

# MAPOON UNMARKED GRAVES, CEMETERIES AND MOUNDS

## GROUND PENETRATING RADAR AND ARCHAEOLOGICAL INVESTIGATIONS

STAGE 4 – COMMUNITY REPORT



Report Prepared for the Western Cape Communities Trust

SEPTEMBER, 2017



## Acknowledgement

Virtus Heritage acknowledges all Aboriginal peoples who belong and are historically associated with Mapoon. Virtus Heritage respects the rights of Aboriginal people as owners of their cultural heritage and acknowledges their connections and rights to country. We acknowledge the importance of Elders, Families, Rangers, the Western Cape Communities Trust, Mapoon Aboriginal Shire Council and MyPathway workers as partners in this project

This community report is compiled with respect to Aboriginal cultural heritage and connection to country and the importance of caring for ancestors – ‘the old people’ and their final resting places.

Aboriginal and Torres Strait Islander people should be aware that this community report contains images of people and information concerning people who are now deceased and some people may find these images distressing



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# INTRODUCTION



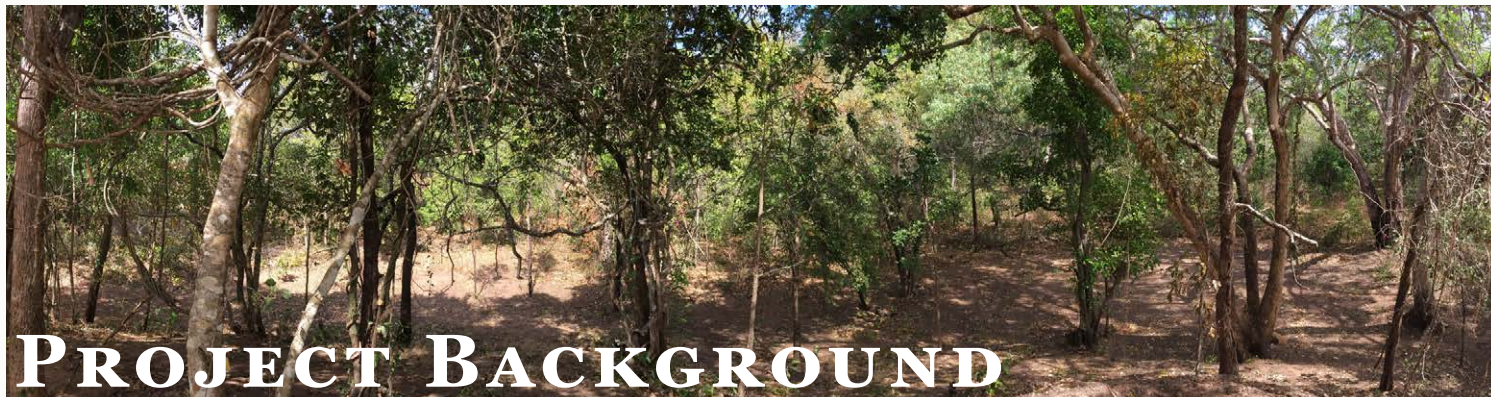
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This community report is about ‘Looking after our old people’ – looking after Mapoon’s old people, the ancestors of current generations and family members living in Mapoon and those families forced away from Mapoon since 1964. This community report is the fourth stage of archaeologists and scientists from Virtus Heritage working together with the Western Cape Communities Trust, Mapoon Land and Sea Rangers, Mapoon Aboriginal Shire Council (MASC), Elders and families to use non ground disturbing scientific tools (such as Ground Penetrating Radar (GPR) and magnetometry) and ethnohistorical investigations to identify and protect unmarked graves and cemeteries in Mapoon. This project focussed on understanding the nature of earth mounds where no living memory in Mapoon families or historical records exist of burials. This project also included attempts to relocate some additional children’s graves from the mission time and the boundaries or graves in Mapoon Cemeteries.

Virtus Heritage, Dr Peter Mitchell, Dr Chet Walker and Prof. Lawrence B. Conyers carried out this study in partnership with Uncle William Busch, Jason Jia (Cultural Heritage Ranger), Traditional Owners, My Pathway and the WCCT from 17 July to 4 August 2017. Elders and families assisted with oral history and fieldwork. This community report aims to summarise these activities, findings and provide some initial conclusions and ways forwards for the future.

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This project follows on from works that began in 2010 when Elders in Mapoon wanted to use GPR (something they had seen on TV) to assist with fencing the Mapoon Mission Cemetery without disturbing graves as the cemetery boundary was not remembered and to find some family graves near mission time home remains. In December 2010, some of these grave locations were spot checked by Prof. Lawrence B. Conyers using ground-penetrating radar (GPR) assisted by Mary-Jean and Elders (Mapoon Cemeteries Project Stage 1). These graves were identified by Prof. Conyers during a voluntary trip to Mapoon invited by Elders, Mapoon Land and Sea, Mapoon Aboriginal Shire Council working with Mary-Jean. At all locations as many as three to sometimes 40 times more graves were identified with GPR than remembered. These initial investigations lead to more funding to identify and protect graves in the Mapoon Mission Cemetery (Stage 2) and to identify the remaining unmarked grave locations, mostly of children and families spot checked by Prof Conyers by GPR in 2010 with Elders (Mapoon Cemeteries Project Stage 3 in 2015). Stage 3 included investigation of two areas of unmarked grave areas located within earthen (sand) mounds (identified by Elders as Shadforth's Landing/Luff family graves and Jack Brown's grave mound). Once again and many more burials were identified within these mounds than remembered by Elders. During these investigations, many more mounds were observed on Cullen Point, including one adjacent to the known marked grave of a child who was part of the Ling family.

Based on the results of GPR investigations of the two mounds and identification of many other mounds in the area based on ground truthing by Dr Sutton, Uncle William Busch, Simon Pearce (Principal Environmental Consultant, GHD) and other Elders in 2016 and review of aerial mapping, funding was applied for through the WCCCA (Mapoon Cemeteries Project 4) for further investigations using GPR and for management of sensitive landscapes within Mapoon for potential burials.

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# PROJECT BACKGROUND



## We would like to acknowledge the assistance from:

- a) Uncle William Busch (Elder) and Peter Guivarra who were key drivers of this project from inception to completion, consultation with the MASC, WCCT, Elders and families in Mapoon and assisted with clearing, GPR data collection, oral history and mapping of graves;
- b) Jason Jia (Cultural Heritage Ranger, Mapoon Land and Sea) who has assisted with this stage of the project since its inception and with the Stage 3 investigations and a source of support throughout this project's completion;
- c) Prof. Conyers whom carried out the GPR data analysis and interpretation and whom has assisted with grave identification in Mapoon working with Elders since 2010;
- d) Aunty Dianne Nicholls Pitt (Traditional Owner) whom assisted with consultation and the data collection of GPR to identify families graves and who is part of the Tjungundji Aboriginal Corporation, Traditional Owners of Cullen Point;





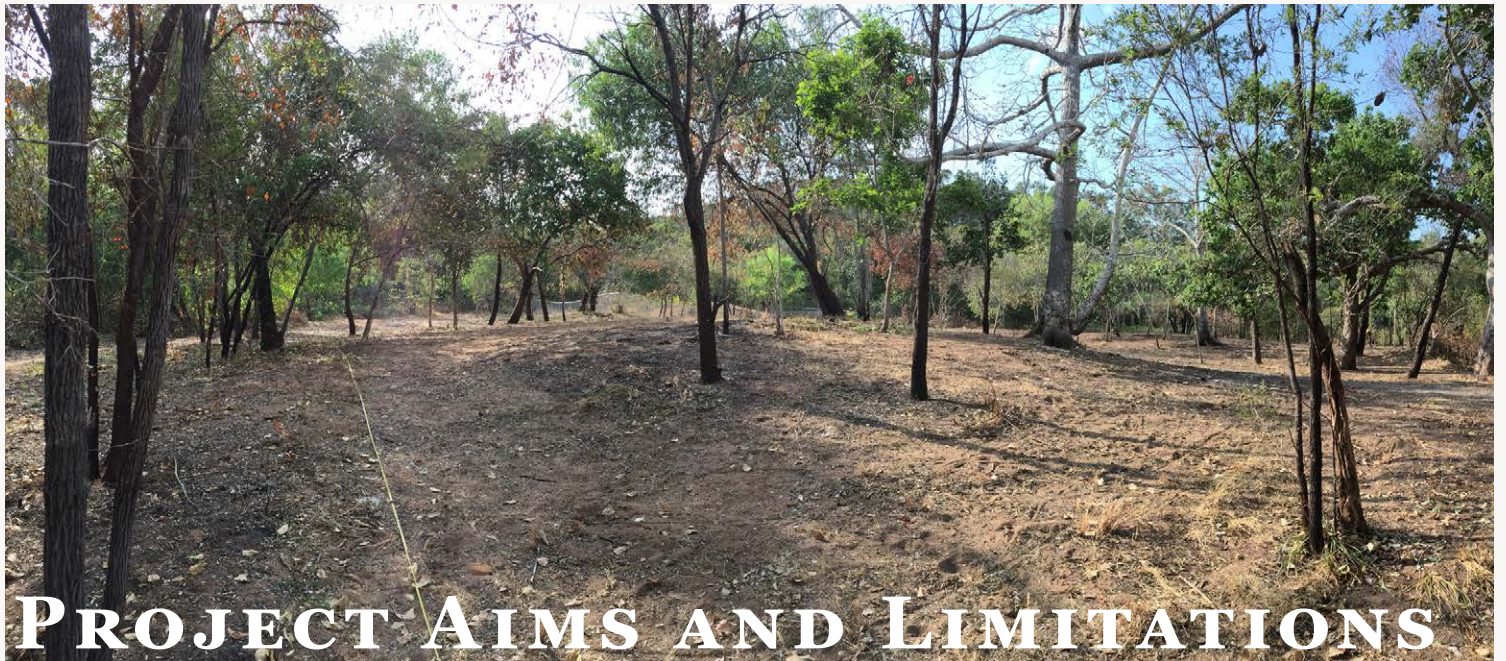
# PROJECT BACKGROUND

## We would like to acknowledge the assistance from:

- e) Maggie Peters (Traditional Owner and part of the Rugapayne Aboriginal Corporation) whom assisted with consultation and the data collection of GPR to identify families graves;
- f) Old Mapoon Aboriginal Corporation;
- g) Mapoon Aboriginal Shire Council;
- h) Mokwirri PBC (registered Native Title Claimants for the study area);
- i) Peter Guivarra (Deputy Mayor) and Ricky Guivarra whom assisted with obtaining funding from the WCCCT and completion of this project.
- j) MyPathway workers and other volunteers – including but not limited to Peter McCulkin, Derek Carter, Phillip Port, Donald Mamoose, Ian Ngallametta, Uncle William, Clifton Boseur, Jack Manantan, Patrick Bond, Maggie and James Peter, Walter Gamia, Brenton Ludwick Craig and Bill Evenden
- k) Elders and families who have assisted with this project since 2010:
  - a. Granny Susie Madua
  - b. Aunty Harret Flinders
  - c. Aunty Alma Day
  - d. Aunty Florence Charger
  - e. The Busch family including Uncle William, Aunty Doreen and Uncle Bob
  - f. The Savo and De Jersey families including Aunty Zoe and Uncle Stan De Jersey, Kenny and Unice Savo and Cr Pauline Smith (Polly Savo)
  - g. Aunty Roberta Toby
  - h. Mr Ed Woodley
  - i. Aunty Etta Callope
  - j. David Allan
  - k. Rev. Garth Filmer and family and
  - l. Uncle Patrick Callope
- l) GHD
  - a. Simon Pearce (assistance with fieldwork and consultation and preparation of management strategy and plan)
  - b. Codie Craig (for working on management documents)







## PROJECT AIMS AND LIMITATIONS

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This community report is based on the aims of the GPR and magnetometry investigations, geomorphological assessment and ethnohistorical research to investigate whether these other mounds were:

- a. natural features in the landscape or constructed cultural monuments; or
- b. used as burial places.

