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Kingston Pier Channel Construction Project



UNDERWATER CULTURAL HERITAGE STATEMENT OF HERITAGE IMPACT

Kingston,
Norfolk Island,
Australian External Territory

June 2020



Kingston Pier Channel

Construction Project

Underwater Cultural Heritage Statement of Heritage Impact

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June 2020

Cosmos Archaeology Job Number J20_03

Cover Image: Naylor, Thomas Beagley, 1842. *View of the landing place, boat crossing the bar.* Note what appears to be a timber slipway adjacent to the Pier on its western side. Available at <http://nla.gov.au/nla.obj-135964801>, accessed 5 March 2020.

Revision	Description	Date	Originator	Reviewer	Approver
V0	Draft SoHI	30-04-2020	MB/JM/CM	CC	CC
V1	Updates from Advisian review	15-05-2020	JM	CC	CC
V2	Updates from 2 nd Advisian review	26-06-2020	N/A	CC	CC

EXECUTIVE SUMMARY

The Commonwealth Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) is proposing to improve the shipping capabilities of Kingston Pier, Norfolk Island. This will involve deepening the approach and berthing areas of the Kingston Pier to provide safer access for vessels at all tides.

Advisian is preparing an environmental assessment for the proposed works and Cosmos Archaeology Pty Ltd has been commissioned to prepare the statement of heritage impact (SoHI) for the underwater cultural heritage.

Historical research found that the area of the proposed works has been in constant use since 1788 as the primary landing place for Norfolk Island. This cultural activity has resulted in objects being discarded, both accidentally and deliberately within the waters of the study area. A number of vessels have been wrecked outside the proposed envelopes for the channel augmentation, but it can be expected that wreckage from one or more shipwrecks, including that of the HMS *Sirius*, would have floated into the areas proposed for seabed removal.

The non-disturbance archaeological dive inspection carried on 26th and 27th February 2020 did not identify any culturally significant artefacts, however it has been assessed that culturally significant artefacts could be concentrated and buried within gullies, gutters, cracks and fissures within the calcarenite and possibly volcanic tuff substrate that would be removed by the proposed works. It is also possible that there may be artefacts encased in the calcarenite.

The identified underwater archaeological resource is adjacent to, and interwoven with, the cultural heritage values of The Kingston and Arthur's Vale Historic Area (KAVHA). The underwater archaeological resource pre-dating the transfer of Norfolk Island's governance to Australia is potentially of critical significance while material culture relating to WWII defence works, tourism, use of earlier structures and modifications is of secondary significance. Dredging in the 1980s truncated this significant underwater archaeological resource but has not removed it.

The proposed works – unmitigated – could potentially have major to extreme impacts to the critical significance of the underwater archaeological resource which would be unacceptable from a heritage standpoint. The Commonwealth *Underwater Cultural Heritage Act 2018* automatically protects remains of shipwrecks of 75 years age or older and it is probable that the proposed works will disturb such remains.

The proposed action – seabed removal (all options) – could have a significant impact as it could potentially permanently remove, destroy, damage or substantially disturb an underwater archaeological resource assessed to have critical cultural heritage significance values in relation to World Heritage Listed KAVHA. In fact, this resource could be considered to be unique to KAVHA in that there is no other location elsewhere within and without KAVHA which formed a constant and longstanding cultural nexus between the land and the sea. As such as it is believed that this action could potentially have a significant impact on a matter of national environmental significance and may require approval from the Australian Government Minister for Agriculture, Water and the Environment as required under the Commonwealth *EPBC Act 1999*.

To mitigate the impact of the proposed works on the cultural heritage significance of the underwater archaeological remains, an extensive archaeological excavation and monitoring programme would be required. For the mitigation to be successful a well prepared plan covering all aspects of the archaeological investigation, including its focus, the recovery, recording, management and publicising of the artefacts as well as the data collected. This plan would be called the Kingston Pier Underwater Archaeological Management Plan (KPUAMP). Some of the elements of this plan have been incorporated into the current 30% construction plan.

An underwater archaeological test excavation would provide information on the extent, variety, frequency and condition of the resource which would be used to create a more informed KPUAMP.

Based on the above findings the following recommendations are made:

Recommendation 1 – Undertake an underwater archaeological test excavation.

This would provide additional information on the nature of the underwater archaeological resource to be impacted by the proposed works which would better inform the mitigation strategy and implementation, prior to, during and after the completion of the proposed works.

Recommendation 2 – Apply for a permit under the Underwater Cultural Heritage Act 2018 (Cth) to undertake the test excavation.

As there is a reasonable probability that wreckage associated with vessels that were wrecked more than 75 years ago will be impacted by the proposed works it would be prudent to obtain a permit under Part 3, Division 1, Subsection 23 of the *UCHA Act 2018*.

Recommendation 3 – Prepare an abbreviated Kingston Pier Underwater Archaeological Management Plan for the test excavation.

This plan would accompany the application for a permit under the *UCHA Act 2018* and its implementation would be a condition of the permit.

Recommendation 4 – Submit a referral under the EPBC Act 1999.

The proposed action – seabed removal (all options) – could have a significant impact as it could potentially permanently remove, destroy, damage or substantially disturb an underwater archaeological resource assessed to have critical cultural heritage significance values in relation to World Heritage Listed KAVHA. In fact, this resource could be considered to be unique to KAVHA in that there is no other location elsewhere within and without KAVHA which formed a constant and longstanding cultural nexus between the land and the sea.

It is believed that this action could potentially have a significant impact on a matter of national environmental significance and may require approval from the Australian Government Minister for the Environment.

The study area is located within the Norfolk Marine Park which is protected under the Act. Further advice from the Australian Marine Parks division should be sought.

Recommendation 5 – Apply for a permit under the Underwater Cultural Heritage Act 2018 (Cth) for the proposed works.

As there is a reasonable probability that wreckage associated with vessels that were wrecked more than 75 years ago will be impacted by the proposed works it would be prudent to obtain a permit under Part 3, Division 1, Subsection 23 of the *UCHA 2018*.

Recommendation 6 – Prepare and implement the Kingston Pier Underwater Archaeological Management Plan for the proposed works.

The implementation of this plan would be a condition of Approval (see recommendation 4) under the *EPBC Act 1999* if a referral is required and the permit (see recommendation 5) under the *UCHA Act 2018*.

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1 INTRODUCTION

1.1 Background

The Commonwealth Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) is proposing to improve the shipping capabilities of Kingston Pier, Norfolk Island. This will involve deepening the approach and berthing areas of Kingston Pier to provide safer access for vessels at all tides.

Kingston is the capital of Norfolk Island, an Australian external territory in the South Pacific Ocean, and is Australia's second oldest town behind Sydney. Kingston Pier is located on the south side of the Island and is one of the main waterway import/export locations on the Island, the other being Cascade Pier on the north side. The channel adjacent to Kingston Pier faces challenges of limited water depth and navigation area at lower tides and therefore presents a safety risk to vessel users.

DITRDC engaged Advisian to undertake the delivery of the Kingston Pier Channel Construction Project (the Project). The Project involves locally deepening and widening the channel approach and berthing area adjacent to the Pier to provide safer access to vessels at all tides, with about 2000m² – 6000m² of seabed material being removed.

The key objectives for the project include:

- Provide a deeper and wider approach channel for commercial and recreational vessels;
- Increase the availability of Kingston Pier for berthing of vessels by providing a safer berthing approach;
- Cause minimal impact to existing port operations and structures during construction;
- Use local labour and resources where appropriate and possible;
- Ensure the project is sympathetic to, and complies with, the KAVHA Heritage Management Plan;
- Ensure the project considers and minimises environmental, social and economic impacts;
- Ensure community and stakeholders are communicated to in a timely manner and involved in key decisions made, including selection of the preferred design channel;
- Consider future allowance for larger vessels to enter the channel, and;
- To deliver the project by the end of the year 2021 and within the project budget.

Advisian is preparing an environmental assessment for the proposed works and Cosmos Archaeology Pty Ltd has been subcontracted to prepare the statement of heritage impact (SoHI) for the underwater cultural heritage.

1.2 Study Area

The study area for this underwater cultural heritage SoHI incorporates the maximum extent of proposed dredging with a further approximate 10 m buffer extending from the seaward edge of the construction envelope of the seabed removal option with the greatest extent – See Option 4 in Section 8 (Figure 1 and Figure 2).



Figure 1 : Location of study area (Base map courtesy Google Maps)



Figure 2: Study area for the underwater cultural heritage SoHI. (Base map courtesy Google Maps)

The polygon further out to sea in Figure 2 is a large submerged bombora beyond the entrance to the channel which may be reduced in height as part of this project.

1.3 Objective of this study

The objective of this study is to:

Assess the impact of the proposed works to the cultural heritage significance of the known and potential underwater cultural heritage by evaluating its context, extent, variety, frequency and condition.

Impact refers to any seabed disturbance arising from the proposed works. Apart from seabed removal, other impacts could arise from anchoring barges, including those with spuds.

Underwater cultural heritage refers to all form of human material behaviour below the highest astronomical tide such as the remains of shipwrecks, maritime infrastructure such as jetties and beacons as well as artefact deposits created by deliberate or accidental discard from vessels, Piers, wharves, jetties or shore.

Known cultural heritage refers to artefacts and/or sites which have been located and/or documented. Potential cultural heritage refers to predicted presence of artefacts and/or sites based on historical accounts, patterns of cultural behaviour and site formation processes.

This statement of heritage impact does not assess any impacts to the structure of Kingston Pier.

1.4 Abbreviations

ADAS	Australian Diving Accreditation Scheme
AUCHD	Australasian Underwater Cultural Heritage Database
AZMP	KAVHA Archaeological Zoning and Management Plan
BOM	Bureau of Meteorology
BP	Before Present
CE	Common Era
DITRDC	Department of Infrastructure, Transport, Regional Development and Communications
EPBC	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
KAVHA	Kingston and Arthur's Vale Historic Area
KPUAMP	Kingston Pier Underwater Archaeological Management Plan
MSL	Mean Sea Level
OH&S	Occupational Health and Safety
PDS	Professional Diving Services
Regulations	<i>Environment Protection and Biodiversity Conservation Regulations 2000</i>
SCUBA	Self-Contained Underwater Breathing Apparatus
SoHI	Statement of Heritage Impact
UCHA	Underwater Cultural Heritage Act 2018

2 PHYSICAL SETTING

The territory of Norfolk Island comprises Norfolk, Phillip and Nepean Islands and is located at 28°58' Latitude and 168° 3' Longitude with an overall area of almost 38 km². The main island is 35 km²; approximately 8 km wide east to west and 6 km north to south with a 32 km long coastline.

Norfolk Island is a mountain top remnant of a shield volcano, part of the Norfolk Ridge that runs between New Zealand and New Caledonia. The shelf immediately surrounding the island group is 95 km long, north to south, and 35 km wide, east to west.¹

The site is located on the southern side of Norfolk Island, where the edge of the island rises gently to the north and steeply to the west.

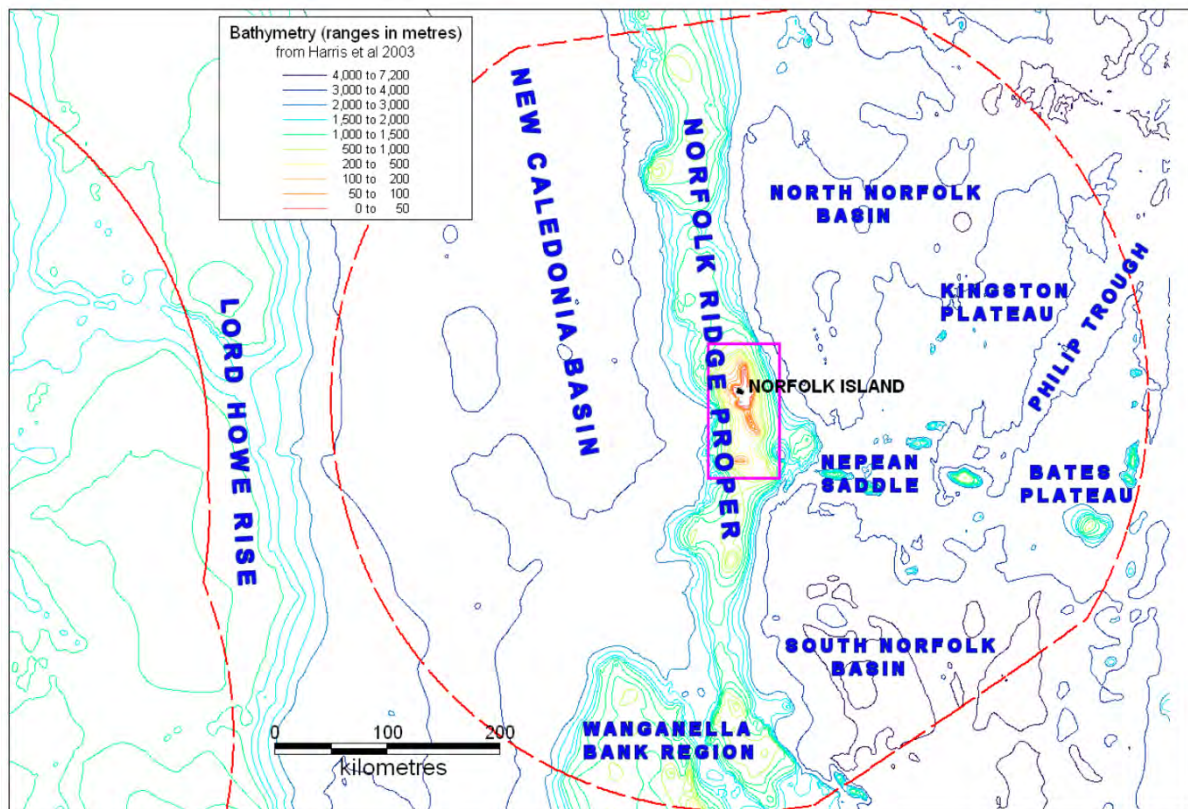


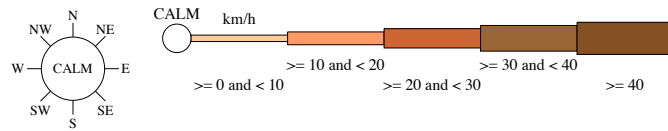
Figure 3: Bathymetry of the Norfolk Ridge running between New Zealand and New Caledonia. Norfolk Island indicated with pink square.²

¹ **Norfolk Island** Commonwealth of Australia (Geoscience Australia) 2020, available at <https://www.ga.gov.au/scientific-topics/national-location-information/dimensions/remote-offshore-territories/norfolk-island#heading-1>, accessed 22 March 2020.

² **Williams A., F. Althaus, D. Furlani, 2006, Assessment of the Conservation Values of the Norfolk Seamounts area**, Report for the Department of Environment and Heritage pg. 18.

2.1 Wind, waves and current

Norfolk Island's climate is subtropical, with a mean monthly maximum of 25°C in February and a mean monthly minimum of 13°C in August.³ The prevailing winds are from the east and south east, while in summer the winds are mostly easterly (NE-SE) and emanate from the south eastern quadrant in winter (Figure 4).⁴



3 pm
13296 Total Observations

Calm 1%

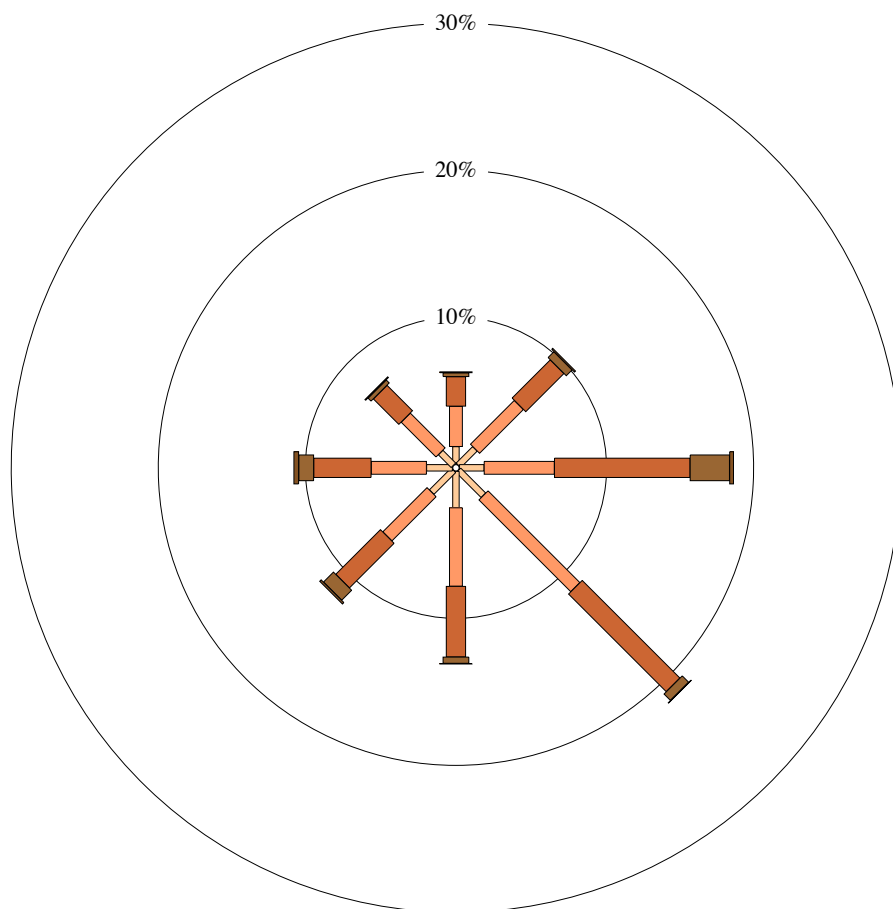


Figure 4 : Rose of annual wind direction versus wind speed as km/h at 3 pm Norfolk Island aerodrome based on daily observations from August 1939 to August 2019.⁵

³ Bureau of Meteorology, Climate statistics for Australian locations – Norfolk Island. http://www.bom.gov.au/climate/averages/tables/cw_200288.shtml Retrieved 10/4/20.

⁴ Bird E. 2010, *Norfolk Island* in Bird E.C.F. (eds) "Encyclopedia of the World's Coastal Landforms. Springer, Dordrecht, available at https://link.springer.com/referenceworkentry/10.1007%2F978-1-4020-8639-7_227

⁵ Bureau of Meteorology, Wind rose for Norfolk Island http://www.bom.gov.au/clim_data/cdio/tables/pdf/windrose/IDCJCM0021.200288.3pm.pdf Retrieved 10/4/20.

The study area is subjected to high energy waves and is mostly affected by oceanic swells originating from the south east quadrant. Nepean Island serves to refract south easterly swells allowing waves to enter the study area from the south. The prevailing southerly winds have the effect of heightening the waves entering the study area while the reef platform projecting from the end of the Pier for approximately 60 m to the south west provides some protection especially at low tide when the platform is exposed (Figure 5). Nevertheless larger waves entering the study area bend around the end of this reef and reduced swells enter the berth area and progress along the side of the Pier and break onto the shore.



Figure 5 : Panoramic view of the Kingston Pier on relatively calm day looking southwards. Waves on a rising tide breaking on the reef projecting to the southwest of the Pier. Phillip Island is on the horizon in left of centre of image, while Nepean island is further towards the left of the image. (Image taken 28 February 2020)

During the 1988 HMS *Sirius* expedition, Dr George Creswell, an oceanographer for CSIRO Tasmania studied the wave climate and current around the HMS *Sirius* site and how this would have affected both the shipwreck itself and subsequent drifting of wreckage.

The studies found that when wave height in Sydney Bay was greater than 1.5 m, the sea level would rise by as much as 50 cm. This would produce up to a 1 knot current running parallel with the bottom topography in an ESE direction. When the tidal chart was overlaid with this data, it showed that Sydney Bay is subjected to an eddy caused by the tides. That is, a flood tide flowing to the west outside the bay, actually creates a clockwise flow inside the bay. This creates a back to front situation, where the tide should flood from the east, but appears to flood from the west due to the Sydney Bay eddy.⁶

As part of this study, the logs of those on board the *Sirius* were examined for tidal current and wave information at the time of the wrecking. While there were some discrepancies, all on board noted that the current had not been encountered before. Seaman Nagle, wrote that the current was very strong to the west which carried their jetsam out to sea or into what he called 'the whirlpool'. Nagle was swimming to shore delivering a message in a bottle and wrote later: "*I knew the danger I was in, the current very strong setting in for the whirlpool, which was not more than 400 yards to the westward.*" It was surmised that this whirlpool was located at the edge of reef at which Kingston Pier now terminates.⁷

The tidal range between mean high water (0.66 m) and lowest astronomical tide (-0.94 m) is 1.6 m.⁸

⁶ Creswell, George, 1988, Oceanography of Norfolk Island and the *Sirius* wreck, in *The 1988 Expedition report on the HMS Sirius wreck (1790)*, pg. 67.

⁷ Op. Cit., Creswell George 1988, pg. 76.

⁸ Worley Parsons 1st September 2016, *Kingston Dredging Feasibility Study*. : 7

2.2 Coastal and seabed morphology

To the south and east the of the Pier there is a continuous reef that fronts the entirety of Slaughter Bay.⁹ It is the seaward edge of this reef, sections of which are exposed at low tide, upon which HMS *Sirius* was wrecked in 1790. Between the reef edge and shore the water is relatively shallow and forms a lagoon. The Pier was constructed on the western edge of this reef (Figure 6).

The reef platform breaks up west of the Pier creating channels between rock outcrops of sufficient depths for small vessels to pass through. Figure 6 provides an instructive presentation of the area west of the Pier. Discrete patches of reef and boulders dot the area while in between there is relatively deeper water over which small boats could thread their way through to shore. This mid-19th century drawing depicts the primary boat channel closest to the Pier. The water depth off the south west end of the reef platform - the entrance to the berthing area - ranges from -3.37 m to - 4.19 m MSL.¹⁰ This depth is roughly maintained for around 5 m to the west before rising up to an expanse of reef, the top of which is between -1.41 m and -2.3 m. Waves break over this broken section of reef though it is never exposed at low tide. This narrow body of water has formed the entrance to the primary boat channel for both the Landing Place and the later Kingston Pier since 1788.

Water depth in the berth adjacent to the Pier is generally between -2 and -3 m in areas which have been previously dredged. Beyond 8 to 10 m west of the Pier the seabed rises to between -1 m and – 2m.

Figure 6 also shows what appears to be a secondary channel to the west which is bounded on both sides by more substantial sections of reef that appear to have been exposed at low tide. The seabed in these deeper portions of the study area is a mosaic of coarse sand exposed rock surfaces with eroded potholes and gullies filled with rubble.¹¹

For further detailed descriptions of the seabed see Section 5.4

⁹ In this report Slaughter Bay refers to the body of water shoreward of the fringing reef east of Kingston Pier. Slaughter Bay, like Emily Bay is located within a wider body of water referred to as Sydney Bay.

¹⁰ Op. Cit., **Worley Parsons 1st September 2016**: Appendix 1

¹¹ **Marges, Jaques, P., May 2005**, Survey of marine flora and fauna in the vicinity of Kingston Pier and an assessment of any impact the refurbishment of the Pier may have on the fauna, flora and environment. : 10

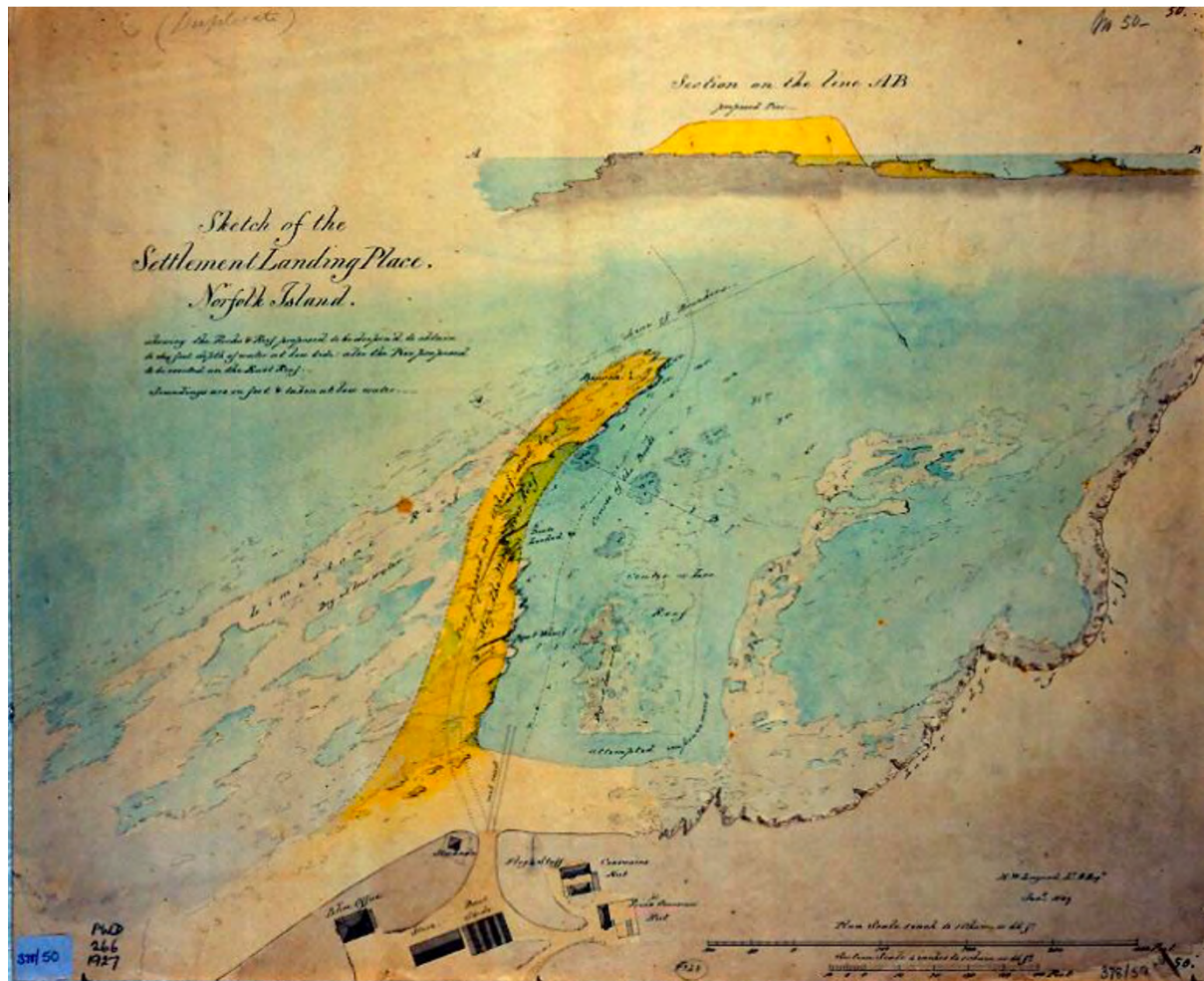


Figure 6 An un-dated sketch of Kingston Pier showing the structure overlaying the western edge of the fringing reef that stretches across Slaughter Bay. (Photo 4 in Hogan, R. November 2011)

2.3 Local geology

The surface of the reef extending south east of the end of the Pier is calcarenite, conglomerate composed of sand, coral and shell fragments cemented with lime. It is generally medium grained, highly porous with voids present up to 50 mm across.¹² Its thickness under the Pier varies from between 0.9 and 2.2 m (

Figure 7).¹³

The calcarenite overlays deeply weathered volcanic deposits, around 3 m thick, which comprise interbedded tuff and basalt rocks ranging from gravel to small boulders.¹⁴ Within the calcarenite and volcanic layers were found silty clay seams. A core sample taken during the 2007 Kingston Pier refurbishment project recovered timber from within the volcanic deposits, 4 m below the coral platform upon which the Pier sits. The timber was dated to 6,800 B.P. which indicates that the build-up of the coral (calcarenite) platform was a gradual and relatively recent (Holocene) phenomenon.¹⁵

¹² Jeffery and Katauskas Pty Ltd, July 2005, Design Report to The Administration of Norfolk Island on Geotechnical Investigation for Design of Refurbishment of Kingston Pier at Norfolk Island. : 7

¹³ Op. Cit. Jeffery and Katauskas Pty Ltd, July 2005 : 10

¹⁴ Op. Cit. Jeffery and Katauskas Pty Ltd, July 2005 : 7

¹⁵ Hogan, R. November 2011, Kingston Pier Refurbishment, Norfolk Island : 4

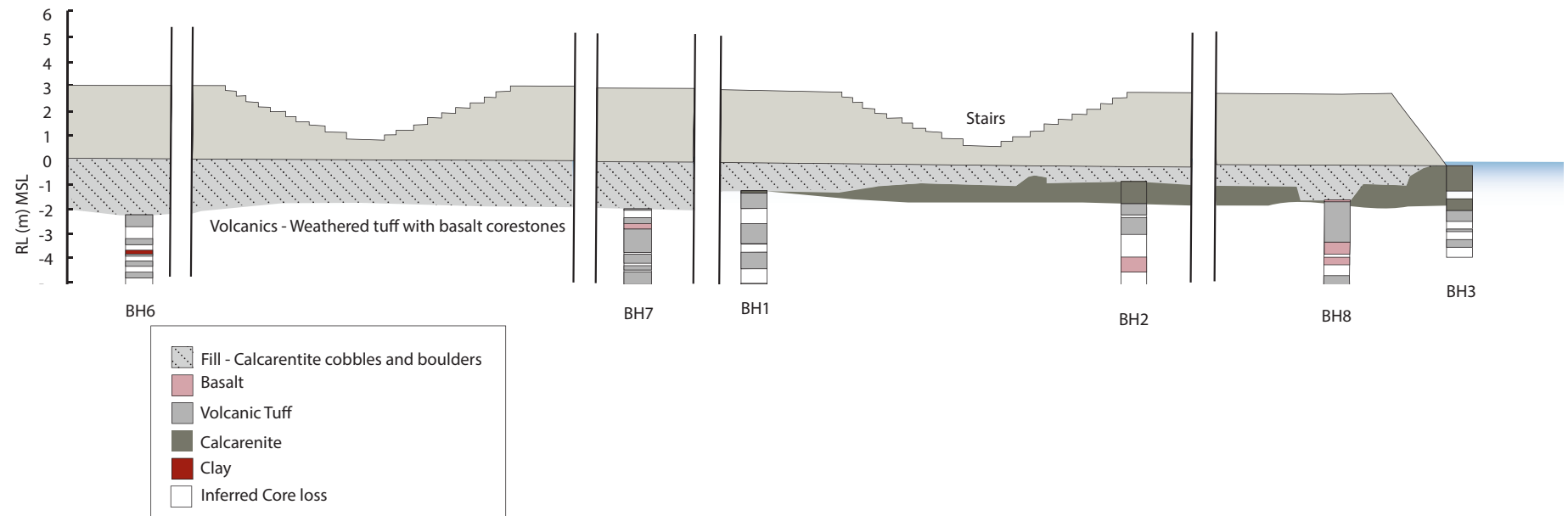


Figure 7: Bore hole samples along the western face of Kingston Pier. After Jeffery and Katauskas Pty Ltd 2005.

Though the Pier was constructed along the western edge of the reef, the calcarenite layer does not appear to be present for a distance of up to eight metres from the western (berth) edge of the Pier. In some places the grey tuff is visible underneath mobile coarse sands. The absence of the calcarenite in this area is almost certainly due to dredging operations from the 1980s undertaken to deepen the berth. From core samples taken of the seabed adjacent to the Pier in 2016 it would appear the volcanic tuff is relatively soft and can be broken up by hand.¹⁶

The patches of reef and boulders west of the Pier and the adjacent deepened berth are composed of inferred silcrete, calcarenite and/or weathered basalt.¹⁷

¹⁶ Op. Cit. **Worley Parsons** 1st September 2016 : 13

¹⁷ **Jeffery and Katauskas Pty Ltd**, July 2005. : 5

3 HISTORICAL BACKGROUND

3.1 The Landing Place

The first instance of Europeans sighting the future landing site on Norfolk Island was by Captain Cook and the crew of HMS *Resolution* on 10th October 1774. Although previously settled by Polynesians from approximately c1150 to c1450 CE, Norfolk Island was uninhabited when Cook sighted it. On 11th October, Cook landed on the northeast side of the island with two boats, along with his officers, to undertake a quick exploration and survey of the island. Cook and his crew took floral and faunal samples, noting the similarities of plants and animals to those in New Zealand.¹⁸

On the morning of 12th October, the landing party returned to the *Resolution* and set sail for New Zealand. As they rounded the southern side of Norfolk Island, Cook recorded the first observation of what would become known as the Landing Place at Kingston:

*Next morning at sun-rise, we made sail, stretching to S.S.W., and weathered the island; on the south side of which lie two isles... On this, as also on the S.E. side, is a sandy beach; whereas most of the other shores are bounded by rocky cliffs... A bank of coral sand, mixed with shells, on which we found from nineteen to thirty-five or forty fathoms water, surrounds the isle, and extends, especially to the South, seven leagues off.*¹⁹

The first European settlement of Norfolk Island was established shortly after the arrival of the First Fleet at Botany Bay in 1788. Instructions given to Captain Arthur Phillips from King George III instructed him to establish a settlement on Norfolk to “secure” the island for England and to “prevent it being occupied by the subjects of any other European Power.” To accomplish this end, Philip Gidley King was appointed by Phillips as superintendent and commandant of Norfolk Island. King embarked with a group of 20, including four military officers, four civil officers, and fifteen convicts.²⁰ The site chosen by King for settlement was the same site described by Cook 15 years earlier.

The first landing at the Landing Place was achieved by King and Lieutenant Ball on 5 March 1788, while the rest of the crew and passengers of HMS *Supply* landed the next day on 6 March (now celebrated as Foundation Day on the island). The initial landing consisted of two small launches that delivered men, tents, tools and supplies to establish the first European settlement on Norfolk Island. King named the settlement Sydney.

The fledgling colony’s only links to the outside world were HMS *Sirius* and HMS *Supply*, which made regular supply runs between Norfolk Island and Port Jackson, bringing much needed supplies to the isolated island. William Bradley, a lieutenant serving onboard *Sirius*, recorded that HMS *Supply* made five trips between Port Jackson and Norfolk Island between the island’s first settlement and the wrecking of HMS *Sirius* in 1790. Bradley was also a keen journalist and observer and painted a watercolour that may be the first European depiction of the landing place at Kingston (Figure 9)²¹. Bradley also undertook detailed surveys of the Landing Place and produced a map showing two channels through the reef that a boat could land at (Figure 8).²² The map also shows two secondary areas (marked A and B) where boats may also have been unloaded.

