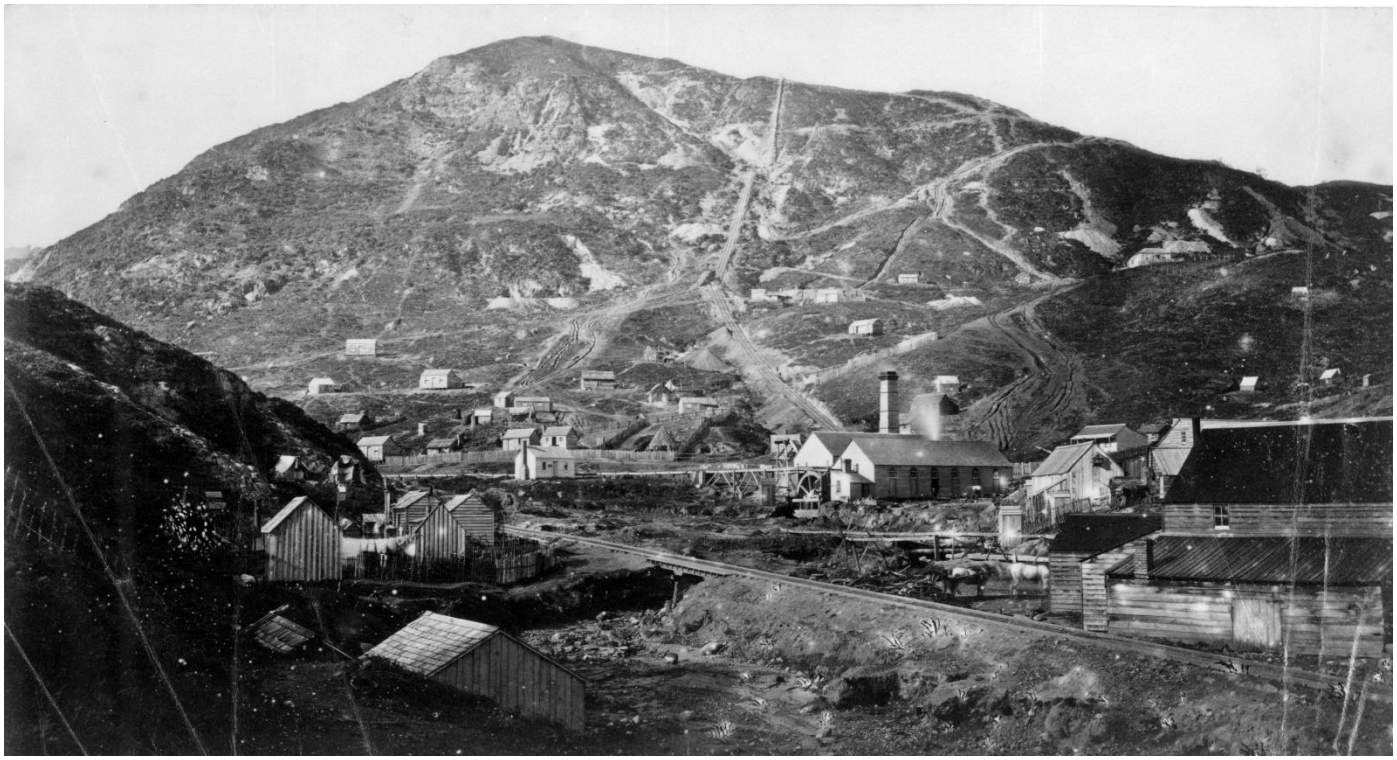
NEW ZEALAND
ARCHAEOLOGICAL
ASSOCIATION

P.O. Box 6337, Dunedin 9059
NEW ZEALAND
nzaa@nzarchaeology.org



NZAA Conference 2017

Thames

21-24 June

Sponsors

The New Zealand Archaeological Association gratefully acknowledges the support of the following sponsors:

Silver Sponsor

Bronze sponsors

Cover Photograph:
Una hill c.1870 showing Una battery in foreground (with plume of steam) and Una tramway and feeder chutes. The original Una GM & QC Co claim covered most of the hillside visible, and a small area behind the ridge on the skyline.
Photo courtesy of David Wilton and Alexander Turnbull Library F-65413-1/2.

Programme

Venue: Thames War Memorial Civic Centre, 200 Mary Street, Thames.

Wednesday 21 June

Morning	11:00 am	Registration opens
	11:30 am – 12:30 pm	Mihi Whakatau and Conference Opening
Lunch	12:30 pm – 1:30 pm	
Afternoon	1:30 pm – 5:00 pm	Papers
	5:30 pm – 7:30 pm	Welcome Event at The Junction Hotel

Thursday 22 June

Morning	8:30 am – 11:40 am	Papers
	11:40 am –12:30 pm	Posters
Lunch	12:30 pm – 1:30 pm	Lunch Student and Consultant Luncheon
Afternoon	1:30 pm – 3:45 pm	Papers
	3:45 pm – 4:45 pm	Student Papers

Friday 23 June

Day	8:30 am – 4:00 pm Approximately	Field Trip

Saturday 24 June

Morning	8:30 am – 12:10 pm	Papers
Lunch	12:10 pm – 1:30 pm	Lunch
Afternoon	1:30 pm – 3:00 pm	Papers
	3:00 pm – 4:30 pm	AGM
Evening	7:00 pm – late	Gala Dinner

Field Trip

The field trip this year will be to several pre-European and historic sites around Thames. The trip will focus on explaining aspects of Thames and Hauraki history with a particular focus on Thames history post 1867. The sites visited on the trip cover Hauraki pre-1867 (Totara Pa), gold mining industry (Goldmine Experience, Thames School of Mines) and the Kauri timber industry (the Kauaeranga Valley).

Gala Dinner

The gala dinner will be held at the same location at the papers, at the Civic Centre, 200 Mary Street. The dinner will begin at 7:00 pm. Drinks are available for purchase at dinner, **please note this is a cash only bar.**

Discounts
This year Café Uno, 202 Mary Street (next door to the Civic), will provide a $1.00 discount on all hot drinks for NZAA Conference attendees. Please mention you are attending the conference during your purchase. Café Uno is open for food and drinks from 7:30 am.

Tikanga
The Conference will be opened at the Civic Centre by mihi whakatau from the tangata whenua of Ngati Maru at 11.30 am. This will commence with a karanga from the tangata whenua with a reply from our side. We will enter the conference space and be seated. The first speeches are given by tangata whenua, followed by a waiata. This is then passed over to our side to be given in Maori or English, followed by a waiata. During the waiata everyone should stand to sing in support of our speaker. The koha is then handed over by the last speaker on our side. The tangata whenua will finish with a karakia and the hongi will take place to conclude the mihi whakatau.

Please ensure you are there on time. Below are the waiata that will be sung after each speech from our side.

