Berth K8 and K9.

The material was loaded into Heron's split hopper barges WH 761 and WH762 and towed to the offshore dump grounds by the tug Kurutai for sea disposal.

A Marine Works Management Plan was formulated through consultation with the Harbour Master, VTS and the pilots, setting out protocols and procedures to ensure zero incidents occurred between the huge bulk carriers that call at Newcastle, tugs, pilot boats, ferries, other dredgers, and recreational users.

The trailer suction dredge Brage R (owned and operated by RN Dredging) was used to remove the  sands and silts from the departure channel, to be disposed at the offshore dump grounds.

**Location**
Hunter River, Newcastle

**Client**
Newcastle Coal Infrastructure Group

**Duration**
2011

**Value**
AU $20M

**Contract Structure**
Hern JV – Joint Venture between Heron Construction Company and RN Dredging

**Project Manager**
Brian Cole

Heron Construction Co. Ltd.

# HUNTER RIVER
## Remediation Project

This project involved mobilising backhoe dredges and hopper barges from three different ports in New Zealand and also Adelaide in Australia.

Heron's ocean going tug Kurutai departed Auckland on Christmas Eve 2009 tandem towing hopper barges H7 and H8 bound for Newcastle, before returning to Lyttelton, New Zealand to collect the backhoe dredge Machiavelli.

The Kurutai towed the Machiavelli 1380 Nautical miles to Newcastle, before setting out for Adelaide to pick up the split hopper barges WH761 and WH762 to tandem tow them back to Newcastle.

The final stage of the mobilisation was a return to Tauranga, New Zealand for the backhoe dredge Kimahia. When the Kurutai arrived back in Newcastle she had successfully completed five trans-Tasman and two inter-state voyages totaling 8,500 nautical miles, all without incident.

Dredging involved the removal of 800,000m$^3$ of contaminated sediment from the Hunter River using the backhoe dredges Machiavelli and Kimahia fitted with a combination of environmental grabs and open buckets.

Contaminates in the river sediments included polycyclic aromatic hydrocarbons (PAHs) such as naphthalene and total petroleum hydrocarbons (TPHs) and to a lesser extend heavy metals.

To manage environmental concerns, all dredging activities took place behind a sheetpile wall isolating the dredge area from the Hunter River.

Contaminated material was loaded into sealed hopper barges and maneuvered to an unloading facility within the confines of the sheetpile wall for trucking to processing plants for stabilisation with cement (by Thiess Services Limited).

**Winner: UNAA's Environmental Best Practice Program Award, United Nations Association of Australia World Environment Day Awards 2011.**

**Location**
Hunter River, Newcastle

**Client**
BHP Billiton

**Duration**
2010 - 2011

**Value**
AU $30.5M

**Contract Structure**
Thiess Services - Head Contractor
Heron Construction Company - Dredging Subcontractor

**Area Manager**
James Cole

Heron Construction Co. Ltd.

# PORTS OF AUCKLAND LIMITED

## Maintenance Dredging and FY/FZ Deepening

As with the previous Ports of Auckland contracts in 2004 to 2006 and 2008 to 2009, the backhoe dredge Kimahia and tug Pacific Way undertook maintenance dredging and capital dredging in Auckland. The capital dredging to deepen the Fergusson Fy and Fz berth involved the stabilisation of the armour rock batter slope under the wharf prior to any dredging in the berth pocket. This was achieved by divers high water blasting and air lifting sediment from between the armour rock and then pumping concrete grout into the voids to create a rock mattress.

Once the mattress was complete, the toe of the batter slope was removed and replaced with high strength (UCS > 800Kpa) cement stabilized sediment (mudcrete). The removal of the batter toe was not a continuous operation; the maximum length of toe that could be removed in one area was 6 metres - this meant dredging 6 metres and missing 6 metres, dredging 6 metres and missing 6 metres all while working around ships arriving, departing and laying in the berth. Once the complete toe had been replaced the complete 350m long berth pocket could be dredged from it 12.2m to 13.5m.

The maintenance contract involved the dredging of thirteen berth pockets within the Ports of Auckland precinct including the dredging of DDT contaminated marine sediments from one berth, successfully completed utilising environmental grads and sealed hopper barges.

All dredging was undertaken in and around the shipping movements and berthing schedules of a live operating port, successfully managed by maintaining open lines of communication between Harbour Control, Pilots, the Marine Services Senior manager, and the dredge master on the backhoe dredge Kimahia.