¹⁸ M. Hoare, 1999, *Norfolk Island: A Revised and Enlarged History 1774-1998*, p.4.

¹⁹ Cook, 12th October 1774, from *A Voyage Towards the South Pole and Round the World*, Vol.2.

²⁰ Op. Cit., Hoare, 1999, p.7.

²¹ W. Bradley’s Journal, “A Voyage to New South Wales, 1786-1792”, ca.1802, Opp. p. 194. ‘Part of the Reef & Landing places Sydney Bay; Sirius & Supply endeavouring to work out of the Bay. March 19 1790’.

http://digital.sl.nsw.gov.au/delivery/DeliveryManagerServlet?dps_pid=FL1113939&embedded=true&toolbar=false

²² Bradley, W. et al., 1792. [Bradley’s manuscript charts] [cartographic material] / By William Bradley., 1792. State Library of NSW, https://search.sl.nsw.gov.au/permalink/f/lq5tom/SLNSW_ALMA21119968210002626.

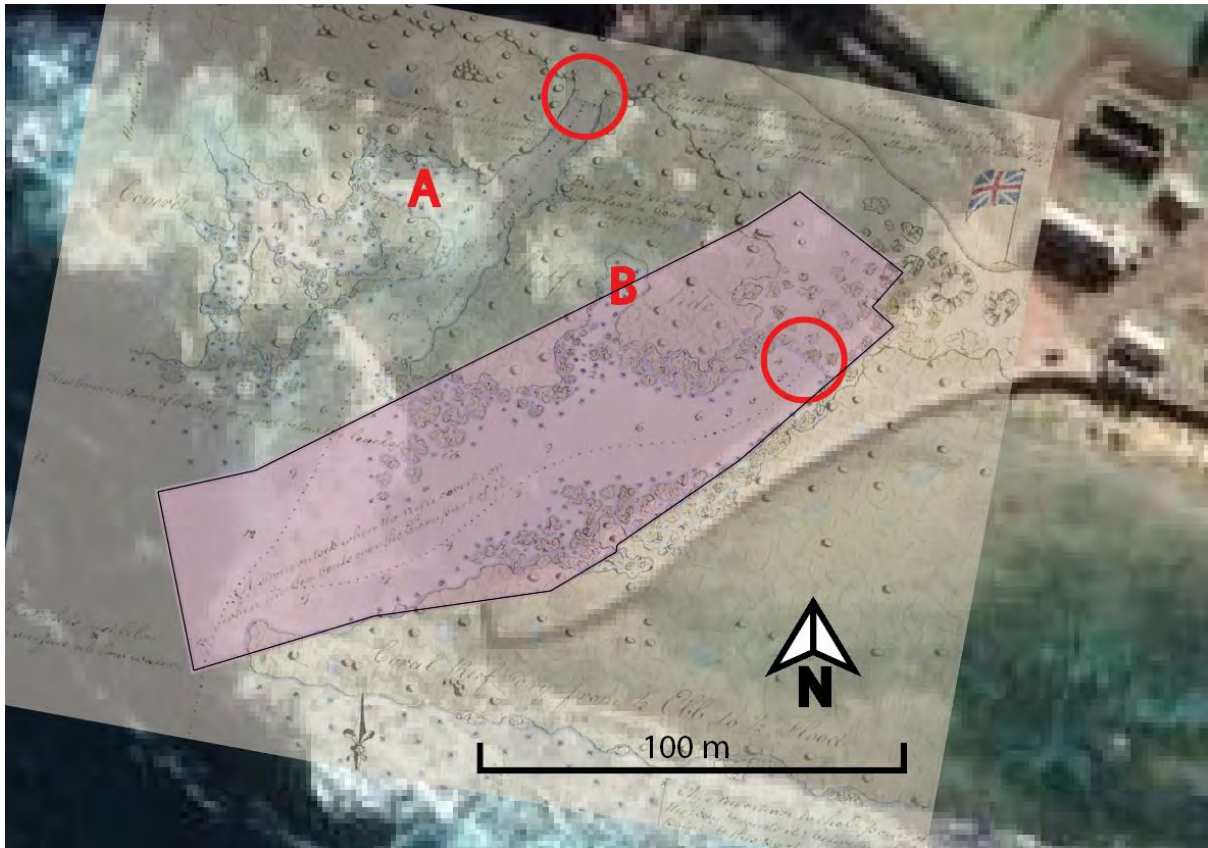


Figure 8: 1791 map of the Landing Place imposed over modern satellite imagery. The two circles denote the two landing places through the channels in the reef. A: noted by Bradley as a place a boat may wait while another boat is unloaded at the western landing place. B: noted by Bradley as a good spot to unload a boat at low tide when the reef was dry. Study area in purple.



Figure 9: Watercolour of the Landing Place painted by William Bradley, showing the channel through the reef, and boats on shore at the Landing Place. HMS Sirius and HMS Supply in the background. Note what appears to be two channels leading to the Landing Place, the largest one being on the left (east).

From this period of early settlement until construction of the Kingston Pier was finished in 1847, the Landing Place at Kingston was one of only two suitable locations on the island for landing supplies. On the north side of the island, a landing place at Cascade was used when the winds came from the south. The Landing Place at Kingston was a section of sandy beach at the end of a natural channel that cut through the western edge of the reef fringing Sydney Bay (Figure 10²³, Figure 11²⁴)

Landings were always difficult under these conditions. Fickle winds could turn at any time, and even a low wind would cause large swells that would threaten to overturn the small boats attempting to land. Unsurprisingly, the historic record contains numerous off-hand accounts of small craft wrecking as they attempted to navigate the narrow channel at Kingston. Bradley notes two craft that sunk in the early days of the Norfolk Island colony, the first on 26 August 1788:

*The Supply arrived from Norfolk Island. Whilst she was at that island (August 6) a boat which had been ordered to lay just within the point of the reef in case of an accident happening to the Supply's boat then coming in, was carried out by the strength of the outset so far as to oblige them to pull across the swell to regain the landing place, in effecting which the surf rose suddenly on her, the consequence of which was the boat lost.*²⁵

The second on 17 August 1790:

*A cutter belonging to the Sirius, with Provisions and convicts in, was thrown upon the reef by a sudden surf. The boat instantly went to pieces.*²⁶



Figure 10: View of Sydney on the south side of Norfolk Island. Edward Dayes, 1797. Note boats pulled up on shore at the landing place and signal flag on hill at top left.

²³ Dayes, Edward & Watling, Thomas. 1797, *View of Sydney on the south side of Norfolk Island*, viewed 24 April 2020 <http://nla.gov.au/nla.obj-138466095>.

²⁴ Wakefield, "Plan of the settlement and Garrison Farm & Co., Norfolk Island / surveyed by Capt. Wakefield, 39th Regt., May 1829" Archives Office of New South Wales, 1991. <https://trove.nla.gov.au/version/28091196>.

²⁵ Op. Cit. **Bradley, 1802** : 123.

²⁶ Op. Cit. **Bradley, 1802** : 210-211.



Figure 11: Location of the Landing Place in 1829 imposed over Google Earth image. Note the Landing Place is approximately where the ramp is located on the Pier. Also note what appears to be erosion of the beach to the west of the Pier.

While the loss of large vessels at the Landing Place was a fairly rare occurrence, numerous small boats like these were recorded wrecking on the reef (see Section 3.3.7). Wrecks of small boats would have deposited cultural material onto the seabed, including cargo and components of the boats themselves. Throughout this period, the capsizing and sinking of small boats, along with the loss of their cargo would have been the primary depositors of cultural material onto the seafloor.

Contemporary accounts note that in the early days of the Norfolk Island settlement other activities on the water, including fishing, were seldom practiced due to the difficult sea conditions. After HMS *Sirius* sank in March 1790 (see Section 3.3.2), the settlers on Norfolk Island were reduced to gathering mutton birds from Mount Pitt in order to survive.²⁷

The Landing Place was marked with a large flag that was raised only when it was considered safe for small boats to land. The flag is frequently noted on charts prior to the construction of Kingston Pier. In 1825, ramps were cut into the reef to land and were further built of cut stones and rubble fill.²⁸ Further navigation improvements included a beacon at the reef point, noted on charts (Figure 12). The date of the construction of the beacon is uncertain, but contemporary beacons constructed in the Florida Keys in the USA consisted of 3m long iron piles driven into the seafloor and topped with 10m tall wooden posts. These posts were topped with a painted barrel that could be seen from several kilometres.²⁹ If the

²⁷ Op. Cit. Hoare, 1999 : 21.

²⁸ Kingston and Arthur's Vale Historic Area, Heritage Management Plan April 2016. p.38.

²⁹ "History of Beacons." Florida Keys National Marine Sanctuary, National Marine Sanctuaries, NOAA. <https://floridakeys.noaa.gov/historic-navigation-aids/history.html>. Accessed 15 April 2020.

beacon at Kingston was constructed in a similar manner, the remains of an iron pile may still be extant at the reef point. An 1855 chart shows the location of an “iron staff” at the same location, which may indicate the remains of the beacon (Figure 13).³⁰

A mooring buoy was installed in 1834 to aid ships anchoring offshore. The buoy was formed of a copper cylinder, at the bottom of which was a copper ring, which was attached to an iron mooring chain.³¹ The mooring buoy did not last long, as the presence of copper turned the iron chain into a sacrificial anode, and rapidly corroded.³² When the schooner *Friendship* anchored to the buoy in 1835, the iron link connecting the copper buoy to the chain snapped, causing *Friendship* to drift onto the reef where it became a total wreck (section 3.3.3). While elements of the chain and buoy washed ashore with *Friendship*, the actual anchoring place and chain may still be extant.

The greater portion of the Landing Place appears to be under the current Pier or has partially eroded away, probably caused by the construction of the Kingston Pier. A sea wall has been constructed to the west of the Pier, consisting of large rock rubble and stone masonry to prevent further erosion.



Figure 12: 1840 chart showing location of a navigation beacon at the entrance to the channel to the Landing Place. Note the tripod shaped base and apparent barrel at the top, consistent with descriptions of contemporary beacons in the Florida Keys. The parallel lines where the Landing Place is written could very well be the timber slipway constructed in the 1830s (see Section 3.2)

³⁰ Great Britain. Hydrographic Department & Denham, Henry Mangles & Wilson, James Glen & Potter, J. D & J. & C. Walker. 1856, *Pacific Ocean* Published by the Hydrographic Office at the Admiralty. <http://nla.gov.au/nla.obj-231292577>. Accessed 15 April 2020.

³¹ *Sydney Monitor*, “News of the Day”. 14 May 1838, p.2.

³² *Ibid*.

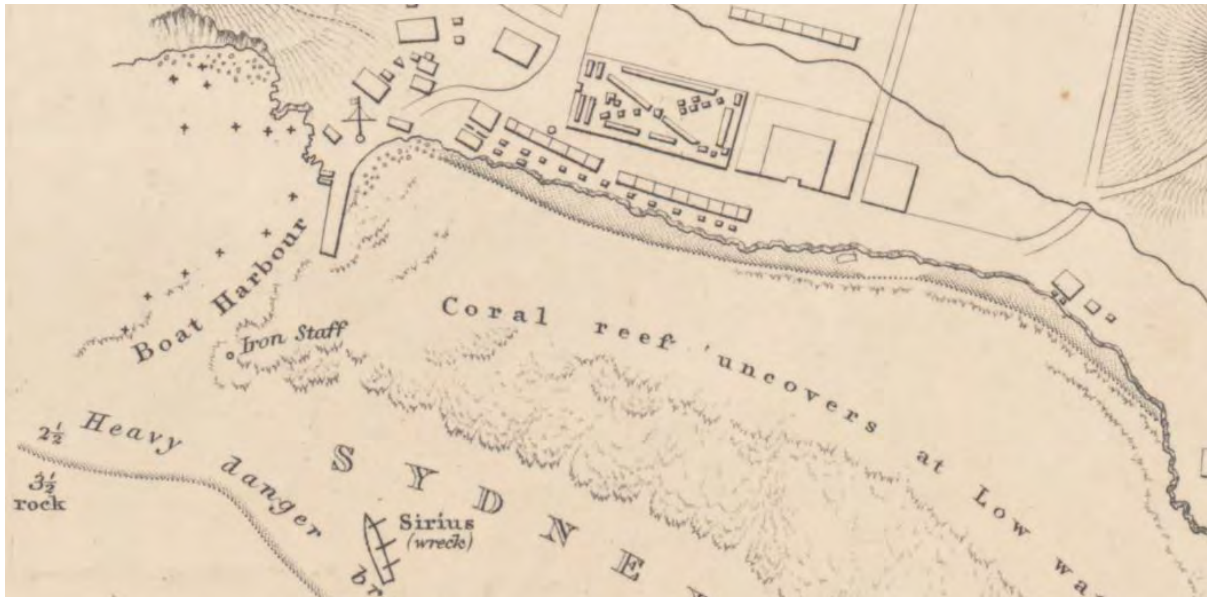


Figure 13: 1855 chart showing the location of an "iron staff" at the reef head, approximately the same location as the beacon in Figure 10.

3.2 Kingston Pier

The first Pier constructed on Norfolk Island was on the north side of the island, at Cascade in 1792. King endeavoured to improve the landing place by erecting a crane on a large rock at the east end of Cascade Bay and connecting the rock to the road by means of a wooden bridge.³³ The construction of the Cascade Pier enabled ships to unload supplies at either the north or south end of the island depending on which direction the wind was blowing.

Construction of the Kingston Pier began in 1839 to improve the port facilities during the 2nd Penal Settlement (1825-1856). The Pier was designed by Royal Engineers, chiefly Lt. Henry Lugard and RG Hamilton, and was constructed during low tide. It was built using large stone blocks as foundation, fastened together with metal clamps. The upper courses were built out of cut stone keyed together using perpendicular stone blocks.³⁴ The rough conditions prevented the full construction of the intended length, as the stone foundations were continually washed away. Construction of the Pier was halted almost 50 metres from the end of the reef.³⁵ A timber slipway constructed at the Landing Place in the 1830s was replaced in 1853 with a stone slipway for launching boats, and sea walls were constructed on the shoreline on either side of the Pier.³⁶

Unloading cargo operated under similar methods as it had before the construction of the Pier. Large ships would anchor well south of Norfolk Island and send goods and people on small boats to the Pier. Cargo would then be removed from the boats via crane, where it would be placed into horse-drawn carts and delivered (Figure 14).³⁷ The location of ship anchorage is indicated in contemporary charts as being roughly halfway between Norfolk and Phillip Islands (Figure 16)³⁸.

³³ Op. Cit. **Hoare 1999** :23.

³⁴ **Baskerville, B., 2013**, "Kingston Pier and Landing Place", *HistoryMatrix*. <https://historymatrix.wordpress.com/2013/07/07/kingston-pier-and-landing-place/> Accessed 15 April 2020.

³⁵ **Van Pel 1959**, "Report on the Fisheries of Norfolk Island", Report prepared for the South Pacific Commission. p.34.

³⁶ Op. Cit. **Baskerville, 2013**.

³⁷ 1910. *Kingston Pier, horses on the landing, Crankmill, boat store ruins and a ship at a distance, Norfolk Island, approximately 1910*, <https://trove.nla.gov.au/work/237389426> accessed 16 April 2020.

³⁸ 1856, Great Britain. Hydrographic Department, *Pacific Ocean. Norfolk and Philip Islands*, viewed 16 April 2020 <http://nla.gov.au/nla.obj-231292577>



Figure 14: Kingston Pier, c.1910, cargo ship anchored in background, lighters unloading cargo via crane onto horse-drawn carts.

In 1856, Norfolk Island ended its status as a penal colony and became the new home for the Pitcairn Islanders. The Pitcairners arrived at Norfolk Island in early June 1856 aboard the *Morayshire*. On 8th June, they disembarked at Kingston Pier under less than favourable conditions. Rain squalls and gusty winds greeted the islanders as they arrived at their new home.³⁹ As the Pitcairners settled into their new surroundings, they began to look for ways to earn money through trade. Early industries included whaling, which would become a mainstay of the Islanders. By 1859, 33 Islanders had formed a whaling company and bought boats and whaling gear from an American whaler.⁴⁰

Whaling continued on and off through the 19th and 20th centuries. A 1959 report on the situation of the Norfolk Island fishing and whaling industries indicated that nine commercial fishing boats were operational, employing several dozen Islanders.⁴¹ By this point, the fishing industry was already in decline, with both the processing company and the fishermen failing to make significant profit. Boats continued to be launched via crane at both Cascade and Kingston Piers, while whales were either processed at sea, or drawn onto the beach for processing at Cascade and Ball Bay (Figure 15).⁴² Whale oil processed by the Islanders was pumped onto tankers that brought petrol from Australia.⁴³

³⁹ Op. Cit. **Hoare, p.77.**

⁴⁰ Op. Cit. **Hoare, p.85.**

⁴¹ Op. Cit. **Van Pel, p.8.**

⁴² Op. Cit., **Hoare, 1999 : 85**

⁴³ Op. Cit., **Van Pel, 1959 : 5-7.**

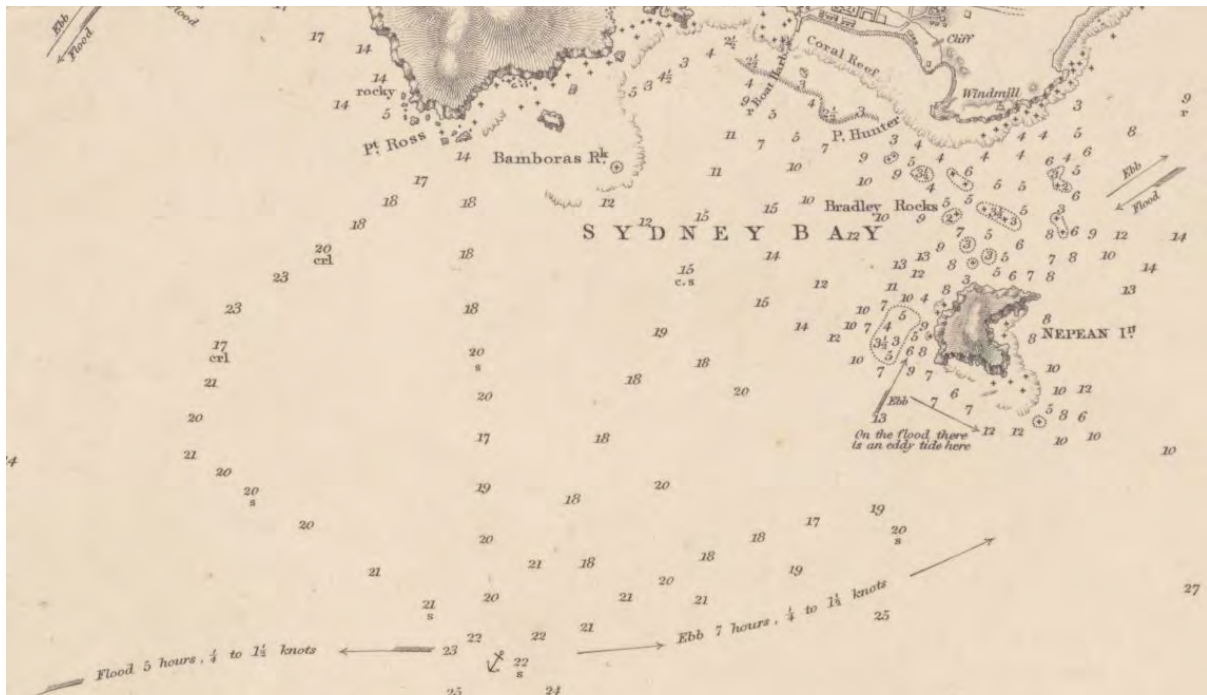


Figure 16: 1855 chart showing ship anchorage (indicated by anchor) approximately 3 km southwest of Kingston.



Figure 15: Whale boats and whaling station at Cascades, ca. 1900. Note the boats used for whaling, which were modelled off of American whale boats from New Bedford.

Throughout this period Norfolk Island, and Kingston specifically, remained an important strategic point for South Pacific trade. Cargoes transported between Norfolk, Australia, New Zealand, New Caledonia and other south seas islands was extremely varied, but chief among imports to Norfolk were manufactured goods that could not be produced on the island. A newspaper account of the wreck of the schooner *Oscar Robinson* at Emily Bay in 1898 (section 3.3.8) gives a good indication of the types of goods that were transiting through Norfolk. *Oscar Robinson* was travelling from Auckland to Noumea via Norfolk and carried as cargo⁴⁴:

⁴⁴ **Sydney Morning Herald** (NSW : 1842 - 1954), Saturday 12 February 1898, page 9.

- For Noumea: blasting powder, sporting powder, candles and jams
- For Norfolk Island: drapery, tea, sugar, candles, dates, kerosene, starch, flour, groceries, mattresses, bags, photo goods, stationery, earthenware, soda, paper, and saddlery
- For Lord Howe Island: furniture, groceries, drapery, sheet iron, bags, hardware, books, rattans.

During WWII, Norfolk Island became militarised as a location for Australian, New Zealand, and American armed forces to monitor South Pacific waters. The chief development of this period was the aerodrome, later to become the Norfolk Island airport. The aerodrome was constructed between 1942 and 1943 under the supervision of American and Australian military engineers.⁴⁵ Military garrisons were regularly supplied by American, Australian and New Zealand ships, including sailing schooners drafted into armed service. One of these vessels, *Ronaki* IX-94, wrecked near Kingston Pier in 1943. *Ronaki* was a three-masted auxiliary schooner that had been involved in the coastal cement trade in New Zealand before it was given over to the US Navy as a supply ship. *Ronaki* was carrying war supplies to Norfolk Island, including a large quantity of electrical equipment, possibly for use in construction of the aerodrome, when it ran aground on the reef (Figure 17).⁴⁶



Figure 17: *Ronaki* IX-94 run aground on reef immediately east of Kingston Pier. Salvage efforts underway.

Kingston Pier was significantly damaged during the war as a result of landing supplies and operating heavy machinery in the construction of the aerodrome. Further damage was caused to the seawalls, which were breached in order to undertake salvage operations on *Ronaki*.⁴⁷

In the 1980s, dredging was undertaken to deepen the berth adjacent to the Pier. This was done using a dragline, where the bucket was dragged along the seabed adjacent, and parallel, to the Pier (Figure 18). The process was reportedly difficult to control and had minor effect on the channel at the entrance to the berth.⁴⁸

⁴⁵ Op. Cit. **Hoare 1999 : 130.**

⁴⁶ **AUCHD** wreck ID 7955 <https://dmzapp17p.ris.environment.gov.au/shipwreck/public/wreck/wreck.do?key=7955>

⁴⁷ Op. Cit. **KAVHA Heritage Management Plan, April 2016, p.38.**

⁴⁸ Op. Cit. **Worley Parsons 1st September 2016 : 2**

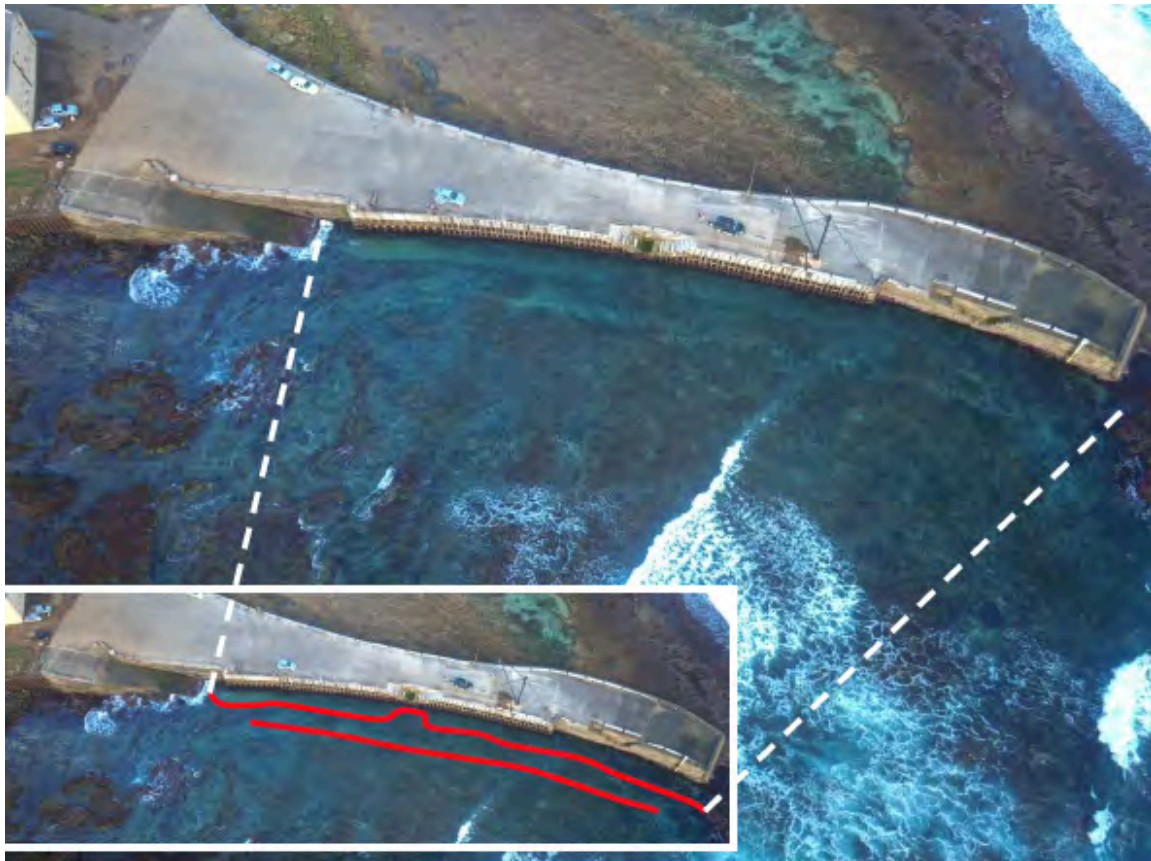


Figure 18: The remains of the 1980s dredging campaign can be seen as two parallel lines which form two ledges adjacent to the Pier. (Worley Parsons 1st September 2016: Photo 6.1)

3.3 Shipwrecks

3.3.1 Sources consulted

The primary source consulted for the occurrence of shipwrecks within the study area is the Australasian Underwater Cultural Heritage Database (AUCHD). The AUCHD is a database maintained by the Federal Department of Agriculture, Water and the Environment and contains upwards of 8,000 historic shipwrecks, sunken aircraft and other underwater cultural heritage sites in Australian waters.⁴⁹ The database has been searched to locate any known or potential shipwrecks that have occurred in the vicinity of Kingston, or more generally at Norfolk Island.

While the AUCHD is an excellent resource for providing a general list of shipwrecks, wreck locations provided by the database are, on occasion, inaccurate, or are given as just a general location within the larger geographic area. Figure 19 shows the locations of the wrecks, as stated in the AUCHD. As a way of cross checking the locations given in the AUCHD, the loss events of listed wrecks were checked against contemporary sources whenever possible. For example, the wreck site of the *Friendship* may be closer to the Pier than indicated in the AUCHD (see Section 3.3.3) and it would have been very unlikely for the *Mary Hamilton* to have come to rest adjacent to the Pier (see Section 3.3.4).

⁴⁹ Australasian Underwater Cultural Heritage Database, Department of Agriculture Water and the Environment, Australian Government, <https://www.environment.gov.au/heritage/underwater-heritage/auchd> Accessed 15 April 2020.

The main sources consulted were contemporary newspaper accounts accessed via Trove. Further searches were conducted in Trove for potential shipwrecks not listed in the AUCHD, with most of these wrecks listed in section 3.3.7. In addition to historic periodicals, historic journals and histories, where available, were also accessed.

The remainder of this section examines the loss events of the identified shipwrecks.



Figure 19: Approximate locations of known wrecking incidents near Kingston with positions provided in AUCHD. Not included are smaller boats (section 3.3.7) and Warrigal (sunk offshore, section 3.3.8).

3.3.2 HMS *Sirius* (1790)

The most famous and significant shipwreck on Norfolk Island is that of the HMS *Sirius*. *Sirius*, along with the ship HMS *Supply*, were members of the First Fleet that transported the first convicts to Sydney Cove in 1788. In 1789, Philip Gidley King was appointed the first governor of Norfolk Island, and took a group of convicts and soldiers to the island to establish the first settlement at what is now Kingston.

In March, 1790, HMS *Sirius* was sent to Norfolk with a contingent of supplies, convicts and marines to relieve the overcrowding at Sydney Cove. On Friday March 19th, Captain John Hunter steered HMS *Sirius* in for Sydney Bay (Kingston) between the main Island and Nepean Island. The wrecking event has been modelled by previous researchers based on physical remains and historical accounts.

Archival sources indicated that in its final resting position the HMS *Sirius* wreck lay very close to the edge of the high reef platform. It is believed likely that the gully between the outer reef and the high inshore reef platform (See Site 2 in Figure 20) is the likely place that HMS *Sirius* broke up. This was further attested during 1987 fieldwork that discovered substantial ballast mounds of iron ballast blocks in the area.⁵⁰

- On 19th March 1790, HMS *Sirius* and HMS *Supply* sailed close to shore to unload supplies. A strong western current pushed both vessels towards Point Ross, forcing them to make sail and attempt to leave the bay. HMS *Supply* was successful but HMS *Sirius* was not. The vessel lost control and momentum as it turned into the

⁵⁰ Henderson, G., M. Stanbury, 1987, "Australian Bicentennial Authority Project 1987: Expedition Report on the Wreck of HMS *Sirius* (1790)", Report prepared for Department of Maritime Archaeology, Western Australian Maritime Museum No.28: p.6.

wind, a small bower anchor was dropped but the vessel struck the reef stern first before the anchor cable could check it.

- After striking, the vessel turned broadside to the surf. Masts were cut, during which two carronades were lost overboard. Rising tide lifted the vessel and turned it facing seaward where it was stopped by the anchor cable.
- The vessel held this position for several days, during which people and supplies were rescued. On March 28th, high winds snapped the anchor chain and the vessel was turned shoreward and thrown more than its own length nearer to shore. The vessel remained here until it fully disintegrated almost two years later.
- Ballast pigs were tied together in a matrix with chain, which explains the large ballast mound on a relatively flat section of reef.
- Remaining artefacts were pushed into gullies and potholes where they survived, or were destroyed/dispersed by heavy wave action and swell. Heavy surf at Sites 1 and 2 (see Figure 20) acted as a sand blaster, which degraded any artefacts.
- Most of HMS *Sirius*' cargo of provisions would likely be unidentifiable at the main wreck site, but casks may have floated to less severe areas to be covered and preserved. This is the assumed reason that HMS *Sirius* material was found at Site 5 (see Figure 20). It is believed that the spectacle plate and 4 copper bolts were part of the top rudder assembly that floated to its final resting place.
- A pintle strap with a bolt was found 212 metres west of Site 1, indicating further drift of rudder material.
- It is unlikely that organic material, glass or ceramics survived intact. Sherds may exist in gullies and potholes.
- During the salvage attempts, a hawser and traveller was set up to move stores and provisions to the high reef platform, dry at low tide. There was substantial successful salvage, however, personal items were deemed less important and were thrown overboard by their owners with the hope that they would float to shore.

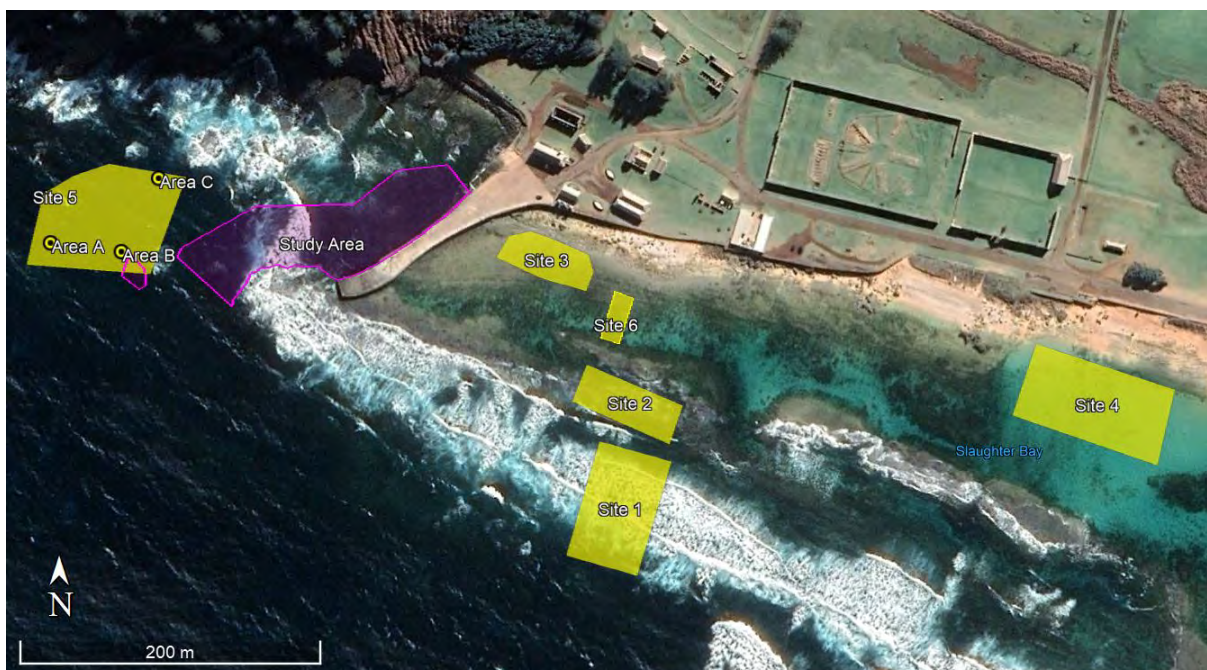


Figure 20: Sirius excavation sites, 1984-2002.

3.3.3 *Friendship* (1835)

Friendship was an 88 ton wooden hulled schooner. The vessel had three decks, measured 58 feet (17.68m) in length, 19 feet (5.79m) wide and had a draft of 10 feet (3.05m).

Friendship was built by J. White in Barnstable England in 1824 and had been chartered by Henry Bull of Sydney to convey himself and his family to Tahiti to establish a sugar plantation. The commander of the vessel, Captain Harrison, was part owner in the venture as well.

