

- **WARNING:** Human remains are shown in this presentation. None are those of Aboriginal people or other Australians.
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# Grave Doubts

## Detecting burials and Boundaries

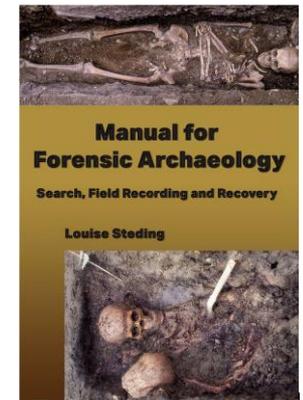
### QSC3 Project

Assoc. Prof. Louise Steding (PhD)



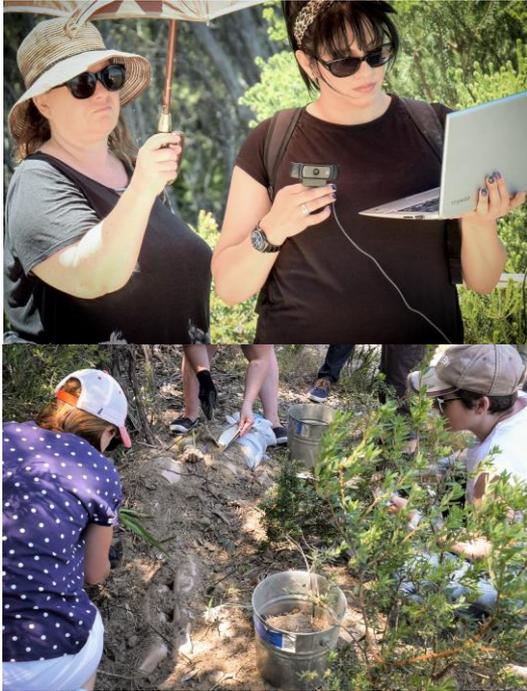
Sydney Harbour Federation Trust (Client)  
Swinburne Online (University of Technology)  
Stedinger Associates (Consultants)

# Missing Persons



- I combine archaeology and criminal profiling
- I teach at Swinburne University
- Within the Industry, I search for Missing Persons, both cold and where information is presently required (but not those who don't want to be found)
- In my spare time I write up historic cold cases (both commercial and academic)

# Fieldwork Project



- A recent addition to my university work is the coordination of fieldwork projects ... usually in cemeteries.
- Client Questions are a priority
- Regional Student Accessibility to Fieldwork
  - Attendees use ground penetrating radar detecting legal burials and cemetery features.
  - Attendees also do a mock excavation and profiling of 'illegal burials'.
  - Onliners attend through a combination of streaming with collaborate session on site and in lectures.



- Career development in Forensics with key industry speakers in search and rescue, NSW Police, physical anthropology, private investigation and forensic archaeology.

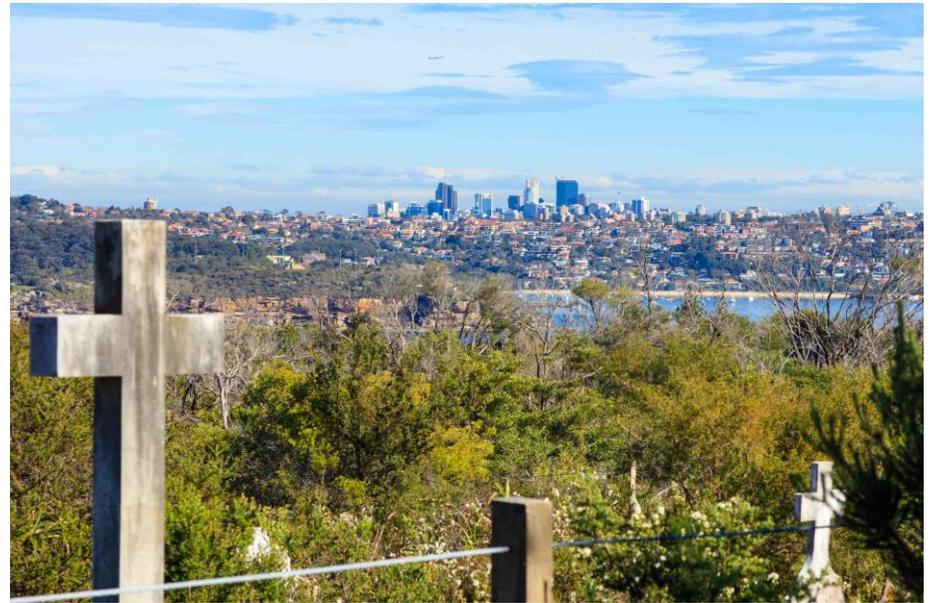


# Quarantine Station Cemetery No.3

- Classic project – combining historical and forensic archaeology
- Conservation Management Plan

## Client questions

- ie. How many burials?
- Where were the boundaries?
- What did the cemetery look like?
- What burial procedures are evident?
- Any difference from the record?





# Geophysical Survey

- With fallen grave markers ... not all are visible.
- Geo physical survey methods – non intrusive.
- Ground Penetrating Radar —short electromagnetic pulse timed.