The report presents the results of investigations of eleven mounds at 5 sites. In addition, a number of sites important to the Elders and Mapoon community were investigated, including a site near the former mission time remains of Jubilee and Rosie Woodley's home at Cullen Point Rd, two areas of the Modern Mapoon Cemetery, the Outstation Cemetery, 3 areas at Janie Creek and an area at the old Batavia Oustation (a former mission time outstation dating from the 1890s and also a traditional camping ground).

The report is limited by the funding obtained for this project and time constraints.

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# ABOUT MAPOON

Mapoon is located within western Cape York Peninsula, Queensland, approximately 75 km, north of Weipa (Figure 1). Weipa is the closest regional centre to Mapoon as well as the home of Rio Tinto Alcan's bauxite mine. Mapoon is situated around the main town of Red Beach. The study area for this project focuses on Cullen Point and extends to Red Beach and country surrounding these locations including Janie Creek and Batavia (Figure 2).

Cullen Point was the location of the former Mapoon Mission (1891 to 1964) and several cemeteries, the Missionary Cemetery, Mapoon Mission Cemetery and Outstation Cemetery. It is also a known traditional country and home to the Tjungundji people who today still live at Cullen Point. Cullen Point, Janie Creek and Red Beach are known story places with legends relating to Chivaree and other important stories of the old people.

Janie Creek is where the salt water meets fresh water estuaries on the western side of the Gulf of Carpentaria. It is the location of the Mapoon Land and Sea Ranger's Turtle Camp and a popular fishing and camping spot. The Modern Mapoon Cemetery is closer to Red Beach, also called Rugapayne which is the centre of the new housing for Mapoon families.

Batavia is a former mission outstation dating from the 1890s located south of Mapoon, off the Mapoon Road to Weipa. Batavia outstation faces the eastern shore of the Wenlock River and is within the harder red pisolite soil landscape. Batavia was also a known Aboriginal camping ground prior to the missionaries arrival and establishment of Batavia outstation.

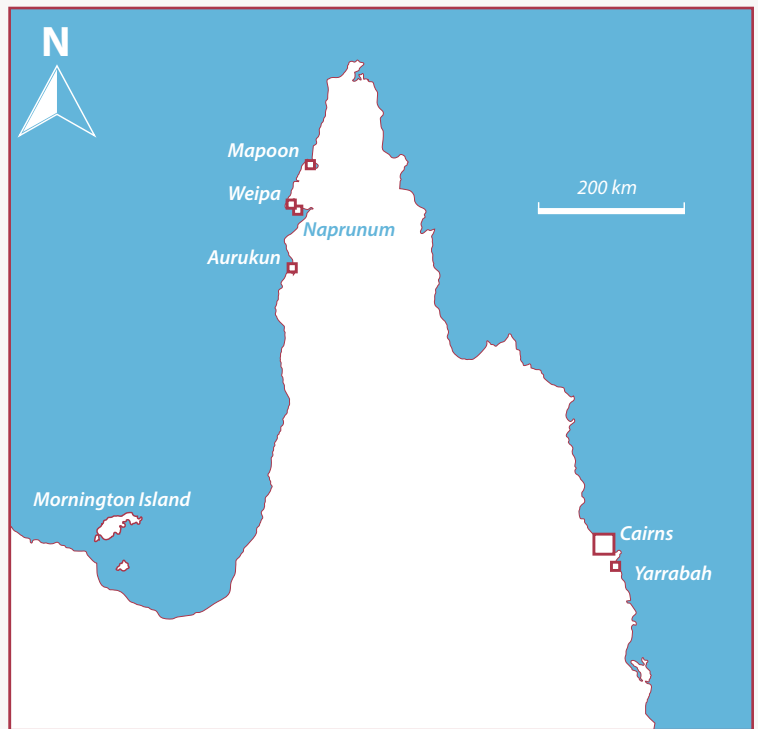


Figure 1. Map of Cape York showing location of Mapoon and daughter missions of Aurukun, Weipa and Mornington Island.

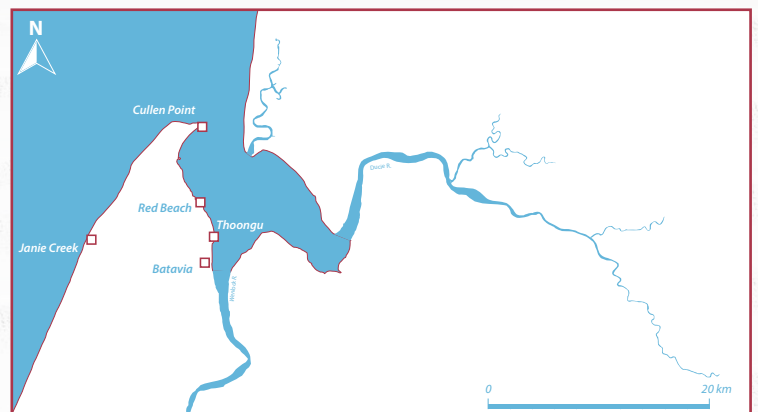
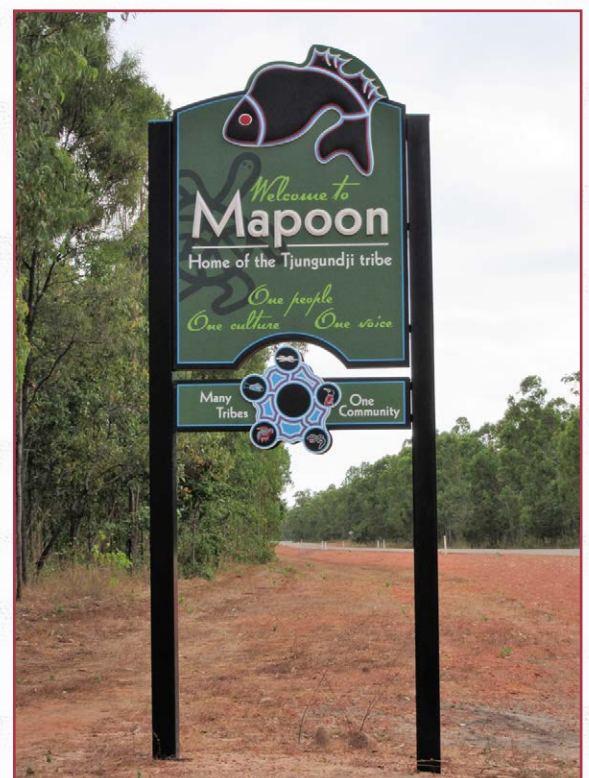


Figure 2. Locality map of Mapoon







Cultural heritage places are defined in this study as physical locations where events, activities and experiences occurred, are remembered and valued by Elders, missionary families and other Mapoon people (Thomas and Ross 2013:222, Casey 1996:13). Cultural heritage places can be buildings, created places such as monuments and memorials, and destroyed places, such as the locations of mission time family homes with no or little material culture. Cultural heritage places can include spaces where traces of the past not yet remembered, can be identified by archaeological and social practice. These places can include created monuments by Elders and unmarked graves.

Cultural landscapes are the broader geographic spaces that contain cultural heritage places and include a representation of lived and commemorated relationships between these places (Byrne and Nugent 2004; Thomas and Ross 2013). Mapoon is a cultural landscape remembered and created long before the arrival of the missionaries. Eighteen areas of unmarked graves and potential unmarked graves were investigated for this project. These areas included the New Mapoon Cemetery and the Outstation Cemetery, Old Batavia Homestead, three areas at Janie Creek and an unmarked burial near Cullen Point Rd. These areas are all known or remembered to have potential burials from the past century. Additionally, 5 sites with mounds, that were potentially used as burial mounds were investigated and 4 of these sites contained burials not remembered by Elders, which may date to their use as traditional burial grounds before European contact. Results of Stage 4 investigations - 'Looking after our Old People'



# UNDERSTANDING COUNTRY



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The Cape York Peninsula surficial deposits generally consist of two coastal barrier systems with sand dunes, lagoons and a large interior area of mangrove swamp, reed beds, and salt pans. Sea level rise occurred at the end of the last ice age, and reached a level about 1-3 meters higher than today about 5,000-6,000 years ago (Chivas et al., 2001). This suggests that most recent human occupation of the Mapoon area probably began after that time. The general pattern of environmental change with a sea level regression after 5,000 to 6,000 years ago led to environments much like we see today. These are generally characterized as beach ridges bounding inland mangrove, sedge swamp, and salt pans (around the margin of Big Swamp) that are only flooded by spring tides and storm surges during the wet season. Smaller freshwater linear lakes lie between the coastal beach ridges that are maintained by groundwater during the dry season.

Mitchell (2017) suggests that none of the sand dunes or barrier ridges upon which the earthen mounds are constructed are likely to be much more than 5,000 to 6,000 years old. Those beaches and beach/aeolian deposits nearest the shore especially near Cullen Point are probably less than 1,000 to 2,000 years old. This landform analysis and timing fits well with the general cultural history of mound building and human burning in the Weipa area obtained from radiocarbon dates from within the mounds that were constructed on these features.





## MOUNDS IN MAPOON AND IN AUSTRALIA

Earth mounds are not unusual in Australia or western Cape York. There are many cases of earth mounds being used for burials within Australia by Aboriginal people, including but not limited to South Australia, Liverpool Plains and Cumberland Plain, New South Wales, Torres Strait and Arnhem Land. Some of these mounds which contain burials have layers of sticks and platforms of timber or funeral pyres used to cremate or inter the dead.

Some earth mounds contain no human remains and some archaeologists argue they are some form of elevated camping structure to keep out the mosquitoes, a cultural or territorial marker in the landscape, a refuge from flood waters to camp, shell middens or even natural formations from scrub turkeys and other times of similar jungle fowl.

The earth mounds of Mapoon are up to 4 metres in height and varying width and mostly constructed of sand. Some mounds are in complexes and groups of three to four associated with known cultural sites such as fighting grounds, dance grounds and bora grounds or are nearby the burnt remains of mission time family homes. Some mounds contain evidence of scrub turkeys, lizards and other burrowing animals. Some mounds contain evidence of shells and burnt coral or contain grave goods or flowering trees such as frangipani.





Until 2010, there was no formal oral history investigation with Mapoon Elders regarding mortuary practices, cemeteries or unmarked burial places within Mapoon. The earliest records of mortuary practices for the Tjungundji and other Traditional Owner families for Mapoon were documented by the former Chief Protector, Walter E. Roth (Roth, 1907), Rev. Hey (Hey 1900-1901; Hey 1903, c.1947; Hey 1923) and by the work of anthropologists, Donald Thomson and Ursula McConnel (McConnel 1936-1937; McConnel 1957). Elders in Mapoon remember oral history passed down by their ancestors and Dr Mary-Jean Sutton documented these stories and customs as part of oral history interviews for her PhD thesis. Dr Sutton carried out additional ethnohistorical research for this report with Elders, former missionary families and in archives.

These records indicate a mixture of elaborate mortuary practices including cremation, mummification and the use of burial platforms and funeral pyres. Prior to missionary influence and contact with Europeans, McConnel (1936/1937:340) maintained that within the “tribes of the lower Archer, Batavia, Embley, Kendall-Holroyd and Edward Rivers,” mummification was the “orthodox procedure”. Her description of traditional mortuary practices (McConnel 1936/1937:350) share similarities with those of Roth, specifically with respect to the removal of internal organs from the body and placing the corpse on “a platform supported on four forked sticks ... in some tribes it is tied to a pole which is supported on two forked sticks.”