Contemporary accounts of the wrecking event can be found in newspapers, with one account originally published in the *Australian* giving a detailed account of the wrecking process as it occurred over several days.⁵¹

- Anchored off Norfolk Island on 14th May, but was unable to reach the moorings south of Kingston harbor due to a strong SW breeze. As the wind picked up, *Friendship* was forced to pull anchor and sail through the channel between Nepean and Norfolk Islands.
- On Saturday, 16th May, *Friendship* was able to reach the mooring. However, the wind was still blowing from the SW and the mooring was precarious. The Commandant, Major Anderson, sent a whale boat to the vessel in case of accident as *Friendship* had lost its only boat on the passage around Nepean Island.
- At daylight on Sunday morning, it was seen that *Friendship* was drifting towards the breakers and the shallow reef, on a lee shore (blowing towards land) wind and heavy surf.
- The reason for the drift was a faulty mooring buoy, which had been installed the previous year in July 1834. The key of the forelock had given way, according to an article from the *Sydney Monitor* in 1838, because the forelock and the buoy were made of copper and the chain out of iron, the iron link at the connection had corroded and failed.
- The crew struggled to keep the vessel off the reef by raising the sails, but as the vessel came directly across from the Commissariat Store they struck the reef and lost the vessel's rudder and came to a spot directly opposite the landing place (presumably where the Pier now exists).
- The masts were then cut away from the vessel to form a bridge and hawser to facilitate rescue.
- At this point the tide was still low enough for a large number of prisoners on the beach to wade out to the stranded vessel and rescue the 50 passengers, crew, and prisoners aboard. To affect this rescue, the prisoners carried a whale boat over the reef and alongside the *Friendship* to rescue its passengers.
- Over the next two days, prisoners were engaged in salvaging as much cargo and personal effects as could be managed.

The location of wrecking is an extremely high energy environment and it is realistic to assume that the majority of the vessel was broken up with wreckage washed towards shore. It was recorded in later newspaper accounts that some of the spars from *Friendship* had been salvaged and were transported back to Sydney for resale.

⁵¹ 1835 'Domestic and Miscellaneous Intelligence.', *The Australian* (Sydney, NSW : 1824 - 1848), 21 August, p. 2. , viewed 15 Apr 2020, <http://nla.gov.au/nla.news-article42008860>.

3.3.4 *Mary Hamilton* (1873)

Mary Hamilton was a 218 ton wooden hulled whaling barque built by Barr & Shearer in Ardrossan, Scotland in 1857. The vessel was registered in Melbourne upon its arrival in 1872 and was fitted out for whaling purposes. On 1st August 1872, *Mary Hamilton* left Melbourne under the command of Captain Barker for a 12 month sperm whaling expedition with a crew of 21 sailors. After returning to Sydney for repairs to replace the bowsprit, the vessel set sail on 9th December and reached Norfolk Island on 19th April 1873.

Boats were sent ashore at Cascade in Norfolk Island to gather wood, water and other supplies. On 6th May, the *Mary Hamilton* circled around the south of Norfolk Island to send a boat to Kingston to pick up Captain Glover, who had made his way across the island for business purposes. At approximately 2pm on the 6th, *Mary Hamilton* struck a submerged rock to the southeast of Nepean Island, just south of Kingston. The wrecking event comes from accounts given by both the Captain and the First Mate, Mr. D.W. Glover.⁵²

- At 1:50 pm, the *Mary Hamilton* struck a submerged rock “three-quarters of a mile, due south, off the west end of Nepean Island”.
- Glover, in command, recorded feeling a slight bump, and noticing sheets of copper coming off the keel of the vessel. Upon checking the hold, it was determined that the vessel was quickly taking on water and would soon sink.
- When Captain Barker boarded the vessel at 5:30 pm, it was determined that the best course of action would be to unload the vessel's cargo to a nearby schooner, *Ivanhoe*, and make preparations to beach the sinking vessel near Kingston Pier.
- In the morning of the 7th May, *Mary Hamilton* was beached at the Landing Place. Over the next seven days supplies and parts were salvaged from the beached vessel until waves eventually broke the vessel in half.
- It was noted by the Captain that the surf and tides were relatively mild, with little heavy surf and spring tides, which assisted in the salvage operation.

Parts of a late 19th century vessel were identified by maritime archaeologists investigating the HMS *Sirius* wreck in 1985. Several components, mostly iron knees and brass fasteners, were recovered from the seafloor to the west of the end of Kingston Pier, in the area designated as Site 5 by investigators (see Figure 20). A small amount of material from the *Sirius* was also found in Site 5, including a spectacle plate bearing the name *Berwick*, the previous name of HMS *Sirius*. In 1985, it was assumed that the later vessel material was from *Mary Hamilton* though this does not equate with the historical records that the vessel was beached inside the Pier. It seems likely given the nature of the archaeological remains at Site 5, which are consistent with a sizable timber sailing vessel, that the vessel was run aground at this location rather than adjacent to the Pier. Furthermore, given the size of the vessel it is very unlikely it could have passed through the narrow and shallow channels leading to the berth beside the Pier in a controlled manner.

3.3.5 *Bittern* (1868)

Bittern was a 40-ton timber hulled cutter, registered in Auckland, and involved in the trade of timber and livestock between Auckland, Norfolk Island, and Noumea. The vessel was built in 1865 in Mahurangi, New Zealand, and measured 53.4 feet (16.28 m) long and 17.6 feet (5.36 m) wide.

⁵² 1873 'Shipping Intelligence. Port of Auckland', *Daily Southern Cross* (Auckland, NZ), 31 May 1873, p.1. viewed 15 Apr 2020, <https://paperspast.natlib.govt.nz/newspapers/DSC18730531.2.4>

1873 'WRECK OF THE MARY HAMILTON.', *The Hay Standard and Advertiser for Balranald, Wentworth, Maude...* (Hay, NSW : 1871 - 1873; 1880 - 1881; 1890 - 1900), 18 June, p. 4. , viewed 15 Apr 2020, <http://nla.gov.au/nla.news-article145704895>

Bittern arrived at Norfolk Island on 13th July 1868 from Noumea, after delivering a load of cattle and sheep for that port. On 16th July, the vessel anchored at Cascade Bay and delivered a portion of its cargo. During the night, the wind shifted to the north and *Bittern* left its anchorage to avoid being blown onto shore. The crew moved the vessel to the south side of the island, making anchorage off Kingston on the 18th July and finished unloading the vessel's cargo.⁵³

The wrecking event was recorded in contemporary newspaper as occurring on the 19 May:

- At approximately 7:00 am, the wind suddenly shifted to the southeast, bringing *Bittern* on a lee shore breeze. The cutter immediately attempted to raise anchor and sail further out to sea, but the increased swell caused the anchor to break off “short of the crown”.
- The vessel attempted to sail into the wind, but was unsuccessful in tacking, possibly due to a length of anchor chain hanging from the hawsepipe.
- As the wind continued to increase, *Bittern* was blown onto the reef a short distance to the left of the channel entering the boat harbour. After striking the reef several times, the crew abandoned the vessel, rescued by islanders in whale boats and *Bittern* was smashed. Almost nothing was saved from the wreck except a chronometer and the vessel's papers.
- The reported wrecking location indicates that the wreck may have occurred near an area known as the “blow hole”, immediately to the west of the Kingston Pier and Landing Place. There is also the possibility that some of the artefacts recovered from Site 5 could be associated with the *Bittern* and not the *Mary Hamilton* (see Section 4.2.1).

3.3.6 *Ronaki* IX-94 (1943)

Ronaki was a 255 ton, timber hulled, twin diesel engine, three-masted auxiliary schooner built in Auckland in 1922. The vessel was owned by the Northern Steam Ship Company prior to WWII, and was intended to operate in the coastal cement trade in New Zealand. On 21st October 1942, *Ronaki* was transferred to the US government as a store ship for US troops in the Pacific War Zone and redesignated IX-94.⁵⁴ *Ronaki* was involved in the supply of Allied forces stationed on Norfolk Island during the war years, indicated by its cargo which included war supplies, including munitions and a large quantity of electrical goods.⁵⁵

On 18 June 1943, *Ronaki* foundered in a violent storm and washed onto the reef south east of Kingston Pier. A line was extended from the vessel to shore and the vessel was pulled up high onto the reef only 50 m east of Kingston Pier. An access was cut through the sea wall nearest to the vessel, and over several days the vessel was successfully salvaged. According to local informants consulted during the 1985 *Sirius* Expedition, the wooden hull of *Ronaki* was burned and most of the structural iron was removed to the base of a cliff near

⁵³ 1868 'TOTAL LOSS OF THE CUTTER BITTERN AT NORFOLK ISLAND.', *The Cornwall Chronicle* (Launceston, Tas. : 1835 - 1880), 31 October, p. 4. , viewed 15 April 2020, <http://nla.gov.au/nla.news-article66463295>

1868 'NOFOLK ISLAND. – THE WRECK OF THE 'BITTERN.' (FROM A CORRESPONDENT.)', *Daily Southern Cross* (Auckland, NZ), 22 September, p.3, viewed 15 April 2020, <https://paperspast.natlib.govt.nz/newspapers/DSC18680922.2.18>

⁵⁴ Mooney, J. ed., 1976, *Dictionary of American Naval Fighting Ships*, Vol. VI, p.154. Naval History Division, Dept. of the Navy. Washington, DC.

⁵⁵ “WWII Merchant Ship Movement Records, *Ronaki* to Samuel Heintzelman”, Royal Australian Navy Naval History Section. https://www.navy.gov.au/sites/default/files/documents/RONAKI_TO_SAMUEL_HEINTZELMAN.pdf accessed 15 April 2020.

Bloody Bridge.⁵⁶ Several artefacts from *Ronaki* were examined by researchers in 1985, along with several items in the Norfolk Island museum. It is unknown how much *Ronaki* material remains at its original stranding site. Because *Ronaki* was beached to the east of the Pier and because it was largely salvaged and removed shortly after wrecking, it is unlikely that any remains would have drifted into the study area. However, there is a possibility that any such remains would be protected under the US Navy's *Sunken Military Craft Act 2004*, as *Ronaki* was operating as a United States Navy vessel when it was wrecked.

3.3.7 Other small vessels wrecked at Kingston

In addition to the larger named vessels discussed above, numerous small lighters, whale boats and launches have been wrecked on the breakers near Kingston Pier, ranging in date from 1788 to 1922, and more than likely since then as well. A search for small boat wrecks was conducted using the AUCHD and Trove digitised newspaper resources, however the newspaper sources were more heavily relied on as very few of these wrecks made their way onto the databases.

- **1788** – a boat was wrecked at the end of the reef while assisting another boat to deliver provisions from HMS *Supply*. Three out of four crew on the boat drowned.⁵⁷
- **1790** – a cutter belonging to HMS *Sirius* was wrecked while transporting supplies and convicts from the *Justinian* and *Surprise* onto shore. Two seamen, one convict man, three convict women and one child were drowned.⁵⁸
- **1826** – a whale boat returning to the landing place from a brig, possibly the *Amity*, was upset on the reef. 7 persons on board were able to swim to shore, but the boat was a total loss.⁵⁹
- **1840** – an anonymous boat, returning from Philip Island, was upset by “tremendous rollers” upon its return to Kingston. All three on board were drowned.⁶⁰
- **1907** – a whaleboat belonging to the No.3 Whaling Company was wrecked on the reef sticking out from the end of Kingston Pier. The crew were rescued, but the boat was destroyed on the rocks opposite the Pier.⁶¹
- **1922** – a whaleboat was destroyed on the rocks while loading timber.⁶²

3.3.8 Other wrecks near Kingston

In addition to the wrecks mentioned in detail above, there are several vessels that sank at localities near Kingston, but not directly near the Pier. Of these five wrecks, three were sunk near Emily Bay, at the eastern end of Sydney Bay, one was sunk at Beefsteak, a headland to the west of Kingston Pier, and one was lost offshore between Norfolk and Philip Islands.

⁵⁶ Henderson, G., M. Stanbury, 1985, “Report to the Australian Bicentennial Authority on the February – March 1985 Bicentennial Project Expedition to the Wreck of HMS *Sirius* (1790) at Norfolk at Norfolk Island”, Report prepared for Department of Maritime Archaeology, Western Australian Maritime Museum No.24: p.21.

⁵⁷ Op. Cit. Bradley, 1802 : 123.

⁵⁸ Op. Cit. Bradley, 1802 : 210-211.

⁵⁹ 1826 'Norfolk Island.', *Colonial Times and Tasmanian Advertiser* (Hobart, Tas. : 1825 - 1827), 3 February, p. 2. , viewed 15 Apr 2020, <http://nla.gov.au/nla.news-article2447070>

⁶⁰ 1840 'Original Correspondence.', *Australasian Chronicle* (Sydney, NSW : 1839 - 1843), 17 March, p. 2. , viewed 15 Apr 2020, <http://nla.gov.au/nla.news-article31727834>

⁶¹ 1907 'WHALE-BOAT CAPSIZES.', *The Argus* (Melbourne, Vic. : 1848 - 1957), 24 July, p. 6. , viewed 15 Apr 2020, <http://nla.gov.au/nla.news-article10136833>

⁶² 1922 'Whaleboat Smashed to Pieces.', *The Age* (Melbourne, Vic. : 1854 - 1954), 6 February, p. 6. , viewed 15 Apr 2020, <http://nla.gov.au/nla.news-article205750810>

While the wrecks of most of these vessels have not been located, there is the potential for material from the wrecks to have washed into the study area.

- **1898 – *Oscar Robinson***, a 61-ton schooner carrying cargo from Sydney to Noumea via Lord Howe Island and Norfolk Island was wrecked in Emily Bay on 16th January 1898. *Oscar Robinson* was dragged onto the beach at Emily Bay, repaired and re-floated as the *Agnes*.⁶³
- **1914 – *Wanderlust***, a small yawl rigged auxiliary yacht, wrecked while on a pleasure cruise of the South Sea Islands. The vessel had lost power to its engines and wrecked while being towed into Emily Bay. The sails caught a gust of wind while under tow, which caused *Wanderlust* to overtake the whaleboat towing it. The vessel was turned and struck broadside by the surf, carrying it onto the reef. The whaleboat was sunk while attempting to rescue the passengers. All persons were eventually rescued but *Wanderlust* was completely destroyed.⁶⁴
- **1918 – *Warrigal***, a 90-ton auxiliary ketch involved in trade between Norfolk Island and Sydney was loading cargo at Kingston Pier on 17th March 1918 when worsening weather conditions forced its crew to sail out to sea. Intending to ride out the storm, the vessel was last seen near Philip Island. Over the next several weeks, pieces of the vessel, including part of its timber cargo, bulwarks, and part of a dinghy washed ashore at Slaughter Bay.⁶⁵
- **1948 – *Jan*** a diesel-powered launch owned by Norfolk Island Industries Ltd. was sunk while attempting to enter Emily Bay through an opening in the reef. The vessel was very low on fuel and had been suffering problems with its clutch. The captain attempted to shoot the reef at high tide, but was caught in a cross sea, capsized and sank. The two people on board were able to escape the craft and swim to shore but nothing could be salvaged.⁶⁶
- **1962 – *Isis***, a 32-foot (9.75 m) pleasure yacht was wrecked off Beefsteak in 1962. *Isis* had been involved in a kidnapping investigation, as it was discovered that its owner, an American named Walter Martindale, had taken his daughter from her Australian mother in Sydney. Upon arrival in Norfolk Island *Isis* was impounded in Emily Bay while the daughter was reunited with her mother. Martindale eventually returned to the island to take possession of the yacht, but while it was anchored off Kingston, the boat was blown onto Beefsteak Rock a few hundred meters from Kingston Pier, and destroyed on 11th October 1962.⁶⁷

⁶³ **1898**, 'THE STRANDING OF THE OSCAR ROBINSON.', *The Sydney Morning Herald* (NSW : 1842 - 1954), 23 March, p. 6. , viewed 16 Apr 2020, <http://nla.gov.au/nla.news-article14175878>.

⁶⁴ **1914**, 'The Wrecked Wanderlust.', *The Richmond River Express and Casino Kyogle Advertiser* (NSW : 1904 - 1929), 31 July, p. 9. , viewed 16 Apr 2020, <http://nla.gov.au/nla.news-article124719485>.

⁶⁵ **1918**, 'MISSING COASTING VESSEL', *The Daily Telegraph* (Sydney, NSW : 1883 - 1930), 16 April, p. 4. , viewed 16 Apr 2020, <http://nla.gov.au/nla.news-article239266500>.

⁶⁶ Op. Cit., **Van Pel, 1959** : 7.

⁶⁷ Mullen, K., 1962, "CUTTER'S TROUBLED CAREER ENDS IN DISASTER." *Pacific Islands Monthly*, vol.33, no.4, Nov 1962, p.120. <https://nla.gov.au/443/tarkine/nla.obj-324357478>, accessed 15 April 2020.

4 KNOWN AND PREDICTED UNDERWATER CULTURAL HERITAGE WITHIN THE STUDY AREA

4.1 Previous site inspections

4.1.1 *Sirius* expeditions 1983 – 2002

The area around Kingston Pier has been the subject of previous underwater cultural heritage studies along with land based cultural heritage studies and environmental surveys. The most significant underwater cultural heritage surveys were conducted from 1984 to 2002 during six seasons of underwater excavations and field research into HMS *Sirius*. Investigations conducted in 1983, 1985, 1987, 1988, 1990 and 2002 identified six archaeological sites in Sydney Bay and definitively located the primary wreck site of HMS *Sirius* (see Figure 20).

The expeditions had various objectives and foci to identify and locate material related to HMS *Sirius*. Along with underwater investigations, the HMS *Sirius* expeditions identified material existing in local museums and worked with the island museum to set up artefact conservation protocols and to assess the condition of previously recovered artefacts. A brief description of the field seasons follows:

- 1983: three dives were conducted on Site 1, identified as the primary wreck site. Artefacts recorded included several anchors, a carronade, gudgeon and pintles, sheathing tacks, copper alloy fittings, ceramics, and wooden planking.⁶⁸
- 1985: further investigation of Site 1, along with investigations of Sites 2, 3, 4, and 5. Artefacts were removed from Site 1, including a large anchor and the carronade. Site 2 was surveyed, and divers noted copper fasteners, a musket ball and glass fragments. Site 3 was found to contain large ferrous structural elements, probably related to *Ronaki* (see Section 3.3.6), along with glass case bottle fragments contemporary with *Sirius*. At Site 4, a metal detector survey was conducted, identifying a u-shaped piece of metal and an iron ballast pig. An extensive dive survey was conducted at Site 5. Local divers had previously found *Sirius* material on the site, including a spectacle plate from the *Sirius*' rudder. Overall, 53 dives were conducted, identifying numerous iron deck supports, iron staple knees, iron fasteners, copper alloy fasteners, bricks, drum hoops, iron chain and brass sheathing. The majority of material recovered at Site 5 was mostly determined to come from a later wreck, assumed to be the *Mary Hamilton* based on age and size of structural components.⁶⁹
- 1987: Sites 1 and 2 were further investigated and excavated. Artefacts recovered included a sextant and pantograph from *Sirius*, a pump housing and glass fragments. The primary ballast mound and final wrecking site of *Sirius* was identified at Site 2.⁷⁰
- 1988: Investigations continued at Sites 1 and 2. Detailed maps of both sites were produced along with detailed analysis of wave patterns, currents and wind patterns.⁷¹
- 1990: brief site inspection to assess condition of Sites 1 and 2.⁷²

⁶⁸ Henderson, G. 1984, *Report to the Australian Bicentennial Authority on the December 1983 Preliminary Expedition to the Wreck of H.M.S. Sirius (1790) at Norfolk Island*. Report – Department of Maritime Archaeology, Western Australian Museum, No.22.

⁶⁹ Op. Cit., Henderson, G., M. Stanbury, 1985.

⁷⁰ Op. Cit., Henderson, G., M. Stanbury, 1987.

⁷¹ Henderson, G., 1988, *Norfolk Island Government Project 1988 Expedition Report on the Wreck of HMS Sirius (1790)*. Report – Department of Maritime Archaeology, Western Australian Museum, No.37.

⁷² Stanbury, M., 1990, *HMS Sirius Project: Report on the artefact collection at Norfolk Island, 13-26 March 1990*. Report – Department of Maritime Archaeology, Western Australian Maritime Museum, No.39.

- 2002: excavation of artefacts from sand gullies between reef and shore. Artefacts included ceramic and glass fragments, trigger elements from small arms, cannonballs, musket balls and copper alloy fittings.⁷³

4.1.2 Kingston Pier survey, May 2005

Undertaken by Jaques Margues of Bounty Divers, the survey was focused on marine ecological issues. It was noted during the survey that no 'historic' artefacts were observed and '*...nor during any other visits to the area over the last 20 years.*'⁷⁴

4.1.3 Kingston Pier refurbishment 2005 - 2006

During the excavation below the deck of the Pier to investigate tie rods, anchor blocks, and other features there was an archaeologist on call to identify any artefacts found. Those artefacts that were found were donated to the museum for their collection.⁷⁵

4.1.4 Commercial diver survey, August 2016

The purpose of the diver survey was to obtain core samples and document the nature of the seabed adjacent to the Pier.⁷⁶ No archaeological remains were noted in the report.

4.2 Known underwater cultural heritage sites near or within study area

4.2.1 Site 5⁷⁷

Site 5 lies immediately west of the study area and was identified and surveyed during the 1985 HMS *Sirius* expedition. Numerous artefacts were identified and recovered, including large ferrous structural elements of a 19th century shipwreck. Site 5 lies to the west of Kingston Pier bearing 276° (magnetic) 170 m from station 1 and bearing 294°, 375 m from site 1 (see Figure 20). Site 5 was surveyed in an L shaped area with arms roughly 50 metres long by 10 metres wide totalling an area approximately 1000 m². Three control points were established, A, B, and C, for tape and compass survey.

Local divers showed expedition members items raised from the site, including a spectacle plate (part of a jury steering system) which is consistent with material from the HMS *Sirius*. It quickly became apparent that material from several shipwrecks, as well as modern material discarded from Kingston Pier, had collected in the same area. The bulk of the wreckage was consistent with a sailing vessel from the second half of the 19th century.

The spectacle plate is definitely from the HMS *Sirius*, as it is marked *Berwick*, an earlier name for HMS *Sirius*. It seems likely that the piece drifted to its location supported by the timbers of the rudder. If that was the case then other fittings from the rudder are likely to have been deposited in the same place.

⁷³ Stanbury, M., 2002, *HMS Sirius 2002 Expedition Report*. Report – Department of Maritime Archaeology, Western Australian Maritime Museum, No.167.

Stanbury, M., A. Evans, 2002, *HMS Sirius 2002 Expedition Report – Audit Supplement*. Report – Department of Maritime Archaeology, Western Australian Maritime Museum, No.167 (Supplement).

⁷⁴ Op. Cit., Marges, Jaques, P., May 2005 : 30

⁷⁵ Op. Cit., Hogan, R. November 2011 : 4

⁷⁶ Op. Cit., Worley Parsons 1st September 2016 : Appendix 3

⁷⁷ Op. Cit., Henderson, G., M. Stanbury, 1985 : 30-33

The artefacts surveyed in 1985 are as follows:

Point A:

Point A0 – Iron deck support knee, 3m long arm, .8m short arm	A6 – section of Norfolk pine tree, corroded 200 litre drum hoops, tin cans and other recent rubbish
A1 – two brass bolts (SI15 and SI16) and three pieces of brass sheathing (SI14 and SI18). Also, around A0 and A1 – two broken deck supports, one brass bolt (SI13) and a brick (SI16)	A7 – piece of whalebone (SI28), raised.
A2 – Iron deck support, 65cm x 10cm, brass sheathing (SI17), two iron bolts (SI19, SI20), and one brass bolt (SI15).	A8 – two clay bricks (SI22 and SI23)
A3 – length of timber, 1.65m x .15m, scarfed at south end with a 3cm diameter treenail. Copper bolt, 36.5cm x 1.7cm (SI12).	A9 – Mast hoop and iron bolts
A4 – broken iron deck support 1.55m x .01m x .005m (SI9) raised with threaded brass bolt (SI7)	A10 – iron shackle with eyebolt
A5 – iron deck support 2.15m x .6m x .12m x .07m (SI10), and an iron object 5.4cm x 1.15cm (SI18), both raised.	A11 – brass bolt

Point B:

B1/2 – brass sheathing and tack	B10 – broken iron deck support .6m x .57m x .15m x .1m
B3 group of two brass (14cm x 2cm) and one copper (23.5cm x 2cm) bolts (SI32) raised. Copper bolt may be from <i>Sirius</i> .	B11 – iron deck support 1.7m long
B4/5 – two extremities of an iron deck stanchion 3m x .15m. A brass bolt 35cm x 18cm raised from B5.	B12 – iron staple knee 1.45m x .8m
B6 – broken iron deck stanchion 1.5m x .15m.	B13 – three iron rings, .6m outer diameter, .4m inner diameter, appearing to be part of capstan or winch. A length of iron deck support was to the N, and a brick to the S.
B7 – curved section of iron 1m x .1m x .05m	B14 – partial iron deck support 1.45m x .8m with broken iron deck support alongside.
B8 – more complete iron deck stanchion, 2m x .15m, large pile of iron chain found to the W (possible anchor chain)	B15 – iron deck support
B9 – three iron deck stanchions concreted together and a section of brass sheathing (SI35) raised	

Point C:

C0 – iron deck support knee of unknown dimensions to which a buoy was tied and surveyed in from the shore.	C7-10 – corner points of a rectangular iron tank of dimensions 1.5m x 1.2m x 1.3m high.
C1 – iron deck support knee .6m x .25m, and other iron bolts and plates.	C11 – three concreted iron bars
C2 – iron deck support knee .63m x .82m	C12 – two mast bands
C3 – broken iron deck support knee 1.15m long	C13 – non-ferrous metal bolt
C4 – corner of an iron staple knee 1.2m x .86m	C14 – non-ferrous metal sheathing
C5 – copper? bolt of unknown dimensions	C15 – brass bolt
C6 – iron deck support knee .5m x .47m	

No material was raised from Point C except brass sheathing from C14.

The majority of ferrous material at points A, B, and C consists of broken and complete iron deck support knees, staple knees and deck stanchions. The material suggested a wooden vessel with iron knees and stanchions, with two decks, or more likely a between deck (staple knees), and up to 3m depth of hold. Material was determined not to have come from the wreck of the *Ronaki*.

The majority of non-ferrous metal on the site appears to be brass. Six brass bolts were raised. Brass sheathing was also raised from A1, A2, B1, B2, B9, and C14. The material suggests a wooden vessel with muntz metal sheathing and brass fastenings (post-1840). Only small pieces of timber were still visible on several of the bolts. Also located on site were a number of copper bolts, raised from A, A1, A3, and B3. At least one may be from a different vessel as it has thread, a brass nut, and washer. The fact that the spectacle plate was reportedly found near point B, combined with the four copper bolts, leads to the supposition that HMS *Sirius* material was deposited among the remains of a later vessel.

A number of bricks were located at A, A8, and B13 – all of which were raised. Frogs appear to suggest building bricks, but possible they're from the galley area or a whaling trypot works. "Hickman" appears on one of the bricks, possibly from the Hickman & Co. firebrick manufacturing company of Stourbridge, England, which operated from 1865 to 1929.⁷⁸

A piece of whale bone was located at A7. Possibly from the *Mary Hamilton*, or from bay whaling activities conducted on the island. Lengths of timber were noted in the area but these appeared to be too good a condition to be 19th or 18th century shipwreck material. Considerable amounts of modern material, consisting of aluminium cans, 200 litre drums, bits of Norfolk pine and other artefacts was present all through the area.

4.3 Predicted underwater cultural heritage within study area

4.3.1 Maritime Infrastructure

Maritime infrastructure related to the Kingston Pier may be extant within the study area. Predicted infrastructure includes any submerged portions of the Pier and items associated with the construction of the Pier. This may include metal fittings which were used to connect and support the stone blocks making up the base level of the Pier.

A timber slipway built to the immediate west of the Pier, at the location of the original Landing Place, was replaced with a stone slipway in 1853.⁷⁹ See cover image for possible depiction of the timber slipway. Remains of the original timber slipway, constructed in the 1830s, may still be extant. The stone slipway/ramp is presumably in the same location as the present ramp.

As noted on historical charts (Figure 12 and Figure 13) a navigation beacon was constructed at the south western end of the reef. If the construction of this beacon was typical for contemporary beacons, the remains of an iron "staff" or post may be extant.

Site 6 from the HMS *Sirius* Expeditions (Figure 20), has been identified as a causeway, potentially constructed for the salvage of material from HMS *Sirius*. It is outside the study area.

⁷⁸ Venovcevs, A., 2017, "A Report on the Carol Brice-Bennett Archaeology Collection from Happy Valley-Goose Bay, Labrador", *Community collections Archaeological Research Project, Vol.4 March 2017*. Newfoundland and Labrador Archaeological Society.

⁷⁹ Op. Cit., Baskerville, 2013.

4.3.2 Discard, deliberate and accidental

The Landing Place and Kingston Pier have been the primary location for the loading and unloading of vessels from the inception of the Norfolk Island colony to the present day. It can be assumed that the largest portion of all cargo transported to the Island has been offloaded at this site. As such, it is extremely likely that numerous items have been discarded into the waters off Kingston Pier, as vessels and passengers were unloaded. Objects would likely be associated with various activities, including commercial and recreational fishing, whaling, cargo transport, personal effects from passengers and rubbish disposal.

Deposits associated with maritime infrastructure would have built up around the structures. Artefacts would have fallen off the edge of Kingston Pier, as well as off the vessels moored alongside. Such deposits can include accidental and/or deliberate discard of items such as personal objects, food and drink containers, fishing equipment as well as damaged and removed material from maintenance of the structure. As the abovementioned structures were associated mostly with industrial activities, there could be a higher concentration of tools and machinery parts under, within and around the structures.

An example of the practice of discard was noted in the 2005 marine ecology survey which observed that, *“the most striking and immediate impressions on entering the water using a snorkel or SCUBA is the amount of fish skeletons and other debris littering the bottom. Fish are commonly cleared along that side of the Pier and the frames and heads are thrown in the water. Whilst some of this is consumed by visiting sharks and rays, much of it remains as bleached bones and skulls.*

*Fishermen filleting and cleaning their catch get thirsty and much beer is consumed on such occasions. Unfortunately, it is common practice to dispose of the stubbies or cans straight into the water. Other bits of debris have been left after work alongside the Pier also is in evidence. This includes large bolts, angle iron etc. Much of the debris has accumulated from the rear most steps to the shores of Flagstaff Hill.”*⁸⁰

Archaeological deposits would have formed below vessels accessed and moored off Kingston Pier and the Landing Place. The vessels in the area include a mix of recreational craft, cargo ships, lighters and industrial vessels associated with a number of industries including fishing, whaling, commercial trade, and logging. Discard of items from vessels can be accidental or deliberate and can include personal objects, food and drink containers, ships fittings and equipment, fishing and boating equipment as well as cargo from vessels passing through the areas. Such deposits can consist of a range of materials and are mostly single items but can also occur in scatters created by one event or multiple events.

Further materials that could have been dumped or discarded from vessels anchored at the Pier include war materials from WWII. The Pier was noted as having suffered substantial damage during the war as heavy machinery was used to unload building materials for the construction of the aerodrome.⁸¹ Other war materials, including ammunition and weaponry may have been dumped or deposited as well. According to anecdote, during the salvage of *Ronaki IX-94*, a crate of spent Bofors anti-aircraft shells was purposely dumped overboard for the Islanders to collect as souvenirs.⁸²

4.3.3 Shipwrecks and associated deposits

Based on the available information there are no definitive wreck impact sites within the study area. Some of the smaller boats noted in the historical record appear to have been wrecked while trying to negotiate the channel connecting the current berth area and the open sea. It is possible that the smashed hulls of these vessels floated into the study area before breaking up. As noted in Section 3.3.4, the *Mary Hamilton* was likely grounded outside the

⁸⁰ Op. Cit. **Marges, Jaques, P., May 2005** : 30

⁸¹ Op. Cit. **KAVHA, 2016** : 38.

⁸² AUCHD, *Ronaki*, vessel id 7955

<https://dmzapp17p.ris.environment.gov.au/shipwreck/public/wreck/wreck.do?key=7955>.

study area to the west. While the *Friendship* appears to have come to rest before breaking up on the edge of the reef that extends from the edge of the Pier.

For those wrecking events that occurred during high wind and corresponding heavy seas, it can be expected that floating wreckage may have been pushed into the study area. An example of wreckage washing into shore is the wreck of *Warrigal* in 1918. *Warrigal* was wrecked offshore between Kingston and Philip Island during a storm and locals later found parts of the vessel and pieces of *Warrigal*'s timber cargo washed ashore at Kingston.

The strong currents flowing along the edge of the reef fringing Slaughter Bay may have brought floating wreckage into the vicinity of the study area before sinking or being pushed towards shore by wind and wave. Such an occurrence was described by Seaman Nagle who saw wreckage from the HMS *Sirius* floating westwards and disappearing into a whirlpool apparently located close to the study area. The finding of the spectacle plate from HMS *Sirius* west of the study area shows how far floating wreckage, in this instance the top part of the vessel's rudder, could be found away from the main wreck site.

The remains of wreckage that can be expected in the study area would be the rigging, decking and upper hull of a timber built vessel as well as cargo – any components that could float. Metal components from such vessels would have been associated with floating timbers which had eventually broken down. It should also be noted that even though the winds, wave and tide for some wreck events may not have been conducive for wreckage to float into the study area, wreckage can float at sea for some time and larger wrecks can break up over a number of years.

There are at least 15 known shipwrecks near Kingston and Slaughter Bay, ranging in date from 1788 to 1962, and ranging in size from small wooden lighters and whaleboats to the 540-ton HMS *Sirius* (see Table 1).

Table 1: Known shipwrecks near Kingston.