Waiata

Ehara i te mea
Ehara i te mea
Nō nāianei te aroha
Nō nga tūpuna
Tuko iho, tuku iho

Te whenua, te whenua
Te orange o te iwi
Nō nga tūpuna
Tuko iho, tuku iho

Mai wai ra
Ma wai ra e taurima
Te marae i waho nei?
Ma te pono, ma te tika
me te aroha e

E toru nga mea
E toru nga mea (repeat)
Nga mea nunui (repeat)
E ki ana (repeat)
Te paipera (repeat)
Whakapono (repeat)
Tumanako (repeat)
Ko te mea nui (repeat)
Ko te aroha (sing all together)

Acknowledgements
We would like to acknowledge the following people who assisted with the organisation of this year's conference: Waati Ngamane, Craig Reidy and Dave Robson of Ngati Maru, Sharron McCaskill, Marlene Perry, Dianne Connor and Kirstin Richmond (TCDC), Jennifer Neal (Aroha Catering), Jude Henderson and Annette Bracefield (Café Uno), Karl Edmonds (The Junction Hotel), Murphies Buses, Joshua Emmitt, Abby Donaldson, Sian Canton, David Wilton, Tom Barker, Brooke Tucker, Garry Law, Matthew Campbell, and Rick McGovern-Wilson.

Papers Timetable

Wednesday 21 June			
1.30 – 2.50	**Session 1: Gold Mining in Thames** Session Chair: Katharine Watson		
	1.30 – 1.50	David Wilton	To Build a Goldfield: Industrial Archaeology of 'The Thames' and Surrounds
	1.50 – 2.10	Kae Lewis	Quartz Reef Mining at Thames 1867 – 1869
	2.10 – 2.30	Ian Smith	Early Pākehā Engagement with the Hauraki-Coromandel Region: An Archaeological Perspective
	2.30 – 2.50	Questions	
2.50 – 3.30	Afternoon Tea		
3.30 – 5.00	**Session 2: Coromandel Archaeology** Session Chair: Matthew Campbell		
	3.30 – 3.50	David Wilton and Neville Ritchie	HMS Buffalo, HMS Tortoise, Sailors Grave and the 'Camp in the Forest'
	3.50 – 4.10	Justin J. Maxwell, Andrew Hoffman, and Ian G. Barber	Early landscape clearance, horticulture and eventual abandonment, 500 years of site use at Cooks Beach (Pukaki), Coromandel Peninsula, New Zealand
	4.10 – 4.30	Andrew Hoffmann	Outline of recent excavations at two sites in Mercury Bay, east coast Coromandel Peninsula: Taputapuatea (T11/914) and Cooks Beach (T11/2789)
	4.30 – 4.50	Craig Reidy	Haere mai ki Hauraki,ki te aute te awhea
	4.50 - 5.00	Questions	
	5.30 - 7.30	Welcome Event	

Thursday 22 June			
8.30 – 10.20	**Session 3: Coastal Archaeology** Session Chair: Louise Furey		
	8.30 – 8.50	James Robinson and Robert Willoughby	Mangahawea Bay Revisited
	8.50 – 9.10	Bill Edwards	Coastal Reserves - Coastal Treasures
	9.10 – 9.30	Robert Brassey	Shore-type dictates style of fishing for the people of a Late-Period open-coast site in east Northland
	9.30 – 9.50	Phil Ross, John Coster, James Crampton, Georgina Flowers, Bruce McFadgen, and Yolanda Vogel	What's missing in the middens? Historical distribution and harvesting of toheroa
	9.50 – 10.10	John Booth	Māori shark fishing in northern New Zealand – towards an archaeological perspective
	10.10 – 10.20	Questions	
10.20 – 10.50	Morning Tea		
10.50 – 11.40	**Session 4: New Zealand Heritage** Session Chair: Bev Parslow		
	10.50 – 11.10	Andrew Coleman	The role and function of archaeology within Heritage New Zealand Pouhere Taonga
	11.10 – 11.30	Dave Robson	S45(2)(b) – Archaeologists' relationship with iwi/hapu
	11.30 – 11.40	Questions	
11.40 – 12.30	**Session 5: Posters session**		
12.30 – 1.30	Lunch		
1.30 – 3.15	**Session 6: Ahuahu/Great Mercury Island Project** Session Chair: Geoff Irwin		
	1.30 – 1.45	Louise Furey, Rebecca Phillipps, Thegn N. Ladefoged, and Simon Holdaway	Overview of the Ahuahu Great Mercury Island excavation programme
	1.45 – 2.00	Simon Holdaway, Rebecca Phillipps, Louise Furey, Ben Davies, Joshua Emmitt, and Fiona Petchey	Developing a settlement chronology for Ahuahu
	2.00 – 2.15	Thegn N. Ladefoged, Alex Jorgensen, Rod Wallace, Rebecca Phillips, Joshua Emmitt, and Matthew Prebble	The horticultural landscape of Tamewhera Kāinga
	2.15 – 2.30	Emma Ash	A Formational Approach to the Analysis of Polynesian Dog Remains from Ahuahu, New Zealand
	2.30 – 2.45	Alex Jorgensen	Lithic recycling and implications for the reconstruction of exchange

			networks; a case study from Tamewera, Ahuahu
	2.45 – 3.00	Christopher M. Stevenson, Thegn N. Ladefoged, and Steven W. Novak	An Evaluation of Hydration Rate Development and Application Protocols for Mayor Island Obsidian
	3.00 – 3.15	Questions	
3.15 – 3.45	Afternoon tea		
3.45 – 4.45	**Session 7: Student Paper Session** Session Chair: Ian Smith		
	3.45 – 3.55	Reno Nims	Defining Variability in Archaeological Māori Fish Catches: A Research Design in Progress
	3.55 – 4.05	Greg Hil	A GIS-based vulnerability assessment of Otago's coastline and its archaeological sites
	4.05 – 4.15	Lisa Mckendry	Archaeological textiles: A Comparison of Archaeological Cloak Fragments from Piha and Karekare
	4.15 – 4.25	Georgia Kerby	The Archaeological History and Material Culture of Redcliffs, Canterbury, New Zealand
	4.25 – 4.35	Matthew Barrett	Flake to Core Ratios as Indicators of Human Mobility: An Example from Australia
	4.35 – 4.45	Questions	

Saturday 24 June			
8.30 – 10.00	**Session 8: World Archaeology** Session Chair: Peter Petchey		
	8.30 – 8.50	W. Ross H. Ramsay, Russel Beck, Graeme Collett, Liz Girvan, Moira White, and Phillip Smith	Attribution/Sourcing of Southern Maori Artefacts to Eastern Polynesia Using Geochemistry
	8.50 – 9.10	Reno Nims and Virginia L. Butler	The Sablefish of Číx^{w}icən: A Mystery from Northwest North America
	9.10 – 9.30	Ben Shaw, Judith Field, Glenn Summerhayes	Insights into social organisation and subsistence practices at a newly discovered Early-Mid Holocene village site in the Highlands of New Guinea
	9.30 – 9.50	Rosanne Hawarden	Recognising Ancient Gold Mining – the case of Nyanga, Eastern Highlands, Zimbabwe
	9.50 – 10.00	Questions	
10.00 – 10.30	Morning Tea		