## ETHNOHISTORY

A photograph in the Moravian archives, Herrnhut also shows this form of mortuary practice in Mapoon with- in the collection of Rev. Hey and Rev. Ward’s personal correspondence (Anon. 1891-1919 circa.-b). Similarly to Roth, McConnel documents bodies were dried using fire and, “wrapped” in “sheets of tea-tree bark,” interred for over a few years during an elaborate mourning process involving family members (McConnel 1936/1937:350).

McConnel documents for the Wik people, in country south of Mapoon, the use of funeral pyres to cremate wrapped bodies after a period of interment on forks of bark (1937:356). These platforms are constructed of wood and then are lit to cremate the body. Photographs of this ritual are provided by McConnel, which show these constructed platforms (1937:Plates following page 370). Similarly, in the case of men, Roth documents oral history at Cape Bedford for a mortuary ritual where a grave is dug in the centre of the camp and “long wooden sticks” are cut to make a platform with all sticks put in a line facing west and then grass and barks is used to cover the platform. Human remains that are wrapped in tea tree bark are then placed on the platform with a fire kept light close by and rituals are performed (1907:380). Peter Sutton has also commented that within Aurukun there are cremation mounds, mounds which are made of earth and sand and contain interments of human remains of clans and families (pers.comm to M. Sutton 2016).

The mission experience in Aurukun, where much of McConnel’s fieldwork observations were concentrated, was different to that at the Mapoon Mission, particularly in relation to the individual personalities and the degree to which Indigenous cultural practices could be maintained without persecution, coercion and discouragement by the Church or State. As observed by Rev. Hey (Hey 1901:10), burials were the predominant, if not the only method of mortuary practice from this time as a result of his or other missionaries’ coercion: Hey’s account indicates Christian burial was accepted by some, but may have been rejected by other Indigenous people of Mapoon Mission in the earliest decade of its establishment.



Mortuary Practices in Mapoon circa 1891 depicting human remains wrapped with bark and suspended on timber forks underneath a camp fire, similar to those practices described in McConnel (1937) in relation to partial cremation. Source: Author’s photograph of N. Queensland photograph album, 2839.B4, Moravian Archives, Herrnhut, Germany – caption on original photograph handwritten in album translates in English to “A corpse is smoked”



Aboriginal people camping in the sand dunes at the Mapoon Mission, circa 1891-1919 circa, note mounds in the background of this photograph. Source EH258, Ethno-historical Collection, Queensland Museum)



# ETHNOHISTORY

If Indigenous people did accept some form of Christian burial as Hey reported, it is likely to have occurred from 1900 onwards based on the absence of earlier archival, oral or archaeological evidence that suggests the use of Christian burials in Mapoon. Hey's account also indicates that the Mapoon Mission Cemetery was what he terms the "newly laid out Cemetery" in his report and was predominantly used from 1900. This statement does not preclude the idea that burials in the area of the Cemetery were not undertaken in pre-mission period nor that mounds were not used to inter human remains during the mission period outside of the view of the missionaries in camps and outstations or prior to the mission period.

Blankets and casket burials were used during the mission period from 1891 to 1963. During the mission time, a sawmill was operational from as early as 1920s and timber was used to make caskets during this time at Mapoon. Elders believe that Mr. Alan Parry ([Mapoon Elder Mrs. Harriet Flinders' father and a Tjungundji man](#)) made the first wooden caskets, from a nonda plum, which has a yellow fruit, called "gurruku fruit" ([Mrs. Harriet Flinders and Mrs. Alma Day interview, December 17, 2010, Audio Recording #VN680010](#)). In 1950, the sawmill at the Mapoon Mission still remained in operation ([Department of Native Affairs Office, File 6G/17, Queensland State Archives](#)). However, not everyone at the mission who died was buried in coffins. For example, a man named Peter Peter who died around this time from a crocodile attack, was carried to the cemetery on a canvas stretcher and laid out covered in blankets. He was later buried wrapped in a blanket tied with rope and string ([Mrs. Alma Day interview, December 17, 2010, Audio Recording #VN680010](#)). Also during the 1950s there was a similar burial at an outstation cemetery located south of Cullen Point, where a woman called Amy who had died, was buried in wrapped and sewn blankets ([Mrs. Zoe De Jersey interview, October 19, 2010, Audio Recording# VN680003](#)). Blankets were also used to wrap deceased persons in the early days of circa 1930s and prior to that (ca. 1925) tea tree bark was used to wrap up deceased persons ([Mrs. Susie Madua interview, October 19, 2010, Audio Recording# VN680003](#)).



Janie Creek



# ETHNOHISTORY

Coral pieces and shell were often used to decorate burial places, and evidence of this practice is visible within Mapoon unmarked graves and cemeteries today. During the mission time the “old people” would collect shells from the beach in handmade baskets and later use them to line graves (Mrs. Harriet Flinders interview, December 17, 2010, Audio Recording #VN680010). A practice also noted in other historical records for the Mapoon Aboriginal Lands including the Jardine River, where The Chronicle, Adelaide South Australia,



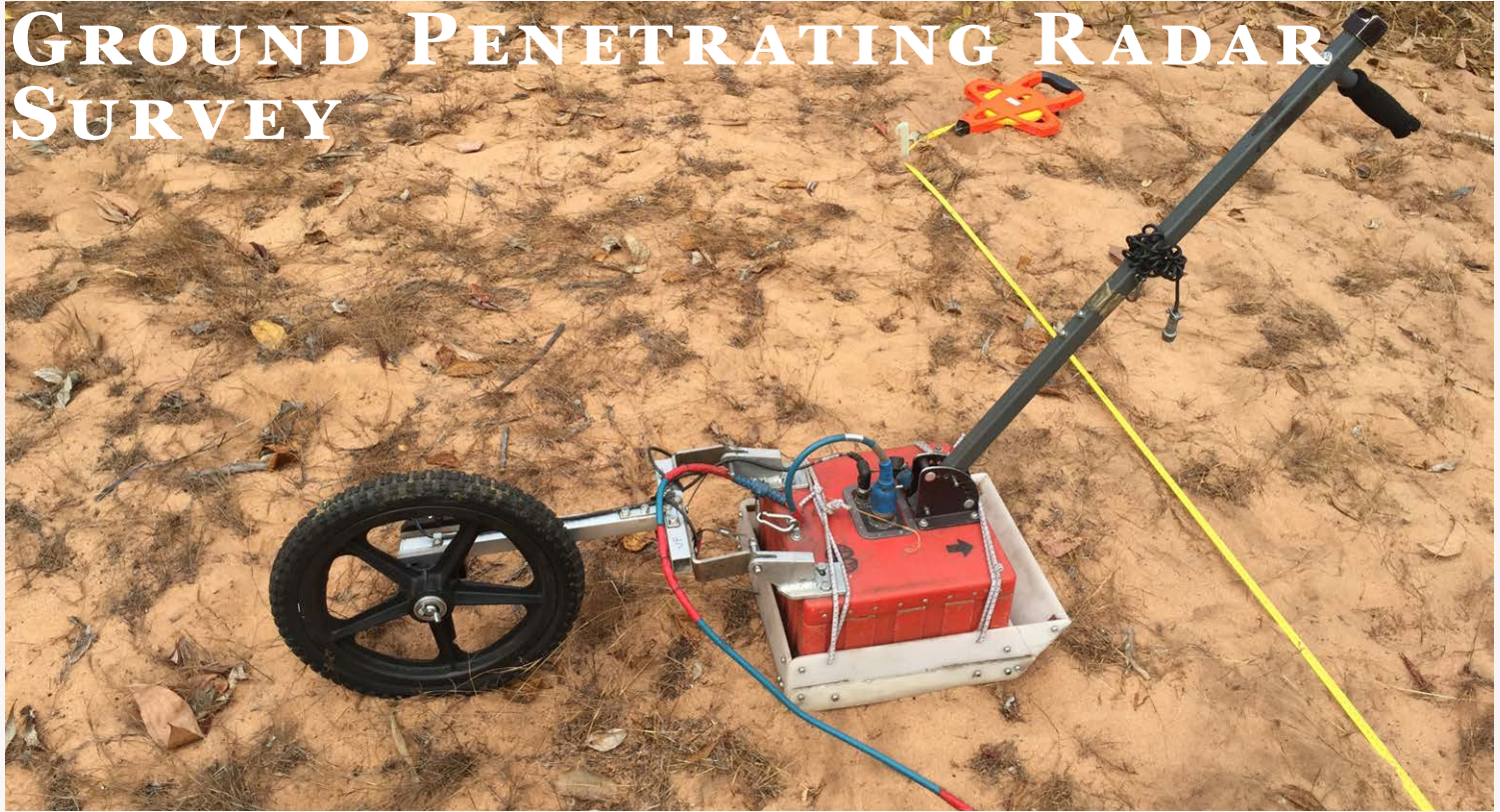
(1938:50) records “situated in a sandy clearing near the mouth of the Jardine River” an Aboriginal cemetery at this location contained graves decorated with “bottles, old tins, logs, stones, shells, stone axe and spear heads, and the remains of old spears, shields, and other Aboriginal implements and weapons...in the decorations of the hundreds of graves”.

Mortuary practices in Mapoon today are a mixture of Christian, Islander and traditional customs. Families today have public viewings of the deceased prior to burial in their home for family and friends to say goodbye prior to their burial procession and ceremony. Burials are predominantly caskets and interred in the Modern Mapoon Cemetery. During mourning, the name of the deceased is often not mentioned for some period of time. Burials have a tombstone opening many months after the burial. The tombstone opening includes customs similar to the mission time, with ribbons and flowers decorating a demarcated area around the grave. Tombstones are decorated with flowers, mementoes, shells and other decorative items.





# GROUND PENETRATING RADAR SURVEY



## What is GPR?

Ground Penetrating Radar (GPR) is a non-invasive technology which transmits radar pulses from a surface antenna into the ground, which reflect off objects and features in the ground and so that a 'picture' of the subsurface environment can be made. The GPR is pulled across the ground surface to collect data and this information is then analysed for many hours (days and sometimes weeks) using special computer software to identify features below the ground such as disturbances, burials and internments at different depths below the surface. Software is also used to produce three dimensional models and pictures of what is below the ground surface.



Key components of the GPR system

This method is ideal for identifying unmarked burials (both traditional internments and casket burials) and can produce three-dimensional images of graves within a variety of subsurface environments. The diagram below shows how the radar picks up of burials below the ground and how the GPR antenna works.