Name	Year Wrecked	Construction	Tonnage	App. Location	Notes
<i>Bittern</i>	1868	Wood	40.6	Kingston	Also possibly wrecked at Beefsteak according to <i>Auckland Star</i> 14 Aug 1893
<i>Friendship</i>	1835	Wood	88	Kingston	Wrecked where Pier now ends
<i>Isis</i>	1962	Wood	UNK	Beefsteak Point	Pleasure yacht wrecked near Beefsteak Point to the west of Kingston Pier.
<i>Jan</i>	1948	Steel	UNK	Emily Bay	Diesel powered launch, capsized while trying to enter Emily Bay
<i>Mary Hamilton</i>	1873	Wood	312	Kingston	Wrecked near Landing Place, remains possibly found at <i>Sirius</i> Site 5
<i>Ronaki IX-94</i>	1943	Wood	255	Kingston	Ran aground on reef immediately east of Kingston Pier. Remains mostly salvaged and removed.
HMS <i>Sirius</i>	1790	Wood	540	Kingston	Wreck material found at several places in Slaughter Bay. Anchors and ballast pile remain on site.
<i>Wanderlust</i>	1914	Wood	UNK	Emily Bay	Wrecked near entrance to Emily Bay while being towed by a whaleboat.
<i>Warrigal</i>	1918	Wood	90	Offshore	Wrecked between Norfolk and Philip Island, some cargo and ship pieces washed ashore in Slaughter Bay.
Small boat	1788	Wood	UNK	Kingston	Noted by William Bradley in his journal, 26 August 1788.
Cutter	1790	Wood	UNK	Kingston	Cutter from <i>Sirius</i> , wreck noted by Wm. Bradley in journal, 17 August 1790.
Whaleboat	1826	Wood	UNK	Offshore	Wrecked in a collision with the schooner <i>Isabella</i> , approximately one mile offshore.
Small boat	1840	Wood	UNK	Kingston	Wrecked returning from Norfolk Island
Whaleboat	1907	Wood	UNK	Kingston	Capsized and wrecked off the reef point while heading out to sea.
Whaleboat	1922	Wood	UNK	UNK	Sank while loading timber, probably either at Kingston or Cascades on north side of Norfolk.

5 ARCHAEOLOGICAL DIVE INSPECTION

5.1 Dates and Personnel

The archaeological dive inspection was carried out on 26th and 27th February, 2020. The inspection was undertaken by Maritime Archaeologists from Cosmos Archaeology and a commercial dive team from Professional Diving Services. Boat and diving equipment support was provided by local dive operator Bounty Dive. The team was made up of the following people:

Cosmos Coroneos	Leading Maritime Archaeologist	Cosmos Archaeology Pty Ltd
Jane Mitchell	Maritime Archaeologist	Cosmos Archaeology Pty Ltd
Malcolm Venturoni	Supervisor/Diver	Professional Diving Services
Jason Blackwell	Supervisor Diver	Professional Diving Services
Mitchell Graham	Skipper	Bounty Dive

5.2 Weather and tide conditions

Diving in Sydney Bay near Kingston Pier is heavily affected by wind, swell and tides. The weather conditions that were taken into consideration in the approach to undertaking the inspection are outlined in Table 2 and Table 3.

Table 2: Tides for the survey period, including the day immediately prior and day after inspections. ⁸³

25 February 2020	Time	0358	1017	11629	21227
	Height (m Lat)	0.40	1.83	0.49	1.69
26 February 2020	Time	0430	1047	1701	2300
	Height (m Lat)	0.41	1.82	0.48	1.69
27 February 2020	Time	0503	1117	1732	2334
	Height (m Lat)	0.44	1.80	0.48	1.68
28 February 2020	Time	0536	1148	1805	
	Height (M Lat)	0.49	1.75	0.53	

Conditions were monitored from the Pier at the start of each day and assessed. If unsuitable for diving, then reassessment took place every two to three hours until conditions were calm enough.

⁸³ **Bureau of Meteorology, Australian Government 2020**, Norfolk Island Times and tides of High and Low Waters 2020¹, available http://www.bom.gov.au/ntc/IDO59001/IDO59001_2020_NSW_TP005.pdf, accessed 1 March, 2020.

Table 3: Wind and swell conditions for the survey period⁸⁴.

Date	Temperature (°C)	Swell (height / period)	Wind 09:00 (km/h)	Wind 15:00 (km/h)
24 February 2020	20.2 – 25.9	2.5 m S / 11 s	24 SE	26 ESE
25 February 2020	19.9 – 25.6	2.1 m SW / 19 s	19 E	17 ESE
26 February 2020	20.3 – 26.9	2.3 m SW / 16 s	22 ENE	20 ENE
27 February 2020	21.1 – 26.4	1.8 m SW / 14 s	22 NE	20 NNE
28 February 2020	20.9 – 26.6	1.7 m SW / 15 s	28 NE	24 NNE

Though the dive inspection took place on the 26th and 27th, the site conditions were substantially better on the day the team flew out, which was the 28th February.

5.3 Conduct of Survey

There were two main components to the inspection requirements:

- Conduct a survey to locate any underwater cultural heritage relics on the western side of Kingston Pier, such as shipwreck artefacts including timbers, ship fittings and personal item and potential discards from vessels, and;
- Survey the topology and make-up of the sea floor to determine the archaeological potential for remaining underwater cultural heritage within the proposed dredging footprint.

The following constraints were taken into consideration when forming the investigation methodology:

- Swell and tidal flow could limit observation and information that could be obtained during the survey, and;
- The location of the survey on the western side of Kingston Pier is the main launching and retrieval location for fishing vessels and their conduct may have an influence on the conduct of the investigation.

The work components were achieved by the use of four transect searches and two swim searches. The diving was conducted by both commercial divers and maritime archaeologists with ADAS qualifications. The surveys were undertaken on Self-Contained Underwater Breathing Apparatus (SCUBA), with the divers swimming in diving pairs. All diving met Occupational Health & Safety (OH&S) requirements.

A transect was formed by attaching a weighted line to a nominated location at the base of Kingston Pier. The divers entered the water from the Pier steps and, using a dive computer's compass, reeled out the line to 30 m on a magnetic bearing of 320°. The divers then swam along the transect noting seafloor features and searching for any indications of underwater cultural heritage remains. Video and still images were taken along all transects using a GoPro 8 and a Sony RX100-IV in an underwater housing. Video files are provided in Annex

⁸⁴ **Bureau of Meteorology, Australian Government 2020**, Norfolk Island February 2020 Daily weather observations, available at <http://www.bom.gov.au/climate/dwo/202002/pdf/IDCJDW2100.202002.pdf>, accessed 1 March 2020, and **Willy Weather 2020**, Sydney Bay Offshore weather swell height and period, available at <https://www.willyweather.com.au/graphs.html?graph=outlook:5.location:20023.series=order:0.id:sunrisesunset.type:forecast.series=order:1.id:swell-height,type:forecast.series=order:2.id:swell-period,type:forecast>, accessed 1 March 2020.

A. Probing was conducted using a 1.2 m copper rod, marked at 250 mm intervals. Relative depth readings were taken at regular intervals along the transects.

Before the transects were run, the dive boat *Black Dog Cat* was launched from the derrick on the western edge of Pier (Figure 21). While the boat was not required for in-water work, the vessel maintained a watching brief at the entrance to the channel to ensure diver safety from fishing vessel movements.



Figure 21: The dive support vessel Black Dog Cat, using derrick to launch off Kingston Pier. (Image taken 26 February 2020)

The location of the four transects were spaced along the length of Kingston Pier so as to obtain a good understanding of the areas previously dredged and the presence and potential presence of any underwater cultural heritage (Figure 22).

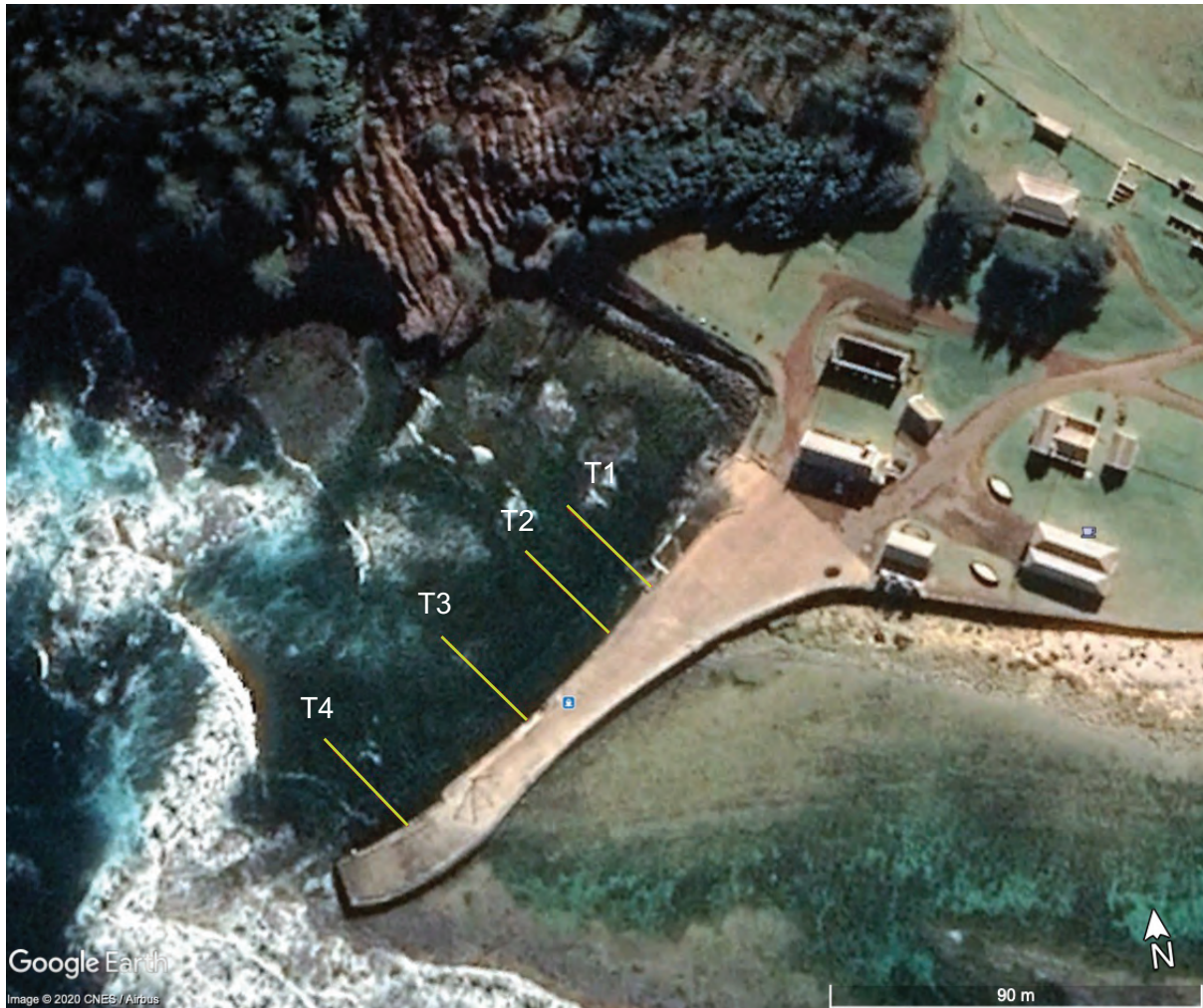


Figure 22: Location of transects west side of Kingston Pier. (Base image Google Earth).

A swim search was conducted around the edge of the reef that forms around the seaward end of Kingston Pier and stretches west out into the channel. Due to the nature of the swell breaking over the reef, the divers entered and exited from the Pier. The inspection was carried out with minimal equipment; the divers only taking video and still images as they swam.

A second swim search was conducted at the location of Site 5, the location of the rudder components from HMS *Sirius* previously located by local divers. The location was obtained using the boat's GPS, and divers entered the water from the boat. Due to the nature of the tides and swell only minimal equipment was used and video and still images taken of the area (Figure 23).

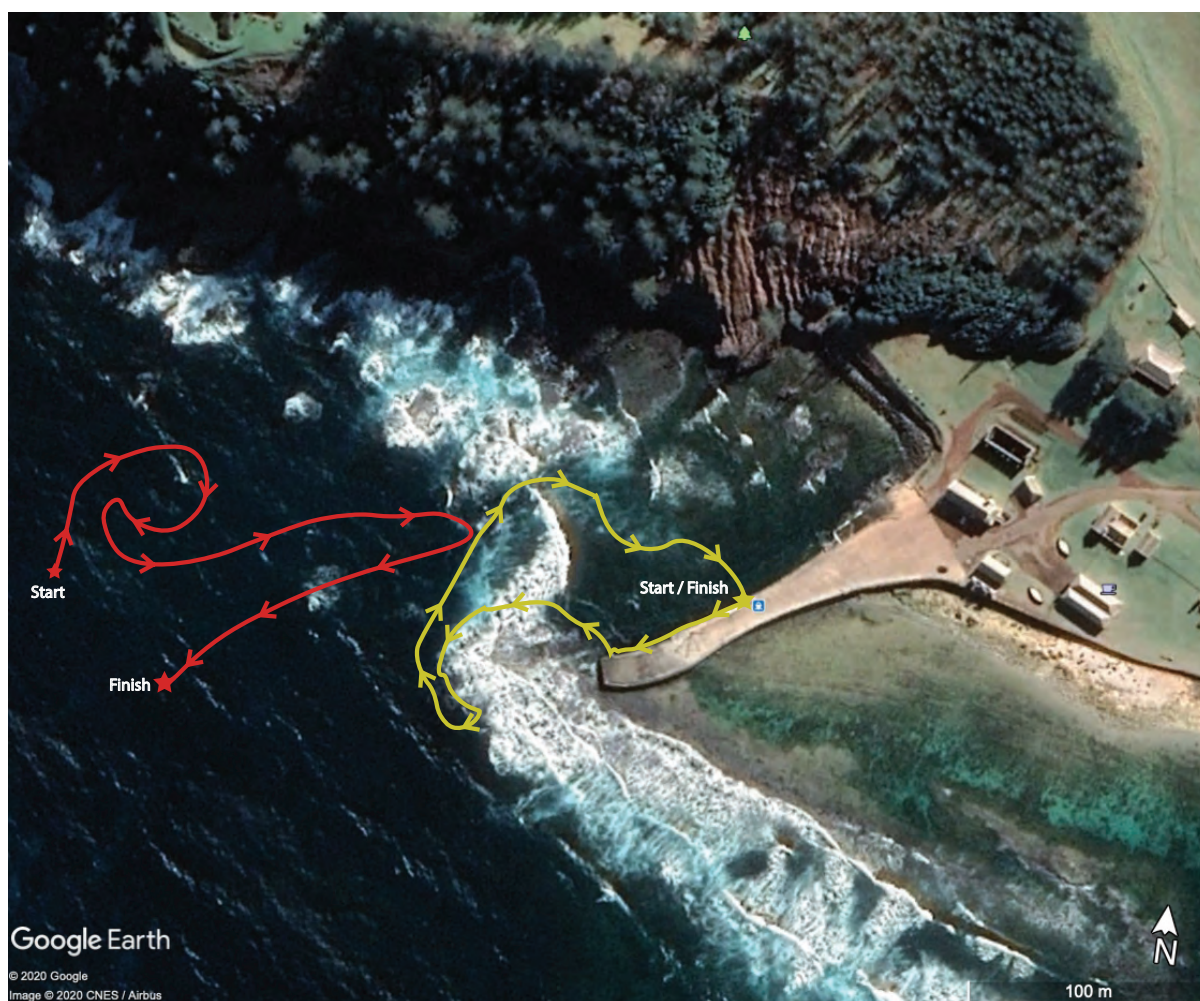


Figure 23: Approximate location of swim searches. Swim search 1 in yellow, Site 5 swim search in red. (Base image: Google Earth).

5.4 Findings

Swim Search 01		
Date: 26 February, 2020	Method: SCUBA	Tide: Ebbing
Distance and direction: N/A		Divers: Cos Coroneos and Mal Venturoni
Time start (min): 1235	Time end (min): 1305	Total time (min): 30
Depth:	Water visibility: 2 – 10 m	Seabed visibility: Good

Divers entered the water from the seaward steps and swam along the Pier until reaching the reef. They then followed the shape of the reef around the seaward end of the Pier. Video footage is available for the first approximately 80 m from where the divers entered the water and to outer entrance to channel.

The sea floor was characterised by rocky reef (calcareenite) interspersed with gullies of smaller cobble-like rocks and sand (Figure 24 to Figure 27). In places the grey volcanic tuff substrate was also observed (see Figure 24). There was significant amounts of surge crashing over the reef head during the survey (Figure 28).



Figure 24: Example of seabed around the channel entrance. These smaller cobbles were interspersed between the larger rocks. The grey material in the bottom right corner is the grey tuff. (NI_SS01_008_200226 00:00).



Figure 25: Example of rocky reef (calcareenite) with sand gully along bottom of image. (NI_SS01_008_200226 00:27).



Figure 26: Example of sand gully at entrance to the channel. Western edge of fringing reef visible in left side of image. (NI_SS01_004_200226 01:11).



Figure 27: Example of sand gully at entrance to the channel. (NI_SS01_005_200226 00:10).

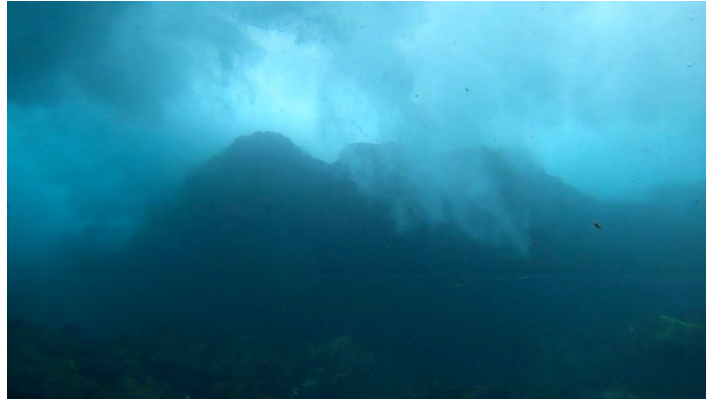


Figure 28: Example of surge over reef edge that extends beyond the Pier at the eastern side of the entrance to the channel. (NI_SS01_008_200226 00:54).

Cultural material observed during the search was mostly recent such as a modern tyre, fishing rod (Figure 29), base of a beer bottle (Figure 30), and plastic coated wire (Figure 31). What was noticeable was how quickly relatively recent materials become covered in growth. A point of interest was a block located within the area dredged in the 1980s (Figure 32).



Figure 29: Remains of fishing rod centre of image. (NI_SS01_003_200226 00:16).



Figure 30: Base of recent beer bottle. Note the growth covering over 50% of the artefact. (NI_SS01_002_200226 00:33).

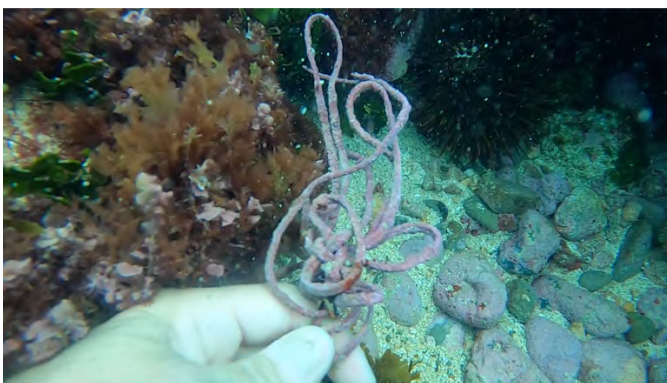


Figure 31: Plastic coated wire completely covered in marine growth. (NI_SS01_008_200226 00:22).



Figure 32: Block, sandstone (?) adjacent to Pier close to where divers entered water. (NI_SS01_001_200226 00:25).

Transect 1		
Date: 26 February, 2020	Method: SCUBA	Tide: Ebbing
Distance and direction: 30m at mag 320° bearing		Divers: Jane Mitchell and Jason Blackwell
Pier start – 58J 787641 mE 6781992 mS WGS84		Seaward end – 58J 787622 mE 6782015 mS WGS84
Time start (min): 13:45	Time end (min): 14:05	Total time (min): 20
Depth: 1.4 – 3.3 m	Water visibility: 5 – 10 m	Seabed visibility: Good

The transect was weighted and placed at the base of the Pier on the seaward side of the boat ramp, near the fish cleaning platform (refer Figure 22). The path of the 1980s dredge line is clearly visible parallel to the Pier and running for 4.5 m along the transect (Figure 33). This 4.5 m section consists of a sandy seafloor with occasional small rock scatters. There are a number of animal bones that appear to be fish bones and potentially chicken or cow bones. Some of these bones are bleached and cleaned of meat, however there was also newer bones with some connective tissue still attached (Figure 34). Modern beer cans, were scattered loosely alongside the Pier, most likely discarded from the Pier itself but also fishing vessels that use the Pier as a launching place.

The remainder of the transect consists of a reef platform with sandy gullies. The reef itself, is covered with hard corals, including plate corals (Figure 35). The gullies are sandy with rocky rubble and broken pieces of reef (Figure 36). There are plenty of small overhangs and holes intertwined amongst the reef and gullies. The reef (calcareenite) floor appears to continue on past the end of the 30 m transect (Figure 37).

Probing along the length of the transect met refusal just below the surface regardless of a sandy or reef sea floor.

No obvious remains of underwater cultural heritage were noted along the transect. For a digital representation of Transect 1 see Figure 38.



Figure 33: Dredged area to reef transition at 4.5 m along transect. (NI_T1_0 to 30 m_200226 1:00)



Figure 34: Dredge line showing sandy seafloor with rock scatters and animal bones. (NI_T1_0 to 30 m_200226 00:10)



Figure 35: Example of reef (calcareenite) seafloor at 6.5m along transect. Note plate coral at top left. (NI_T1_0 to 30 m_200226 01:20).



Figure 36: Example of sandy gully right half of image. (NI_T1_0 to 30 m_200226 01:45)



Figure 37: Reef (calcareenite) seabed continuing past the end of the transect at 28 m mark. (NI_T1_0 to 30m_200226 3:46)

UNIT ID: **Transect 1** DATE: **26 February 2020** LOCATION: **Kingston Pier, Norfolk Island**

START TIME: **1345** FINISH: **1405** TOTAL TIME (MIN): **20** DIVERS: **Jane Mitchell and Jason Blackwell**

WATER VISIBILITY (METRES): **5 - 10 m** SEABED VISIBILITY: **Good** SPACING (METERS): **2 m**

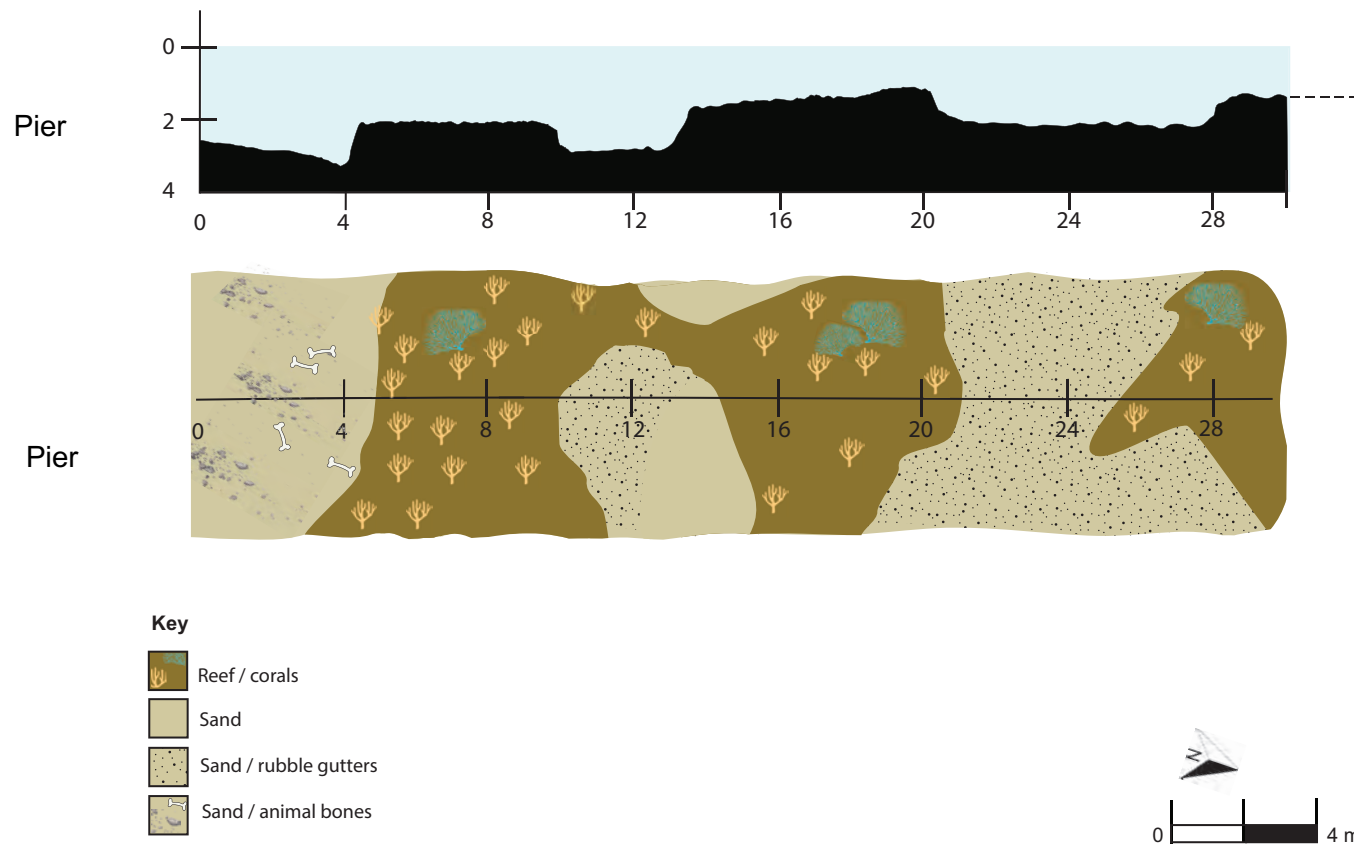


Figure 38: Digital representation of NI Transect 1, including profile of relative depths

Transect 2		
Date: 26 February, 2020	Method: SCUBA	Tide: Ebbing
Distance and direction: 30m at mag 320° bearing	Divers: Jane Mitchell and Jason Blackwell	
Pier start – 58J 787626 mE 6781979 mS WGS84	Seaward end – 58J 787605 mE 6782005 mS WGS84	
Time start (min): 1410	Time end (min): 1430	Total time (min): 20
Depth: 1.4 – 3.3 m	Water visibility: 5 – 10 m	Seabed visibility: Good

The transect line was moved to the next position, moving south along the Pier (Figure 22). There is bluestone gravel at the base of the Pier to almost a metre along the transect (Figure 39). This is likely derived from previous repairs to the Pier. This gravel thins out to the sandy covered dredge line. The dredged area is scattered with animal bones and the occasional beer can (Figure 40). At 4 m the transition from the dredged area to the reef (calcarenite) floor commences (Figure 41).

The remainder of the transect consists of a reef floor with sandy gullies and rock rubble. At the 10 m mark a potential brick was recorded (Figure 42). At 12 m along the transect, a recent hard piece of plastic was noted. The plastic had some evidence of algae growth and discoloration (Figure 43).

The reef floor continued on past the 30 m end of transect (Figure 44). For a digital representation of transect 2 see Figure 45.



Figure 39: Gravel infill over sand at the start of Transect 2. (NI_T2_0 to 30 m_200226 00:00m).



Figure 40: Previously dredged area at 2 m, note the gravel infill is scattered thinly throughout area. (NI_T2_0 to 30 m_200226 00:06).



Figure 41: Changing sea floor at 4 m where the sandy dredged area transitions into rocky reef. (NI_T2_0 to 30 m_200226 00:15).



Figure 42: Potential brick at 10 m indicated with red arrow. (NI_T2_0 to 30m_200226 00:48).



Figure 43: Piece of modern hard plastic, indicated with red arrow. (NI_T2_0 to 30 m_200226 00:58).



Figure 44: Example of rocky reef with overlay of rubble and sand at 26 m. (NI_T2_0 to 30 m_200226 01:53).

UNIT ID: **Transect 2**

DATE: **26 February 2020**

LOCATION: **Kingston Pier, Norfolk Island**

START TIME: **1410**

FINISH: **1430**

TOTAL TIME (MIN): **20**

DIVERS: **Jane Mitchell and Jason Blackwell**

WATER VISIBILITY (METRES): **5 - 10 m**

SEABED VISIBILITY: **Good**

SPACING (METERS): **2 m**

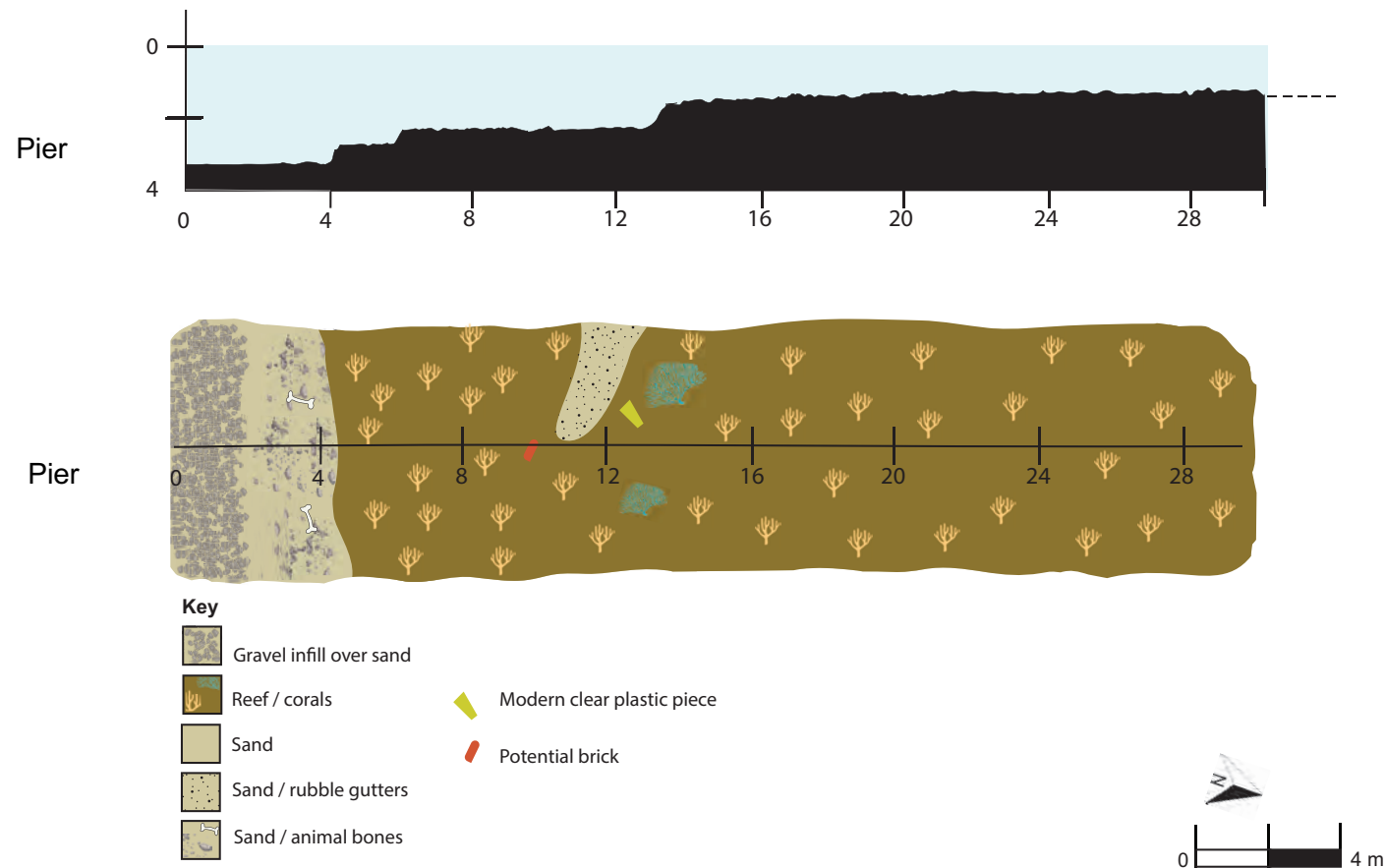


Figure 45: Digital representation of NI Transect 2, including profile of relative depths.

Transect 3		
Date: 26 February, 2020	Method: SCUBA	Tide: Ebbing
Distance and direction: 30m at mag 320° bearing	Divers: Jane Mitchell and Jason Blackwell	
Pier start – 58J 787608 mE 6781965 mS WGS84	Seaward end – 58J 787588 mE 6781989 mS WGS84	
Time start (min): 1525	Time end (min): 1540	Total time (min): 15
Depth: 1 – 1.9 m	Water visibility: 5 – 10 m	Seabed visibility: Good

The transect line was moved to the next position, moving south along the Pier (Figure 22). At this location the previously dredged area is less obvious, with the seafloor appearing more reef like in appearance. Approximately a metre to the north of the transect, the sea floor transitions from the sandy dredged area to a relatively higher rocky (calcarenite) reef (Figure 46). The reef has a slightly different appearance to the reef along Transects 1 and 2. This section of reef appears to consist of larger rocks and boulders (Figure 47). At 4 m, a single copper or brass bolt with nut, likely recent, was recorded (Figure 48).

At 6 m along the transect, the reef floor develops a heavy scattering of broken pieces of rock and reef, likely as a result of being located closer to the end of the Pier in a location heavily affected by swell and rough seas (Figure 49). This is also likely why the larger plate corals are not present along this transect. The appearance of the reef is largely the same for the remainder of the transect. Figure 50 and Figure 51 provide an example of the rocky reef's appearance at 20m and 30m respectively.



Figure 46: T3 at 0m facing north parallel to the Pier. Note rocky reef area drops away at the top of the image. (NI_T3_0 to 30m_200226 00:07).



Figure 47: Two metres along transect, the reef consists of larger blocks and gullies. (NI_T3_0 to 30m_200226 00:15).



Figure 48: Potential copper or brass bolt with nut located at 4 m along transect 3, indicated with red circle. (NI_T3_0 to 30m_200226 00:20).



Figure 49: Example of seafloor at 6 m. (NI_T3_0 to 30m_200226 00:35).



Figure 50: Example of seafloor at 20 m. (NI_T3_0 to 30m_200226 02:39).



Figure 51: Example of T3 seafloor at 30m. (NI_T3_0 to 30m_200226 03:21).

For a digital representation of Transect 3 see Figure 52.