10.30 – 12.10	**Session 9: Landscape archaeology** Session Chair: Bill Edwards		
	10.30 – 10.50	Benjamin D. Jones and Simon Bickler	High Resolution LiDAR data for Landscape Archaeology in New Zealand
	10.50 – 11.10	Hans-Dieter Bader and Caroline Phillips	"It's all been ploughed out": Geomagnetics enabling site preservation within development-driven archaeology
	11.10 – 11.30	Caroline Phillips	Defensive trenches at Otamarakau
	11.30 – 11.50	Issac McIvor and Thegn N. Ladefoged	Intermittent irrigation in the Waimea Field System, Hawai'i Island: a computational fluid dynamics model
	11.50 – 12.10	Questions	
12.10 – 1.30	Lunch		
1.30 - 3.00	**Session 10: Historical Archaeology** Session Chair: Jessie Garland		
	1.30 – 1.50	Peter Petchey and Hallie Buckley	To Greener Fields: The archaeology & bioarchaeology of St. Johns Cemetery, Milton
	1.50 – 2.10	Katharine Watson and Tristan Wadsworth	"From hell's heart": excavating a whaling station with teenagers
	2.10 – 2.30	Braeden Scally	Forget Me Not – Critical Intervention of Tōtara North's Decaying Industrial Heritage
	2.30 – 2.50	Clara Watson	Halls, Churches, and Houses: Exploring Urban Rubbish Pits in Mosgiel
	2.50 - 3.00	Questions	
3.00 - 4.30	Afternoon tea, AGM, and conference closing		
7.00	**Gala dinner at the Civic Centre**		

Abstracts

Emma Ash	**A Formational Approach to the Analysis of Polynesian Dog Remains from Ahuahu, New Zealand** A comparative examination of two sites on Ahuahu, Great Mercury Island, New Zealand using a formational perspective to understand the processes that create the observable record. Kuri bone material is used as a medium to explore the effect these processes have on the retrieval of information about past behaviours.
Hans-Dieter Bader and Caroline Phillips	**"It's all been ploughed out": Geomagnetics enabling site preservation within development-driven archaeology** A recent archaeological project, triggered by accidental discoveries during a roading project, threw up a number of questions. First, after the first features of a Maori gun-fighter pa had been uncovered, the extent and state of preservation of the rest of the site within the development corridor was unknown. The answer to this question would have an impact on changing the design of the development. The extent of a back-filled stream bed and the exact location of a redoubt that was constructed somewhere in the vicinity were further questions that could have had a major impact on the construction budget and time-table. Once these questions could be answered, follow-up questions included the extent of a later kainga and an existing urupa. Geomagnetic surveys accompanied the archaeological project and enhanced the interpretation of test pits and archaeological monitoring of road construction. It proved a vital part of the archaeological toolset during a difficult project accompanying roading works, enabling the preservation of the surviving parts of the recorded sites.
Matthew Barrett	**Flake to Core Ratios as Indicators of Human Mobility: An Example from Australia** Mobility is a useful but highly variable process with which to understand how people interacted with their environments in the past. Commonly cited archaeological proxies for mobility, such as permanent structures, burials or particular artefact forms, reflect only the potential to move or may represent different behaviours in different contexts. This can mask the range of variability in past human behaviour. An alternative approach is to investigate independent, empirical evidence of human movement which may then be related to broader contextual variables such as environment and economy. Stone artefacts are useful as they are portable and ubiquitous in the archaeological record, and can be shown to have moved from one point to another. This paper focuses on patterning in flake to core ratios as a direct indicator of human movement using a case study from late-Holocene Rutherford's Creek, Australia, where the level of mobility of past groups has already been extensively investigated. Analysing flake to core ratios from known contexts allows a detailed understanding of how variance in the values might be interpreted. Like other proxies for mobility, flake to core ratios themselves are contextually dependent. A method is presented for

	understanding the effects of initial cobble size, reduction intensity and artefact movement on flake to core ratios. Results suggest a large amount of the variance in values can be explained by differential initial cobble size. This highlights the need to understand the different process that produce the patterning in the archaeological record that we interpret.
Robert Brassey	**Shore-type dictates style of fishing for the people of a Late-Period open-coast site in east Northland** Sharks made an insignificant contribution to the Māori economy during the pre-European period - or at least this is the impression that might be gained from a review of archaeological literature relating to fishing in New Zealand. But was this really the case, and how can we know? Archaeological evidence of shark fishing is uncommon because elasmobranchs have cartilaginous skeletons which rarely survive in middens. In this paper, I review some alternative sources of information on Māori shark fishing in northern New Zealand, including written documents, recorded oral tradition and ethnographic accounts. While these sources have their limitations, they provide a very different perspective from that gained to date from archaeological research, particularly within the Auckland region. I then consider the possible implications that this might have for the interpretation of archaeological sites and potentially for our understanding of observed changes to populations of certain shark and other fish species in northern New Zealand.
Robert Brassey, Simon Bickler, Joss Piper-Jarrett, and Simon Best	**The last flight of Texas Tornado** Seventy five years ago a US Air Force Boeing B17 Flying Fortress heavy bomber on a secret mission to New Zealand crashed and exploded near Whenuapai Air Base west of Auckland. All 11 occupants of the aircraft were killed in what was, at the time, New Zealand's worst air accident. This poster presentation focusses on the results of the archaeological excavation of a large crater created when one of the 500lb bombs on board the burning aircraft detonated within minutes of the crash. According to an eyewitness account the bomb crater was infilled during the clean-up of the crash site, a few days after the event on 9 June 1942. The crash site appeared to have remained substantially undisturbed since that time but the property upon which it is located will be developed in the near future.
John Booth	**Māori shark fishing in northern New Zealand – towards an archaeological perspective** Artefacts associated with a deflated dune midden on the open coast a little north of the Bay of Islands were recovered in the early 1960s. Most of the nearly 500 items appear to be Late Period and associated with fishing; there was about equal representation of Cook's turban, paua and bone (and bone-related) items. Polynesian dog (kuri) remains were prominent, their bones and teeth used in many artefacts. The collection is significant because 1) for Cook's turban fishhook points, it represents a geographically intermediate collection location (sensu Law 1984), and there are also many complete (or almost complete) one-piece fishhooks of this material; 2) there is indisputable use of (probably northern) spiny dogfish spines as fishhook points; 3) gorges may have been a significant part of the fisherman's kit; and 4) kuri may have been more important economically at this site than in others Late. We conclude the place was