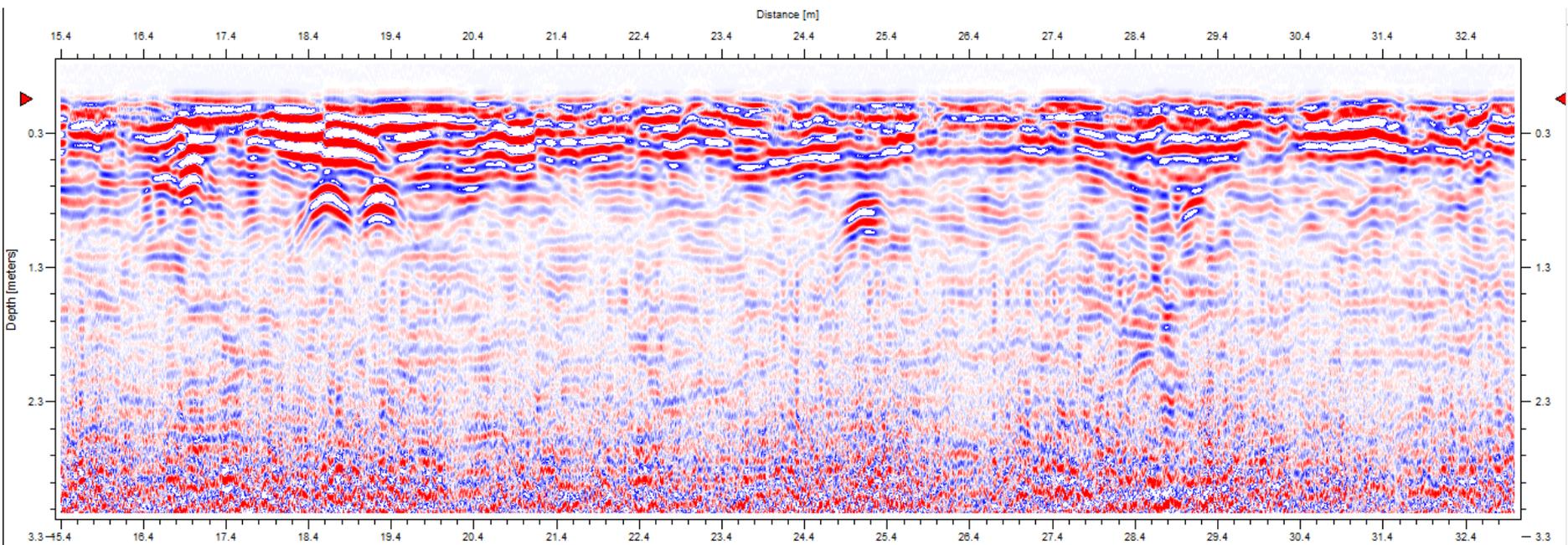


- +ve. Immediate results, penetrates concrete, it estimates depth of the target and can detect graves.
- Chose the correct machine and aerial

# Our Method: Traditional + GPR

- Problems = path obstruction.
- Traditional tape grid / alignment clearly visible
- Real time recording
  1. GPR file recording for burials and locations
  2. Plotting on satellite image







- More than in register
- Depth / Disease
- Date of death +burial / transport / Delay
- Central anomalie
- Regularity
- Boundary / Outliers

# Results

- 1880s – 1920s Cemetery
- Burials due to disease, accident, suicide.
- Immigrants / Sydneysiders
- 241 persons buried according to the records.
  
- More than 245 with not all areas accessible (vegetation).
- Nature of markers - temporary
- Arrangement not traditional = date of burial. Visible as ... Depth.
- Areas of epidemics.
- Progressive occupation – from where? Former entrance to the south. Dates of burial.
- Central area = access / depth of soil?
- Central marker
- Lack of ceremony? Retention of deceased = organization.
- Boundaries are modern but not necessarily outliers. Suicides are included. So too are people from many cultures – Aboriginal, German, Chinese, Italian, Scottish, English, ...
- Orientation – confirmed by the signal as being north south. Unusual.

# What to do?

- If there are more people buried, who might they be?
- Is the burial register incomplete?
- Were people exhumed from two earlier cemeteries?
- This is easily tested by surveying the locations of the early cemeteries using ground penetrating radar.
- A pertinent question is ... Would you want to exhume?

# Excavation (Forensics / Hist Arch – search, record, recover)



- What has happened to create this site?
- What or who created it and how?
- Search for, identify, thoroughly record / document and recover physical remains associated with boundaries, unmarked graves, a crime, a dispute, missing persons or property. We are data collectors.

# Do You Want to Excavate ?

## Quarantine Station

Tuberculosis,  
Spanish Influenza,  
Bubonic Plague,  
Typhoid,  
Cholera, and  
Scarlet Fever



The individual above is not from the Quarantine Station. They are actually from the 17<sup>th</sup> Century.  
Photo: L. Steding.

# Disease.



- The skin of Rameses V is covered with bumps, suggesting that he died of smallpox.

• Ramses V, *Patrick Landmann / SPL*

# Small Pox



- In the 1950s in the Netherlands small pox scabs were stored in envelopes for 13 years. The variola virus can survive for more than a decade in a temperate climate.



- Advanced symptoms of small pox, scarlet fever and bubonic plague, all of which were present at the Quarantine Station.

- Influenza viruses seem to be able to survive freezing conditions
- In February 2014, researchers studying Siberian permafrost reported that they were able to resurrect a 30,000-year-old virus that infects amoebae.



- View across the graves of soldiers buried at the Quarantine Station. They fell victim to the Spanish Flu.

# Where are they / Who are they

- Clusters (dates of death & burial)/ Interpolation
- Depth – disease
- Photography Chong Ling Shon + Joseph and Annie Fennells + David Williams



# Major Problems

- How to reconcile different interests - ie.  
Vegetation and conservation.  
Tourism and erosion prevention
- How to represent unmarked graves