UNIT ID: ***Transect 3***

DATE: ***26 February 2020***

LOCATION: ***Kingston Pier, Norfolk Island***

START TIME: ***1525***

FINISH: ***1540***

TOTAL TIME (MIN): ***15***

DIVERS: ***Jane Mitchell and Jason Blackwell***

WATER VISIBILITY (METRES): ***5 - 10 m***

SEABED VISIBILITY: ***Good***

SPACING (METERS): ***2 m***

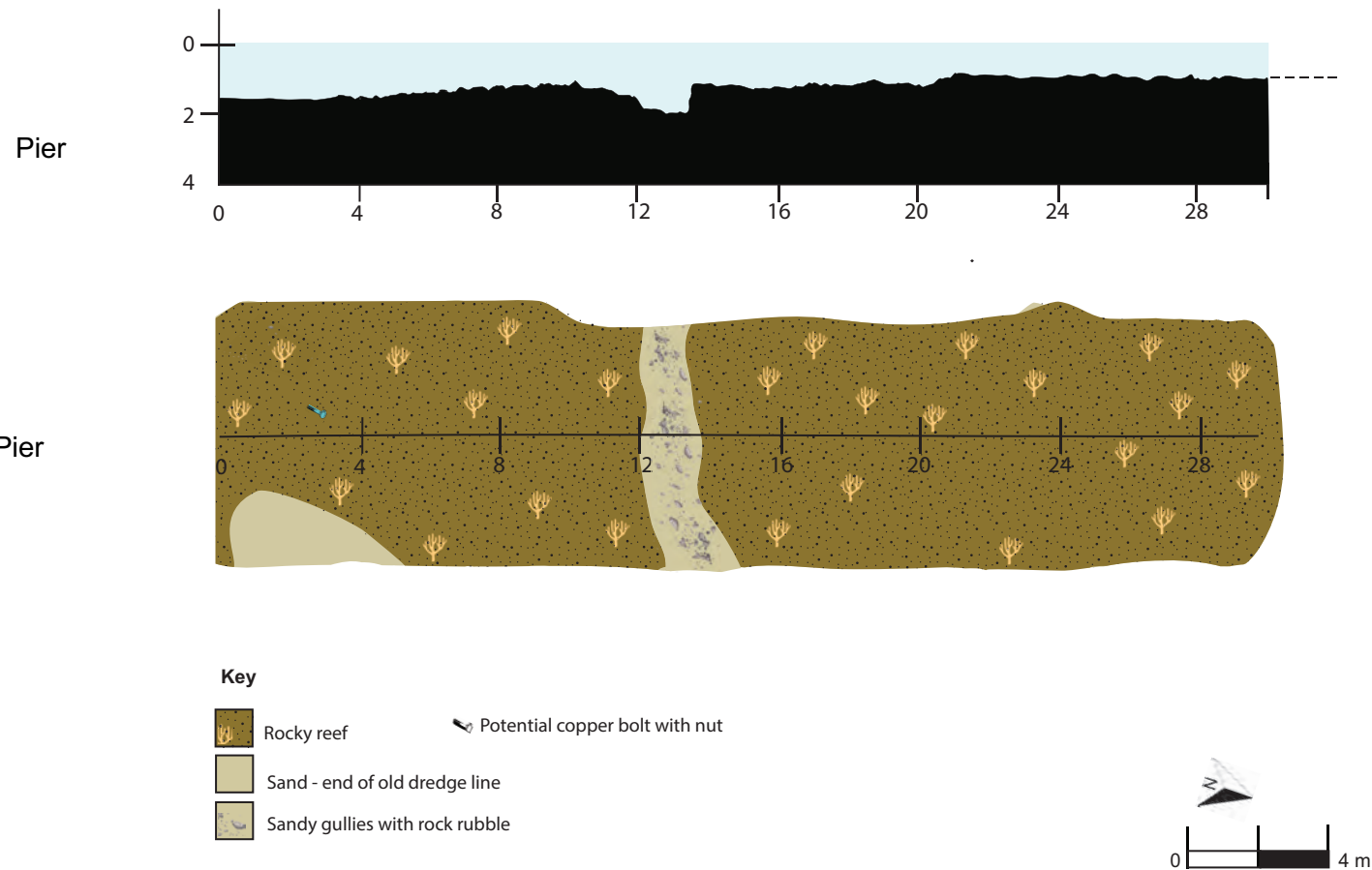


Figure 52: Digital representation of NI Transect 3, including profile of relative depths.

<i>Transect 4</i>		
<i>Date:</i> 26 February, 2020	<i>Method:</i> SCUBA	<i>Tide:</i> Ebbing
<i>Distance and direction:</i> 30m at mag 320° bearing		<i>Divers:</i> Jane Mitchell and Jason Blackwell
<i>Pier start</i> – 58J 787571 mE 6781944 mS WGS84		<i>Seaward end</i> – 58J 787553 mE 6781969 mS WGS84
<i>Time start (min):</i> 1550	<i>Time end (min):</i> 1600	<i>Total time (min):</i> 10
<i>Depth:</i> 1.5 – 1.6 m	<i>Water visibility:</i> 5 – 10 m	<i>Seabed visibility:</i> Good

The transect line was moved to the next position, moving south along the Pier (See Figure 22). The previously dredged area was difficult to discern as per the previous transect. The seafloor located between 0 m and 4 m is a hard rocky reef with a relatively thin covering of sand (Figure 53 and Figure 54).

The remainder of the transect was very similar in appearance to Transect 3. There are no larger plate corals and the reef appears more boulder like in appearance. There is a large amount of broken rock and reef scattered over the seafloor. There are small cracks and crevices but no large sand gullies or overhangs. Figure 55, Figure 56 and Figure 57 provide examples of the seafloor along the transect from 10 to 30 m.

No obvious cultural heritage material was located along the transect.



Figure 53: Example of T4 seafloor at 0 m.
(NI_T4_0 to 30 m_200226 00:05).



Figure 54: Example of T4 seafloor at 2 m.
(NI_T4_0 to 30 m_200226 00:11).



Figure 55: Example of T4 seafloor at 10 m.
(NI_T4_0 to 30m_200226 00:40).



Figure 56: Example of T4 seafloor at 20m.
(NI_T4_0 to 30m_200226 01:04).



Figure 57: Example of T4 seafloor at 30m.
(NI_T4_0 to 30m_200226 01:26).

For a digital representation of Transect 4 see Figure 58.

UNIT ID: ***Transect 4***

DATE: ***26 February 2020***

LOCATION: ***Kingston Pier, Norfolk Island***

START TIME: ***1550***

FINISH: ***1600***

TOTAL TIME (MIN): ***10***

DIVERS: ***Jane Mitchell and Jason Blackwell***

WATER VISIBILITY (METRES): ***5 - 10 m***

SEABED VISIBILITY: ***Good***

SPACING (METERS): ***2 m***

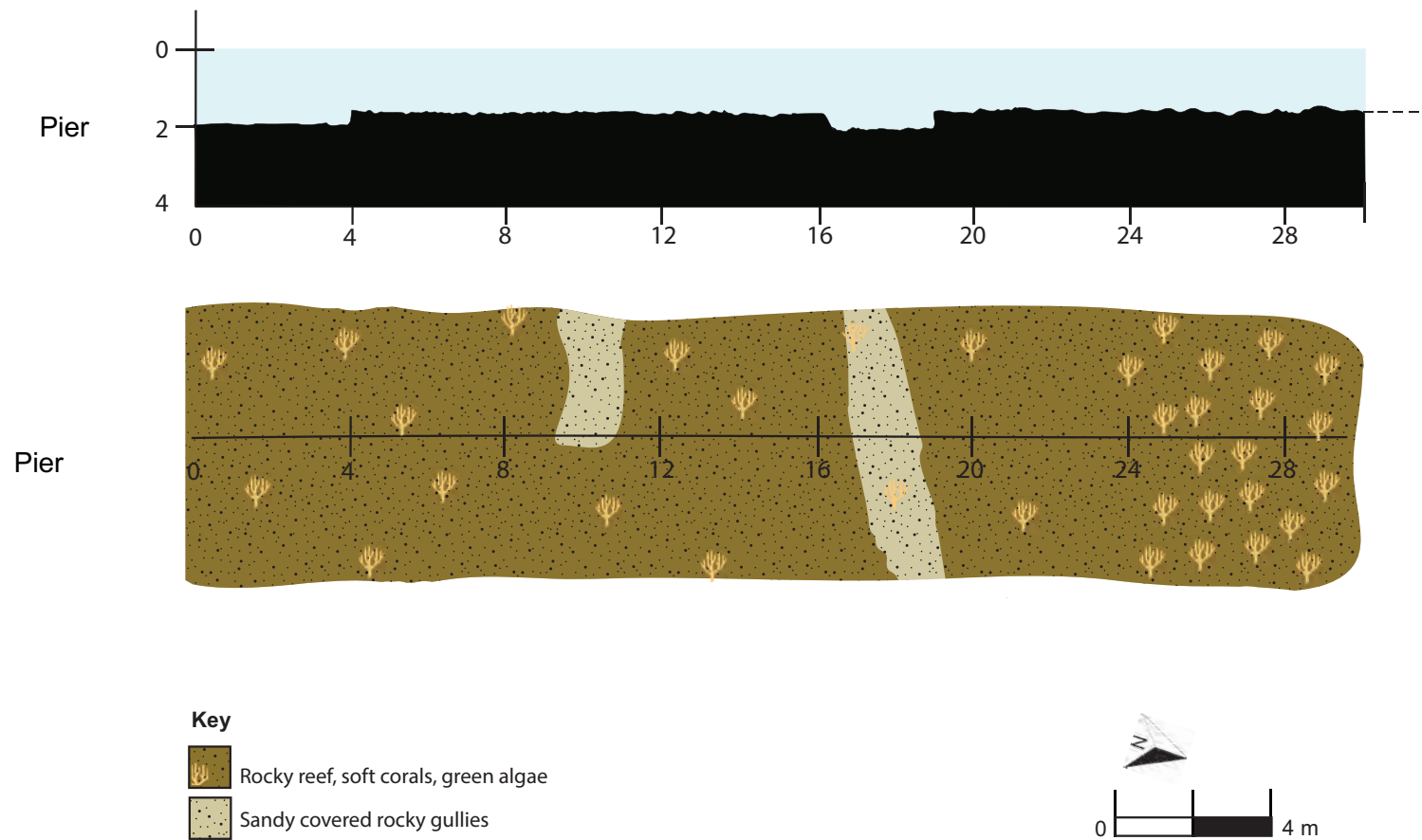


Figure 58: Digital representation of NI Transect 4, including profile of relative depths.

Site 5 swim search		
Date: 27 February, 2020	Method: SCUBA	Tide: Flooding
Distance and direction: N/A	Divers: Jane Mitchell, Cos Coroneos, Mal Venturoni and Jason Blackwell	
Time start (min): 1057	Time end (min): 1121	Total time (min): 24
Depth: 8 – 10 m	Water visibility: 10 – 20 m	Seabed visibility: Good

Divers were dropped at the approximate location of Site 5, outside the channel to the west of Kingston Pier. The coordinates were 29° 3.496'S and 167° 57.109'E and from there the divers swam in a northerly direction before swinging around the large bombora and back out into the channel (Figure 23). Visibility was very good, however there was a strong surge which made still images difficult to take.

The seafloor outside the channel is characterised by rocky boulders covered in coral, sea weed and algae (Figure 59 and Figure 60). Larger boulders are scattered around the large bombora (Figure 61 and Figure 62). The rocks create overhangs and large crevices, often concealed underneath growth and corals (Figure 63). The only cultural material encountered during this inspection was one modern tyre (Figure 64). This tyre was the same tyre located during swim search 1.



Figure 59: Example of sea bed for SS Site 5. (NI_SS02_001_200227 0:55).



Figure 60: Example of large rocky boulders on the seabed. (NI_SS02_001_200227 01:39).



Figure 61: Larger boulders rest around the bombora. (NI_SS02_001_200227 03:39).

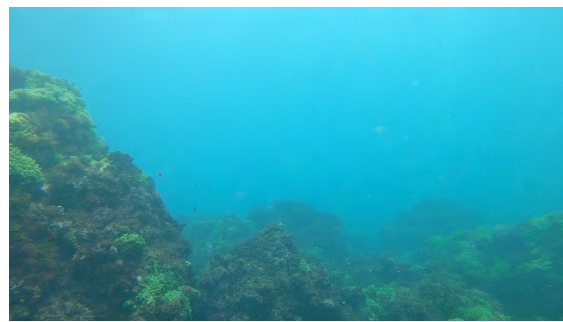


Figure 62: Rocky boulders at site 5. (NI_SS02_001_200227 04:10).



Figure 63: Deep crevices and cracks could be found amongst the rocks.
(NI_SS02_001_200227 10:15).



Figure 64: Modern tyre located at the intersection of SS1 and SS5. (Image: Cosmos Archaeology).

6 UNDERWATER ARCHAEOLOGICAL POTENTIAL

This section assesses the underwater archaeological potential within the study area. The assessment draws on the information presented in this report thus far, the information being:

- Knowledge of cultural activities that have taken place over time;
- Visual, non-disturbance dive inspection by maritime archaeologists;
- Understanding of geological and environmental conditions.

The assessment analyses the interplay between the above points so as to model the site formation processes which create the underwater archaeological potential. The known cultural activities (including dredging in the 1980s) within the study area provide an indication of the variety, extent and frequency of cultural remains, while the geology and environmental conditions inform the condition of these remains. It is these factors—variety, extent, frequency and condition—that have a substantial input into the cultural heritage significance of this resource.

The environment of the study area coupled with the nature of the seabed are key to predicting archaeological potential. In a marine environment there are three main influences affecting artefacts and archaeological features and deposits. These are:

Biological attack; where organisms such as marine borers devour organic materials such as wood;

Chemical attack; where materials are altered due to chemical reactions, such as oxidation (corrosion), and;

Mechanical attack; where objects are altered from kinetic impacts such as wave action and sand abrasion.

It was noted during the wrecking of HMS *Sirius* that wreckage floated close by the study area. This wreckage was buoyant and therefore of mostly timber, whether it be elements of the vessels hull and/or fittings, as well as boxes or bags with stores, personal possessions or other items. The sub-tropical marine environment of the study area is not conducive to the preservation of organic cultural objects. Marine borers such as teredo worm or *limnoria*, devour timber thereby weakening the integrity of the object and making it more vulnerable to dissolution from mechanical attack. Most timber objects would have had metallic fastenings of one form or another (nails, bolts, hinges, gimlets, locks...) and such artefacts could be the only remnants of larger objects that floated into the study area.

Organic based artefacts could survive biological attack underwater if they are placed in anoxic environment soon after deposition. Burial under deep sediment could produce such a preserving environment, even if the object is exposed on occasion. This analysis also applies to the timber slipway built at the Landing Place in the 1830s. The landward portion may have been buried under the current Pier and is preserved while the seaward portion would have deteriorated not long after it became redundant.

Corrosion of metal objects, not only those ferrous based but also copper alloys, is accelerated in environments where there is heat, light, high salinity and oxygen. As such surf zones in tropical/sub-tropical environments are the worst locations for the preservation of metallic objects. Conversely should such objects be placed in a location away from light, where there is low oxygen, minimal re-charging of saline water – such as burial under deep sediment, the rate of corrosion is retarded.

With regards to the remains of the beacon at the extremity of the reef beyond the end of the Pier, it is very likely that the footings of the beacon are present but do not protrude above the surface of the reef rock, the upper portions being encased in corrosion.

Though the study area is mostly situated behind a reef barrier it is subjected regularly to high energy wave action due to its shallow nature. Wave action pummels objects resulting in their breaking apart (disarticulation) and/or moving them for short distances (dislocation).

The destructive kinetic effects of wave action is aided by the on-going biological and chemical attacks on cultural objects. Timbers being eaten by marine borers lose their structural integrity. Corrosion generally has the effect of protecting an object by presenting a physical barrier to oxygen and salinity to coming into contact with the metal. Pounding wave action, and the derivative process of abrasion by mobilised sediment, removes the corrosion carapace thereby re-starting the corrosion process. Shiny brass or copper alloy objects visible on the seabed is evidence of a high energy environment and is an indicator that such an object, with time, will corrode and wear away completely.

Mechanical attack can also effect what can be considered to be inert materials such as ceramics and glass. Ceramics can have their glaze abraded away over time and their edges rounded. They, like glass (which can become white from being covered in scratches), can eventually take the shape and colour of the surrounding pebbles making them hard to identify.

On a relative level, hard featureless seabed artefacts will move away from the high energy source, in this case towards shore, depending on their surface area and density. (Wave action will rarely be able to propel artefacts up a sloping seabed). Denser objects will move less distances while rounder objects could roll longer distances. A flat dense object such as a thick ferrous plate or ballast pigs such as those found on the HMS *Sirius* site will by and large not move far but a section of timber board will be picked up and moved until such time as resistance exceeds the energy from water propulsion. Long denser objects will move until they present the least amount of surface area towards the origin of the energy source. It can be expected that long ferrous rods for example would orientated perpendicular to the axis of the direction of the water movement.

On a level hard featureless seabed, such as the section of the exposed reef top immediately adjacent to the Pier on its eastern side, artefacts over time would be pushed onto shore or would have been devoured, corroded, worn and/or broken up into tiny unidentifiable (at least on a macro scale) pieces. The seabed within the study area however is the opposite to flat and featureless. In the un-dredged portion of the study area the seabed is undulating and dispersed with irregularly shaped calcarenite rocks. Within these rocks are cracks and fissures within which small or narrow/flat artefacts could fall into. Such artefacts would be protected indefinitely from mechanical damage and to a limited extent from biological and chemical attack. Artefacts could also progressively work their way into sheltered locations under large reef rock. This site formation scenario is validated by the HMS *Sirius* wreck site where most of the smaller fragile cultural material that has been found was located in gutters within the flat reef top.

Where there are not large calcarenite rock reef sections or where the calcarenite is relatively level there is a covering ranging from coarse sediment to gravel to small sized rock. Probing found that there was limited cover over the calcarenite or volcanic tuff substrate exposed by the dredging in the 1980s. There are however a number of pronounced gullies/gutters across the study area. It could be expected that those artefacts that could be mobilised by the high energy environment have over time migrated into these gullies and depressions.

Wave action in shallow waters raises sediments, such those in the gutters/gullies, into suspension leading to denser objects falling and becoming more deeply buried. This, over time, results in a stratigraphy based on density and surface area rather than when objects were deposited. Such disarticulation and dislocation of artefacts scrambles the contexts of

archaeological sites thereby removing the opportunity for a diachronic examination of the site via chronologically deposited stratigraphy. Such stratigraphies are complex and relatively ephemeral as seasonal or average wave activity may affect the upper portions of a body of sediment, separating objects by density and surface area at a metronomic rate only for the whole sediment body to be completely re-sorted in a rare one in one hundred year storm event.

It can be expected that there would be a concentration of artefacts in the gullies/gutters and perhaps deeper depressions across the study area buried within sediment ranging in size from coarse sand to cobbles. This is what was found by the maritime archaeologists on the 1987 HMS *Sirius* expedition in that many artefacts were found in seabed depressions. However the main difference between the two locations is that the main *Sirius* wreck site is subjected to such violent wave action that it is never calm enough for the depressions, gullies and gutters to become filled with sediment except for perhaps rare short periods.

Artefacts mostly recent deposited could be present on, and within, the relatively thin layers of sediments outside of the depressions, gutters and gullies on the more 'level' areas. This could also apply to larger denser objects such as iron bars/plates or anchors.

There would also be artefacts present in crevices between and under the overhangs of calcarenite boulders and the larger expanses of reef. The excavators of the HMS *Sirius* wreck site found artefacts underneath loose, naturally formed boulders. The artefacts could only be recovered when these boulders were removed. There may also be artefacts present in fissures within the volcanic tuff substrate.

The act of dredging the seabed up to 8 m from the Pier in the 1980s would have removed much of the cultural material present. Recent artefacts were observed within this dredged zone and it is possible that earlier artefacts may have migrated into this area – which is in effect a depression that has filled with sediment – though the frequency of such earlier artefacts would not be as high as in the un-dredged parts of the study area.

Corroding ferrous objects tend to encapsulate objects nearby such as sediment and other artefacts. Where there are a number of ferrous objects together they form large corroded clumps or concretions. Such concretions can contain many smaller non-ferrous artefacts. The excavators of the HMS *Sirius* in 1987 found such ferrous concretions, which in some cases were found in partially covered depressions in the reef. During the expedition, these concretions were removed using geo-picks and broken open once back at the field laboratory to reveal relics from the wreck.⁸⁵

There is a possibility that there may be some artefacts encased in the calcarenite. The rock in the study area has formed since sea levels stopped rising in the early Holocene and is likely to still be forming. Such rock, which is a conglomerate of sediment and shell, would form in very calm conditions. It is possible that there may have been the rare suitable conditions for some of this rock to form in the historic period, especially where small artefacts became wedged in cracks and fissures.

The archaeological dive inspection found artefacts on the seabed within the study area demonstrating that there is present cultural material (artefacts), associated with the occupation of Norfolk Island since 1788. What is not known is the extent, variety, frequency, condition and cultural heritage significance of the archaeological resource within the study area.

Based on the above discussion the following can be said about the underwater archaeological potential within the study area:

⁸⁵ Henderson, G and M. Stanbury, 1987, *Expedition Report on the Wreck of the HMS Sirius*. Report prepared for the Australian Bicentennial Authority Project, p.6

- It can be expected that there would be an increasing concentration of artefacts associated with the Landing Place closer to the stone ramp on the Pier. This resource would have been truncated by the dredging that took place in the 1980s.
- It can be expected that there would be an increasing concentration of artefacts associated with the Pier closer to the western edge. This resource would have been truncated by the dredging that took place in the 1980s.
- It could be expected that any wreck-related materials would be distributed across the study area with perhaps an increasing concentration closer to the entrance to the channel leading into the berth.
- The majority of artefacts could be concentrated in gutters, gullies, crevasses and cracks in the seafloor and buried with sediment ranging from coarse sand to cobbles.
- Such artefacts could be concreted into ferrous masses or possibly even into recently formed calcarenite.
- It cannot be stated with confidence at this stage as to the depth of the gutters and gullies which is a factor in determining the quantity and condition of any artefacts present.
- There would be a tendency for smaller or highly fragmented artefacts, including ceramics and glass, to be present.
- Timber wreckage is unlikely to be present unless rapidly buried in the apparent deeper sediments in the entrance to the channel.
- The timber remains of the slipway are very unlikely to be present within the study area though parts of slipways could be buried under the Pier.
- The footings of the beacon are likely to be present but difficult to identify.

This assessment of underwater archaeological potential has been modelled without input from sub-seabed data in the form of an archaeological test excavation. As such this assessment in this report can only be considered to be a preliminary predictive model until such time as suitable and appropriate sub-seabed testing is undertaken.

7 PRELIMINARY UNDERWATER ARCHAEOLOGICAL SIGNIFICANCE

The study area is immediately adjacent to the World Heritage listed Kingston and Arthur's Vale Historic Area (KAVHA). KAVHA is recognised by Australia as being of National significance to the nation. As the study area is inextricably linked to the KAVHA from 1788, the heritage values can be considered to be similar – and this includes cultural remains associated with shipwrecks that have taken place near the site. The following assessment will draw on the significance assessments presented in the 2016 KAVHA Heritage Management Plan⁸⁶ and KAVHA Archaeological Zoning and Management Plan.⁸⁷

There is also potential for wreckage to be present in the study area, including that of the HMS *Sirius*. The wreck of the *Sirius* has been recognised as being of National significance and the assessment will draw on that which is presented in the 2018 draft review of the 1993 Plan of Management for HMS *Sirius* Shipwreck.⁸⁸

The cultural heritage significance assessment of the identified underwater archaeological resource can only be considered preliminary as its nature – extent, variety, condition, frequency – has been predicted but not tested.

7.1 Underwater archaeological remains

The assessment of preliminary underwater archaeological significance, excluding shipwrecks, will conform to that stated in Section 8 of the KAVHA Archaeological Zoning and Management Plan (AZMP). This is because the identified underwater archaeological resource in the study area is an extension of the archaeological resource in the KAVHA created by differing cultural behaviours (direct interactions with the sea) and shaped by differing site formation processes.

The cultural heritage significance of KAVHA has been determined by assessing the site against National and Commonwealth Heritage criteria⁸⁹ which are a collection of principles, categories and characteristics. The criteria examine a place's importance in the course, or pattern of cultural history, whether a place displays a high degree of creative or technical achievement at a particular period, the place's importance for its association with the life and/or works of a person or group of persons of importance in cultural history.

In this assessment underwater archaeological significance refers to the heritage significance of both known and potential cultural material within the study area. Archaeological resources satisfy a number of National and Commonwealth Heritage criteria but most commonly it is the criterion referring to research, criterion (c) which is most applicable.

The following section presents the existing statements relevant to underwater archaeological significance for both the National and Commonwealth Heritage listings and text in italics are direct quotes from Sections 8.2.1 to 8.2.3 of the AZMP.

⁸⁶ **Jean Rice Architect, Context Pty Ltd, and GML Heritage Pty Ltd. 2016.** Kingston and Arthur's Vale Historic Area: Heritage Management Plan.

⁸⁷ **Extent, June 2020** *Kingston and Arthur's Vale Historic Area (KAVHA) : Archaeological Zoning and Management Plan.*

⁸⁸ **Henderson, G, 2018,** *Review of the 1993 Plan of Management for HMS Sirius Shipwreck.* Draft

⁸⁹ Op. Cit. **Jean Rice Architect, Context Pty Ltd, and GML Heritage Pty Ltd. 2016 : Section 4**

7.1.1 National Heritage List (Place ID 105962)

Criterion (a) – Events, processes

KAVHA is outstanding as a convict settlement spanning the era of convict transportation to eastern Australia. It is a cultural landscape comprising a large group of buildings from the convict era, some modified during the Pitcairn period (the Third Settlement), substantial ruins and standing structures, archaeological remains, landform and landscape elements.

KAVHA is important for its role in the evolution of the colonies of both Van Diemen's Land and New South Wales. The buildings, archaeological remains and landforms of the First Settlement illustrate British convict settlement at the beginning of European occupation of Australia.

... The Second Settlement buildings and archaeological remains of the convict establishment, the New Gaol, the Prisoners' Barracks, and the Crankmill demonstrate the harshness and severity of the treatment of convicts.

Criterion (c) – Research

The KAVHA artefact collections, the buildings in their landscape setting, the archaeological remains and the documentary records have significant potential to contribute to understanding the living and working conditions of convicts, the military and civil establishment, women and children, and changes in penal practice and philosophy during the span of convict transportation.

KAVHA has research potential to yield information on pre-European Polynesian culture, exploration and settlement patterns.

Criterion (d) – Principal characteristics of a class of place

... It has substantial ruins, standing structures and archaeological sub-surface remains related to its operation as a place of primary incarceration and early settlement, as a place of secondary punishment and finally as a place spanning both incarceration and secondary punishment. ...

The archaeological remains of the two convict gaols, the perimeter walls and archaeological remains of the Prisoners' Barracks (1828–48) with the Protestant Chapel, show the development of penal philosophies with the original gaol built for barrack type accommodation while the extant remains of the New Prison and its perimeter walls (1836–40, 1845–57) provides a rare representation of a radial design. The role of harsh labour as punishment is evident in the archaeological remains of the blacksmith's shop (1846); lumber yard; water mill; the crankmill (1827–38), the remains of the only known human powered crankmill built in Australia before 1850; the salt house (1847); the windmill base (1842–43); lime kilns; the landing Pier (1839–47) and sea wall, two of the earliest remaining large scale engineering works in Australia. The possibility of reform is evident in the Protestant and Catholic clergyman's quarters.

7.1.2 Commonwealth Heritage List (Place ID 105606)

Criterion (b) – Rarity

KAVHA is the only known pre-European Polynesian occupation site in Australia. Furthermore, it demonstrates a rare occupation sequence of Polynesian and European settlement in the West Pacific. KAVHA is a rare site of archaeological evidence of the earliest European settlement in Australia, and is significant in that it was of similar size to the other initial settlement of Sydney Cove for a decade. This significance is enhanced by the lack of substantial subsequent development. KAVHA contains the archaeological remains of two of Australia's three oldest government houses, built in 1788.

Criterion (C) – Research

Archaeological research potential is enhanced by the lack of substantial development, allowing opportunities to contribute to a wider understanding of the history of each of the Island's four distinct settlement periods. Many buildings and archaeological sites at KAVHA are significant for their research potential to contribute to a wider understanding of the history and development of industrial processes, technology, architecture and engineering on Norfolk Island. KAVHA is significant as a microcosm of society, providing an unparalleled resource for integrated research with its rich array of architectural and archaeological elements, landscape, archives, artefacts, Pitcairn language, ongoing traditions and anthropological research potential. KAVHA is valued for its potential to demonstrate ongoing conservation and restoration techniques.

Previous life forms including an extinct mollusc also provide significant research potential.

7.1.3 Norfolk Island Heritage Register

Kingston and Arthur's Vale Historic Area (KAVHA) is significant for its association with four distinct settlement periods in one place: the pre-European Polynesian occupation; the First and Second Settlements during the convict era (1788–1814, 1825–55); and the Pitcairn period (1856–present), referred to as the Third Settlement. KAVHA comprises a large group of buildings from the convict era; some modified during the Pitcairn period. The substantial ruins and standing structures, archaeological sub-surface remains, landform and cultural landscape elements are significant as an outstanding example of the development of global convict transportation. KAVHA is significant for its close association with the wreck of the Sirius in 1790. KAVHA is significant for its association with the settlement of the Pitcairners and the evolution and development of the Norfolk Island community. It is highly valued by the Australian community being one of a relatively small number of sites identified by a wide variety of Australians as landmarks of Australia's historical development. KAVHA is significant for its rare association with pre-European Polynesian settlement. It is rare for being the site of the earliest European settlement of Australia and the southwest Pacific (1788), containing areas and individual elements of First Settlement buildings and activities. KAVHA is the primary site of the Second Settlement period and contains the landform, layout, extensive buildings, standing structures, archaeological remains and remnant landscape features of the period. It is an outstanding rare example of a place of secondary punishment for nineteenth century British convicts. Since 1856, KAVHA has been the administrative centre for the social, religious and political development of an Australian island community. It retains rare evidence of this Third Settlement period and contains elements, groups of elements and continuing uses that illustrate aspects of this significance. KAVHA is important for its aesthetic qualities, which are valued by the Norfolk Island community and visitors. The combination of cultural expression, natural forces and their patterns enable a perception and interpretation of the place as a

picturesque and romantic landscape. The drama of its landform, sea, and panoramic views creates a picturesque setting enhanced by visual links integral to the functioning of the First and Second penal settlements. Whereas, the subsequently undeveloped character and part ruinous configuration contribute to the romantic landscape, as does the strong streetscape quality of the built elements in Quality Row. Norfolk Island is first and foremost the home of its residents, who value KAVHA as a site of continuous and active use as a place of residence, of work and recreation since the arrival at Kingston Pier in 1856 of the Pitcairn Islanders, from whom one third of the island's population is descended. KAVHA holds significant symbolic, ceremonial, religious, lifestyle and cultural association in a unique built and natural environment. KAVHA is significant for its archaeological research potential to contribute to a wider understanding of the history of pre-European Polynesian occupation of Norfolk Island.

It has archaeological research potential to contribute to a wider understanding of the history of the First and Second Settlements of Norfolk Island and Australia. KAVHA is also significant for its archaeological research potential to contribute to the history of the Third Settlement period. It is valued by the Norfolk Island, Australian, and international communities as a place of education potential. KAVHA contains important wetland habitat and remnant vegetation. The wetlands are particularly valuable as a resting place for migratory birds and in supporting a population of rare crustaceans found only on Norfolk Island. KAVHA is significant for its topography, the littoral, the watercourse and its connection to the lagoon and marine environment. The Watermill Dam and inshore marine areas of KAVHA have been listed as an important Commonwealth wetland in the 2nd edition of 'A Directory of Important Wetlands in Australia'. The Plans of Management for reserves in the KAVHA were approved by the Norfolk Island Legislative Assembly on 21 May 2003.

7.1.4 Summary of preliminary underwater archaeology significance

The KAVHA Archaeological Zoning and Management Plan states that with respect to archaeological significance;

KAVHA is a rare surviving settlement that provides tangible evidence of a range of different forms of human occupation extending over a period of almost one thousand years. The archaeological remains have significant potential to contribute to understanding of the site's continuous development during each period of occupation.

The values detailed in the statement of significance cover a wide range of existing and potential resources. These may vary in their ability to contribute to the core reasons for conserving and interpreting the site.⁹⁰

The archaeological resource within KAVHA has been assessed in AZMP as follows in Table 4. This assessment at present also applies to the underwater archaeological resources within the study area, including shipwreck remains other than the HMS *Sirius* (see Section 7.2). This assessment remains as preliminary with respect to the underwater archaeological remains as the research and key value rely on a tested understanding of the condition and extent of the resource (text not in italics has been added by the authors).

⁹⁰ Op. Cit., **Extent, June 2020** : 65

Table 4 : Archaeological – terrestrial and preliminary underwater - significance

Occupation Phase	Occurrence	Condition	Historical relevance	Research value	Resource	Key value
Polynesian settlement c.1150 - c. 1450	Rare	Potentially a high degree of integrity	Tracing Polynesian settlement across the Pacific	High	All physical evidence	Critical
The First (Colonial) Settlement 1788 - 1814	Rare	Relatively undisturbed	Key part of the broader operation of the British penal system	High	All physical evidence	Critical
The Second (Penal) Settlement 1825 - 1855	Rare	Relatively undisturbed	The ultimate expression of Britain's global system of penal discipline	High	All physical evidence	Critical
The Third (Pitcairn) Settlement 1856 - 1897	Rare	Not assessed	The operation of a culturally distinct Polynesia/European community living within a broader European context	High	All physical evidence	Critical
The Third (Pitcairn) Settlement 1898 to present	Common	Not assessed		Limited	Evidence relating to WWII defence works, tourism, use of earlier structures and modifications	Secondary

7.2 The HMS Sirius wreck site

The cultural heritage significance of the HMS *Sirius* wreck site as listed on the Australia Heritage Database is summarised as follows:

The archaeological remains of HMS Sirius represent a tangible link to the most significant vessel associated with early migration of European people to Australia. HMS Sirius was guardian of the first fleet during its epic voyage to Australia between 1787 and 1788, which brought the convicts, soldiers and sailors who became Australia's first permanent European settlers. HMS Sirius was also the mainstay of early colonial defence in New South Wales and the primary supply and communications link with Great Britain during the first two years of the settlement.

The careers of the first three governors of the colony of New South Wales, Arthur Phillip (1788-1792), John Hunter (1795-1800) and Philip Gidley King (1800-1806) are closely associated with the history of HMS Sirius as all three sailed as senior officers on board HMS Sirius during the voyage of the first fleet to New South Wales. Hunter was also Captain of HMS Sirius during its last ill-fated voyage in 1790, when it was totally wrecked at Norfolk Island.