	not permanently occupied; rather it was inhabited for days to weeks at a time – during which time fishhook manufacture took place - and was focused on both shore-casting, waka-fishing, and - almost certainly - netting.
Andrew Coleman	**The role and function of archaeology within Heritage New Zealand Pouhere Taonga** Andrew Coleman (Heritage New Zealand Pouhere Taonga, Chief Executive) will present on the role and function of archaeology within Heritage New Zealand Pouhere Taonga. Andrew has been in the role of Chief Executive for 6 months and has early insights and advice on archaeology – the process, the functions, the connections and the profession.
Bill Edwards	**Coastal Reserves - Coastal Treasures** There are numerous small reserves scattered throughout the coastal margins of New Zealand. This paper explores four such reserves in Northland. They are backwaters that have been forgotten and as a result they have preserved important archaeological features. These tell a series of stories that include Maori horticulture, naval camps, early European settlement and maritime industrial heritage. There was no systematic sampling, no theme passed approach to the selection of these reserves - just an innate desire to poke around the shoreline and explore these places in my weekends, often with the kids in tow. However, what it has illustrated to me is the importance of these places in preserving not only archaeological sites, but the stories that connect people to these places. This is only a very small sample, but based on this small study I would advocate that coastal reserves are a taonga that need to celebrated, explored and preserved. Reserves are under constant threat from development, erosion and councils divesting of their ownership into private property. This paper illustrates that small things often have big stories.
Louise Furey, Rebecca Phillipps, Thegn N. Ladefoged, and Simon Holdaway	**Overview of the Ahuahu Great Mercury Island excavation programme** The Ahuahu Great Mercury Island Archaeological project is in its 7th year. A range of sites have been excavated in two areas: the centre of the island referred to as the tombolo, and Tamewhera in the northwest. This paper briefly describes the sites investigated to provide a context for the papers to follow in the Ahuahu session. The project is a partnership between Auckland Museum, Auckland University, Ngati Hei and the Fay and Richwhite families.
Rosanne Hawarden	**Recognising Ancient Gold Mining – the case of Nyanga, Eastern Highlands, Zimbabwe** The history and archaeology of gold mining in south-eastern Africa and the associated gold trade into the Indo-Pacific extends back approximately 1000 years. The scale of precolonial production was clearly extensive, particularly in Zimbabwe where the archaeological evidence suggests that gold was a major driver of the economies of the region's Late Iron Age kingdoms. The current understanding of early gold mining in Zimbabwe relies heavily on early colonial mining sources, oral traditions and the seminal archaeological work of Roger Summers. The

	extensive ruins of terraces and stone lined pits or tanks in the Nyanga region in the Eastern Highlands have only recently been identified as the remains of precolonial goldmining by geologist Ann Kritzinger. She has published extensively on her theories of gold mining and recovery by local African communities following on from her program of gold assaying around the pits. She has locked horns with archaeologists such as Robert Soper who interpret the ruins as the remains of an indigenous pastoral and agricultural stone building tradition that extends into South Africa. To contribute to the resolution of this debate, this paper examines the construction of the stone pits suggesting that they are the core of an industrial metallurgical solution that peaked in the sixteenth century using the limited technology available to maximise the recovery of placer gold. If this is a unique mining solution, it is helpful to compare these stone tanks to other large scale medieval stone structures in Africa and the Pacific, similarly built in mountainous and difficult terrains. If the *ninga* or stone pits of Nyanga were built as holding pens for small cattle as the pastoralists suggest, these over-engineered stone structures need explaining.
Greg Hil	**A Three Phase Approach for Assessing a Coastline and its Archaeological Sites** This poster presents the methods and findings of a recently conducted coastal vulnerability assessment of Otago's coastline and its archaeological sites. It is designed to complement the paper given at this conference on the same research. The assessment had three primary objectives: 1) determine which areas of the Otago coastline are most susceptible to the effects of coastal erosion 2) assess the level of risk for each coastal archaeological site through desk-based means, and 3) quantify the rate of erosion at high risk areas through an analysis of historic aerial and satellite imagery. These work towards the aim of providing increased clarity regarding the threat and impact of coastal erosion on Otago's coastline and its associated archaeological sites. Although this research focused primarily on the region of Otago, these methods are not region specific and could serve as a rapid and preliminary means of assessing other coastal areas in both New Zealand and overseas.
Greg Hil	**A GIS-based vulnerability assessment of Otago's coastline and its archaeological sites** The Otago coastline is a high-powered environment that has provided humans opportunities for settlement, subsistence, and enterprise since approximately 1300 AD with the arrival of its first East Polynesians settlers. Although Otago's temperate climate proved unfavourable for tropical cultigens such as kumara, taro, and yam, its coastal zones instead offered an abundance of sea mammals, birds, fish, and shellfish. The richness of coastal subsistence options coupled with limited inland alternatives contributed to a general concentration of human activity along the coastline, amplified at river mouths and estuaries. In the 19th century these trends were also repeated by the regions first European sealers and whalers. This has culminated in the formation of a large number of important archaeological sites in terms of age, size, and information potential all within a kilometre of the coastline. These sites are often located along soft-shore areas, which are particularly vulnerable to coastal processes such as erosion. While it is generally

	known that New Zealand's coastal archaeological sites are at risk of being eroded, exactly how this threat manifests itself along a given stretch of coast is not always readily apparent. This paper seeks to alleviate some of this ambiguity through a presentation of the methods and findings of a GIS-based coastal vulnerability assessment of the Otago coastline, conducted as part of a 2016 honours dissertation.
Andrew Hoffmann	**Outline of recent excavations at two sites in Mercury Bay, east coast Coromandel Peninsula: Taputapuatea (T11/914) and Cooks Beach (T11/2789)** Results from 2014-2015 excavations of two sites on dunes in Mercury Bay are presented. For site T11/914, I discuss the formation of the stream side dune where the earliest evidence was uncovered, and the related stratigraphic and chronological models developed which define the period of this Colonisation – to - Transitional phase settlement at Taputapuatea, from c. AD 1375. The evidence for small cultivation area and c. AD 1500 timing of a Traditional phase of settlement here are outlined. At T11/2789, evidence for an extensive 16th Century horticultural site covering about 8 acres of dune plain adjacent to the Purangi is described. The parent soils, paleosols and characteristic horticultural soils are discussed, including stratigraphic and related feature evidence of the existence of a 'plaggen' type soil across large parts of the site. Related evidence of short-term domestic-type occupations are also summarised. Aspects of the obsidian technology, microfossil analysis and chronology of occupation of this site will be discussed by J Maxwell.
Simon Holdaway, Rebecca Phillipps, Louise Furey, Ben Davies, Joshua Emmitt, and Fiona Petchey	**Developing a settlement chronology for Ahuahu** There are now more than 30 radiocarbon determinations obtained by the Ahuahu Great Mercury Island Project. The majority of these come from excavation areas across the tombolo region of Great Mercury. Here we review what these radiocarbon determinations tell us about the chronology of settlement on the island. While a number of the determinations return dates that are early in comparison with those obtained from other New Zealand sites, issues of calibration place limits on the development of a chronology for settlement. We outline some of the approaches we are adopting to seek clarification of these issues.
Benjamin D. Jones and Simon Bickler	**High Resolution LiDAR data for Landscape Archaeology in New Zealand** The quality and availability of LiDAR data offers new opportunities for archaeological investigation in New Zealand. These datasets exist for numerous locations across New Zealand, several of which have been captured by local government. Access to these datasets is often available as a by-product of environmental, ecological, civil and survey work that occurs on land developments, and can enhance the quality of archaeological assessments and surveys. We discuss the utility of LiDAR for known archaeological sites, not only emphasising its ability to locate sites by providing a lens into difficult terrain, but also illustrating how the data can generate new maps, update existing site plans, extents and locations. Modelling the 3-D component of archaeological locations is also linked to LiDAR's ability to form a high-resolution DEM (digital elevation model). This paper examines case studies to demonstrate LiDAR's capabilities for both new and previously recorded sites, such as