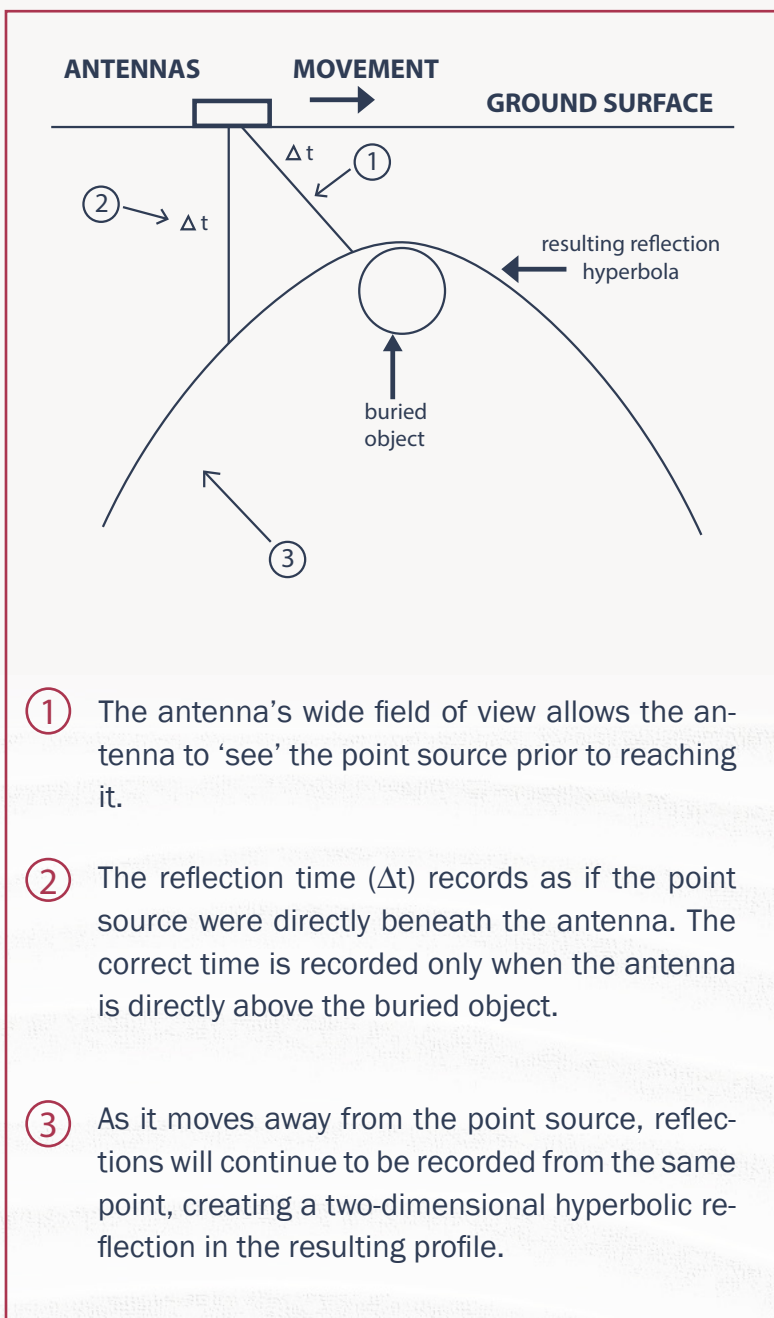


# GROUND PENETRATING RADAR SURVEY

Different antennas pick up different depths and images below the ground surface. A 400 mHz antenna is the best for identifying graves. A 270 mHz antenna is used for very deep deposits and 900 mHz antennas for very shallow depths but provides much greater defined images below the ground surface.



Dr St Pierre with GPR system



- ① The antenna's wide field of view allows the antenna to 'see' the point source prior to reaching it.
- ② The reflection time ( $\Delta t$ ) records as if the point source were directly beneath the antenna. The correct time is recorded only when the antenna is directly above the buried object.
- ③ As it moves away from the point source, reflections will continue to be recorded from the same point, creating a two-dimensional hyperbolic reflection in the resulting profile.



Establishing a grid



# GROUND PENETRATING RADAR SURVEY

## **GPR in Mapoon**

Results from ethno-historical study and previous GPR surveys undertaken in 2010, 2013 and 2015 indicate that within Mapoon, areas that were easy to dig by hand and stick with loose sandy soil or within the sand dunes along the coast (for example, heading north from the Mapoon Mission Cemetery to Cullen Point, from Cullen Point leading down to Red Beach and from Cullen Point to Janie Creek) are also likely to be sensitive for potential pre-mission and mission time, unmarked Aboriginal burials (Sutton et al. 2013). Other unmarked burial places are known to exist in these areas from oral history testimony provided by Elders and in some locations through spot checks with the GPR (De Jersey et al. 2010d, 2010e, Flinders et al. 2010a; Sutton et al. 2013).

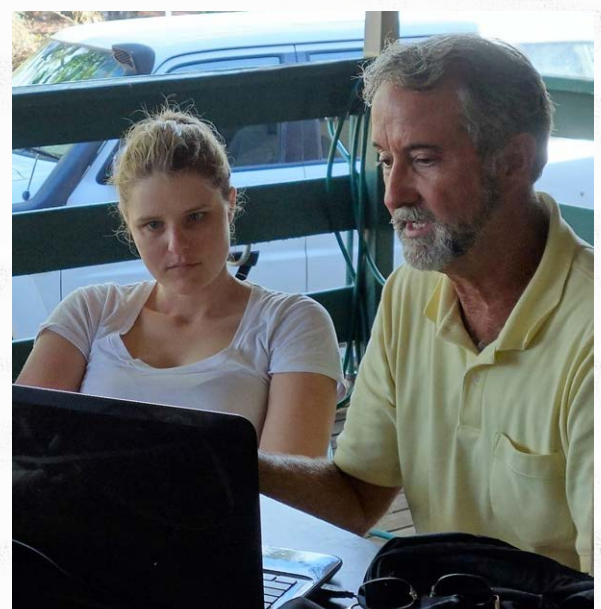
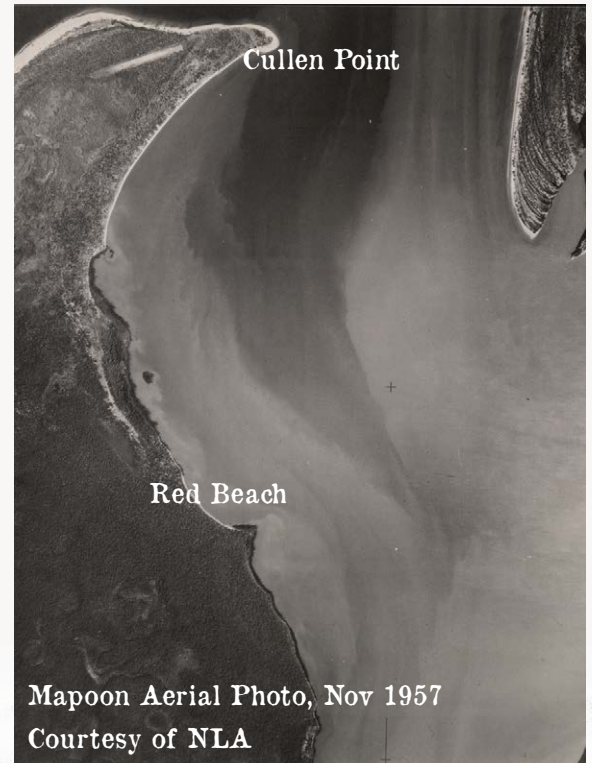
## **Data Collection with GPR and Mapping**

The GSSI (Geophysical Survey Systems Inc.) Subsurface Interface Radar (SIR) Model 3000 with a 400 MHz centre-frequency antenna was used to collect radar reflections. A survey wheel was used for ensuring that the reflection data for each profile was recorded in distance, which was linked to the grids. This was done so that reflections could be plotted in space and the exact location of unmarked burials could be mapped. Reflections were recorded in a 45 ns time window (which is equal to about 3.5 m in depth) and all reflections were filtered prior to recording, removing all received frequencies lower than 200 MHz and higher than 800 MHz. Forty reflection traces were recorded each metre along all profiles. Profiles were spaced 50 cm apart so that complete coverage of the ground was achieved. Profile lengths varied throughout the grids in order to avoid large trees and other surface obstructions, and to stay within the cleared areas that were considered likely to have unmarked graves. All reflection data were saved to disk and used to produce the images of profiles and amplitude maps discussed in the results section of this report.

## **GPR Data processing**

After the completion of the GPR data collection Prof Conyers with assistance from Dr St Pierre worked on the data processing in July and August 2017, using three software packages called GPR Process, GPR Viewer and Surfer to view, enhance and correct the profiles of reflection data and to understand what is a likely burial and what might be other types of subsurface features (such as tree roots or rocks) and ground disturbance.

Dr St Pierre and Prof Conyers undertaking data processing during 2015 investigations





# MAGNETOMETRY AND SURVEYING

## **What is Magnetometry?**

Magnetometer and gradiometer surveys are non-invasive and passive techniques that measure slight variations in the magnetic properties of soil. Gradiometers allow archaeo-geophysicists to collect and process geophysical data rapidly and efficiently. When soil conditions are good, magnetometers and gradiometers have proven useful in locating features such as pits and post holes as well as thermally-altered features such as fire hearths and burned structures (Gaffney 2008; Gaffney et al. 2000; Kvamme 2006b).

Gradiometers record the minute fluctuations that sediments and objects have on the earth's magnetic field. This is known as induced magnetism because the object does not maintain its own magnetic field. If the effects of this induced magnetism are strong enough compared to the magnetism of the surrounding soil matrix, even small pit features or post holes can be identified or resolved in the geophysical data along with the larger-sized features (i.e., structures). A second type of magnetism called remnant magnetism is created when an object maintains its own magnetic field. In prehistoric archaeological examples, this occurs when objects themselves are thermally altered, thus creating a magnetic state called thermoremanent magnetism (Kvamme 2006a:207). The properties of the specific magnetometer used in the current study—a Bartington 601-2 Fluxgate Gradiometer—is discussed in detail by Bartington and Chapman (2004).



The gradiometer data during the 2017 field survey in Mapoon was collected using an RTK GNSS system to position the readings. The gradiometer and the GNSS antenna was attached to a two wheeled non-magnetic hand cart. Real time data output was stored in an Toughbook H2 field computer and integrated with the GNSS coordinates. A grid projected on the display of the field computer was used to guide the surveyor across the collection area allowing the surveyor to walk along “virtual” grid lines to ensure complete coverage.



# MAGNETOMETRY AND SURVEYING

## **Survey**

During the GPR and magnetometry surveys, a **DJI Mavic Pro** drone was used to capture high resolution aerial photographs. This data was used to accurately map the areas where GPR grids were laid out, and also to create 3D digital elevation models (**DEM**) using photogrammetry software.

## **Data Processing**

Gradiometer data was pre-processed using a software package developed by **ArchaeoGeophysical Associates, LLC**, with further processing using **Golden Software's Surfer**. The general goal of data processing is to lessen the effects of background “noise” and to enhance the quality of the “signal” or “target.” In field geophysics, the term noise is used to discuss any return that is not a result of the object under investigation. Accuracy of the geophysical readings are not as important for resolving targets as is the contrast between the target and its surrounding matrix. After each processing step, the results are closely compared to their previous state to assure that data manipulation is not in fact decreasing the clarity and quality of the data, and thus insures that the findings are not products of data processing.







### **Clearing**

GPR and magnetometry investigations, require clearing of sites to remove obstructions such as dense vegetation and other objects for a clear ground surface. Clearing of the major mound sites was undertaken with MyPathway workers and volunteers with Chris Jennings and Julian Travaglia (Virtus Heritage Archaeologists) supervised by Uncle William Busch from Monday 17 July to Friday 21 July 2017. Chainsaws, leaf blowers, rakes and saws were employed to remove the majority of obstacles, with burning and a slasher used for more difficult areas of sites,







# WORKING TOGETHER

## **School visit**

On the 2nd of August, During the 2017 GPR field work, Dr Emma St Pierre and Dr Peter Mitchell with Uncle William Busch, Aunty Diane Nicholls Pitt and Craig Evenden visited Mapoon State Shool to present information on the project to the school children and promote the culture, archaeology and history of the Mapoon area. Two presentation sessions were given, one to students in grades 2-4 and one to students in grades 5-7.



Uncle William spoke about the mounds in Mapoon and the continuing collaboration with Virtus Heritage allowing burials to be relocated. Dr St Pierre explained how Ground Penetrating Radar works and discussed the results from the 2015 investigations of the mounds and unmarked grades. Dr Mitchell gave a short talk about the geomorphology of the Mapoon area. Association with GHD, Virtus Heritage organised shirts featuring artwork by Aunty Diane promoting archaeology and heritage in Mapoon, which Craig Evenden gave to the students after the talks.