The loss of HMS Sirius at Norfolk Island on 19 March 1790 was a disaster to the fledgling colony during a period of crisis, when the settlement at Port Jackson was in danger of collapse and abandonment. It can be argued that the adaptability, ingenuity and grim determination to survive, demonstrated by the colonists at Port Jackson and Norfolk Island following this disaster, became an enduring trait of the Australian people.

The archaeological investigations of the shipwreck site of HMS Sirius have demonstrated its significant archaeological potential for research into the cultural heritage of the early European settlement of Australia. The remaining fabric of HMS Sirius and associated artefact assemblages represents a 'time capsule' of cultural life from the period leading up to its shipwreck in 1790.

The important role played by HMS Sirius in the European phase of Australian settlement is widely recognised within the Australian community and is especially significant to the descendants of the first European settlers or 'first fleeters' as they are often described.

This importance was highlighted with the selection of HMS Sirius as a significant archaeological project to celebrate the Australian Bicentenary in 1988.

The history and archaeological remains of the HMS Sirius are also highly valued by the people of Norfolk Island as the vessel represents a significant phase in the peopling of the Island and its development as a place of secondary punishment of convicts transported to Australia.⁹¹

Any artefacts associated with the HMS *Sirius* located within the study area would have the same cultural heritage significance values expressed in the above statement.

⁹¹ Op. Cit., **Henderson, G, 2018: 4**

8 IMPACT ASSESSMENT

8.1 Proposed works

Information on the proposed works has been provided in the 30% Design Report for the Kingston Pier Channel Construction Project.⁹² The proposed works involve locally deepening and widening the channel approach and berthing area adjacent to the Pier to provide safer access to vessels at all tides. Depending on which option is chosen, about 2,500m³ to 8,200 m³ of seabed will be removed.

Four options are being considered, each varying the extent of seabed removal. Aspects of the options, including adapted figures, relevant to this study will be discussed below. Detailed plans of each of the options are presented in Annex B.

Option 1 Is the narrowest channel proposed and therefore the least amount of seabed disturbance. As can be seen in Figure 65, proposed seabed removal will take place across the berth and the channel on the inshore side of the fringing reef from 16 m to 20 m from the Pier and reef edge. The depth of excavation will vary, from 200 mm close to the Pier (which has previously been dredged) to approximately 1.6 m closer to the western boundary of the proposed project envelope. The total amount of material to be removed is around 2,500m³.

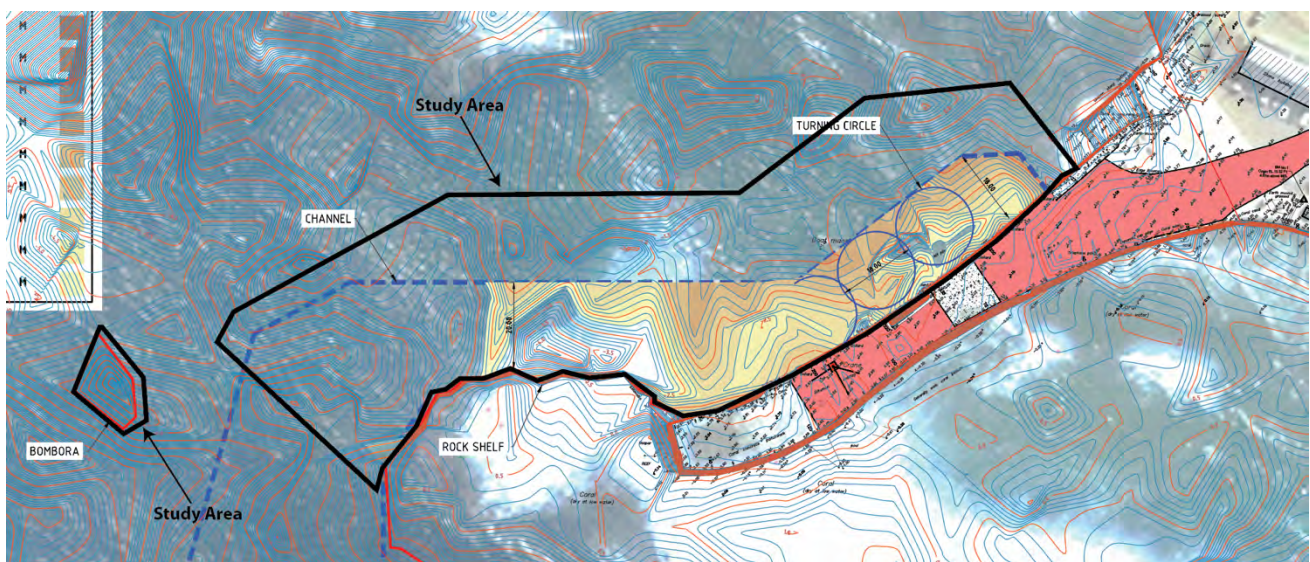


Figure 65 : Seabed removal Option 1 with study area overlaid

Option 2 would remove a greater amount of seabed over a wider area. Seabed removal would extend up to 27 m from the Pier and from the inshore edge of the fringing reef (Figure 66). The depth of excavation would be over 2 m in the northern corner of the project envelope. Up to 4,000 m³ of seabed would be removed.

⁹² Advisian, April 2020 Kingston Pier Channel Construction Project: 30% Design Report

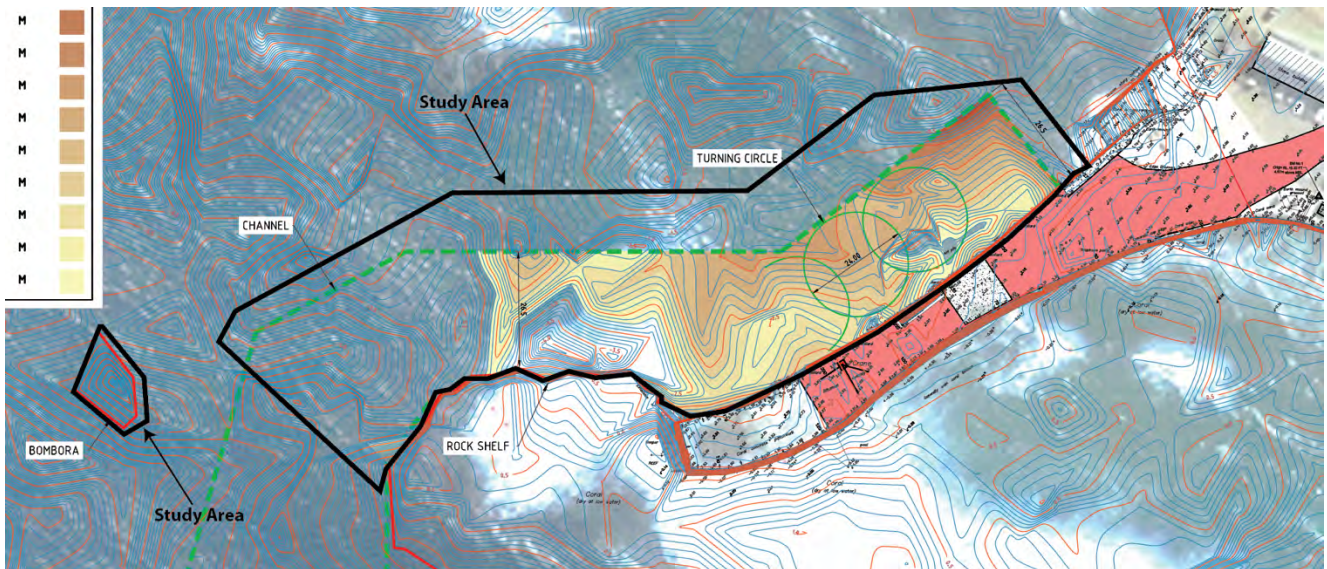


Figure 66 : Seabed removal Option 2 with study area overlaid

Option 3 would remove seabed over a narrower area around the berth pocket (up to 20 m from the Pier) but slightly wider at the channel entrance (up to 28 m). This option leaves more of the area around the ramp (Landing Place) untouched (Figure 67). Approximately 5,400 m³ of seabed will be removed as the excavation will be deeper along the western edge of the envelope, up to 2.4 m.

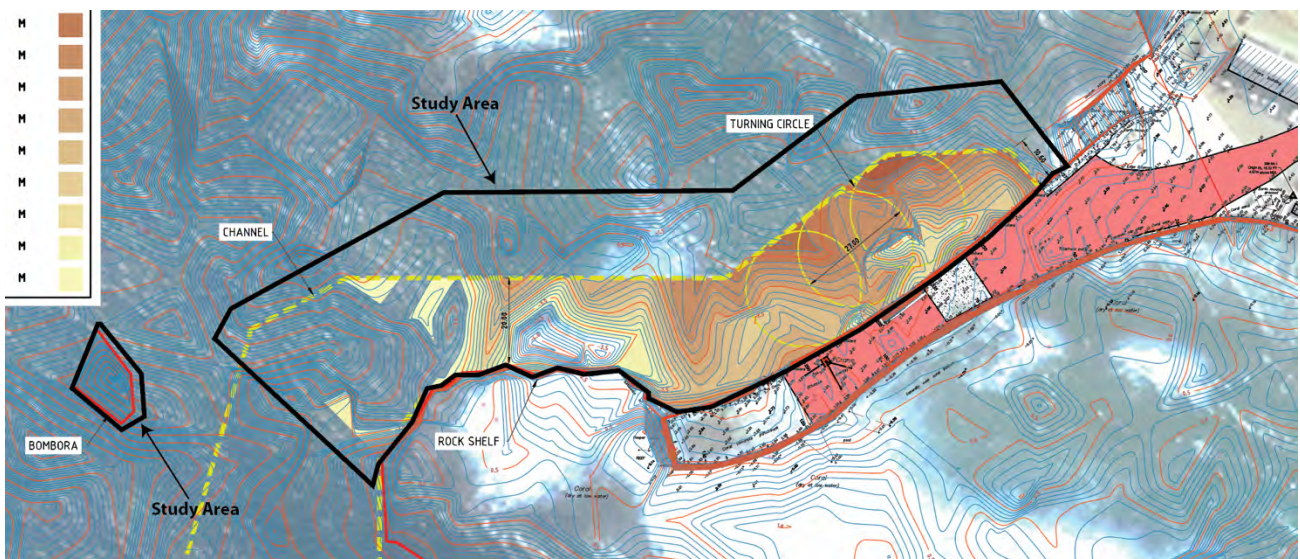


Figure 67 : Seabed removal Option 3 with study area overlaid

Option 4 would see the greatest amount of seabed removed; up to 8,200 m³. The dredging would cover a wider area, up to 32.5 m from Pier and 36 m inshore of the fringing reef (Figure 68). The depth of excavation would also be greater, up to 2.6 m in places.

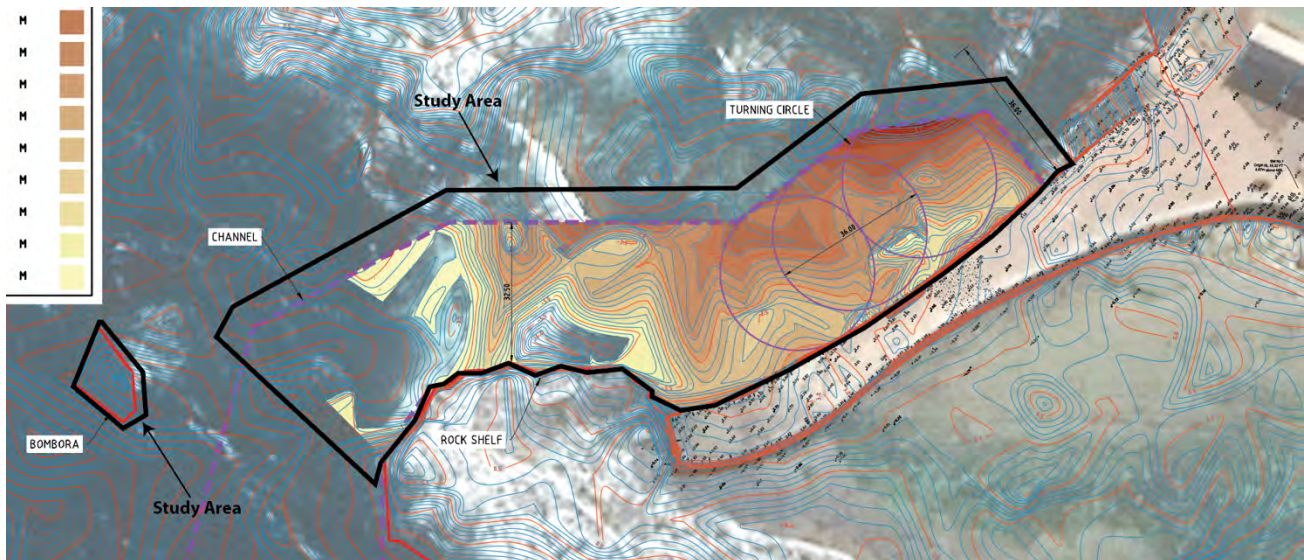


Figure 68 : Seabed removal Option 4 with study area overlaid

The proposed construction methodology has not been finalised and a range of seabed removal options have been presented. The recommended construction method has taken into consideration discussions with the authors of this report surrounding the potential mitigation requirements for the safeguarding the cultural heritage significance of the underwater archaeological resource.

The method recommended involves the initial use of a diver operated venturi suction pipe to remove the loose sediments.⁹³ A backhoe excavator mounted on a jack-up barge would remove the harder material, calcarenite and volcanic tuff. The recovered sediments and portions of the calcarenite would be put through a sieve to collect and document any artefacts. The artefacts would then be managed according to their significance and retained by the KAVHA authority. This is discussed in Section 10.

To provide for the safe navigation of vessels, a channel marker is to be placed at the edge of the rock shelf beyond the end of the Pier and another possibly marking the opposite edge of the channel.⁹⁴

8.2 Potential impacts

Based on the understanding of the proposed works as it relates to the underwater archaeological resource, the impacts are as follows:

Seabed removal will remove and potentially destroy any cultural material within the project envelope. While the four options vary in the amount of seabed to be removed, the extent of all the options is such that almost all of the remaining underwater archaeological resource associated with the Landing Place and Pier would be lost. Any shipwreck artefacts within the construction envelope would also be lost.

Anchoring and spuds from the jack-up barge could impact (break up and/or destroy) archaeological remains.

Channel marker installation could impact the remains of the earlier convict period beacon.

⁹³ Op. Cit., **Advisian, April 2020** : 31

⁹⁴ Op. Cit., **Advisian, April 2020** : 38

The severity of the impacts depends on the probability of the impact occurring and the scale of impact, in this case seabed disturbance on the identified resource. A scale range of impact on the archaeological significance is presented in Table 5 while terms for defining probability of impact are presented in Table 6.

Table 5 Scale range of impact on significance values

Scale of Impact Significance values	Negligible	Minor	Moderate	Major	Extreme
Critical	No discernible alterations to existing natural and human processes already impacting on underwater archaeological remains.	Detectable impact with underwater archaeological resource remaining largely intact.	Partial reduction in underwater archaeological resource.	Substantial reduction in underwater archaeological resource.	Complete or near complete loss of underwater archaeological resource.
Secondary	Detectable impact with underwater archaeological resource remaining largely intact.	Partial reduction in underwater archaeological resource.	Substantial reduction in underwater archaeological resource.	Complete or near complete loss of underwater archaeological resource.	N/A

Table 6 Terms defining probability of impact

Term	Probability
Definite	100%
Highly probable	85–99%
Probable	50–84%
Improbable	25–49%
Highly improbable	1–14%
Almost impossible	< 1%

The scale of impact is difficult to quantify at present as the predicted extent, variety, condition and consequently the significance of the underwater archaeological resource remains untested. The following impacts are assessed on the basis that the resource is extensive throughout the study area and as significant as predicted in Section 7. It is also assessed on the basis that it does not include the mitigation proposed in the 30% design construction methodology and in Section 10. Shipwrecks have been assessed separately as the wreck sites are not in the study area and therefore only a portion of wreckage of any individual shipwreck is likely to be present.

Impact to underwater archaeological resource Associated with the Landing Place and Kingston Pier				
Impact type	Estimated Level of impact	Critical value	Secondary value	Probability of impact
Option 1	ca. 75% removal of resource	Major	Moderate	Highly probable

Option 2	ca. 90% removal of resource	Extreme	Major	Highly probable
Option 3	ca. 80 % removal of resource	Major	Moderate	Highly probable
Option 4	ca. 90% removal of resource	Extreme	Major	Highly probable
Anchoring	< 1% of resource	Minor	Negligible	Highly improbable
Beacon	100% of remains of earlier beacon	Extreme	n/a	Highly improbable

Impact to underwater archaeological resource Associated with shipwrecks				
<i>Impact type</i>	<i>Estimated level of impact</i>	<i>Critical value (including Sirius)</i>	<i>Secondary value</i>	<i>Probability of impact</i>
Option 1	< 10% removal of individual wreck	Moderate	Minor	Probable
Option 2	< 10% removal of individual wreck	Moderate	Minor	Probable
Option 3	< 10% removal of individual wreck	Moderate	Minor	Probable
Option 4	< 10% removal of individual wreck	Moderate	Minor	Probable
Anchoring	< 1% of resource	Minor	Negligible	Highly improbable
Beacon	< 1% of resource	Minor	Negligible	Highly improbable

The potential impact to the archaeological remains associated with the Landing Place and Kingston Pier have been assessed to be of critical significance value. This high level of impact is considered **unacceptable without mitigation**. Acceptable mitigation is proposed in Section 10 and incorporates the mitigation presented in the 30% design construction methodology.

9 HERITAGE LEGISLATION AND POLICY

The southern portion of Norfolk Island is steeped in history and has in-depth heritage legislation combined with Australian Commonwealth laws. Statutory protection for underwater cultural heritage is applied using the Commonwealth *Underwater Cultural Heritage Act 2018*. However as the study area abuts other significant heritage sites such as KAVHA and the HMS *Sirius* wreck site, other pieces of heritage legislation have been considered.

9.1 Norfolk Island Applied Laws Ordinance 2016 (Cwlth)

The *Norfolk Island Act 1979* (Cwlth) provides for the application of New South Wales laws in Norfolk Island, however, the application of the majority of NSW laws has been suspended until 30 June 2021. Some NSW laws have been applied to support the delivery of health, education and local government services. The *Heritage Act 1977* (NSW), which provides statutory protection for significant archaeological resources, and the *National Parks and Wildlife Act 1974* (NSW), which provides for the conservation and management of objects, places or features of cultural value within the landscape, remain suspended.

9.2 Cultural Heritage Statutory Protection

9.2.1 Underwater Cultural Heritage Act 2018 (Cwlth)

Australia protects its shipwrecks, sunken aircraft and other types of underwater heritage and their associated artefacts through the *Underwater Cultural Heritage Act 2018*, which is administered in collaboration between the Commonwealth and the States, Northern Territory and Norfolk Island.

The *Underwater Cultural Heritage Act 2018* (UCHA 2018) came into effect on 1 July 2019, replacing the *Historic Shipwrecks Act 1976*. The new Underwater Heritage Act continues to provide protection for historic shipwrecks in Australian waters, expands protection to historic aircraft wrecks within Commonwealth waters, and establishes a register of underwater cultural heritage, the Australasian Underwater Cultural Heritage Database (AUCHD). Under Part 2, Division 1, Subsection 16, the following articles of underwater cultural heritage are automatically protected:

- (a) all remains of vessels that have been in Australian waters for at least 75 years;
- (b) every article that is associated with a vessel, or the remains of a vessel, and that has been in Australian waters for at least 75 years;
- (c) all remains of aircraft that have been in Commonwealth waters for at least 75 years;
- (d) every article that is associated with an aircraft, or the remains of an aircraft, and that has been in Commonwealth waters for at least 75 years.

At the time of writing, vessels and aircraft wrecked before 1945, and their associated articles, are automatically protected under the Act.

Under Part 2, Division 1, Subsection 17 of the Act, shipwrecks, aircraft wrecks and their associated articles, that do not meet the criteria for automatic protection may be granted protection by the Minister.

Furthermore, the Minister may declare other kinds of ‘articles’ of underwater cultural heritage protected (Subsection 17, 19) if the Minister is satisfied that they *may* be of heritage significance. Such ‘articles’ could be interpreted to include submerged terrestrial sites,

historic cables and pipelines, archaeological deposits associated with maritime infrastructure or dumped material that may be located in Australian waters.

Under the Act, (Subsection 30) it is an offence to directly or indirectly physically disturb or otherwise damage protected underwater cultural heritage, or cause the removal of protected underwater cultural heritage from waters or its archaeological context. Part 3, Division 2, Subsections 29 – 40 outline further offences under the Act.

Under Part 3, Division 1, Subsection 23, a person may apply to the Minister for a permit authorising the person, or persons, specified in the permit to engage in specified conduct relating to protected underwater cultural heritage. Such activities would include archaeological excavation and could include removal of the underwater cultural heritage with the implementation of acceptable mitigation.

Under subsection 20 of the *UCHA 2018*, the Minister may, by legislative instrument, declare an area containing protected underwater cultural heritage to be a protected zone. Specific conduct within a protected zone may be prohibited.

Engaging in prohibited conduct within a protected zone without a permit, or adversely affecting protected underwater cultural heritage, is subject to criminal and civil penalties, including imprisonment.

It should be noted that although the seaward boundary of KAVHA is limited to the high-water mark, archaeological relics associated with such historic shipwrecks are also protected whether they are in museum displays or found in terrestrial archaeological deposits.

Potential actions to be undertaken for this project with respect to this Act:

As there is a reasonable probability that wreckage associated with vessels that were wrecked more than 75 years ago will be impacted by the proposed works it would be prudent to obtain a permit under Part 3, Division 1, Subsection 23 of the UCHA 2018. Such a permit would also be required should any test excavation take place.

9.2.2 Environment Protection and Biodiversity Conservation Act (Cwlth)

Australia is one of only a few countries worldwide that has enacted legislation to implement its obligations under the World Heritage Convention. The *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Environment Protection and Biodiversity Conservation Regulations 2000* (Regulations) focuses Government interests on the protection of matters of national environmental significance, with the states and territories having responsibility for matters of State and local significance.

The objectives of the *EPBC Act* are to:

- provide for the protection of the environment, especially matters of national environmental significance;
- conserve Australian biodiversity;
- provide a streamlined national environmental assessment and approvals process;
- enhance the protection and management of important natural and cultural places;
- control the international movement of plants and animals (wildlife), wildlife specimens and products made or derived from wildlife;
- promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources;

- recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity, and;
- promote the use of Indigenous peoples' knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.

Under the *EPBC Act*, actions that have, or are likely to have, a significant impact on a matter of national environmental significance require approval from the Australian Government Minister for the Environment (the Minister). The Minister will decide whether assessment and approval is then required.

A significant impact is an: *impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. You should consider all of these factors when determining whether an action is likely to have a significant impact on the environment.*⁹⁵

The nine matters of national environmental significance protected under the *EPBC Act* are:

1. World heritage properties
2. National heritage places
3. Wetlands of international importance (listed under the Ramsar Convention)
4. Listed threatened species and ecological communities
5. Migratory species protected under international agreements
6. Commonwealth marine areas
7. The Great Barrier Reef Marine Park
8. Nuclear actions (including uranium mines)
9. A water resource, in relation to coal seam gas development and large coal mining development

Under s158 of the Act the Minister may exempt a person proposing to take an action from the requirement to conduct an environmental assessment and/or obtain approval in relation to the action to which the exemption relates. Under s158 the Minister may exempt a person from any or all steps in the assessment and approvals process. However, the Minister may only grant an exemption under s158 if they are satisfied that it is in the national interest to do so.

The *EPBC Act* enhances the management and protection of Australia's heritage places, including World Heritage properties. It provides for the listing of natural, historic or Indigenous places that are of outstanding national heritage value to the Australian nation as well as heritage places on Commonwealth lands and waters or under Australian Government control.

A declared World Heritage property is an area that has been included in the World Heritage List or declared by the Minister to be a World Heritage property. The National Heritage List includes natural, historic and Indigenous places of outstanding heritage value. The Commonwealth Heritage List comprises natural, Indigenous and historic heritage places on Commonwealth lands and waters or under Australian Government control.

⁹⁵ **Department of Agriculture, Water and the Environment, 2020, Glossary**, available at <http://www.environment.gov.au/epbc/about/glossary#significant>

Once a heritage place is listed under the *EPBC Act*, special requirements come into force to ensure that the values of the place will be protected and conserved for future generations. The *EPBC Act* provides for the preparation of management plans which set out the significant heritage aspects of the place and how the values of the site will be managed.

Under the *EPBC Act* there are three listings that directly affect heritage at Norfolk Island:

1. National Heritage List
2. Commonwealth Heritage List
3. Australian places on the World Heritage List:

Under the Act, an action is likely to have a significant impact on the Heritage values of a declared World, National or Commonwealth Heritage site if there is a real chance or possibility that it will cause:

- one or more of the significant Heritage values to be lost
- one or more of the significant Heritage values to be degraded or damaged, or
- one or more of the significant Heritage values to be notably altered, modified, obscured or diminished.

Approval is required for any action occurring **within or outside** a declared Heritage property, place or site that has, will have, or is likely to have a significant impact on the Heritage values.

There are no sites listed on these heritage lists within the study area, however, both KAVHA and HMS *Sirius* wreck site abut the study area and therefore must be considered.

National Heritage List

KAVHA is of outstanding significance to the nation as a convict settlement spanning the era of transportation to eastern Australia between 1788-1855. It is also significant as the only site in Australia to display evidence of early Polynesian settlement, and the place where the Pitcairn Island descendants of the *Bounty* mutineers were re-settled in 1856. KAVHA was included in the National Heritage List on 1 August 2007 (Figure 69).⁹⁶

⁹⁶ Department of Agriculture, Water and the Environment, 2020, *Kingston and Arthur's Vale Historic area*, available at <http://www.environment.gov.au/heritage/places/national/kavha>

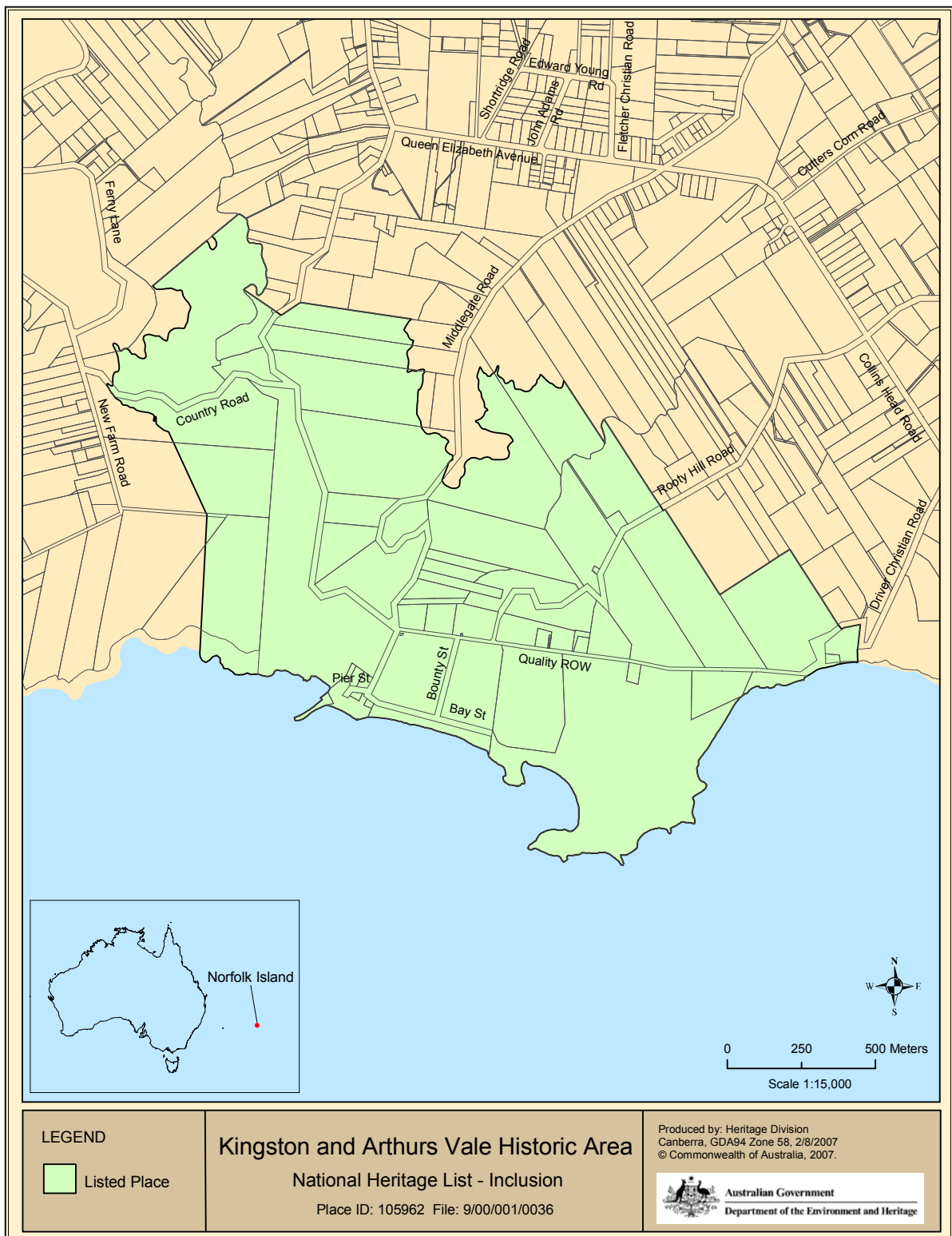


Figure 69: Listed boundary of KAVHA on the National Heritage List. The KAVHA boundary stops at the High Water Mark.⁹⁷

⁹⁷ Jean Rice Architect, Context Pty Ltd, and GML Heritage Pty Ltd. 2016.: 4

The shipwreck remains of the HMS *Sirius* are a tangible link to the most significant vessel associated with the settlement of colonial Australia. They are the only known remains of a vessel from the First Fleet (Figure 70).⁹⁸



Figure 70: HMS Sirius boundary as listed on the National Heritage list.

Commonwealth Heritage List

KAVHA is significant for its association with four distinct settlement periods in one place: the pre-European, Polynesian occupation; and three periods of later settlement, two during the convict era referred to as the First and Second Settlements (1788-1814, 1825-1855); and the Pitcairn period (1856-present), referred to as the Third Settlement. KAVHA comprises a large group of buildings from the convict era, some modified during the Pitcairn period, substantial ruins and standing structures, archaeological sub-surface remains, landform and cultural landscape elements, which represent an outstanding example of the development of global convict transportation.⁹⁹

⁹⁸ Department of Agriculture, Water and the Environment, 2020, *HMS Sirius*, available at <https://www.environment.gov.au/heritage/places/national/sirius>

⁹⁹ Department of Agriculture, Water and the Environment, 2020, *Kingston and Arthurs Vale Commonwealth Tenure Area*, Quality Row, Kingston, EXT, Australia, available at https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=state%3DEXT%3Blist_code%3DCHL%3Blegal_status%3D35%3Bkeyword_PD%3D0%3Bkeyword_SS%3D0%3Bkeyword_PH%3D0;place_id=105606

The archaeological remains of HMS *Sirius* represent a tangible link to the most significant vessel associated with early migration of European people to Australia. HMS *Sirius* was guardian of the first fleet during its epic voyage to Australia between 1787 and 1788, which brought the convicts, soldiers and sailors who became Australia's first permanent European settlers. HMS *Sirius* was also the mainstay of early colonial defence in New South Wales and the primary supply and communication link with Great Britain during the first two years of the settlement.¹⁰⁰

World Heritage List

KAVHA is one of 11 places that make up the Australian Convict Sites World Heritage serial listing that tells the story of exile from one side of the world to the other and how a new nation was formed from hardship, inequality and adversity.

Together the sites represent the global phenomenon of convictism - the forced migration of convicts to penal colonies in the 18th and 19th centuries - and global developments in the punishment of crime in modern times.¹⁰¹

An action is likely to have a significant impact on historic heritage values of a National Heritage place if there is a real chance or possibility that the action will permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a World/National/Commonwealth Heritage place.

Another aspect of the *EPBC Act* which must be considered is the protection of nominated Commonwealth Marine Parks. A 'Commonwealth marine area' is defined in section 24 of the *EPBC Act*. Marine protected areas are marine areas which are recognised to have high conservation value. Actions in or near marine protected areas, or other areas with high conservation value, have a greater likelihood of significant impacts on the Commonwealth marine environment.

The waters surrounding Norfolk Island make up the Norfolk Marine Park which falls within the Temperate East Marine Parks Network. The study area is located within the area classed as a *Special Purpose Zone* (Norfolk) (Figure 71).