	the Auckland volcanic cone pa. In areas where multiple LiDAR coverages exist, these can be compared in order to measure and analyse landscape change. We illustrate how coastal impacts, such as erosion, accretion and sedimentation, can be observed on archaeological sites over time, by analysing LiDAR coverages that are 7 years apart covering the area of the Whau River in Auckland. This approach can form the basis of risk assessments for archaeological sites and landscapes, as climate change, sea level rise and land development affect the long-term survivability of the archaeological record in New Zealand.
Alex Jorgensen	**Lithic recycling and implications for the reconstruction of exchange networks; a case study from Tamewera, Ahuahu** Lithic artefacts recovered archaeologically are often conceptualised in terms of a straightforward life-cycle incorporating procurement of raw material, manufacture, use, maintenance and discard (Wojtczak 2015). However, lithic artefacts may be buried, exposed by the process of erosion and reburied again, and during periods of exposure, recycled by individuals from populations that have no direct cultural, spatial or chronological relationship to the population that was responsible for the original creation of the artefact, and then discarded again. This paper presents some evidence for the recycling of stone artefacts from Ahuahu/Great Mercury Island. It examines the implications of recycling in a wider context for studies that incorporate lithic sourcing and technological analysis in the formation of archaeological assemblages and the evaluation of mobility strategies.
Alana Kelly	**Kamau Taurua/Quarantine Island: Its place in the Human History of Otago Harbour** Kamau Taurua is the largest of three islands within Otago Harbour and archaeological evidence shows that it has been used by people from prehistoric times until the present day. Its best-known use was as a quarantine station from 1861 to 1924. Quarantine was an essential process for the successful immigration of peoples to New Zealand during the nineteenth century, with each of the main ports establishing an island as a quarantine station. The Otago station was first used in 1863 with the arrival of the smallpox ridden Victory. Over the next four decades thousands of people, from a total of 41 ships were placed on the island, marking their first 'home' in a new land. The island served as a military hospital from 1915-1919 primarily treating returning soldiers for VD, before being decommissioned as a quarantine station in 1924. In more recent times it has served as a farm, ecumenical retreat, and recreation reserve. To date there has been only limited archaeological investigation on the island. The primary aim of this research to examine the different uses of the island through an archaeological lens to determine how these reflect changes over time in the human history of Otago Harbour. A second objective is to highlight the role of quarantine stations which have been largely ignored in New Zealand archaeological studies.
Georgia Kerby	**The Archaeological History and Material Culture of Redcliffs, Canterbury, New Zealand** Over 140 years of archaeological excavations in Redcliffs (Te Raekura), Canterbury, has uncovered a significant artefact collection that is now housed in Canterbury Museum. The sites of Moa Bone Point Cave,

	Moncks Cave, Redcliffs Flat and Sumner Burial Ground were excavated intermittently between 1865 and 2003, a period over which New Zealand's archaeological discipline and legislation largely developed. However, Redcliffs' excavation records are patchy and vary in detail and quality, hindering the analysis of Canterbury Museum's artefact collection and limiting our perspectives of Redcliffs' history. This paper aims to outline when and where excavations took place, who was involved and what information about the sites is available. It will also give an indication of what Canterbury Museum's collection is composed of and what it can show about Redcliffs in the fourteenth to sixteenth centuries AD.
Brendan Kneebone	**Spatial Interaction and Communication: An analysis of obsidian from the Auckland region** This research used portable X-Ray Fluorescence (pXRF) to geochemically assign an archaeological obsidian assemblage from Elletts Mountain in the Auckland (Tamaki) region of New Zealand to source. Provenance studies are an important aspect of archaeological research, and the precise results of a modern XRF analysis mean that archaeologists are now capable of separating rocks that appear very similar into distinct source groups rapidly, inexpensively, and in a way which is non-destructive. For this study, 316 flakes of obsidian were geochemically sourced and the results show that over 90% originate from either Mayor Island or Great Barrier Island. These results fit an emerging pattern of obsidian use in the Auckland region whereby an emphasis on Mayor Island material during the Early Period of occupation is replaced by the growing importance of Great Barrier Island obsidian during the Late Period. This potentially indicates a shift in spatial interactions and communication networks among pre-European Maori. This research adds to the existing body of knowledge regarding obsidian use in the wider Auckland region.
Thegn N. Ladefoged, Alex Jorgensen, Rod Wallace, Rebecca Phillips, Joshua Emmitt, and Matthew Prebble	**The horticultural landscape of Tamewhera Kāinga** Situated next to one of the largest pā on Ahuahu/Great Mercury Island, Tamewhera Kāinga is the largest archaeologically visible undefended settlement on the island. Covering an area of approximately 6.5 ha, it contains hundreds of residential and horticultural features. Initial archaeological investigations utilizing terrestrial LiDAR and GPS survey with limited excavations in features and the adjacent swamp have focused on spatial variability and the dynamic nature of occupation. Interspersed throughout the many earthen and rock faced residential terraces are a multitude of gardening features. Some alignments define small possible household garden plots, while others are large multi-course rock walls extending upwards of 100 m. The orientation and morphology of the larger alignments in particular suggest multiple stages of construction and temporal horticultural development. Coring in the downhill swamp corroborates this and suggests a long history of gardening and extensive landscape change. Understanding the palimpsest nature of this intensively occupied area provides insights into the rich history of its past occupants.
Garry Law	**Wish You Were Here: Postcards from Thames** A selection of Thames postcards from the years of the postcard craze and after.