Dredged marine sediment was transported by hopper barges to the Port of Auckland Fergusson Reclamation where it was stabilised with cement using a pugmill on Heron's spudded construction barge Mesenge.

Stabilised sediment (mudcrete) was placed to create land by way of reclamation to enable the Port of Auckland to expand their Fergusson Container Terminal operations and to build the revetment for the future Fergusson North Wharf.

**Location**
Auckland. New Zealand

**Client**
Ports of Auckland Limited

**Duration**
2011 - 2012

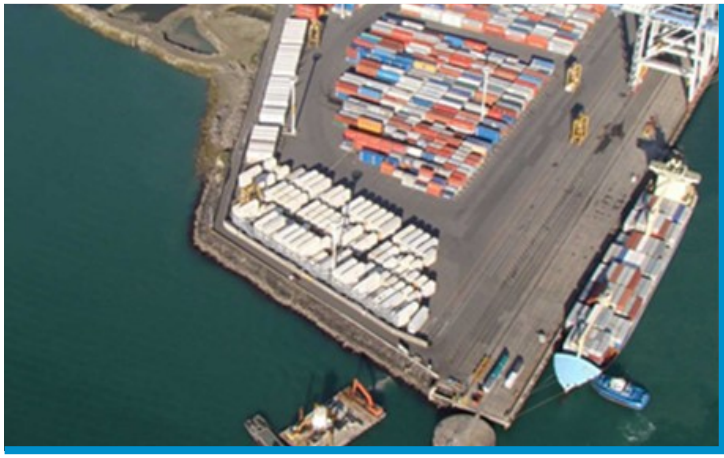
**Value**
AU $5.2M

**Contract Structure**
Heron Construction Company - Dredging Contractor

**Client Engineer**
Alistair Kirk

Heron Construction Co. Ltd.

# WAITEMATA MAINTENANCE DREDGING
## and Fergusson Capital Works



The backhoe dredge Kimahia and tug Pacific Way undertook maintenance dredging and capital dredging for the Ports of Auckland Ltd.
The maintenance dredging involved the dredging of thirteen berth pockets within the Ports of Auckland Precinct. The capital dredging was undertaken to improve the approaches to the berth pockets for both the Fergusson and Bledisloe Container wharves.

Dredging was undertaken in and around shipping movements and berthing schedules, successfully managed by maintaining open lines of communication between Harbour Control, Pilots, the Marine Services Senior manager and the dredge master.

The dredged marine sediment was loaded into hopper barges and transported to the Port of Auckland Fergusson Reclamation where it was stabilised with cement using a pugmill on Heron's spudded construction barge Mesenge.

The stabilised sediment (mudcrete) was placed to create land by way of reclamation to enable the Port of Auckland to expand their Fergusson Container Terminal operations.

Clay and sandstone material from the capital dredging was unloaded from the hopper barges at the Fergusson Reclamation and stabilised on land using traditional cements track spreaders, hoes and compaction techniques.

**Location**
Auckland. New Zealand

**Client**
Ports of Auckland Limited

**Duration**
2008 - 2009

**Value**
AU $4.3M

**Contract Structure**
Heron Construction Company - Dredging Contractor

**Client Engineer**
Alistair Kirk

Heron Construction Co. Ltd.

# PORT TARANAKI DEEPENING 2005

This was the first project for the backhoe dredge Machiavelli.

The backhoe dredge was built in Europe and was mobilised to New Plymouth by tug, a journey that took the Machiavelli through the Suez Canal, with calls at Oman, Mumbai, Colombo, Singapore, Rabaul and finally New Plymouth - a trip of close to six months.

The Capital Dredging Project to deepen Port Taranaki involved the dredging of over 700,000 $m^3$ of silts, sands, rocks and large boulders from the entrance channel, turning basin and berth pockets using the Machiavelli.

The dredged material was disposed of at the Port Taranaki offshore dump ground using the 750$m^3$ split hopper barges WH761 and WH762 and the 1200hp tug Pacific Way, with more than 1200 trips made without incident.

Some boulders were so large that they would not pass through the hopper when the barges opened. On these occasions the barges were towed back to port and the Port's container cranes were used to extract boulders from the barges for use on the breakwaters.