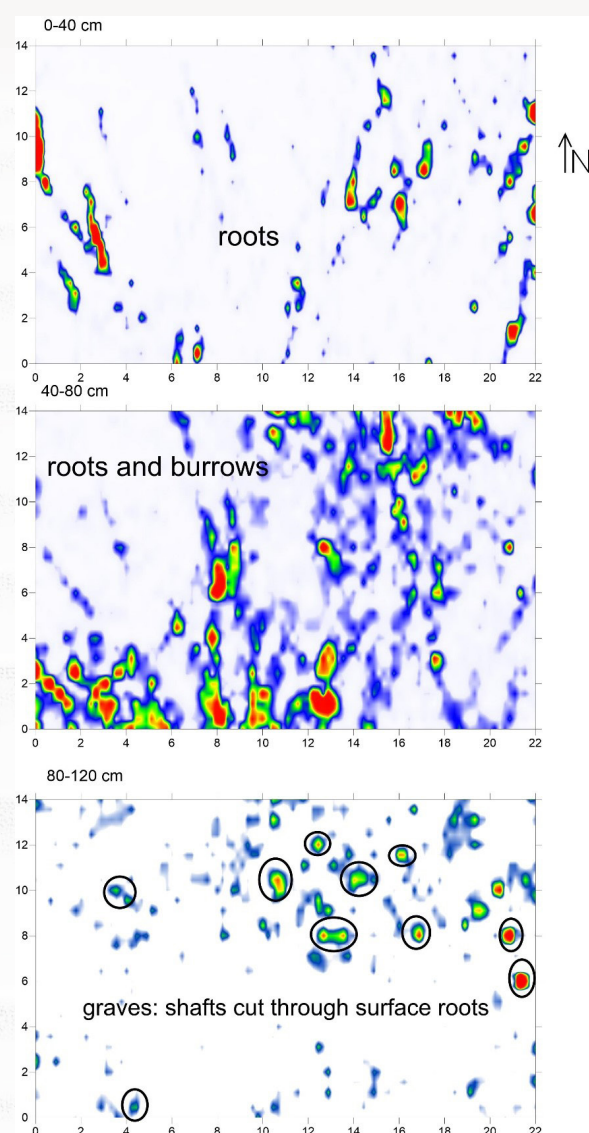
# RESULTS OF STAGE 4 INVESTIGATIONS - 'LOOKING AFTER OUR OLD PEOPLE'



The modern Mapoon cemetery is east of Cullen Point Road closer to Red Beach. It was originally established near the former Outstation Church in the early days of the mission and is the location where families currently bury their family members in Mapoon. Uncle William Busch believes there are at least six graves which are not demarcated in the southern end of the Cemetery and was concerned the fence may not protect or demarcate the extent of the Cemetery.

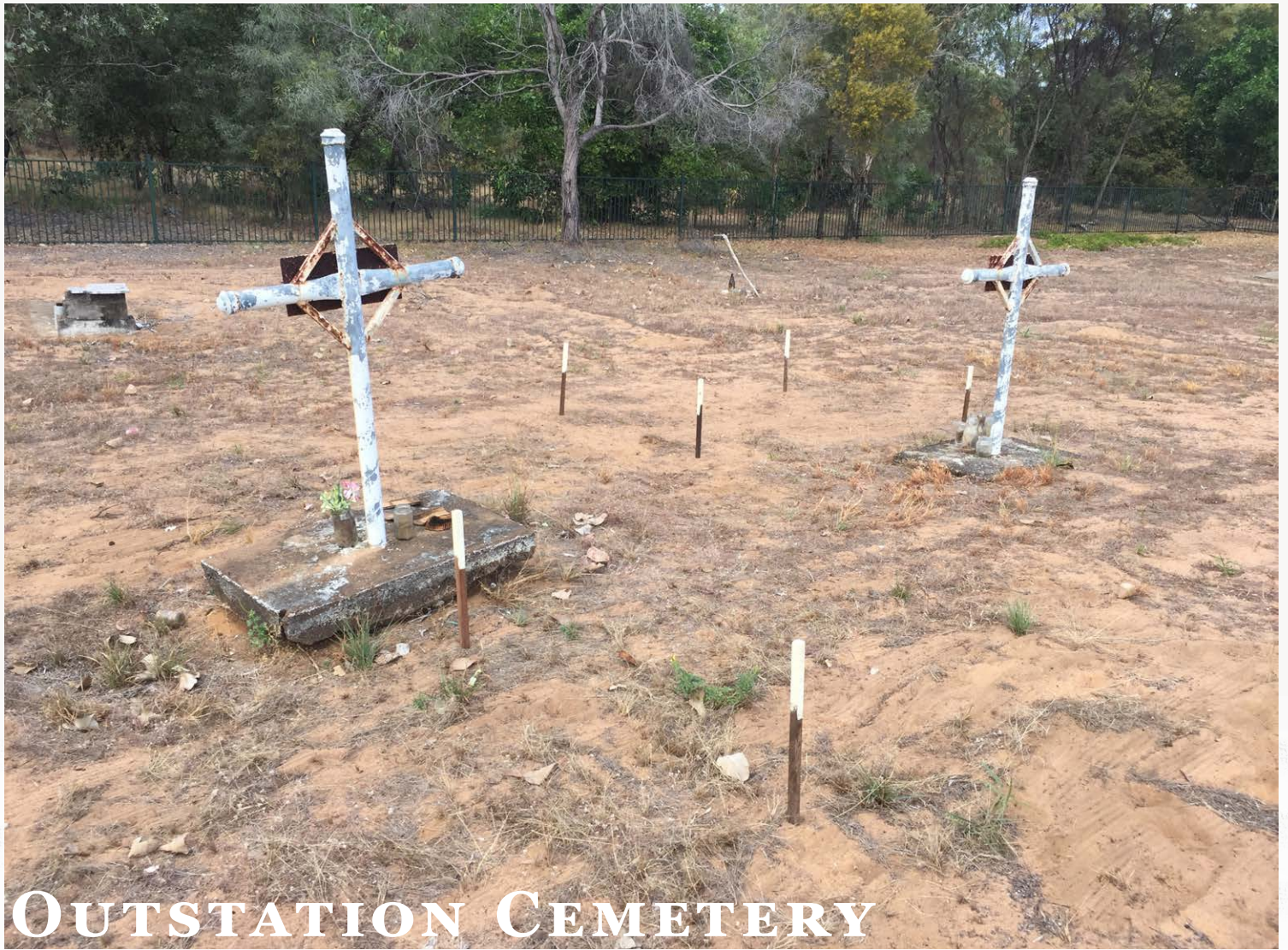
A grid for GPR survey was set up at the southern end of the cemetery and measured 22 x 14 m. Reflections of the graves can be clearly seen as high amplitude reflections. It was more difficult to point-plot these grave reflections as was done at Batavia, and therefore the orientation of the graves was not determined. It can be assumed they are east-west as in most Christian burials. A total of 10 very visible burials are located here and annotated on their high amplitude values in **Figure 3**. There may be more than this in the New Cemetery grid, but their reflections are obscured by the near-surface root and burrow reflections.

A spot-check with GPR was undertaken on the western side of the Modern Mapoon cemetery at the request of Mr Peter Guivera who remembers unmarked burials in the area from the previous decade. Two burials were identified near the entrance gate and marked with wooden stakes.



**Figure 3.** Modern Mapoon cemetery grid amplitude maps



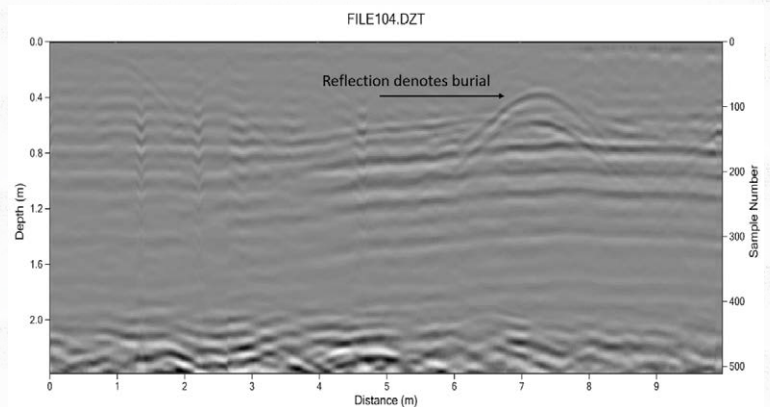


This cemetery is the third oldest cemetery in Mapoon with burials interred up to the mission closure in 1964. The fence of this cemetery is believed to be in the correct position as checked by Dr Chet Walker and Ian Moffatt using GPR in 2013. This location was spot-checked with GPR as requested by Elders and families to demarcate some family graves for headstones to be erected. Five burials were identified and marked out with wooden stakes with the assistance of Uncle William Busch and Maggie Peters.





This unmarked burial was identified by Uncle William Busch as being directly north of a large tree on the side of Cullen Point Rd. The child grave is the brother of Mr Edwin Woodley and is located near the mission time home remains of his grandparents, Rosie and Jubilee Woodley. The grid area for GPR investigations was 6 m x 10 m and located on relatively flat, sandy area on the eastern side of Cullen Point Rd. Processing of the GPR data identified the burial (Figure 4) which was located between 1.5-2.5 m on the x-axis and 7 m on the y-axis of the grid.



**Figure 4.** GPR profile from grid over presumed location of Woodley's unmarked grave. The hyperbola seen in the upper layers is a reflection of the burial.

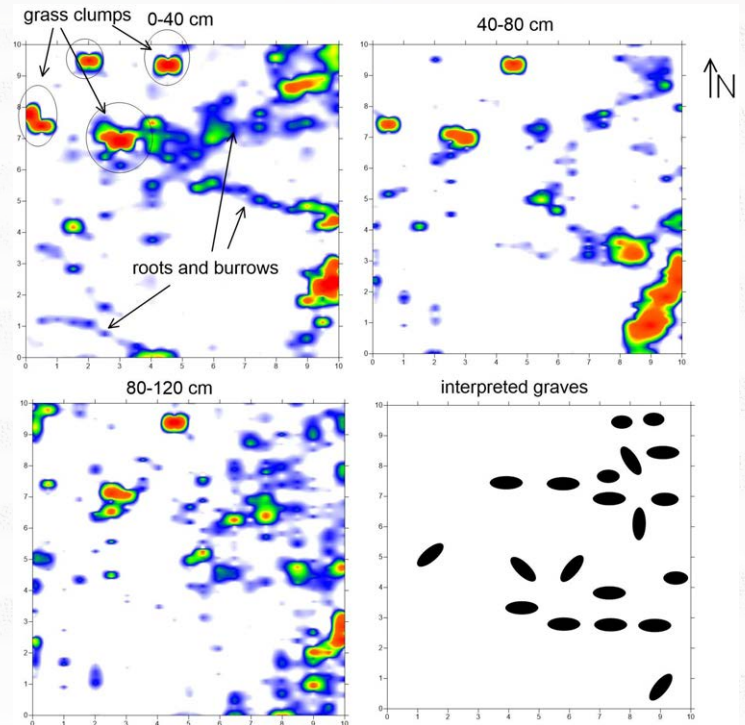




## BATAVIA OUTSTATION UNMARKED GRAVES

Two areas were identified in the vicinity of the Batavia Outstation as having possible human remains. Aunty Harriet Flinders remembered a grave as belonging to her Uncle Peter Gibson's brother, Norman Gibson when she was little during c1930s (Aunty Harriet Flinders, pers. comm. November 2016). This grave was unable to be investigated with GPR due to a mango tree that has grown over the site.