Kae Lewis	**Quartz Reef Mining at Thames 1867 – 1869** Within a few months of the opening of the Thames Goldfield in August 1867, several thousand diggers had swarmed all over the steep hills looking for gold. They soon discovered to their dismay that all the gold at the Thames was locked up in quartz reefs deep underground. After they had pegged out a claim, they began digging holes. When they latched on to some 'likely-looking stuff', they dug it out and followed it deep into the bowels of the earth. Sometimes it led them to huge quartz reefs, with the gold yield increasing as they went down. On other claims, they would dig into barren ground for months without ever finding any payable dirt. The only mining equipment these early diggers had was a pick, shovel and their brute strength. Once the quartz was all finally above ground, they still had very little idea about whether it was even payable. They would not know if they could eat that week until they had contrived to transport tons of the quartz along crudely built muddy tracks to the distant quartz-crushing batteries. The Thames mines gradually increased in complexity and became centered on a few bonanza reefs, some of which yielded specimen rock that was estimated to be half gold. Photographs of the visible remains of these shafts and drives on the Thames goldfield will be shown and the earliest methods used to mine the quartz described.
Justin J. Maxwell, Andrew Hoffman, and Ian G. Barber	**Early landscape clearance, horticulture and eventual abandonment, 500 years of site use at Cooks Beach (Pukaki), Coromandel Peninsula, New Zealand** Sites which have been occupied semi-continuously from the 14th century until European contact are rare in New Zealand archaeology. Here we present new research from a coastal site on the North Island of New Zealand at Cooks Beach where anthropogenic vegetation changes indicate the initial presence of people in AD 1300-1400 followed by subsequent periods of disuse or abandonment and sweet potato cultivation. After AD 1400 the area appears to be deserted for at least a century. After AD 1500 we see evidence for the cultivation of sweet potato as evidenced by extensive soil modification and numerous storage pits. It appears cultivation was abandoned after AD 1650 marking a second secession of use; a fact confirmed in AD 1769 when Captain Cook visited the area. We consider the possible drivers for the late abandonment of cultivation at Cooks Beach. We also describe the methods both in the field and the laboratory which resulted in high quality dates from each phase of occupation.
Isaac H. McIvor and Thegn N. Ladefoged	**Intermittent irrigation in the Waimea Field System, Hawai'i Island: a computational fluid dynamics model** In pre-European contact Hawai'i, flooded irrigated agricultural systems were developed in wet windward areas with rain-fed dryland systems dominating leeward zones. In select areas lacking sufficient rainfall for dryland production, irrigation from intermittent streams would have been a viable alternative. A number of intermittent irrigated agricultural systems have been recorded in leeward Hawaiian locations, with the ca. 33 km^2 Waimea Field System being the most extensive. This area was first occupied in the 15th century, with significant intensification of dryland agriculture during the seventeenth and eighteenth centuries, and the development of intermittent irrigation systems during the late pre-European Contact (prior to 1778) to early post-Contact periods. We use

	fluid dynamics modelling within a digital elevation model based on high resolution terrestrial laser scanning data to investigate intermittent irrigation within a 2.6 ha study area of the Waimea Field System. Documenting variation within this small section of the Waimea field system provides an understanding of diverse agricultural practices and how these were used for subsistence and surplus production.
Lisa Mckendry	**Archaeological textiles: A Comparison of Archaeological Cloak Fragments from Piha and Karekare** This presentation reports on the twined fragments from Piha (Whakaari Pa (Lion Rock) and Takatu Point) and Karekare, Te Wao Nui A Tiriwa (Waitakere Ranges), West Auckland, held at Tāmaki Paenga Auckland Museum. The key structural attributes of whatu (twined) textiles; the weave form, strand form and width, pattern and edge types were investigated along with the type of commencement and finishing structures. This showed the prolific use of kōkōwai and a wide variety of tags from a range of raw materials. Further, the cloak fragments revealed clear technical variations in manufacturing processes at each site, and may signal distinct cultural groups.
Reno Nims	**Defining Variability in Archaeological Māori Fish Catches: A Research Design in Progress** From pioneering midden analyses of the 1960's, to recent reviews of zooarchaeological data, studies of traditional Māori fishing have long played an important role in New Zealand archaeology. For my doctoral thesis research, I hope to build on this rich body of work by asking, how much variability is there within the broadly defined patterns of Māori fishing? Specifically, I aim to build a comprehensive database of marine fishbone records from Northland, Auckland, Waikato, and Bay of Plenty, and inductively explore the local and regional variation in northern North Island Māori fish catches over time. My research will also attempt to develop methods for comparing qualitatively different datasets to make the most of all available lines of evidence.
Reno Nims and Virginia L. Butler	**The Sablefish of Číxwicən: A Mystery from Northwest North America** In Northwest North America, sablefish (Anoplopoma fimbria) is rarely recorded archaeologically, and only in small numbers. But at the village site of Číxwicən (ch-WHEET-son) on the coast of Washington state, sablefish is one of the most abundant fish species represented at the site for over 2,000 years. After initially asking why there were so many sablefish at Číxwicən, we now wonder why it isn't more common elsewhere. The near-total absence of this species from other regional sites is not explained by post-depositional destruction, screen sizes used, sample size biases, or identification methods. In this talk, we consider possible socio-ecological explanations for the observed contrasts in sablefish abundance and turn to the archaeology of Číxwicən for insight on the factors that affected sablefish representation there.
Peter Petchey and Hallie Buckley	**To Greener Fields: The archaeology & bioarchaeology of St. Johns Cemetery, Milton**