Minimising downtime due to weather and sea conditions was key to completing this dredging project. Port Taranaki is located on the west coast of New Zealand's North Island, and while the port is well protected by large rock breakwaters, the entrance channel and disposal grounds are part of the nitrous West Coast and Tasman Sea.

MetOcean Services were contracted to supply up-to-date and accurate forecasting to ensure maximum utilisation of suitable weather window to dredge the unprotected and exposed entrance channels.


**Location**
Taranaki, New Zealand

**Client**
Ports Taranaki Limited

**Duration**
2006 - 2007

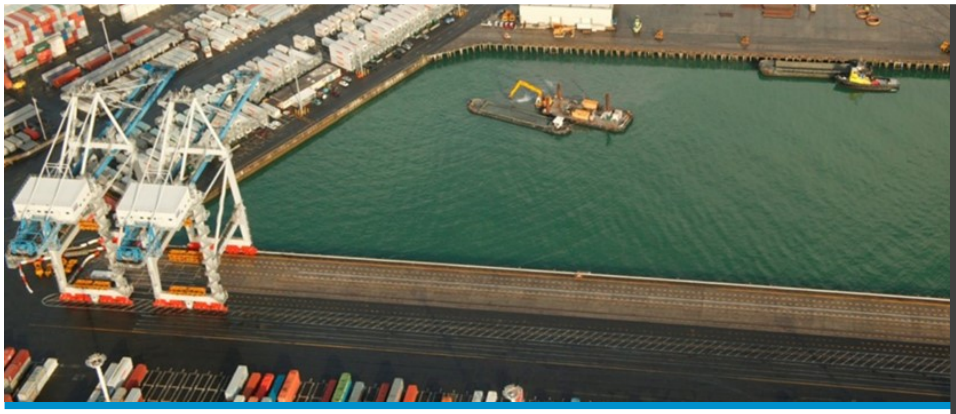
**Value**
AU $15.2M

**Contract Structure**
Heron Construction Company - Dredging Contractor

**Client Engineer**
Peter Atkinson

Heron Construction Co. Ltd.

# RANGITOTO CHANNEL DREDGING



**Location**
Auckland, New Zealand

**Client**
Port of Auckland Limited

**Duration**
2004 - 2006

**Value**
AU $9.6M

**Contract Structure**
Fletcher Construction Company - Head Contractor

Heron Construction Company - Dredging Contractor

**Engineer to Contract**
Niksa Sardelic

Heron Construction completed the dredging of 750,000m$^3$ of marine sediment, clays and sandstones from the Rangitoto Channel and the Fergusson Approaches and turning basin using the backhoe dredge Kimahia.

The dredged material was delivered to a temporary wharf where it was unloaded by excavator; it was then stabilized with cement and placed into the Fergusson Reclamation.

High levels of co-operation and communication between the dredge crew, harbour control and the pilots was required to ensure the dredging operation could operate efficiently as possible while not effecting Auckland's busy shipping schedules.

With Auckland is known as the 'City of Sails', additional vigilance had to be given to the recreational boat users of Auckland.

This was achieved through the usual Notice to Mariners as well as regular update and progress bulletins being sent to all yachting and boating clubs, notices posted at boat ramps which outlined the area the dredge would be working in the coming month.

The project proceeded through the busy summer periods without incident or accident with neither recreational nor commercial harbour users.

Heron Construction Co. Ltd.

# OUR COMMITMENT

**Heron Construction Company's commitment to the highest standards of safety and quality management, combined with transparent, ethical business practices have been the foundation of its success.**

As a family owned and operated company, Heron aim to deliver to our clients the highest level of dredging and construction services at fair and competitive prices.

We will ensure the future of our company through repeat and referral business achieved by customer satisfaction in all areas including timeliness, attention to detail and service-minded attitudes.

We are dedicated to creating a workplace that respects and values people from diverse backgrounds and enables all employees to thrive.

**Work Safe – Home Safe – Heron Safe**

Heron's safety vision is to ensure no person will suffer a serious preventable work related injury or illness.

Our Health & Safety Management System forms part of our Integrated Management System, developed, implemented and managed in accordance with AS/NZS 4801 standard.

This sets the baseline commitment for us to identify and control our health and safety risks, reduce the potential for accidents and ensure we are complying with relevant Health and Safety legislation.

Our managers and supervisors provide the leadership to ensure that our people undertake their roles and responsibilities under legislation to achieve excellent production in the safest possible way.