The second area is located at the main homestead site for the mission, directly east of the road from the Weipa-Mapoon Road to Batavia Outstation. This area was identified by Uncle William Busch as the possible location of unmarked graves and is located next to a slight mounded rise with a frangipani tree planted on it. The grid area for GPR investigations was 10 m x 10 m and located on relatively flat area east of the frangipani tree, a termite mound is located in the centre of the grid (see above photograph). A total of twenty graves were identified at this location (Figure 5). These graves may be associated with the Batavia Outstation, which was the former Samoan outstation run by Old Louie and a satellite mission outstation to the Mapoon Mission c1890s. This location is likely to be part of this outstation's mission time cemetery and also appears to include some graves which may be mission time or earlier use of Batavia outstation as a traditional Aboriginal camping ground.



**Figure 5.** GPR amplitude maps from Batavia showing many roots and burrows in the upper two slices, and graves in the 80-120 cm depth slice. The interpreted graves are shown as black ovals.





## POTENTIAL BURIAL MOUNDS 5-7

This site is located on the western side of Cullen Point Road and consists of three mounds located within an area of approximately 2500 square metres. All three mounds were vegetated with trees, vines and low scrub. GPR data was collected in two grids. Grid 1 (25m x 55m) encompassed **PBM 5** and **6** and Grid 2 (20m x 20m) encompassed **PBM 7**.



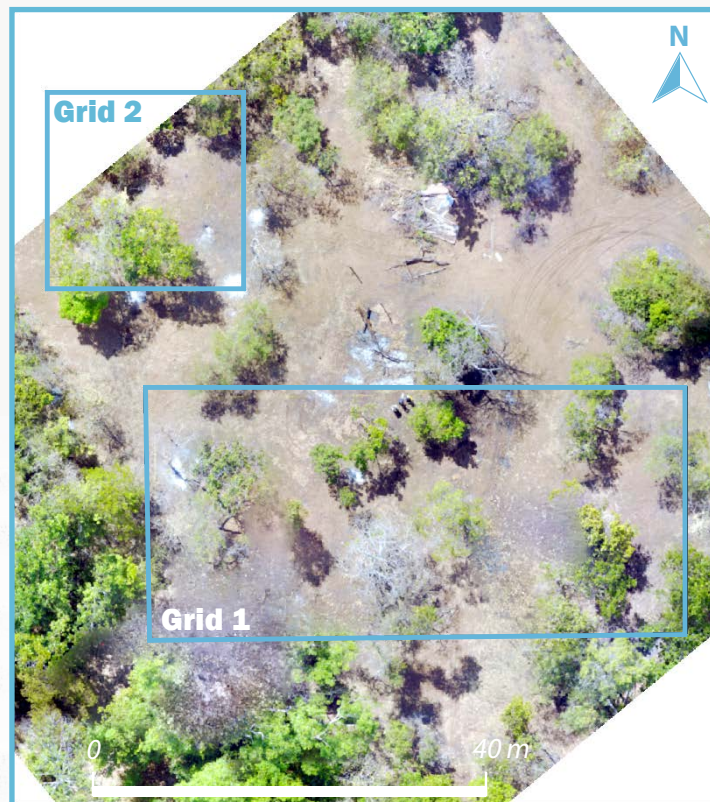
Potential Burial Mound 5 (PBM 5)



Potential Burial Mound 6 (PBM 6)



Potential Burial Mound 7 (PBM 7)



**Grid 1** includes **PBM 5** and **6**. The GPR profiles across **PBM 5** and **6** show a number of distinctive reflection features. The fill in **PBM 5** was built over a hard-packed surface, which in this case was not built above the ground surface when in use (**Figure 6**). Instead it looks to have been altered by compaction, and the surface contains many objects large enough to reflect radar energy (greater than about 20 cm in diameter). **PBM 6** was not constructed over a compaction surface, and no such reflective horizon is visible under its sediment fill. **Grid 2** contains **PBM 7** at this site. It has some very interesting surfaces, which appear to be stacked on each other on the north side of what would be the mound. Those surfaces are built directly on what was the ancient ground surface.



# POTENTIAL BURIAL MOUNDS 5-7

PBM 5 and 6, and the ground surrounding them, contain potentially 44 distinct burials (Figure 7). Most are clustered on the northern flank of the two mounds, and 11 of those are on flat ground between and around the mounds. None are located on the crest of the mounds, which seems to be the case for all the burials discovered in mounds in the study area.

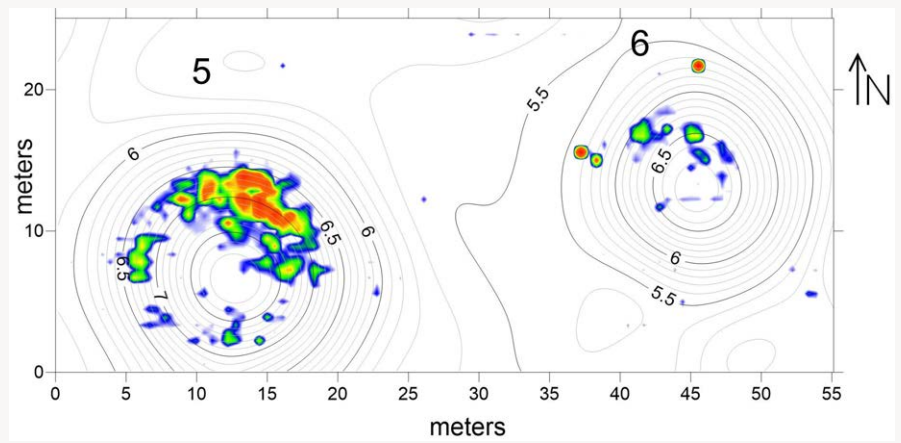


Figure 6. Amplitude map of the ground surface before the mounds were constructed on the present-day topography of the ground. Mound 5 shows a distinct hard surface under its north flank.

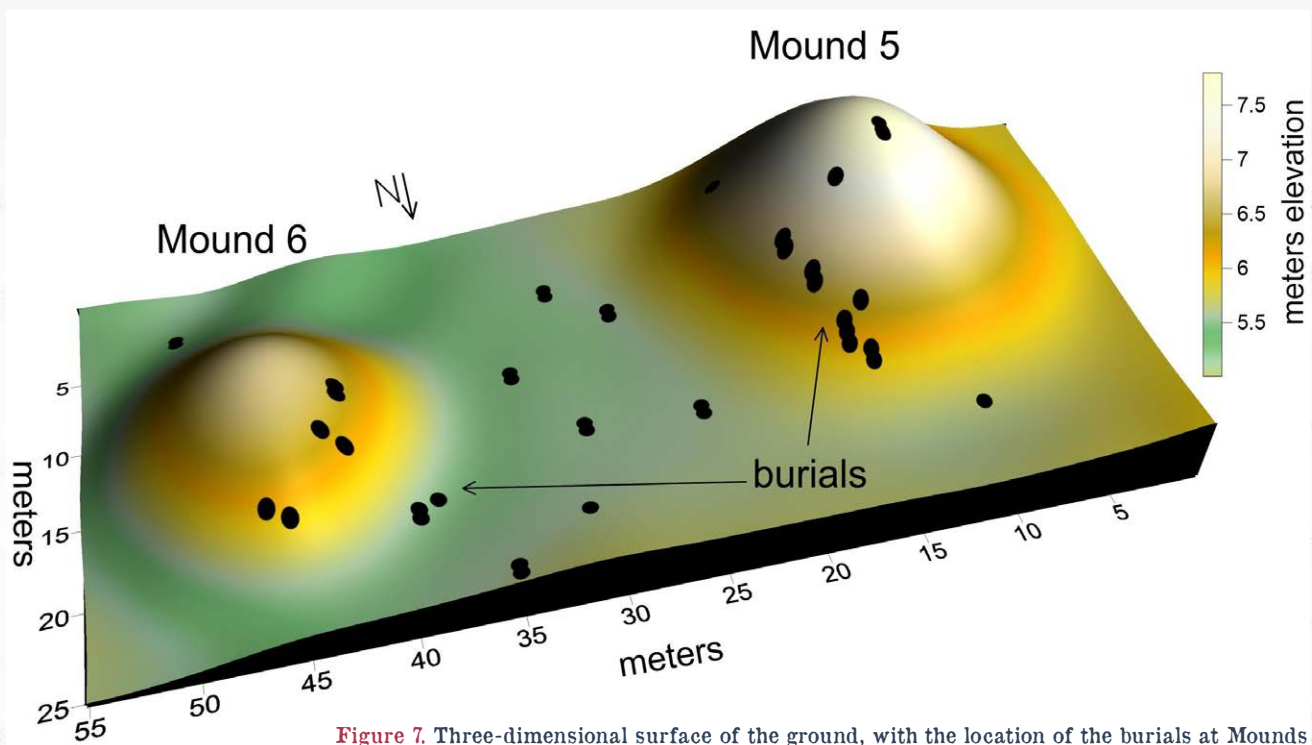


Figure 7. Three-dimensional surface of the ground, with the location of the burials at Mounds 5 and 6.

There are 12 well defined graves within PBM 7 (Figure 8). All are located on the northern half of the mound, with one (or perhaps two that are very close to each other) on the western flank near the base of the mound.

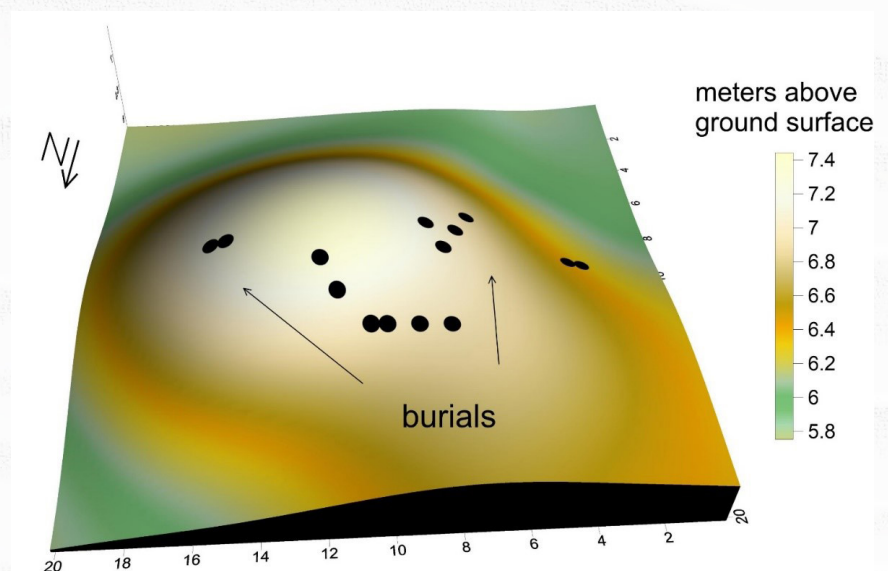


Figure 8. Mound 7 surface topography with the location of 11 graves, all on the northern half of the feature.





# POTENTIAL BURIAL MOUND 12

PBM 12 is located directly adjacent to Cullen Point Road on the eastern side. The closest mission time house remains belong to Connie and Willie Cooktown and Jean and Gilbert Jimmy. PBM 12 is approximately 1km east of fighting ground near Big Swamp. There are large trees on and around the mound, and land snail and cockle shells on its surface. The GPR survey grid is 16 m by 18 m in dimension covering the whole mound, and some of the flat areas adjacent to it.

Five distinct burials are visible on this mound (Figure 9).