	In December 2016, an archaeological excavation was carried out at the disused St. John's Anglican cemetery on Back Road, near Milton in South Otago. A preliminary excavation report was published in the March issue of AINZ, and this paper expands on some aspects of the results. Emigration to 19th century New Zealand was often promoted as offering more opportunities and a healthier lifestyle that were possible in Britain. Was this actually the case? We will consider some aspects of the life, health and culture of the individuals buried in Milton to address this question. This is still research in progress, so we will also be raising new questions and considering new directions of investigation.
Caroline Phillips	**Defensive trenches at Otamarakau** The excavation of a small part of a site near Otamarakau on the Bay of Plenty coast revealed at least six phases of occupation spanning more than 450 years. Phase five comprised two trenches, one of which had two small bunkers attached. These were interpreted as rifle trenches, dating probably to 1864, when there were several movements of the opposing Waikato King Movement and supporters of the colonial government, or Queenites. Rifle trenches and rifle pits are part of the suite of defensive and attacking positions Maori developed in response to musket and cannon fire, sometimes within gunfighter pa and sometimes as stand-alone structures. These trenches were unusual in not having traverses, or rifle pits. It is suggested that these may have been defensive structures, aimed to protect children and possibly unarmed women, rather than being places to protect defenders firing positions. Alternatively, they may be part of escape routes associated with other military features further north on the hill overlooking the beach.
Patricia Pillay, Matthew Barrett, Joshua Emmitt, Tim Mackrell, and Rebecca Phillipps	**Data acquisition and integration workflow: A case study from the Ahuahu Great Mercury Island Project** On the Ahuahu/Great Mercury Island Project a wide range of technology is used to record large quantities of data. Laser scanners for generating 3D models of the landscape, GPS for logging points during pedestrian survey, drones capture aerial photography, tablets are used for in-field artefact registry and analysis, and total stations for recording the location of artefacts, features, deposits, and points for Terrain Irregular Networks (TINs). The use of such technology in conjunction with excavation requires a rigid workflow to maximise use of time and maintain recording standards, while minimising data loss and disruption to excavation. This workflow includes the post-field processing of data which are ultimately appended to a master relational database. Following a workflow in this way allows the efficient integration, management, and comparison of data from multiple sites across multiple field seasons.
Craig Reidy	**Haere mai ki Hauraki,ki te aute te awhea** My journey to archaeology has not been as simple as I first thought it would be. I have had to make decisions and compromises on this journey that have had an effect on my personal Maori values. The act of archaeological excavation has the potential to affect cultural sensitivities as well as influence political outcomes. Excavation imposes data gathering techniques on a landscape usually slated for development resulting in an archaeologists Interpretation of previous human activity. In this paper, I will briefly explore some of the issues I have had to come to

	terms with as well as issues I am still trying to come to terms with in the field.
W. Ross H. Ramsay, Russel Beck, Graeme Collett, Liz Girvan, Moira White, and Phillip Smith	**Attribution/Sourcing of Southern Maori Artefacts to Eastern Polynesia Using Geochemistry** Three shaped scoria blocks have been recovered from within or adjacent to early Maori occupation sites in the Catlins and on Rakiura (Stewart Island). Both bulk rock and mineral chemical analyses have been undertaken using SEM with an energy dispersive detector, Otago Centre for Electron Microscopy, Otago University. Chemically all three blocks are closely related based by their major and minor element chemistry and are distinctly alkaline, aluminous mugearites to phonolitic tephrites with total alkalis 7.3 - 9.6 wt%, TiO2 2 - 2.3 wt%, MgO 2 - 3.2 wt%, and Al2O3 ~19 wt%. Mineralogically the scoria block from Rakiura is characterised by fine crystals of olivine, titaniferous augite, labradorite, alkali feldspar, and strongly titaniferous magnetite set in a fresh glassy matrix. 87Sr/86Sr for the Rakiura block is 0.704131, 143Nd/144Nd 0.512846 and εNd 4.2 (leached), which both distinguishes and separates it from the young alkaline basaltic fields of Auckland and North Auckland. Likewise, the fresh and inferred youthful nature of these blocks, their bulk rock chemistry, and the isotopic signature of the Rakiura block denies an association with the Dunedin Volcanics, Banks Peninsula, and various off-shore islands (Chatham Islands, Campbell Island, Auckland Islands, and the Antipodes). Research in progress tends to support a potential origin from a location in the Eastern Pacific (Tahiti, Marquesas, Pitcairn, or even Hawaii) and the chemistry of these island groups is now being investigated.
James Robinson and Robert Willoughby	**Mangahawea Bay Revisited** In 1981 an excavation of an midden Q05/682 (Nl2/374) took place at Mangahawea Bay, Moturua Island in the Bay of Islands. This site contained early artefacts and material but was never fully analysed or written up as a final report. In the last few years all the excavation notes and surviving excavated material was returned to the care of the Department of Conservation. In 2016 a joint project between Ngati Kuta and Patu Keha, the Department of Conservation, the university of Otago and Heritage New Zealand was established. Working under the tikanga of the tangata whenua, the 1981 excavation was revisited in early 2017 to try and understand the nature and extent of this site that appears to date somewhere in the early period of human settlement in the north. This paper looks at the 2017 successful re-excavation of the midden at Mangahawea Bay. It identifies the geomorphological processes that have occurred in the last 37 years and how much of the site still survives. Then using the stratigraphy and features recorded in both 1981 and 2017, an initial understanding of the sites archaeology will be presented. In 2016 a joint project between Ngati Kuta and Patu Keha, the Department of Conservation, the university of Otago and Heritage New Zealand was established. Working under the tikanga of the tangata whenua, the 1981 excavation was revisited in early 2017 to try and understand the nature and extent of this site that appears to date somewhere in the early period of human settlement in the north.This paper looks at the 2017 successful re-excavation of the midden at Mangahawea Bay. It identifies the geomorphological processes that have occurred in the last 37 years and how much of the site still survives.

	Then using the stratigraphy and features recorded in both 1981 and 2017, an initial understanding of the sites archaeology will be presented.
Dave Robson	**S45(2)(b) – Archaeologists' relationship with iwi/hapu** Since the authority process was first introduced by way of the HPA 1975, Archaeologists and iwi/hapu have been working collaboratively in various ways to address the consultation requirements. Although the onus is on the applicant to ensure consultation with iwi/hapu is adequate, the Authority Archaeologist has regularly been contracted to undertake this task. The HNZPTA 2014 has introduced another role for Archaeologists. S45(2)(b) states that Archaeologists must: (i) have the requisite competencies to recognise & respect Maori values (ii) have access to appropriate cultural support. As a pre-requisite, it is essential that the archaeologist establishes a close working relationship with the iwi/hapu/kaitiaki. From this, recognition and respect of Maori values and support from iwi/hapu will follow. This practice, which has been followed implicitly as part of the archaeological authority process for years, has now been made explicit in the updated guidelines, which will be available soon. This paper promotes good practice procedures which will help to foster that relationship.
Phil Ross, John Coster, James Crampton, Georgina Flowers, Bruce McFadgen, and Yolanda Vogel	**What's missing in the middens? Historical distribution and harvesting of toheroa** Analyses of toheroa DNA suggest that the present-day distribution of this endemic surf clam may be a consequence of historical human-mediated translocations. While modern day practices and accounts of traditional Maori marine resource management support the translocation hypothesis, the archaeological record is yet to be thoroughly interrogated. Preliminary analyses of shell midden data indicate a possible mismatch between recent and historical toheroa distribution. Patterns of toheroa and tuatua abundance in middens may also point to preferential harvesting of each species under different circumstances or temporal changes in toheroa abundance and availability. To assist with these analyses, geometric morphometrics (shape analysis) is being development as a tool for distinguishing between Paphies clams and to improve shell size estimates and species determination from shell fragments. Once developed, this tool will reduce the likelihood that taxonomic errors will lead to incorrect assumptions about the historical use of marine resources and species distributions.
Braeden Scally	**Forget Me Not – Critical Intervention of Tōtara North's Decaying Industrial Heritage** The critical condition of the last Kauri mill in the world is upon us. Situated on the east coast of New Zealand's far north, Totara North is a small coastal town historically connected to the world via the mouth of the Whangaroa Harbour. The inevitable connection to the sea has constructed the towns identity, defined by its proximity to dense native forest and picturesque water ways, historically presenting industrial opportunities in the form of timber milling and shipbuilding. With the closure of the mill in 2004, the townships industrial heritage is disintegrating back into the ground where kauri once grew, previously building a connection between its people and their relationship to the place. The resulting disjunction, has led to an uncertain future for the occupants and their globally significant industrial heritage. This design-