However, we know that responsibility for identifying hazards, assessing risks and taking action belongs to all of our employees, and we ensure that all Heron personnel receive appropriate on-going training and certification.

**Environmental Custodians**

Heron is committed to the highest level of protection to the marine environments in which we operate and ensure compliance with all environmental legislation and approved codes of practice.

Heron invest heavily in maintenance and technology to ensure that the risk of oil leaks and spills, excessive noise, emission and waste is reduced to as low as reasonably possible.

We continually seek to improve our environmental performance, by conducting and recording regular inspections, drills and observations. Our employees have regular training and we encourage participation in environmental matters.

Our Environmental Management System also forms part of our accredited Integrated Management System has been developed, implemented and managed in accordance with ISO 14001:2004 standard for environmental management.

This management tool enables us to successfully identify and control the environmental risks of our activities and to implement a systematic approach to set and achieve environmental objectives and targets.

**Quality Management**

Throughout the history of Heron Construction Company we have focused and invested in the continuous evolution in the standard and quality of our equipment. This has created an environment for our employees that is safe and pleasurable to work in.

We have some of the latest technologies on our dredges and barges to make a safe and environmentally friendly place to work.

Our Quality Management System has been developed, implemented and managed in accordance with ISO 9001:2008, and is contained in our Integrated Management System.

Certified System™ Quality ISO 9001 SAI GLOBAL

Certified System™ Health & Safety AS 4801 SAI GLOBAL

Certified System™ Environment ISO 14001 SAI GLOBAL

# OUR PEOPLE

## Greg Kroef

Managing Director
P | +64 (09) 299 9767
M | +64 274 787 942
gregk@heronconstruction.co.nz

Greg has over twenty-five years' experience in the construction industry, the last twenty years specifically involved in the dredging industry with Heron Construction. He has been involved in both cutter suction and backhoe dredging projects throughout New Zealand, Australia and the South Pacific. Greg has worked in various capacities within Heron Construction over the past 20 years including: Machine Operator, Construction Supervisor, Project Manager, Contract Manager and now Managing Director.

## Matt Kroef

Director and
Dredging Operations Manager
M | +61 488 902 323
mattk@heronconstruction.co.nz

Matt completed a Fitter and Turner apprenticeship in Heron's Papakura workshops and was heavily involved with the rebuilding of the backhoe dredge Kimahia. Matt went on to operate the Kimahia, until Heron purchased the backhoe dredge Machiavelli in 2006, when he transferred to the new dredge for the Capital Dredging Project in Taranaki. Matt has extensive backhoe experience on inshore port and harbour projects as well as offshore outfall dredging projects.

## Geert Meijers

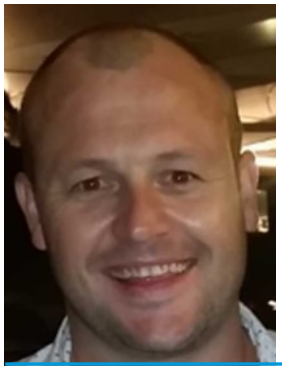
Contract Manager
P | +64 (09) 299 9767
geertm@heronconstruction.co.nz

Geert has more than 25 years' experience in the marine construction industry in roles including hydrographic surveyor, superintendent, works manager, and now contract manager. Geert has vast experience in dredging, sea defences and reclamation gained in the Netherlands and the UK. Geert has been involved in the complex reclamation projects around the world including Hong Kong Airport, Tuas Extension in Singapore and the Palm Island and World projects in Dubai.

## Garry Ward

Dredging Manager
P | +64 (09) 299 9767
garryw@heronconstruction.co.nz

Garry has been continuously employed for 20 years in management and supervision roles for major marine EPCM contracts in Australia and various remote countries. Prior to joining Heron, Garry gained extensive experience on large scale dredging projects, in project management and delivery. He specialises in dredging and safety supervision involving all dredging disciplines including backhoe, cutter suction and trailing suction hopper dredges.



## Will Pryce

HSE Manager
P | +64 (09) 299 9767
willp@heronconstruction.co.nz

Will has ten years of HSEQ experience gained on port capital and maintenance dredging projects as well as maritime works projects such as wharf construction and outfall throughout New Zealand and Australia. His emphasis on worker consultation in system implementation embellishes a safety culture that engages a pro-active workforce.
Will's knowledge of legislation, standards and codes of practice make him an ongoing asset to any project.


Heron Construction Co. Ltd.

www.heronconstruction.co.nz