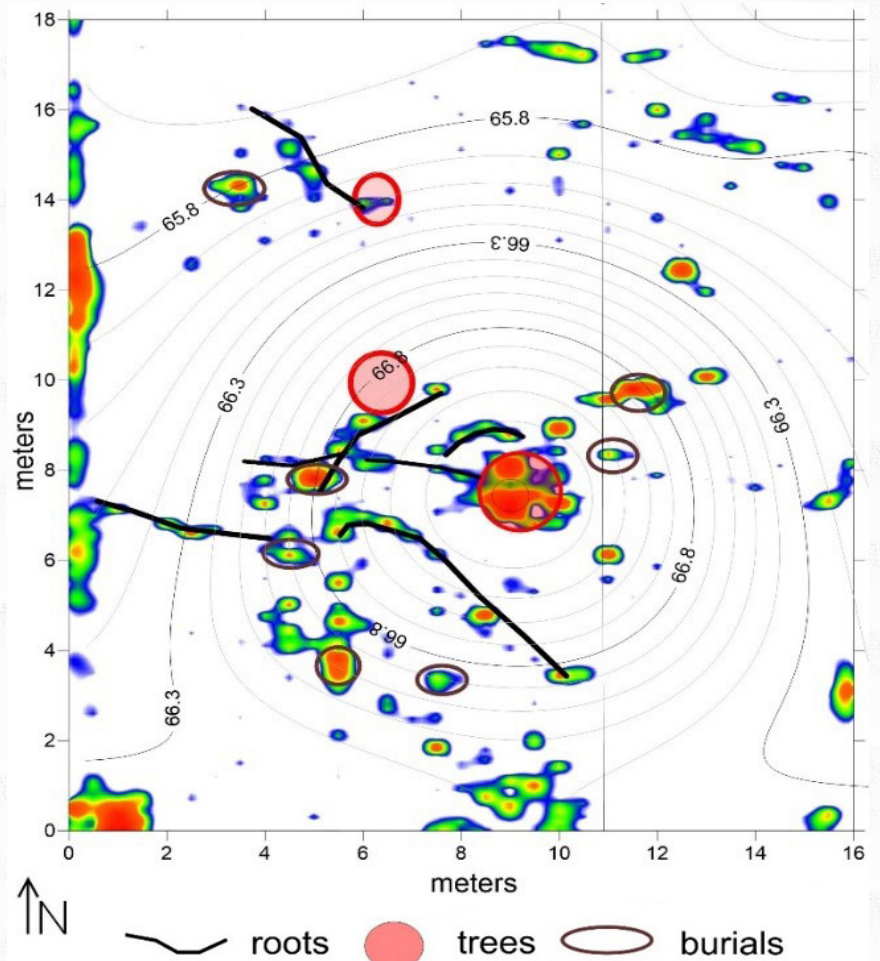


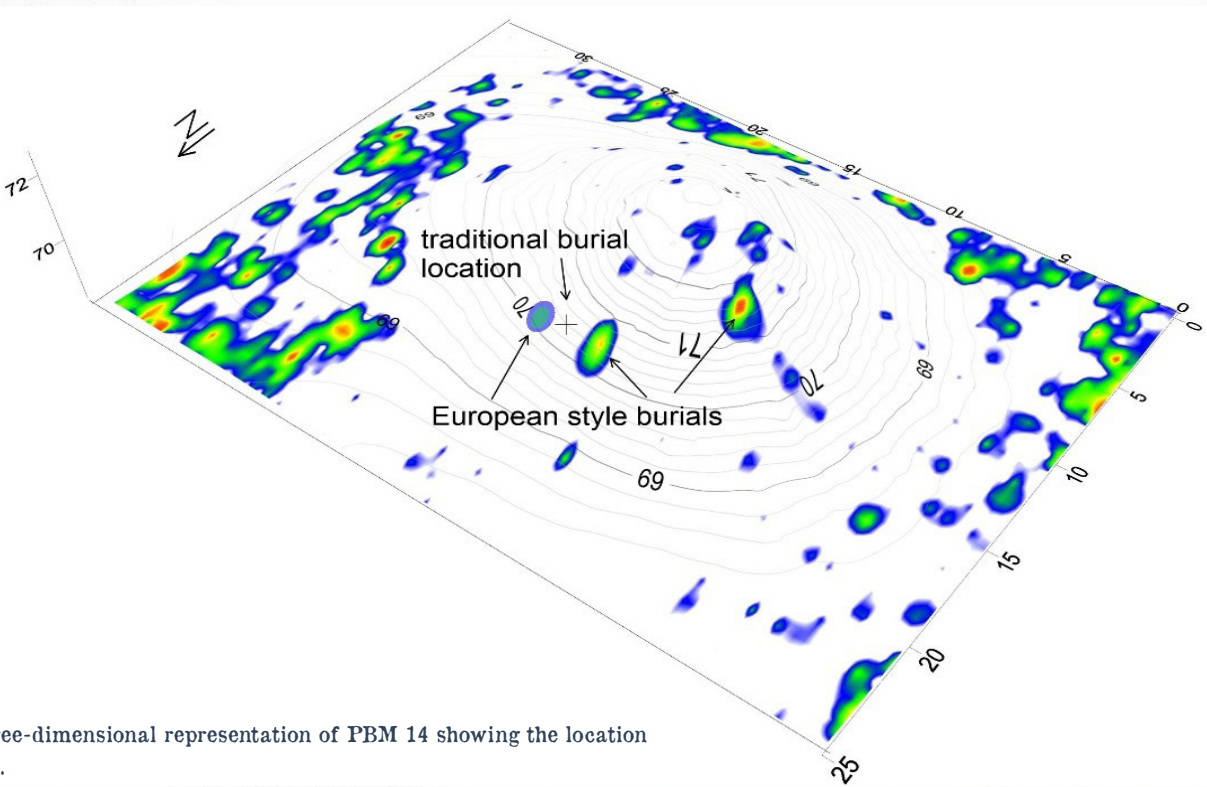
Figure 9. Composite reflection amplitude map of the strongest radar reflections in this grid from 40-120 cm depth.





**PBM 14** is located on the eastern side of Cullen Point Road. This mound is located adjacent to a known demarcated concrete grave for a child belonging to the Ling family (this grave was fenced as part of the Mapoon Cemeteries Project Stage 3 in 2015). Ethnohistorical accounts support the theory that this may be a burial mound. Mr Ling walked around 50 kilometres over hot sand dunes to bury his son at this location, during the mission time, at the base of this mound (William Busch pers. comm. June 2015). **PBM 14** is located 250 metres south of a dancing ground and 750 metres south of a bora ground recorded by Mark Moran in 1991. The mound is approximately 3.5m high, is very steep with loose unstable sediment and has a scrub turkey nest located on the crest of it.

The GPR data shows three graves on this mound (Figure 10). Near its crest is a very high amplitude reflection feature, which is representative of a European-style burial. A traditional burial, like those seen at the Mapoon Mission Cemetery is present as well as a third grave near the surface, which is likely to be more recent.



**Figure 10.** Three-dimensional representation of PBM 14 showing the location of four burials.





# POTENTIAL BURIAL MOUNDS 16-18

PBM 16 to 18 are located on the eastern side of Cullen Point Road. These mounds are located at the mission boat landing known as Felicia's Landing and adjacent to a known dancing and fighting ground remembered by Aunty Harriet Flinders. These mounds are also nearby the remains of the mission time home of Old William Seven Poosh. The GPR survey grid is 35 m x 55m and encompasses all three mounds at this site.



The GPR reflection profiles show the ground surface as a flat reflection, upon which the mounds were built (Figure 11). This distinct layer becomes less clear under PBM 18, as it is taller and energy has attenuated within the sediment. But there are still clear indications that this pre-mound surface continues horizontally under the mound fill of PBM 18. PBM 17 is very different from PBM 18, as it has a built and compacted layer on the ancient ground surface. All the profiles collected over PBM 17 show this constructed layer below the mound fill, but only under this mound and not PBM 16 and 18.

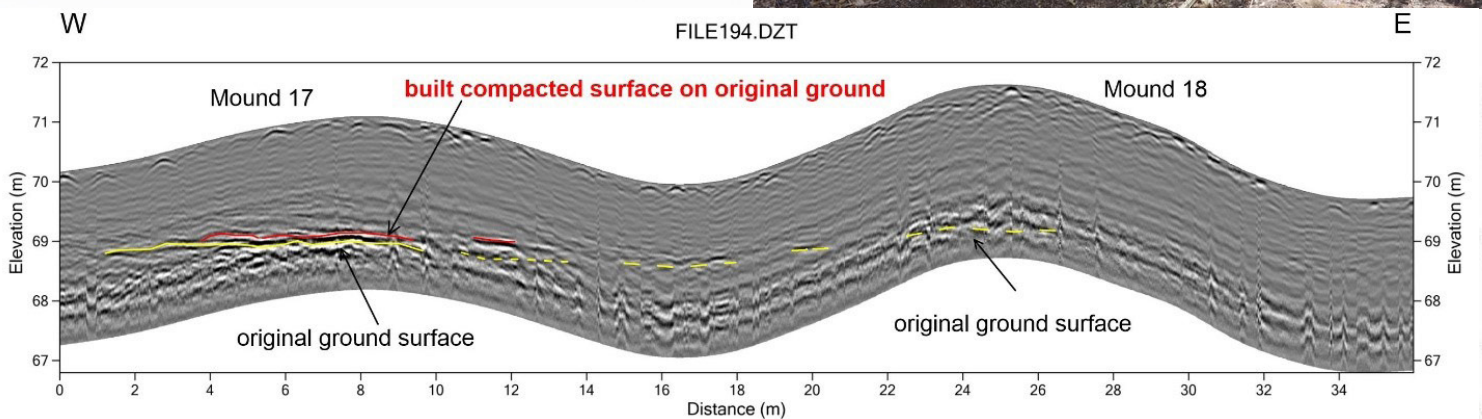
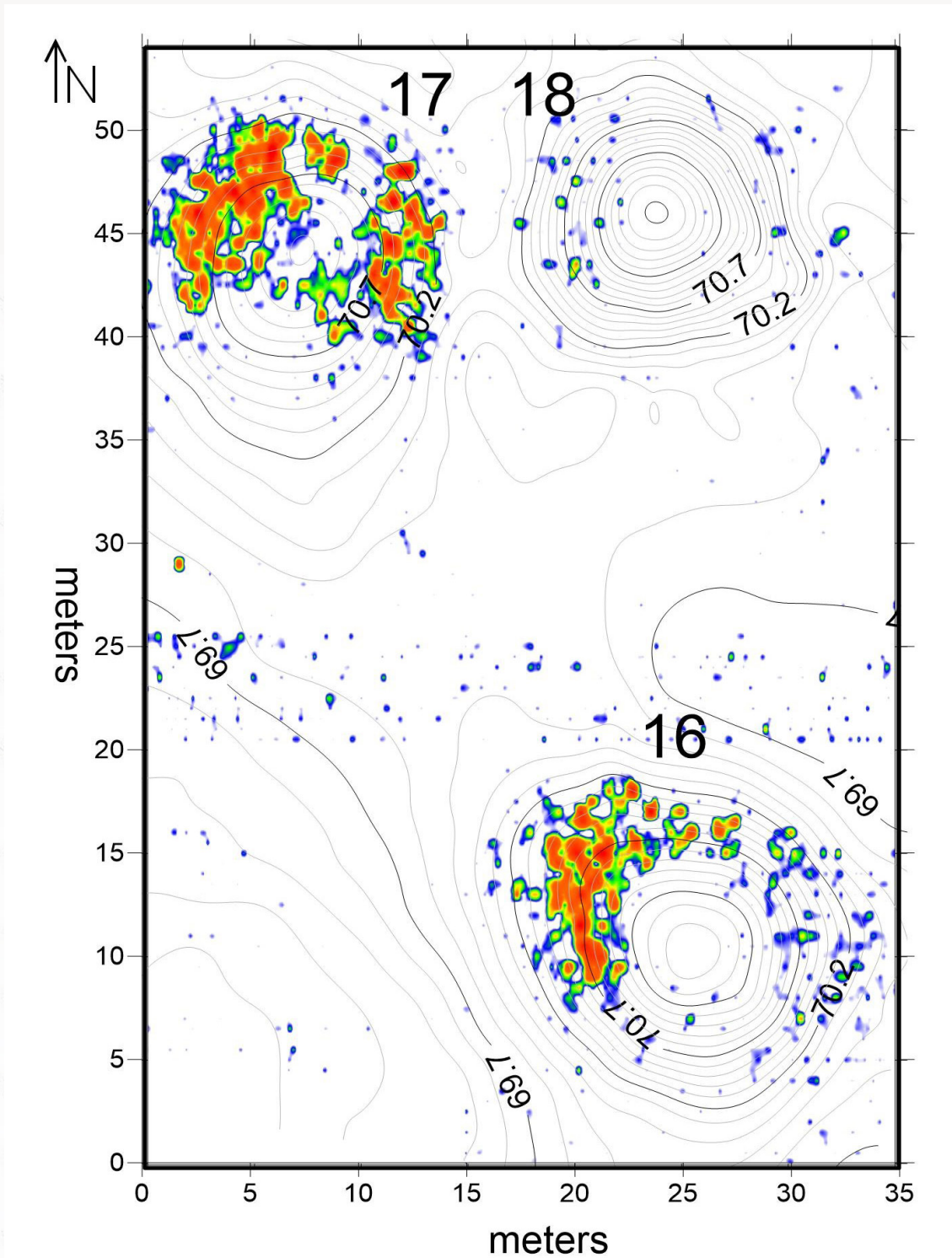


Figure 11. GPR reflection profile across Mounds 17 and 18 showing the original ground surface.