¹⁰⁰ Department of Agriculture, Water and the Environment, 2020, *HMS Sirius wreck site, Kingston, Norfolk Island*, available at https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=state%3DEXT%3Blist_code%3DCHL%3Blegal_status%3D35%3Bkeyword_PD%3D0%3Bkeyword_SS%3D0%3Bkeyword_PH%3D0;place_id=105179

¹⁰¹ Department of Agriculture, Water and the Environment, 2020, *Australian Convict Sites*, available at <https://www.environment.gov.au/heritage/places/world/convict-sites>

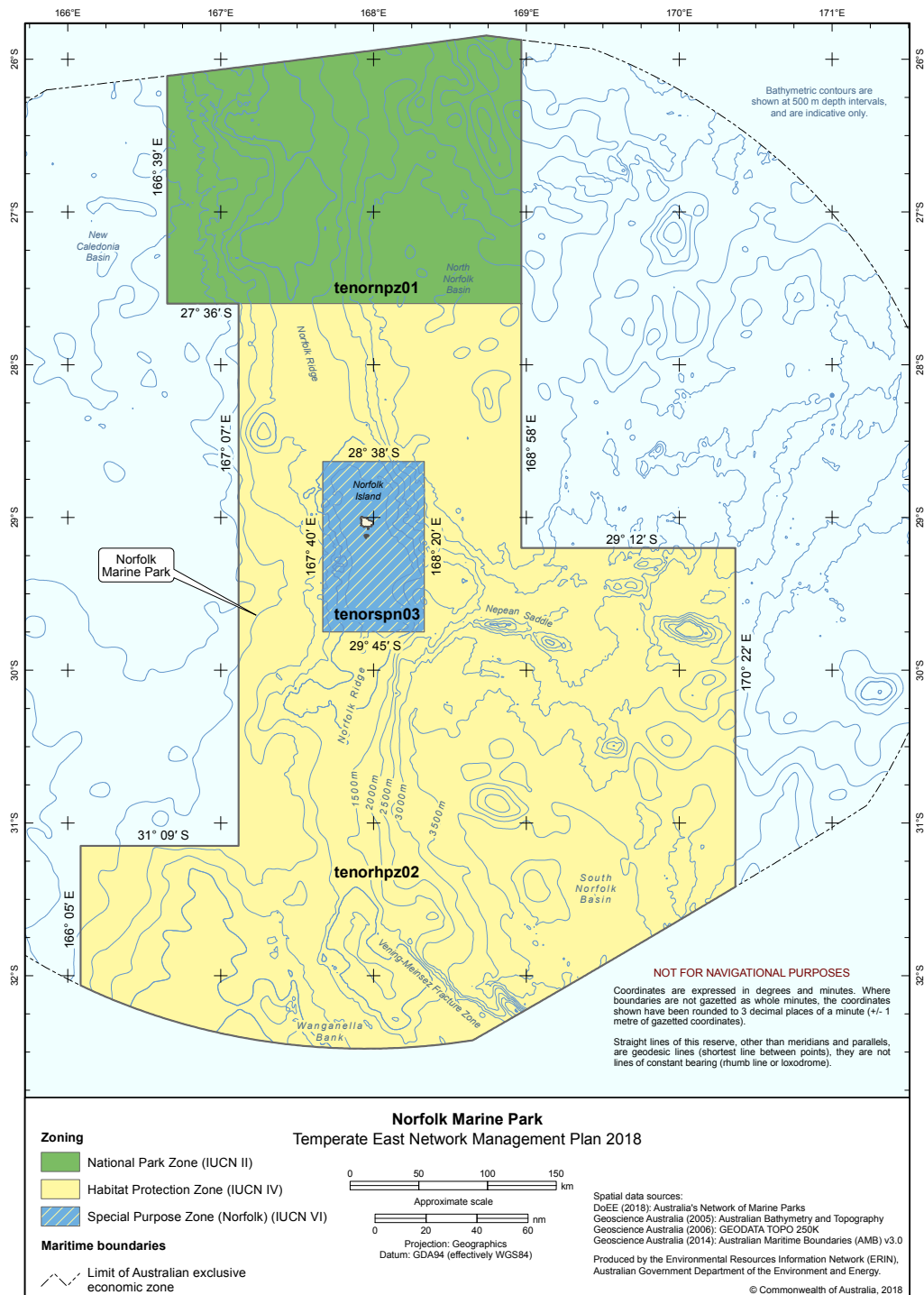


Figure 71: Norfolk Marine Park boundaries. Note blue striped area is classed as special zone.

Under the *EPBC Act* an action will require approval if:

- the action is taken in a Commonwealth marine area and the action has, will have, or is likely to have a significant impact on the environment, or
- the action is taken outside a Commonwealth marine area and the action has, will have, or is likely to have a significant impact on the environment in a Commonwealth marine area.

One of the significance criteria under this sections states: An action is likely to have a significant impact on the environment in a Commonwealth marine area if there is a real chance or possibility that the action will have a substantial adverse impact on heritage values of the Commonwealth marine area, including damage or destruction of an historic shipwreck.¹⁰²

Potential actions to be undertaken for this project with respect to this Act:

The study area is not located within any area of heritage listings protected under the Act, however, the underwater archaeological values within the study area must be considered as it adjoins both the KAVHA and HMS Sirius sites which are listed on the World Heritage, National and Commonwealth Lists.

The proposed action – seabed removal (all options) – will potentially have a significant impact as it will permanently remove, destroy, damage or substantially disturb an underwater archaeological resource assessed to have critical cultural heritage significance values in relation to World Heritage Listed KAVHA. In fact, this resource could be considered to be unique to KAVHA in that there is no other location elsewhere within and without KAVHA which formed a constant and longstanding cultural nexus between the land and the sea.

It is believed that this action could potentially have a significant impact on a matter of national environmental significance and may require approval from the Australian Government Minister for the Environment.

At present it is likely that the action will not have a substantial adverse impact to a ship wreck and as such a referral is not required.

The study area is located within the Norfolk Marine Park which is protected under the Act. Further advice from the Australian Marine Parks division may be required.

9.2.3 Protection of Movable Cultural Heritage Act 1986 (Cwlth)

The *Protection of Movable Cultural Heritage Act 1986 (Cwlth)* protects Australia's movable cultural heritage and provides for the return of foreign cultural property that has been illegally exported from its country of origin and imported into Australia. The 2016 KAVHA Heritage Management Plan defines movable cultural heritage as material that includes 'artefacts, building components and other objects, irrespective of ownership or current location'. Protection (export control) would be extended to material recovered as part of any archaeological investigations undertaken in KAVHA. The Act is primarily concerned with the unlawful removal and export of items. See *Protection of Moveable Cultural Heritage Act 2002 (NI)* for further information.

Potential actions to be undertaken for this project with respect to this Act:

As it is not desired or intended that artefacts recovered within the study area are to be exported no action is required.

¹⁰² **Commonwealth of Australia, 2013, Matter of National Environmental Significance. Significance Impact Guidelines 1.1** Environment Protection and Biodiversity Conservation Act 1999, pg.14.

9.2.4 Planning Act 2002 (NI)

The *Planning Act 2002* (NI) is an Act to provide for a Norfolk Island Plan and associated controls on the use and development of land in Norfolk Island and for related purposes. The objects of the Act (Part 1 (3)) are to:

- (a) to promote the conservation of the natural environment and landscape beauty of Norfolk Island; and
- (b) to promote the conservation and preservation of the unique cultural and built heritage of Norfolk Island; and
- (c) to preserve the way of life and the quality of life of the people of Norfolk Island; and
- (d) to promote the proper management, development and conservation of the natural and man-made resources of Norfolk Island for the social and economic welfare of the community and a better environment; and
- (e) to determine the preferred future use, development and management of Norfolk Island; and
- (f) to promote and co-ordinate the orderly and economic use and development of land on Norfolk Island and provision of utility and community services and facilities; and
- (g) to ensure that human health and safety, and the amenity of Norfolk Island, are promoted by activities subject to development approval; and
- (h) to provide standard development approval procedures.

All proposals for use or development must be considered in the context of the Norfolk Island Plan 2002 to determine whether approval is required and whether the proposed use or development is permitted. Applications for development are determined by the responsible Federal Minister or their delegate, based on advice from the Norfolk Island Regional Council. Development applications must be publicly displayed for comment. The term 'development' includes the 'use of any land or the erection or use of any building or other structure or the carrying out of building, engineering, mining, or other operations in, on, or under the land, or the making of any material change to the use of any premises.' "Heritage" defined in the Act means the archaeological, historical, aesthetic, architectural, scientific, natural, cultural or social heritage of Norfolk Island for the present community and for future generations.

9.2.5 Norfolk Island Plan 2002 (NI)

The Norfolk Island Plan has been prepared in accordance with the provisions of the *Planning Act 2002* (NI). It is intended to be the framework for the future development and land management of Norfolk Island. The Plan breaks Norfolk Island into zones (Figure 72). The study area falls outside the zones shown in Figure 72.

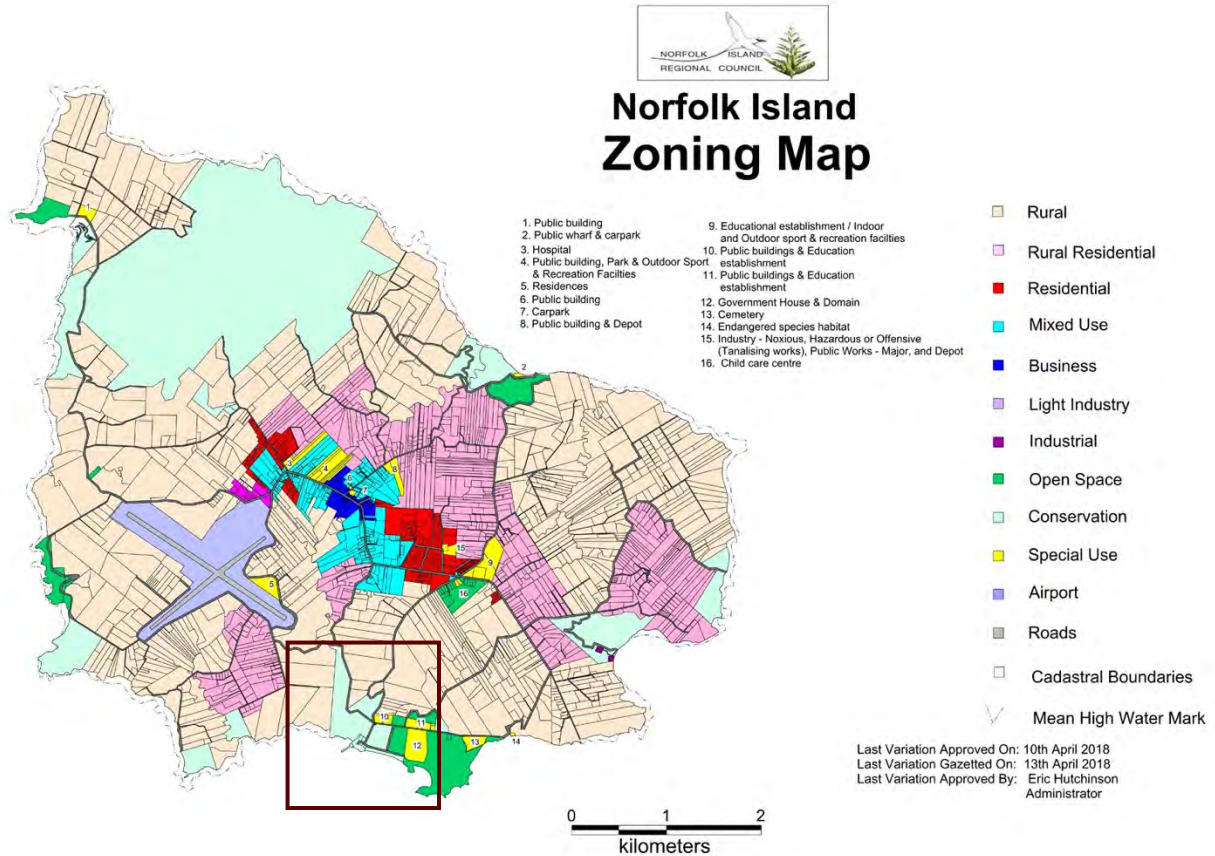


Figure 72: Norfolk Island Zoning Map. Red box indicates Kingston Pier lies within a conservation zone while the study area is outside.

Part B2 Overlay provisions outlines the protections afforded to places that fall within a heritage overlay (Figure 73). The study area is outside the area listed as Items of Heritage Significance as the boundary ceases at the High Water Mark.

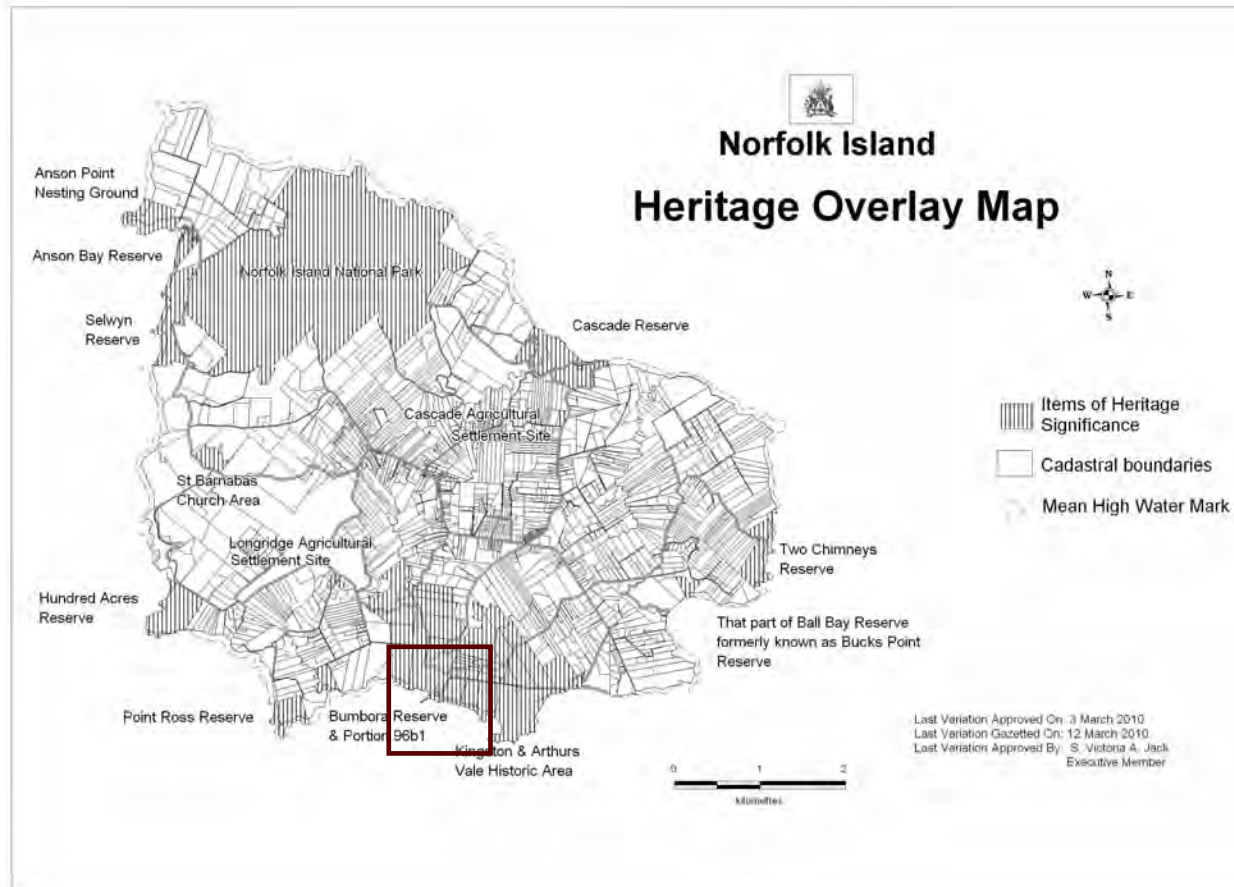


Figure 73: Heritage Overlay for Norfolk Island. Note red square indicates Kingston Pier falls within this overlay but the study area falls outside.

Land identified on the Heritage Overlay Map and listed in the Norfolk Island Heritage Register (established in accordance with the *Heritage Act 2002*) has been identified as contributing to an appreciation of Norfolk Island's archaeological, historical, aesthetic, architectural, scientific, natural, or social heritage. Decisions relating to the conservation and management of this land shall be guided by the principles and recommended practices of the Burra Charter.

The aims of the Plan in relation to the Heritage Overlay are:

- (a) to conserve the environmental heritage of Norfolk Island;
- (b) to integrate heritage conservation into the planning and development control processes;
- (c) to provide for public involvement in the conservation of environmental heritage; and
- (d) to ensure that any use or development does not adversely affect the heritage significance of land subject to the Heritage Overlay

Potential actions to be undertaken for this project with respect to this Act:

As the study area is outside the delineated boundary of this Act no further action is required.

9.2.6 Heritage Act 2002 (NI)

The *Heritage Act* 2002 (NI) establishes: the Norfolk Island Heritage Register; criteria for listing items in the Heritage Register; a panel of heritage advisers; procedures for a heritage conservation fund, and requirements for heritage impact statements and conservation management plans. For development applications that are in relation to, or likely to affect a heritage item, the *Heritage Act* requires the applicant to prepare a heritage impact statement, and requires that the responsible Minister has regard to the heritage impact statement. The responsible Minister (or his or her delegate) may also require an applicant to prepare a conservation management plan in relation to a heritage item.

The KAVHA site was included on the Norfolk Island Heritage Register on 17th December 2003.

Potential actions to be undertaken for this project with respect to this Act:

As the study area is outside the delineated boundary of this Act no further action is required.

9.2.7 Protection of Moveable Cultural Heritage Act 1987 (NI)

Protection of Movable Cultural Heritage Act 1987 (NI) in conjunction with the *Protection of Movable Cultural Heritage Regulations* 1988, provides protections and controls relating to the export or import of moveable cultural heritage items, including archaeological objects. The Act also establishes the Norfolk Island Cultural Heritage Control List.

In this Act (Part 5), a reference to the movable cultural heritage of Norfolk Island is a reference to objects that are of importance to Norfolk Island for ethnological, archaeological, historical, literary, artistic, scientific or technological reasons, being objects falling within one or more of the following categories:

- (a) objects recovered from —
 - (i) the Territory of Norfolk Island described in Schedule 1 to the *Norfolk Island Act 1979*;
 - (ii) the territorial waters within the meaning of the *Territorial Waters Act 1926*; or
 - (iii) the seabed or subsoil beneath the territorial waters referred to in subparagraph (ii);
- (b) objects relating to the convicts, free settlers, military and naval personnel associated with the penal settlement and Pitcairn Islanders and their descendants;
- (c) objects of ethnographic art or ethnography;
- (d) military or naval objects;
- (e) objects of decorative art;
- (f) objects of fine art;
- (g) objects of scientific or technological interest;
- (h) books, records, documents or photographs, graphic, film or television material or sound recordings;
- (i) prescribed categories.

Regulation 4 of the *Protection of Movable Cultural Heritage Regulations* 1988 outlines the Norfolk Island Heritage Control list:

Item	Category of objects	Class of objects
1	Objects recovered from the wreck in 1790 at Pitcairn Island of HM Armed Vessel <i>Bounty</i>	A
2	Objects landed in Norfolk Island on 8 th June 1856 and brought from Pitcairn Island on the vessel <i>Morayshire</i>	A
3	Objects recovered from or located in the Kingston – Arthur's Vale Historic Area and relating to convicts, free settlers, military or naval personnel associated with the penal settlement of Norfolk Island before 8 th June 1856	B
4	Objects recovered from ships wrecked before 1 January 1938 in territorial waters within the meaning of the <i>Territorial Waters Act</i> 1926	B

Potential actions to be undertaken for this project with respect to this Act:

As it is not desired or intended that artefacts recovered within the study area are to be exported no action is required.

9.2.8 United States Sunken Military Craft Act (USA)

Sunken US Military craft are afforded automatic protection under the United States *Sunken Military Craft Act* [Division A, Title XIV of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005].

The US *Sunken Military Craft Act* codifies previous case law with regard to the recognition of perpetual US Federal ownership of all sunken US military ships and aircraft, regardless of when and where wrecked, and provides protection to these wrecks and associated artefacts. Under the Act [Section 1402], activities directed at sunken military craft that disturbs, removes or injures the craft is prohibited except in accordance with a permit under Section 1403 of the Act, or as otherwise authorised by associated legislation and regulations.

Ronaki is the only vessel to potentially be affected by this legislation. At the time of wrecking, ownership was under the US government and the vessel was used as a store ship for US troops in the Pacific war zone. Because *Ronaki* was beached to the east of the Pier, and because it was largely salvaged and removed shortly after wrecking, it is unlikely that any remains would have drifted into the study area. However, there is a possibility that any such remains would be protected under the US Navy's *Sunken Military Craft Act* 2004, as *Ronaki* was operating as a United States Navy vessel when it was wrecked.

Potential actions to be undertaken for this project with respect to this Act:

Ronaki is the only vessel to potentially be affected by this legislation. At the time of wrecking, ownership was under the US government and used as a store ship for US troops in the Pacific war zone. Because Ronaki was beached to the east of the Pier, and because it was largely salvaged and removed shortly after wrecking, it is unlikely that any remains would have drifted into the study area. However, if during excavations some relics of Ronaki were

located, then this Act may come into play. There is a precedent for a USN Research Permit being issued for disturbing USN Catalina wrecks in Australian waters.

9.3 Heritage guidelines relevant to underwater cultural heritage

9.3.1 UNESCO Convention on Protection of the Underwater Cultural Heritage

The UNESCO Convention on the Protection of the Underwater Cultural Heritage, adopted in 2001, sets out the basic principles for the protection of underwater cultural heritage, provides a detailed cooperation system and provides widely recognised practical rules for the treatment and research of underwater cultural heritage. The main principles are:

- Obligation to preserve underwater cultural heritage
- *In situ* preservation as first option
- No commercial exploitation
- Training and information sharing.

Article 2 of the convention details the objectives and general principles:

1. This Convention aims to ensure and strengthen the protection of underwater cultural heritage.
2. States Parties shall cooperate in the protection of underwater cultural heritage.
3. States Parties shall preserve underwater cultural heritage for the benefit of humanity in conformity with the provisions of this Convention.
4. States Parties shall, individually or jointly as appropriate, take all appropriate measures in conformity with this Convention and with international law that are necessary to protect underwater cultural heritage, using for this purpose the best practicable means at their disposal and in accordance with their capabilities.
5. The preservation *in situ* of underwater cultural heritage shall be considered as the first option before allowing or engaging in any activities directed at this heritage.
6. Recovered underwater cultural heritage shall be deposited, conserved and managed in a manner that ensures its long-term preservation.
7. Underwater cultural heritage shall not be commercially exploited.
8. Consistent with State practice and international law, including the United Nations Convention on the Law of the Sea, nothing in this Convention shall be interpreted as modifying the rules of international law and State practice pertaining to sovereign immunities, nor any State's rights with respect to its State vessels and aircraft.
9. States Parties shall ensure that proper respect is given to all human remains located in maritime waters.
10. Responsible non-intrusive access to observe or document *in situ* underwater cultural heritage shall be encouraged to create public awareness, appreciation, and protection of the heritage except where such access is incompatible with its protection and management.
11. No act or activity undertaken on the basis of this Convention shall constitute grounds for claiming, contending or disputing any claim to national sovereignty or jurisdiction.

Annex – Rules concerning activities directed at underwater cultural heritage, specifically for the conservation of removed artefacts are listed below:

Rule 1. The protection of underwater cultural heritage through *in situ* preservation shall be considered as the first option. Accordingly, activities directed at underwater cultural heritage shall be authorized in a manner consistent with the protection of that heritage, and subject to that requirement may be authorized for the purpose of making a significant contribution to protection or knowledge or enhancement of underwater cultural heritage.

Rule 3. Activities directed at underwater cultural heritage shall not adversely affect the underwater cultural heritage more than is necessary for the objectives of the project.

Rule 4. Activities directed at underwater cultural heritage must use non-destructive techniques and survey methods in preference to recovery of objects. If excavation or recovery is necessary for the purpose of scientific studies or for the ultimate protection of the underwater cultural heritage, the methods and techniques used must be as non-destructive as possible and contribute to the preservation of the remains.

Rule 6. Activities directed at underwater cultural heritage shall be strictly regulated to ensure proper recording of cultural, historical and archaeological information.

Rule 9. Prior to any activity directed at underwater cultural heritage, a project design for the activity shall be developed and submitted to the competent authorities for authorization and appropriate peer review.

(h) a conservation programme for artefacts and the site in close cooperation with the competent authorities;

(o) deposition of archives, including underwater cultural heritage removed

Rule 17. Except in cases of emergency to protect underwater cultural heritage, an adequate funding base shall be assured in advance of any activity, sufficient to complete all stages of the project design, including conservation, documentation and curation of recovered artefacts, and report preparation and dissemination.

Rule 19. The project design shall include a contingency plan that will ensure conservation of underwater cultural heritage and supporting documentation in the event of any interruption of anticipated funding.

Rule 20. An adequate timetable shall be developed to assure in advance of any activity directed at underwater cultural heritage the completion of all stages of the project design, including conservation, documentation and curation of recovered underwater cultural heritage, as well as report preparation and dissemination.

Rule 21. The project design shall include a contingency plan that will ensure conservation of underwater cultural heritage and supporting documentation in the event of any interruption or termination of the project.

Rule 24. The conservation programme shall provide for the treatment of the archaeological remains during the activities directed at underwater cultural heritage, during transit and in the long term. Conservation shall be carried out in accordance with current professional standards.

Rule 25. The site management programme shall provide for the protection and management *in situ* of underwater cultural heritage, in the course of and upon termination of fieldwork. The programme shall include public information, reasonable provision for site stabilization, monitoring, and protection against interference.

9.3.2 The Burra Charter

The Burra Charter 2013 provides a best practice standard for managing cultural heritage places in Australia. The Burra Charter was first adopted in 1979 and is periodically updated to reflect developing understanding of the theory and practice of cultural heritage management. The current version was adopted in 2013.

The Charter can be applied to all types of places of cultural significance including natural, Indigenous and historic places with cultural values. The Burra Charter advocates a cautious approach to change: do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained. The Charter includes 12 conservation principles which are further developed in the processes and practice sections of the Charter.

9.3.3 Guidelines for the Management of Australia's Shipwrecks

The Guidelines for the Management of Australia's Shipwrecks were produced as a combined publication by the Australian Institute for Maritime Archaeology Inc. (now the Australasian Institute for Maritime Archaeology) and the Australian Cultural Development Office (now the Australian Government Department of the Environment and Energy) in 1994.

The guidelines comprise principles and practices that have been adopted by Australia's professional maritime archaeologists and serve as useful modules for other groups. The document includes a Statement of Principles governing the broad approach to be taken when dealing with historic shipwreck sites and related archaeological collections.

9.4 Relevant Norfolk Island Heritage Management Guidelines

9.4.1 Kingston and Arthur's Vale Historic Area Heritage Management Plan 2016

On 31 July 2010, the Kingston and Arthur's Vale Historic Area was inscribed on the UNESCO World Heritage List as part of the Australian Convict Sites property. Under Article 4 of the World Heritage Convention, ratified by Australia in August 1974, Australia has a duty to ensure the identification, protection, conservation, presentation and transmission to future generation of natural and cultural heritage of outstanding universal value.

The Conservation and Management Policies of the KAVHA Management Plan sets out guidelines and rules for the conservation and development of the Kingston and Arthur's Vale Historic Area. According to the guidelines, "the archaeological resources of the KAVHA site will be managed to retain their cultural heritage values and realise their research potential".

This includes conservation of the resource, specifically:

- Archaeological sites and features will be identified, protected and conserved. These include relics, ruins and standing structures, as well as subsurface deposits and artefacts.
- The creation of an integrated Archaeological Zoning Plan, to document known and predicted areas of archaeological sensitivity and known disturbed areas.
- The avoidance of damage or intervention to archaeological sites, with impacts strictly managed through approved works in conjunction with archaeological supervision.
- A Code of Practice for archaeological investigations at the KAVHA site.

Conservation of artefacts:

- Artefacts will be managed as part of the authentic significant fabric and movable heritage of the KAVHA site.

- Excavated artefacts will be analysed, catalogued and physically conserved, consistent with best practice museum standards.
- Budgets for archaeological investigations (whether undertaken in conjunction with works or as research projects) will include upfront budgetary provisions for artefact analysis, cataloguing, conservation and long-term curation.

Finally, the policies address the need for archaeological records:

- Comprehensive archival records, including text, photographs, and sketches, will be made in all cases where archaeological features or deposits are disturbed.
- Archaeological investigations will include the preparation of post-investigation reports, including comprehensive research archives of all relevant records, responses to research design questions and recommendations for future archaeological heritage management. All investigations will be carried out according to approved research design and methodology.
- Information gained from archaeological activities will be made available to the KAVHA manager and integrated into site management inventories and other resources.

9.4.2 KAVHA Archaeological Zoning and Management Plan 2020

The KAVHA Archaeological Zoning and Management Plan (AZMP) is required to enable the Australian Government to meet its statutory obligations so as to provide for the protection, conservation and presentation of World Heritage properties under the EPBC Act and should be used in conjunction with the 2016 HMP. It provides the framework for management of known and potential archaeological resources, and their cultural values, within KAVHA. The AZMP is intended to be a working document for KAVHA staff, statutory authorities, heritage advisors and owners to assist with decisions relating to the ongoing maintenance, conservation and presentation of KAVHA. It provides guidelines for avoidance of archaeological impacts by future development and planning to retain the assessed significance of archaeological resources. Figure 74 highlights the considered archaeological potential for the land at Kingston Pier.¹⁰³ It is of interest to note that the Precinct H boundary is based on 19th century maps and does not take into consideration that the shoreline north of the Pier has receded. The AZMP does not consider underwater archaeological potential as the KAVHA boundary stops at the High Water Mark.

The report identifies the following archaeological policies relating to maritime archaeology: Artefacts recovered from archaeological deposits within the KAVHA that appear to be associated with a vessel, such as copper alloy sheathing or copper alloy fastenings, could be associated with a historic shipwreck as defined by the *Historic Shipwrecks Act 1976* (which was replaced by the *Underwater Cultural Heritage Act 2018* in July 2019). Such relics would also be protected under *Underwater Cultural Heritage Act 2018*.

It states a policy that artefacts potentially related to a vessel are to be assessed by a qualified maritime archaeologist whether they are or could be associated with a Historic Shipwreck, such as the HMS *Sirius*.¹⁰⁴

¹⁰³ Op. Cit. **Extent, September 2019** : Volume 2 Plate 16

¹⁰⁴ Op. Cit. **Extent, September 2019** : Volume 1 pg 95

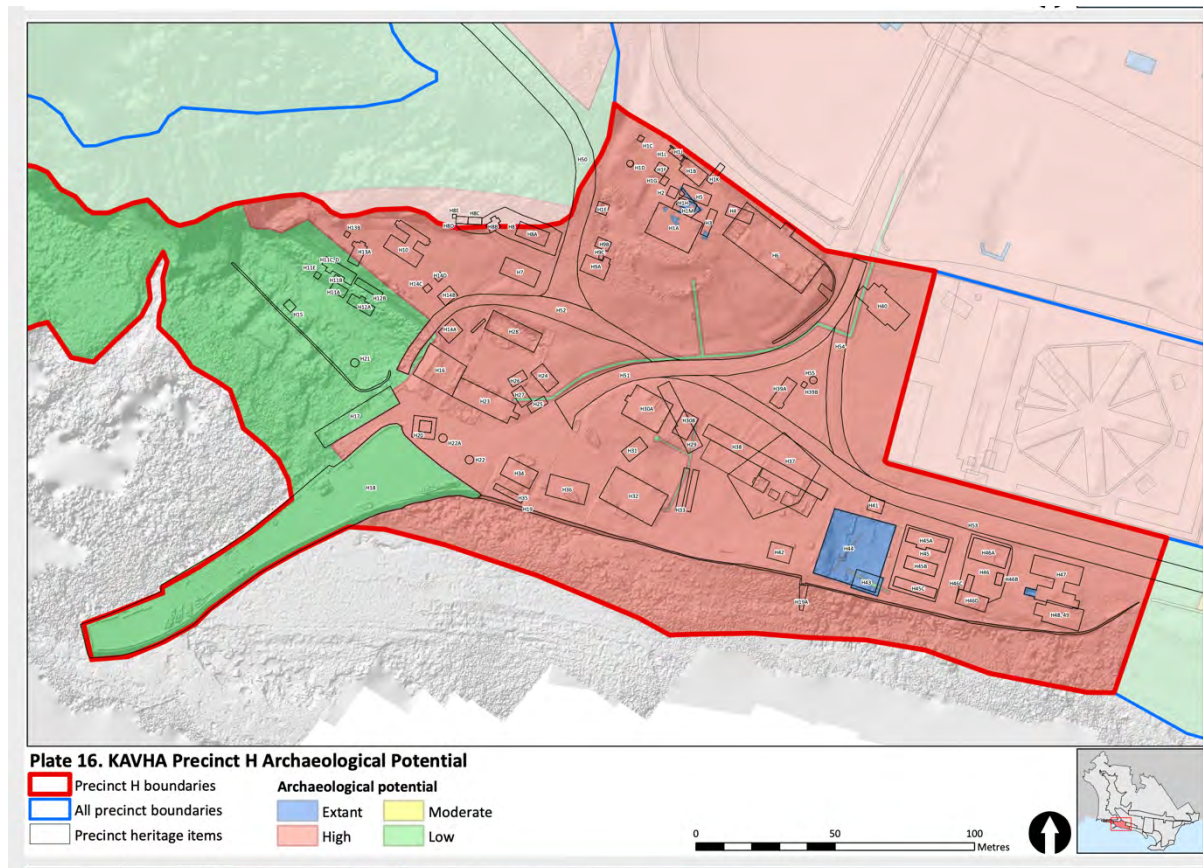


Figure 74: Archaeological potential around Kingston Pier.

9.4.3 Review of 1993 Plan of Management for HMS *Sirius* Shipwreck 2018 (draft)

A plan of management for the HMS *Sirius* wreck site was adopted in 1993. This plan outlined management responsibilities for both the shipwreck site itself and the collection of artefacts housed at the HMS *Sirius* museum.

The objectives of the review of the 1993 Plan were to:

- i) Identify, protect, conserve, present and transmit to all generations the Commonwealth and National heritage values of the wreck of HMS *Sirius* at Kingston, Norfolk Island, together with the collection of recovered artefacts and records relating to the site.
- ii) Provide a management framework that includes reference to the statutory requirements of the EPBC Act, the EPBC Regulations, the HSA, and guidelines provided in the Australia ICOMOS 2013 *Charter for Places of Cultural Significance* (Burra Charter), and the UNESCO 2001 *Convention on the Protection of the Underwater Cultural Heritage*.

It is currently unknown if this plan has been updated and adopted by the Commonwealth.

As part of any excavation strategy an artefact retention policy and mitigation will need to be developed to ensure any HMS *Sirius* artefacts are treated according to this management plan.

9.5 Memorandums of Understanding between the Commonwealth and Norfolk Island

9.5.1 MoU: Wreck of, and relics from, HMS *Sirius*

Under this MoU, signed in 1988, the two Governments recognised that the wreck and associated relics are of historic significance to the people of Australia and particularly to the residents of Norfolk Island. They agreed that:

- i. the protection, preservation and conservation of the wreck, relics and associated articles from the wreck is of paramount importance, and that any action taken under a management plan will be consistent with this principle.
- ii. the wreck should not be regarded as a source of important individual items but as a body of material whose collective significance outweighs the importance of the individual pieces and in which the relationship of the individual items within the collection is a major part of its historical significance.
- iii. Norfolk Island is the home of the wreck, and the appropriate location for the museum to house the relics and associated articles.
- iv. the bulk of the collection from the wreck would remain on Norfolk Island.
- v. the wreck and relics and associated articles would be conserved, preserved and managed in accord with a plan of management to be agreed.
- vi. the two Governments would try to agree on the contents of a plan of management by December 1988.
- vii. the plan of management would be consistent with the Act and the memorandum, and include provisions relating to management of the wreck site (including conditions under which archaeological expeditions might work at the site), methods to conserve relics, methods of relic storage, the availability on Norfolk Island for relic display and research, and access for divers wanting to inspect the wreck site.
- viii. the two Governments agree not to take steps in contradiction of any agreed plan of management, and to consult before taking steps on matters not covered in the memorandum or any agreed plan of management.