	led research explores the proposition that architecture can play a central role in building upon significant heritage. It investigates this by developing methods for representing heritage through architecture, with the aim of using the past as a future informant that enables the public to dynamically engage with the place, in doing so, the following question is addressed: How can a forgotten industrial heritage inform an architectural response?
Ben Shaw, Judith Field, and Glenn Summerhayes	**Insights into social organisation and subsistence practices at a newly discovered Early-Mid Holocene village site in the Highlands of New Guinea** This paper presents findings from a newly discovered Early-Mid Holocene village site (9900-4200 cal. BP) in the Highlands of northern Papua New Guinea. Excavations at the Waim site were undertaken in 2016 as part of a larger archaeological research project investigating long term cultural adaptations in the mountainous interior of New Guinea. Intensive agricultural practices are known to have developed in the Highlands in the Early-Mid Holocene, with evidence from Waim expanding our understanding of lifeways during this crucial period of Pacific prehistory. A range of rare cultural objects including pestles, stone carvings and other modified stones were recovered which have provided unique insights into subsistence strategies, trade, tool manufacture and the social organisation of these early Highland inhabitants.
Ian Smith	**Early Pākehā Engagement with the Hauraki-Coromandel Region: An Archaeological Perspective** This paper provides an overview of early Pākehā interactions with the Hauraki-Coromandel region, from James Cook's first visit to New Zealand in 1769 until the discovery of gold in the 1850s. It considers the types of activities that brought Pākehā to the region, the kinds of fauna, flora and material goods that they introduced, the forms of settlements that they established, and the nature of their interactions with the indigenous population. Although archaeological evidence of these early engagements is limited, it nonetheless provides important insights into the initial stages of Pākehā settlement in this region
Christopher M. Stevenson, Thegn N. Ladefoged, and Steven W. Novak	**An Evaluation of Hydration Rate Development and Application Protocols for Mayor Island Obsidian** It has long been recognized that the ubiquity of Mayor Island obsidian at New Zealand archaeological sites offers a unique opportunity to link time and behavior through the hydration dating (OHD) of obsidian artefacts. As a methodological foundation for the Māori Social Networks Project and a potentially important dating method for the Ahuahu/Great Mercury Island project, we have conducted an accelerated hydration experiment on Mayor Island obsidian to confirm the results of earlier experimentation and establish the activation energy (E) of the rhyolitic glass. Secondary ion mass spectrometry (SIMS) of the induced layers reveal stable, long-term diffusion coefficients that are established after the early glass structural relaxation process. Infrared photoacoustic analysis of diffused surface water forming the archaeological hydration layers on artifacts from two archaeological sites on Ahuahu/Great Mercury Island generated pre-human settlement dates. This was determined to be caused by trace quantities of water within micro-cracks on the glass

	surface created by hammer percussion and human use. Pre-analysis drying of the dated artifacts removed residual surface water and resulted in dates consistent with radiocarbon dating from the sites. With improved methods, OHD provides a useful method for directly dating artefacts and establishing chronometric estimates for archaeological deposits.
Clara Watson	**Halls, Churches, and Houses: Exploring Urban Rubbish Pits in Mosgiel** In 2016, New Zealand Heritage Properties Ltd conducted archaeological excavations along Gordon Road and Church Road, Mosgiel, prior to the construction of a new Countdown supermarket. These excavations spanned 12 town lots, and recovered over 10,000 artefacts and ecofacts. A variety of buildings occupied the 12 lots, including an Odd Fellow's hall, St Mary's Church, and several residential homes. Artefacts and ecofacts were primarily recovered from rubbish pits and dated from the 1880s through to the 1950s. This paper will summarise the material recovered the site. It looks at the differences in material between residential and non-residential sections, and how differences between the two were related to a section's use. It also looks at the residential sections of the site in order to identify at the similarities and differences between the material people were disposing. Finally, it answers the question of why people were still burying their rubbish in the backyard up until the 1950s in Mosgiel.
Katharine Watson and Tristan Wadsworth	**"From hell's heart": excavating a whaling station with teenagers** In May 2017, we were part of a team that ran an excavation at Waitata/Little Port Cooper with a group of Year 12 students from the Akaroa Area School. The site, near the mouth of Whakaraupo/Lyttelton Harbour, was home to shore whalers in the 1830s. Maori lived there both during and after the whaling era, and very likely prior to this as well. The bay was subsequently a pilot station and then, until 1947, associated with the operation of the signal station at Adderley Head. The excavation focused on two midden deposits eroding from the beach front, one on either side of a dry stream. This paper reports on the results of that excavation, and on our experience of running an excavation with high school students - what we learnt, what worked, what didn't, how much we managed to excavate, etc - in the hope that such information will be useful to others.
David Wilton	**To Build a Goldfield: Industrial Archaeology of 'The Thames' and Surrounds** Industrial archaeology is often defined as "…the systematic study of material evidence associated with the industrial past" (Neaverson and Palmer (1998)). Sub-categories include extractive (i.e. mining), manufacturing, public utilities and transportation. The Thames goldfield, proclaimed open in 1867, has a wide selection of sites spanning the whole spectrum of industrial archaeology. The presentation will cover a selection of interesting sites.
David Wilton and Neville Ritchie	**HMS Buffalo, HMS Tortoise, Sailors Grave and the 'Camp in the Forest'** Ships gathering spars for the Royal Navy started to arrive in the Coromandel area within about 10 years of Captain James Cook's visit in

	1769. During 2015, the authors, and (mostly volunteer) colleagues investigated sites associated with HM Ships Buffalo and Tortoise; operating near the Tairua River, in 1840-43. Historical research revealed sketch maps of the general area the crews were working in; detailed plans of the main camp at Te Karo beach and a 'camp in the forest' (CITF) about a kilometer inland. One of the sailors was drowned after a small boat capsized in the surf early in the deployment, and his grave is still in situ and well maintained. (Hence the local name 'Sailors Grave' for Te Karo). The presentation will discuss the visits of spar-gathering ships HMS Buffalo and Tortoise to the Tairua area in the 1840s. The archaeology of the Buffalo, Tortoise, main camp at Te Karo beach and the 'Camp in the Forest' will be described.