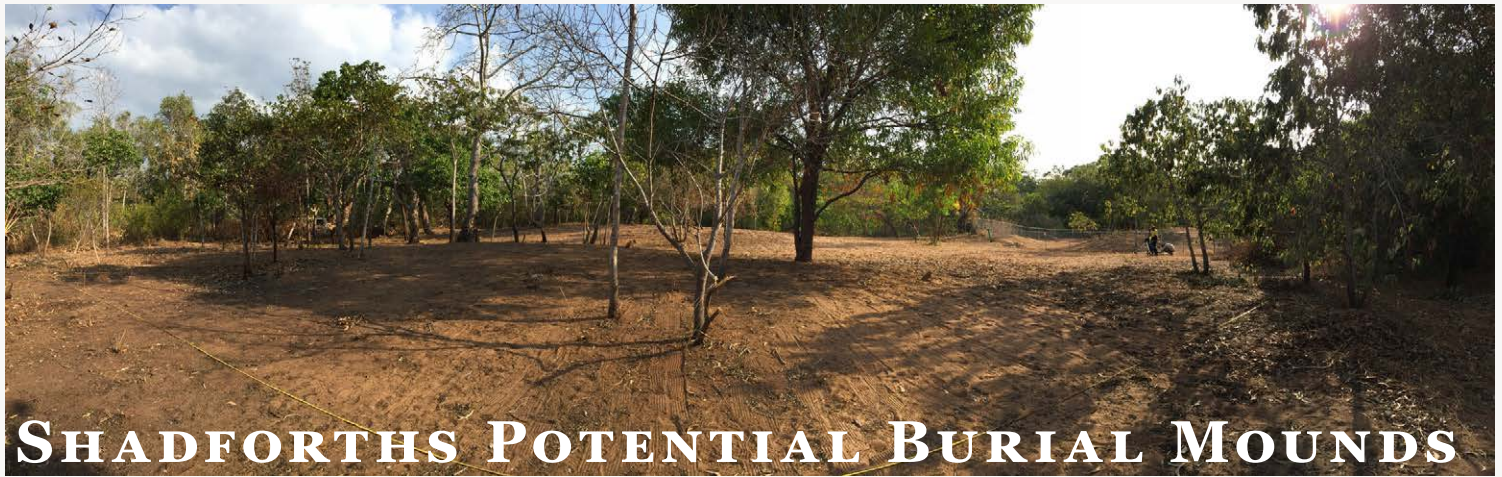
## POTENTIAL BURIAL MOUNDS 16 - 18

It is notable that **PBM 18** to the east has no constructed feature below the mound fill. This was the mound (along with **PBM 16** just to its south) that had an abundance of shells and coral fragments on their surface. The western high amplitude surface under **PBM 17** may have been a dance platform and feasting area. Whatever the original use of the sites all three of the mound areas were ultimately converted to mounds when these types of activities ceased. Another important feature of these three mounds is that there were no burials visible in any of the mound fill on any of the mounds (Figure 12). This is unlike any of the other mounds studied so far in this area.



**Figure 12.** Reflection amplitudes from the materials directly on the ancient ground surface. Mound 17 has a distinct square feature below it, indicating a prepared and compacted surface was located there prior to mound building.





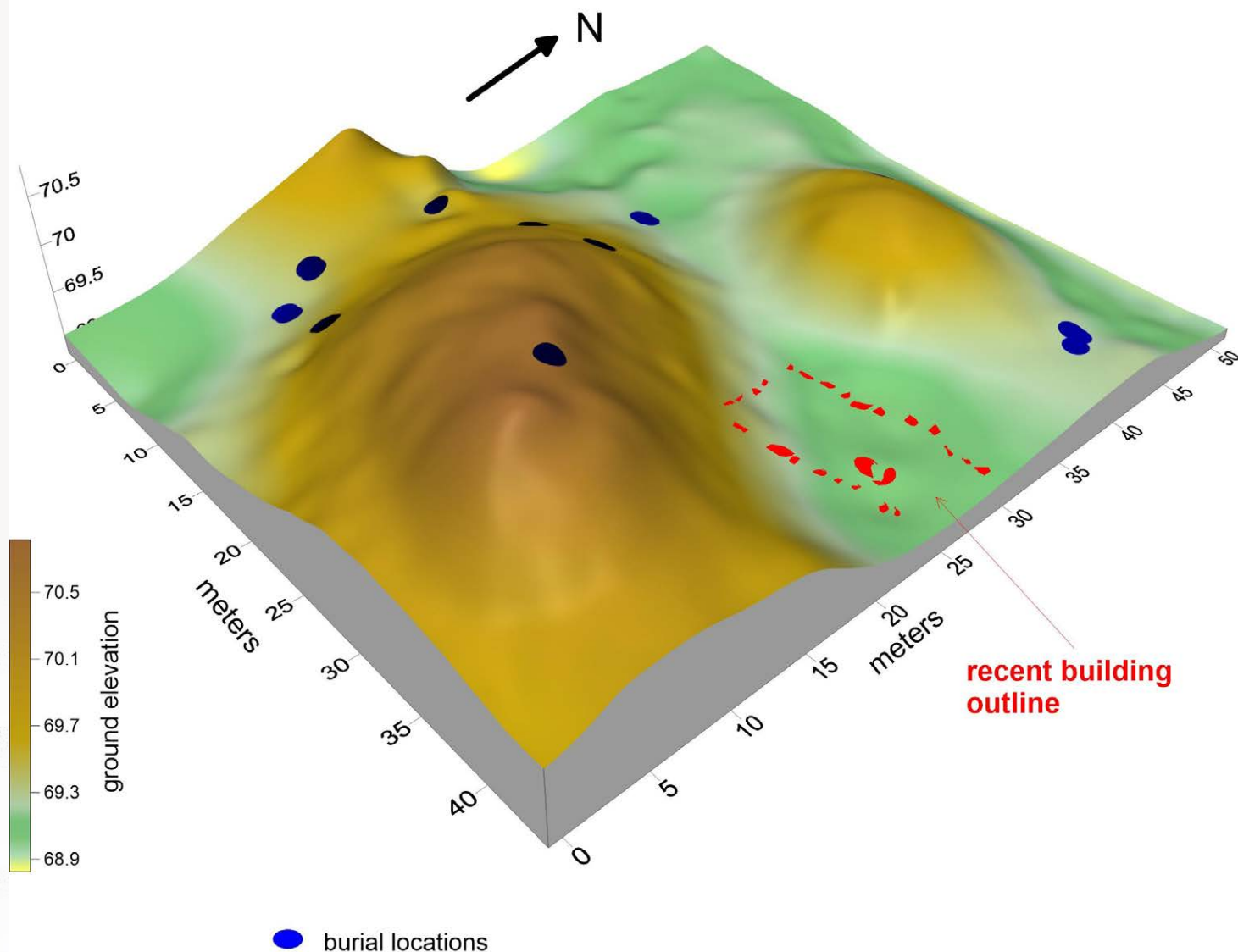
Shadforths Landing is the location of a former mission boat landing. The Shadforths mounds are a complex of four mounds and are also referred to as the Luff's family graves. **PBM A** (the highest mound, previously called the Large Mound) and part of **PBM B** (previously called the Small Mound), were previously investigated using GPR during the 2010 and 2015 investigations (Conyers 2015). During these investigations three burials were identified in the northern portion of **PBM B** and at least 10 burials were identified in Mound A, with two other burials noted in the flat area to the east and south of **PBM A** (Conyers 2015). Temporary followed by permanent fencing was put in place around **PBM A**, and bisecting **PBM B**. Two low relief mounds, **C** and **D** (located to the east of **PBMs A** and **B**), and the eastern part of **PBM B** were investigated during the 2017 field program using GPR and magnetometry. These mounds are the most southern graves investigated for this project and closest to Red Beach, located east of Cullen Point Road. An irregular shaped grid was used for GPR survey with maximum width of 42 m and maximum length of 50 m.



Grid at Shadforths



# SHADFORTHS POTENTIAL BURIAL MOUNDS



**Figure 13.** 3D surface at Shadforth's mounds C and D showing the location of the burials and the recent building discovered between the mounds.

A total of 9 burials were discovered associated with **PMBs B and C**, with most being on **PBM C** (Figure 13). Interestingly there are no burials at all associated with **PBM D** (with one on the easternmost flank of **PBM D**). The evidence of constructed features associated with or below the burial mounds at Shadforth allows for a provisional analysis of how this area was used over time. First people came to this area and built platforms (perhaps two at **PBM C** and one at **PBM D**). Those surfaces were either paved or compacted and certain unknown activities occurred there. They were built on sand dunes, perhaps because those features already provided a somewhat raised aspect the surrounding landscape. Then these areas were transformed into mounds by importing a great deal of sediment from elsewhere. The two mounds were constructed, but this building was likely in stages. One flat surface within the southern mound shows that at some time that area was the top of **PBM C** and later on the mound was built higher. Only after those construction episodes ceased were burials emplaced within these mounds. That is good evidence of a change in the way this location at Shadforth was used, with burials being only the last use of these upraised areas. The final episode of human activity was the construction of a building between the mounds. That building is likely historic, and may not be related at all to the previous activities at Shadforth.



# WHERE TO FROM HERE?



## **Recommendations**

There are hundreds of earth mounds within Mapoon lands. These mounds are likely to be culturally constructed and also to have been once used by scrub turkeys or formed and constructed off sand dunes. The mounds investigated within this study nearly all contain human remains based on the results of the GPR and magnetometry. These results indicate that many more mounds may perhaps contain human remains. The age of these remains and when they were buried in mounds is unknown, they may be hundreds or even thousands of years old.

These mounds are important cultural places to Mapoon people, particularly the Traditional Owners of Mapoon who are connected spiritually and by kinship to these burial places and cultural monument. These mounds also have scientific significance and international research potential because they can tell us more about how people lived and mourned their lost family members and provide new information about how people cared for their dead and connected to their culture a long time ago that is not remembered or known.

This initial study shows that further research on what the earth mounds contain and how they are constructed needs to be undertaken in other areas of Mapoon and western Cape York. It also shows how useful GPR and other scientific tools can be when used appropriately and in partnership with community to help identify and protect the resting places of Mapoon's old people.



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