Agreement relating to Historic Artefacts

Under this agreement, signed August 1990, KAVHA is the subject of a management plan between the two Governments with the object of conserving KAVHA, continuing appropriate use of the area, encouraging visitation and understanding of historic significance, and managing the area in an efficient and economic manner. Ownership of historic artefacts remained with the Commonwealth but custody was to be undertaken by the Administration. The agreement is relevant to the *Sirius* listed place because in addition to the people offloaded from the *Sirius*, most of the fabric of the *Sirius* was transported to within the KAVHA boundaries by salvage operations and the forces of ocean currents and wind.

9.5.2 MoU: Application of Blanket Declaration to the Historic Shipwrecks in Waters Surrounding Norfolk Island.

Under this MoU, signed September 1993, the two Governments agreed that the remains of ships declared historic under the *Historic Shipwrecks Act 1976* (now the *Underwater Cultural Heritage Act 2018*) would be conserved, preserved and managed in accordance with plans of management to be agreed between the Governments.

10 MEASURES TO MITIGATE IMPACT

The following proposed measures to mitigate the impact of the proposed works on the identified archaeological resource builds on those presented in the 30% construction methodology and will conform with the heritage guidelines, where applicable, outlined in Sections 9.2 and 9.3 as well as standard archaeological principles.

The objective of the proposed measures is to;

Preserve and promote the cultural heritage significance of the identified underwater archaeological resource.

10.1 Kingston Pier Underwater Archaeological Management Plan

The objective of preserving and promoting the significance of the underwater archaeological resource would be achieved by the formulation and implementation of the Kingston Pier Underwater Archaeological Management Plan (KPUAMP). The KPUAMP would be informed by an archaeological test excavations to understand the extent, variety, frequency, condition and significance of the artefacts see (Section 10.2). The KPUAMP will comprise five key parts which are :

- *Focus*
- *Recovery*
- *Record*
- *Manage*
- *Publicise*

Focus refers to establishing the direction of the underwater archaeological excavation by identifying and prioritising the significant elements of the resource as well as posing questions that the resource could answer in relation to the understanding of the cultural development of KAVHA and Norfolk Island, maritime infrastructure related sites and site formation processes in general.

Establishing a focus for the mitigation will dictate the approach and methodologies for the remaining key parts. Having a clear focus will provide a reference point for decision making in the event that unexpected finds and/or situations arise during the implementation of the KPUAMP.

Recovery refers to the removal of artefacts from within the proposed project envelope in a manner that minimises any loss of contextual (and therefore significant) information. Artefact recovery would take the form of a combination of diver based water dredging as well as monitoring and sampling of removed seabed.

At all times the location and contexts from where artefacts were recovered will be tracked, whether it be from within excavation grids or from the area where the excavator bucket will be operating.

Sediments containing artefacts will be pumped by venturi suction pipe into a sealed container on the seabed which would be lifted onto the Pier when full (Figure 75). Sediment

and rock will be examined for artefacts at a sieve station by a team of locals and archaeologists (Figure 76).



Figure 75 : Sediment box being lifted from seabed. (courtesy PDS)



Figure 76 : Example of sieving. For this project the sieve system would need to be larger without losing efficiency. (courtesy PDS)

The KPUAMP will detail the methodology for the artefact recovery such as the size and location of diver based excavation grids, position fixing, information to be documented from each grid, consideration of stratigraphical relevance, handling of artefacts recovered from the grids, handling of sediments and rock from the site to the sieve station(s). It will also include monitoring protocols including a system for tracking removed seabed, managing run-off from the sieving, sampling strategies, roles and responsibilities of the archaeology team which includes divers and people working on the sieve.

Record refers to how the artefacts will be documented, that is, descriptions, photographed, bagged and tagged. All artefacts will be recorded to a standard level so as to create an inventory of finds.

The KPUAMP will detail such things as the information that will be recorded for each artefact, methods of recording, how the information will be catalogued, processed and stored (paper forms, photo labelling, databases, etc.), recording sequence, where recording will take place, photography standards, roles and responsibilities of those undertaking the recording. Consideration could be given to retaining samples of non-cultural material such as marine animal bones or corals that could be used for other scientific studies.

Manage refers to how the artefact collection is to be treated with respect to storage, conservation or de-accessioning. In the first instance all artefacts recovered will need to remain in sea water, which would need to be changed regularly, until such time as their status in curation is determined.

The KPUAMP will contain an artefact retention policy which will guide the archaeologists as to which artefacts are to be retained and those which could be de-accessioned after recording has been completed. What is meant by de-accessioning is that such designated artefacts leave the controls set by the KPUAMP and are in effect discarded. Broadly

speaking the artefacts that would be retained would be those associated with the critical significance values of the resource – those which can be dated to the 18th and 19th centuries. Those artefacts that would be de-accessioned would be recent 21st century objects while those artefacts from the 20th century would be retained or discarded on account of their association with the secondary significance values and/or their inherent rarity.

The KPUAMP will detail the locations where retained artefacts will be stored pending the commencement of conservation treatment. It will also detail the process for determining which retained artefacts are prioritised for conservation based on factors such as rarity or representativeness of objects displayed in the Island's museums, or their relevance to planned exhibitions.

It is possible that the volume of artefacts retained could exceed existing wet storage capacity and/or initial conservation budgets. An option to be considered in the KPUAMP would be the in-water storage or reburial of the artefacts. The creation and management of underwater repositories for artefacts recovered from a marine environment, is either being undertaken or considered by agencies responsible for the management of underwater cultural heritage. In this last decade the Australian Historic Shipwreck Protection Project examined ways in which recovered organic artefacts from the wreck of the *Clarence* (1841-50) could be recovered, recorded and reburied with minimal impact to the integrity of the object.¹⁰⁵ Maritime archaeological work in Darwin Harbour saw over 500 artefacts recovered prior to the commencement of dredging, recorded onboard work vessels and reburied.¹⁰⁶

For artefacts to be reburied successfully they require to be returned to a similar environment from which they were recovered. For example, if recovered from a gravelly seabed at 3 m of water and is subject to surge, a similar environment should be sought. This usually means that they should not be re-buried far from where they were found. The artefacts should also be buried at a depth to effect anaerobic conditions, which can dramatically slow down fabric degradation. Wrapping the artefacts in geofabric facilitates the creation of an anaerobic environment. The KPUAMP would examine suitable locations for an underwater repository taking into consideration the security of the artefacts. What is meant by security is safeguarding a buried cache from disturbance from surge and from theft.

The KPUAMP will also contain basic protocols for monitoring the collection prior to and during conservation treatment, as well as addressing budget estimates for conservation and curation. Most critically the KPUAMP will detail the roles and responsibilities of the dredging contractors, the archaeologists, the Commonwealth and the KAVHA Authority, including a well-defined chain of custody for the management of the artefacts.

Publicise refers to the dissemination of the conduct and findings of the archaeological investigations. This includes the preparation of a comprehensive technical excavation report with specialist reports as required as well as associated project records such as images, videos, databases, mapping. Also to be prepared would be a shorter and well-illustrated 'plain English' report.

The KPUAMP will outline options for further promotion in the form of displays, video, publications and other multi-media that would be addressed in an Interpretation Plan that would be prepared after the archaeological excavation and cataloguing has been completed.

In addition the KPUAMP will include a construction environmental sub-plan documenting procedures to negate impacts on the environment such as the controls placed on reducing turbidity or fuel spills.

¹⁰⁵ Australian Historic Shipwreck Preservation Project <http://www.ahspp.org.au>

¹⁰⁶ Cosmos Archaeology Pty Ltd February 2014 INPEX Ichthys LNG Project : Nearshore Development – Dredging. East Arm Darwin Harbour, Northern Territory. Relocation of Heritage Objects & Removal of Debris. Prepared for Tek Ventures Pty Ltd

The KPUAMP will need to be prepared in consultation with key stakeholders from the Norfolk Island Council, Community, KAVHA and the Commonwealth. It is the intention that the KPUAMP forms part of the conditions of approval required under *the Underwater Cultural Heritage* and *EPBC* Acts.

10.2 Underwater Archaeological Test Excavation

At present the underwater archaeological significance within the study area has been modelled with the absence of sub-surface archaeological investigations. An underwater archaeological test excavation would refine the predictions made in this assessment with respect to the extent, condition, frequency and variety of archaeological remains. This would in turn inform the KPUAMP with regards to the methodology and conduct of the archaeological mitigation as well as providing more accurate estimates for the costs of storing, conserving and curating the artefacts recovered prior to and during the proposed works.

The objectives of an underwater test excavation would be to:

- Estimate the number and type of artefacts that would be recovered prior to and during the proposed works;
- Which is the most efficient diver based excavation techniques;
- Whether diver based archaeological excavation prior to construction phase add any heritage value, based on the nature of the archaeological deposit, and;
- Obtain an understanding of artefact density across the proposed construction envelope so as to explore the options for a sampling strategy as opposed to 100% recovery and sieving of all material.

An underwater archaeological test excavation would provide input into the above objectives by excavating, with a diver operated venturi suction pipe, four 2 m x 2 m grids across the project envelope. The remaining methodology for the test excavation would follow that described for the KPUAMP but given the volumes to be excavated it will be on a much smaller scales. The recovery, recording and management techniques to be used for the KPUAMP will in effect be trialled in the test excavation.

Because of the potential for shipwreck remains protected under the *UCHA 2018* to be disturbed by the underwater archaeological test excavation it would be prudent to obtain a permit. An abbreviated KPUAMP would be required as a condition of approval.

11 CONCLUSION AND RECOMMENDATIONS

This assessment of the impact of the proposed works on the cultural heritage significance of the identified underwater archaeological remains within the construction envelopes of the four current options found that:

- The proposed works area has been in constant use since 1788 as the primary landing place for Norfolk Island;
- This cultural activity has resulted in objects being discarded, both accidentally and deliberately within the waters of the study area;
- A number of vessels have been wrecked outside the proposed construction envelopes but it can be expected that wreckage from one or more shipwrecks, including that of the HMS *Sirius*, would have floated into the areas proposed for seabed removal;
- The non-disturbance dive inspection did not identify any culturally significant artefacts, however it has been assessed that culturally significant artefacts could be concentrated and buried within gullies, gutters, cracks and fissures within the calcarenite and possibly volcanic tuff substrate that would be removed by the proposed works;
- It is possible that there may be artefacts encased in the calcarenite;
- The identified underwater archaeological resource is adjacent to and interwoven with the cultural heritage values of The KAVHA;
- The underwater archaeological resource pre-dating the transfer of Norfolk Island's governance to Australia is potentially of critical significance while material cultural relating to WWII defence works, tourism, use of earlier structures and modifications is of secondary significance;
- Dredging in the 1980s truncated this significant underwater archaeological resource but has not removed it;
- The proposed works – unmitigated – could potentially have major to extreme impacts to the critical significance of the underwater archaeological resource which would be unacceptable from a heritage standpoint;
- The Commonwealth *Underwater Cultural Heritage Act 2018* automatically protects remains of shipwrecks of 75 years old and it is probable that the proposed works will disturb such remains;
- The proposed action – seabed removal (all options) – could have a significant impact as it could potentially permanently remove, destroy, damage or substantially disturb an underwater archaeological resource assessed to have critical cultural heritage significance values in relation to World Heritage Listed KAVHA. In fact this resource could be considered to be unique to KAVHA in that there is no other location elsewhere within and without KAVHA which formed a constant and longstanding cultural nexus between the land and the sea.
- As such as it is believed that this action could potentially have a significant impact on a matter of national environmental significance and may require approval from the Australian Government Minister for the Environment as required under the Commonwealth *EPBC Act 2018*;
- To mitigate the impact of the proposed works on the cultural heritage significance of the underwater archaeological remains an extensive archaeological excavation and monitoring programme would be required;

- For the mitigation to be successful a well prepared plan covering all aspects of the archaeological investigation, from its focus, the recovery, recording, management and publicising of the artefacts as well as the data collected, this plan would be called the Kingston Pier Underwater Archaeological Management Plan (KPUAMP);
- Some of the elements of what would be in this plan have been incorporated into the current 30% construction plan, and;
- An underwater archaeological test excavation would provide information on the extent, variety, frequency and condition of the resource which would be used to create more informed KPUAMP.

Based on the above findings the following recommendations are made:

Recommendation 1 – Undertake an underwater archaeological test excavation.

This would provide additional information on the nature of the underwater archaeological resource to be impacted by the proposed works which would better inform the mitigation strategy and implementation, prior to, during and after the completion of the proposed works.

Recommendation 2 – Apply for a permit under the Underwater Cultural Heritage Act 2018 (Cth) to undertake the test excavation.

As there is a reasonable probability that wreckage associated with vessels that were wrecked more than 75 years ago will be impacted by the proposed works it would be prudent to obtain a permit under Part 3, Division 1, Subsection 23 of the *UCHA 2018*.

Recommendation 3 – Prepare an abbreviated Kingston Pier Underwater Archaeological Management Plan for the test excavation.

This plan would accompany the application for a permit under the *UCHA Act* and its implementation would be a condition of the permit.

Recommendation 4 – Submit a referral under the EPBC Act.

The proposed action – seabed removal (all options) – could have a significant impact as it could potentially permanently remove, destroy, damage or substantially disturb an underwater archaeological resource assessed to have critical cultural heritage significance values in relation to World Heritage Listed KAVHA. In fact, this resource could be considered to be unique to KAVHA in that there is no other location elsewhere within and without KAVHA which formed a constant and longstanding cultural nexus between the land and the sea.

It is believed that this action could potentially have a significant impact on a matter of national environmental significance and may require approval from the Australian Government Minister for the Environment.

The study area is located within the Norfolk Marine Park which is protected under the Act. Further advice from the Australian Marine Parks division should be sought.

Recommendation 5 – Apply for a permit under the Underwater Cultural Heritage Act 2018 (Cth) for the proposed works.

As there is a reasonable probability that wreckage associated with vessels that were wrecked more than 75 years ago will be impacted by the proposed works it would be prudent to obtain a permit under Part 3, Division 1, Subsection 23 of the *UCHA 2018*.

Recommendation 6 – Prepare and implement the Kingston Pier Underwater Archaeological Management Plan for the proposed works.

The implementation of this plan would be a condition of Approval (see recommendation 4) under the *EPBC Act* if a referral is required and the permit (see recommendation 5) under the *UCHA Act*.

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ANNEX A – UNDERWATER VIDEO FILES

The following files are provided on an external data storage device:

Swim Search 1

File name	Date/time	Length	Size (MB)	File Type
NI_SS01_001_200226	200226_12:38	01:15	284	.mp4
NI_SS01_002_200226	200226_12:39	01:10	267	.mp4
NI_SS01_003_200226	200226_12:40	01:08	259	.mp4
NI_SS01_004_200226	200226_12:41	01:12	271	.mp4
NI_SS01_005_200226	200226_12:43	01:06	248	.mp4
NI_SS01_006_200226	200226_12:44	01:21	308	.mp4
NI_SS01_007_200226	200226_12:45	01:09	261	.mp4
NI_SS01_008_200226	200226_13:03	17:38	4,000	.mp4

Swim Search 2

File name	Date/time	Length	Size (MB)	File Type
NI_SS02_001_200227	200227_11:14	15:50	3,600	.mp4
NI_SS02_002_200227	200227_11:23	01:57	441	.mp4

Transect 1

File name	Date/time	Length	Size (MB)	File Type
NI_T1_0 to 30 m_200226	200226_14:03	04:17	970.6	.mp4
NI_T1_30 to 0 m_200226	200226_12:03	01:47	403	.mp4

Transect 2

File name	Date/time	Length	Size (MB)	File Type
NI_T2_0 to 30 m_200226	200226_14:30	02:02	461	.mp4
NI_T2_30 to 0 m_200226	200226_14:21	02:47	630	.mp4

Transect 3

File name	Date/time	Length	Size (MB)	File Type
NI_T3_0 to 30 m_200226	200226_15:38	03:32	802	.mp4
NI_T3_30 to 0 m_200226	200226_15:34	03:51	873	.mp4

Transect 4

File name	Date/time	Length	Size (MB)	File Type
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ANNEX B – PROPOSED SEABED REMOVAL OPTIONS



Kingston Pier Channel Construction

Heritage Impact Statement

Department of Infrastructure, Transport, Regional Development and
Communications (DITRDC)

19 October 2021

311015-00061

Advisian
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PROJECT 311015-00061: Kingston Pier Channel Construction – Heritage Impact Statement

Rev	Description	Author	Review	Advisian approval	Revision date	Client approval	Approval date
A	Internal review	 A. Pappas	 C. Jones	-	12.05.2021		
B	Client review	 C. Jones	 K. Newton	-	28.07.2021		
0	Final	 C. Jones	 K. Newton	 B. Morgan	19.10.2021		

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Executive summary

This Heritage Impact Statement (HIS) has been prepared for the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) to accompany the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) Referral and Environmental Impact Statement (EIS) for the proposed Kingston Pier Channel Construction (the Project). This HIS specifically applies to land-based works (located above the mean high water mark (MHWM)) associated with the Project at Kingston Pier and the Old Cascade Quarry.

The land-based works include:

- establishment of a land-based contractor's working area including a temporary site compound area and temporary spoil stockpile area at Kingston Pier
- establishment of a screening area near Kingston Pier to dewater and screen loose sediment for any potential archaeological artefacts
- storage of archaeological artefacts within an available building near Kingston Pier such as the single Boatshed for assessment and subsequent management
- transfer of spoil from Kingston Pier to the onshore disposal site at the Old Cascade Quarry
- stockpiling, earthworks and filling at the Old Cascade Quarry
- stabilisation of the existing steel sheet pile wall on the western side of Kingston Pier
- remediation of the rock revetment adjacent to Kingston Pier and the Slaughter Bay seawall.

The conclusions of this HIS are as follows:

- the land-based works are located in:
 - the Kingston and Arthur's Vale Historic Area (KAVHA) which is listed on the UNESCO World Heritage List as one of the 11 places that make up the 'Australian Convict Sites' World Heritage serial listing, Commonwealth Heritage List (excluding areas of freehold tenure), National Heritage List and Norfolk Island Heritage Register
 - the vicinity of Cascade Reserve which is a nominated place on the Commonwealth Heritage List and listed on the Norfolk Island Heritage Register.
- The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would respect and enhance the integrity of the structure and enable the continuity of culturally significant events and uses. It is considered to be an appropriate part of conservation to improve structural integrity and physically protect the fabric from further deterioration
- The land-based works would not adversely impact extant buildings, structures, ruins, landscapes or land-based subsurface archaeological remains that are associated with the KAVHA
- The temporary use of an available building near Kingston Pier such as the single Boatshed to store archaeological artefacts would not impact heritage significance
- The stockpiling, earthworks and filling at the Old Cascade Quarry may disturb subsurface archaeological potential.

In summary, the land-based works would not have a significant impact on the World and National heritage values of the KAVHA under the EPBC Act.

Therefore, it is considered that on heritage grounds, the land-based works associated with the Project can be supported. Finally, the proposed mitigation measures in Section 8 will be implemented to minimise potential heritage impacts.

Acronyms and abbreviations

Acronym/abbreviation	Definition
DCP	Development Control Plan
DITRDC	Department of Infrastructure, Transport, Regional Development and Communications
EIS	Environmental Impact Statement
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
HIS	Heritage Impact Statement
KAVHA	Kingston and Arthur's Vale Historic Area
KAVHA AZMP	Kingston and Arthur's Vale Historic Area Archaeological Zoning and Management Plan
KAVHA CLMP	Kingston and Arthur's Vale Historic Area Cultural Landscape Management Plan
KAVHA HMP	Kingston and Arthur's Vale Historic Area Heritage Management Plan
MHWM	Mean high water mark
Project	Kingston Pier Channel Construction

1 Introduction

1.1 Brief

Advisian has been engaged by the Australian Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) to prepare this Heritage Impact Statement (HIS) to accompany the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) Referral and Environmental Impact Statement (EIS) for the proposed Kingston Pier Channel Construction (the Project). This HIS specifically applies to land-based works (located above the mean high water mark (MHW)) associated with the Project.

The purpose of this HIS is to assess the impact(s), if any, of the land-based works associated with the Project on any conservation values that may constitute the heritage significance of the site.

1.2 Methodology

In preparing this HIS, the following methodology has been followed:

- inspection of the site, its context and setting
- review of relevant legislative, regulatory and Norfolk Island statutory and non-statutory planning controls
- review of the Australian Heritage Database and the Norfolk Island Heritage Register for heritage items that may be located on or in the vicinity of the site
- review of *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (*The Burra Charter*) and the MNES guideline (Department of Environment, 2013).

1.3 The site, its context and setting

The land-based works are located on land around Kingston Pier, Slaughter Bay and the Old Cascade Quarry. The land at Kingston Pier is owned and managed by the Australian government and is located within the Kingston and Arthur's Vale Historic Area (KAVHA). The land-based spoil disposal site is privately owned and is located at the Old Cascade Quarry. The locations of the land-based works are shown in Figure 1-1.



Figure 1-1 Indicative location of land-based works: Kingston Pier and Slaughter Bay (left) and the Old Cascade Quarry (right) (Source: Google Earth, 2020).

The property description of the lands subject of this HIS are provided in Table 1-1 and Table 1-2.

Table 1-1 Property description at Kingston Pier.

Property description	
Address	Kingston Pier and Kingston Common Reserve, Kingston 2899, Norfolk Island
Portion No.	RES (Kingston Common Reserve) (19.16 hectares) 182 (2.605 square metres) 164 (1.107 hectares)
Zoning	Conservation
Owner	Crown land
Current use	
Kingston Pier is a key element of the Kingston and Arthur's Vale Historic Area (KAVHA). The KAVHA is of international and national heritage significance and is a tourist attraction. Portion RES comprises the Kingston Common Reserve contains remnants of First Settlement buildings and significant structures from the Second convict Settlement, including the ruins of the watermill, hexagonal gaol and prisoners' compound. Most of the reserve is used as grazing common. The portion includes the Rock Revetment and Slaughter Bay Seawall. Portion 182 comprises the Kingston Pier hardstand area, paved areas and grassed areas which are currently used for activities by various vessel operators such as commercial charter, fishing vessels and emergency responders as well as local launches and lighters, and for other public users who use Kingston Pier for fishing and other recreational activities. The land includes Kingston Pier which is considered critical infrastructure for minor freight operations and transfer of cruise ship passengers to access Norfolk Island. Other heritage elements near Kingston Pier include the Pier Store (Museum), Boatsheds, Flaghouses and the Royal Engineers Office (Museum shop and information). The Boatsheds are currently used to store maritime vessels and equipment. Kingston Pier is accessed via Pier Street. Portion 164 is located west of the Pier Store (Museum) and includes the boat ramp and grassed areas. The land is generally associated with the activities of various vessel operators and other users at Kingston Pier.	

Table 1-2 Property description at Old Cascade Quarry.

Property description	
Address	Old Cascade Quarry, Cascade 2899, Norfolk Island
Portion No.	5a1 (Youngs Road) (2.848 hectares)
Zoning	Rural
Owner	Private (John Christian)
Current use	
The Old Cascade Quarry is not currently in use. It was previously used as a quarry to supply stone for various construction projects on Norfolk Island. It is proposed to be rehabilitated in the future as per the NIRC's objectives as a separate project.	

A summary description of the land-based works is as follows:

- establishment of a land-based contractor's working area including a temporary site compound area and temporary spoil stockpile area at Kingston Pier (Portion No. 182) to store land-based plant and equipment
- receipt of seabed material from the harbour onto Kingston Pier via crane
- establishment of a screening area (Portion No. 164) near Kingston Pier to dewater and screen loose sediment for any potential archaeological artefacts. Archaeological artefacts would seek to be securely stored within an available building near Kingston Pier such as the Boatshed
- transfer of spoil (including loose sediment, calcarenite rock and tuff rock) via about three locally sourced trucks from Kingston Pier to the onshore disposal site at Old Cascade Quarry where it would be placed in an appropriate sorting area to be screened (Portion No. 5a1)
- filling and earthworks at Old Cascade Quarry which would assist with the future rehabilitation of the former quarry site in accordance with NIRC's objectives
- stabilisation of the existing steel sheet pile wall on the western side of Kingston Pier. This may involve concrete plugging and welding of the existing steel sheet piles
- remediation of the rock revetment adjacent to Kingston Pier and the Slaughter Bay seawall through repair works.

2 History of the site

A brief description of the KAVHA and Cascade Reserve is provided below. In addition, historical photographs are provided at Figure 2-2 – Figure 2-6.

2.1 Kingston and Arthur's Vale Historic Area

The following brief historical overview of the KAVHA has been informed by a review of the KAVHA Heritage Management Plan (KAVHA HMP). The KAVHA comprises the following four historical periods.

2.1.1 Polynesian Settlement

Norfolk Island was occupied by Polynesians prior to European settlement. Past archaeological investigations have uncovered numerous artefacts and remains on Norfolk Island. Investigations at Emily Bay site in 1995-7 suggests a single phase of occupation between c.1150 and c.1450AD. The Norfolk Island Museum contains a collection of Polynesian artefacts recovered from the KAVHA.

2.1.2 First (Colonial) Settlement (1788 – 1814)

On 10 October 1774, Captain James Cook sighted Norfolk Island and then claimed it for the British Crown. The HMS *Supply* with Lieutenant Philip Gidley King arrived on Norfolk Island on 2 March 1788. By 1790, buildings and structures were constructed and the land cultivated.

The settlement's only links from Norfolk Island were HMS *Supply* and HMS *Sirius*. On 19 March 1790, HMS *Sirius* was wrecked on the reef east of Kingston Pier. The crew and passengers were forced to remain whilst King left on HMS *Supply*. The settlers survived on sparse rations and by eating ground nesting birds and their eggs. Former convicts and the military were granted land for private use and villages were formed as well as roads, town structures and facilities. The settlement was called Sydney.

In 1803, it was recognised that Norfolk Island could not operate independently of Port Jackson and in 1810, orders were issued to close the settlement. By 1814, the remnants of the Norfolk Island community sailed for Sydney. Norfolk Island remained unoccupied for the following 11 years.

2.1.3 Second (Penal) Settlement (1825 – 1855)

In 1822, Norfolk Island was recommended to be re-occupied on the principles of a penitentiary. On 6 June 1825, a party of convicts landed on Norfolk Island. By 1833 there were 600 prisoners and 130 troops on Norfolk Island and convicts were instructed to work in building and agriculture. A series of Commandants over the following eight years saw the construction of the structures including the Prisoners' Barracks, the Old Military Barracks and the Pier Store. By 1834, the settlement was known as Kingston. In 1838, the Royal Engineer, Lieutenant Lugard arrived at Norfolk Island and surveyed the settlement and later designed a number of buildings. He proposed improvements at the Landing Place and construction of Kingston Pier commenced in 1839 and other building programs continued into the 1840s. In 1847, the penal settlement on Norfolk Island was to be abolished. From a total of 1820 convicts on Norfolk Island in December 1846, there were only 119 in October 1854.

2.1.4 Third (Pitcairn) Settlement (1856 – Present)

In 1852, the Pitcairn Islanders had outgrown the small Pitcairn Island and were to be relocated to Norfolk Island (over 6,000 kilometres to the west) following closure of the penal settlement. The Pitcairners sailed to Norfolk Island on the *Morayshire*, landing at Kingston on 8 June 1856. By 1857, the

Pitcairners were in possession of the existing buildings at Kingston but maintained only those that they needed. Each household head was also allocated a 50-acre lot away from Kingston. Until 1900, few significant physical changes occurred in Kingston. Some of the existing buildings were modified as needed for use and additions were also made to some houses.

The Administration of Norfolk Island was transferred to the Governor of New South Wales, effective on 1 January 1901. The *Norfolk Island Act* of 1913 established Norfolk Island as a territory under the Commonwealth of Australia. During the 1920s, a number of buildings and structures were renovated for use by the Administration of Norfolk Island as both offices and residences. The tourism trade also led to the construction of a guest house called Dewville to the east of the Quality Row houses and the creation of the golf course.

During World War II, Kingston Pier was the main landing site for personnel and equipment associated with the construction of the airfield. The tourism trade increased following World War II. In the 1950s, a number of buildings were repaired, and some ruins were removed. In 1962, the Commonwealth Department of Housing initiated a restoration program which continued into the 1970s.

2.1.4.1 Heritage Elements

The KAVHA is comprised of precincts. Land-based works at Kingston Pier are located within Precinct H (Figure 2-1). There are 57 significant elements within Precinct H. In accordance with the KAVHA HMP, the post-1825 elements of Precinct H are briefly described below:

- *Kingston Pier* – constructed (1839-47) using stone, rubble fill and local materials. It was refurbished in 2007 using modern materials, steel sheet piles and a concrete surface.
- *The Seawalls* – made of stone and located east of Kingston Pier along the whole foreshore. In 1943, the wall was breached during the salvage of *Ronaki IX-94* which was wrecked on the reef. Kingston Pier and the Seawalls are considered to be among the earliest remaining large-scale engineering works in Australia.
- *Boatsheds & Workshops* – the single boatshed (1828-9) and double boatshed (1841) were constructed using local calcarenite.
- *The Pier Store and Crankmill* – the Pier Store (1825) and is currently used as a museum. It has been used for milling and a guardroom. The verandah was added in 1841. The Crankmill was constructed in 1827-38 and originally housed a hand-powered mill for grinding grain. It was subsequently used by a whaling company as a boatshed. It is now a ruin.
- *The Settlement Guard House* – constructed (1826) on the foundations of a First (Colonial) Settlement 1788 – 1814 building. The building was a guard house until 1841 and later altered to a boatshed. It was reconstructed in 1977-1979.
- *Hospital and Surgeon's Quarters* – constructed (1827) for civil officers using prefabricated timber components. It was used as a residence after 1856. Past excavations revealed remains which are stored in the museum. It is now used by the Norfolk Island Lions Club.
- *Royal Engineer's Office and Stables* – constructed from stone (1848) with a hall and two front rooms. The stables block, portico and additional rooms were soon added. In c.1897, internal modifications were undertaken. It has been used by the museum as a café. The stables block was reconstructed as a public amenities building containing male and female toilets.
- *Quarters for the Lower Ranks* – archaeological remains of quarters built along the foreshore. A single remaining cottage (1850-3) is now the restoration office.

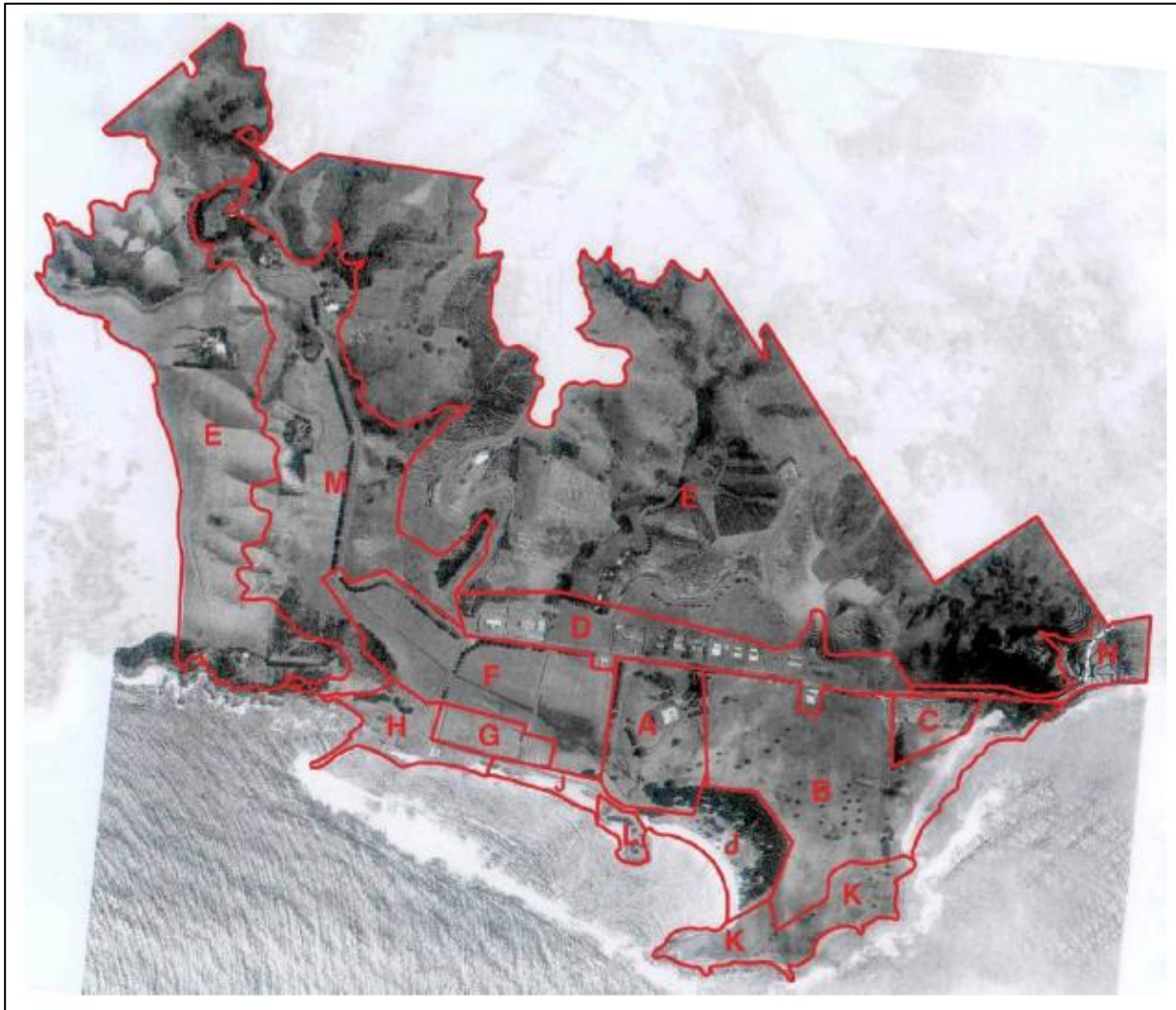


Figure 2-1 The KAVHA precincts (Source: Jean Rice Architect, Context and GML Heritage, 2016).

2.2 Old Cascade Quarry

The Old Cascade Quarry is located in the vicinity of Cascade Reserve.

Cascade Reserve is the largest public reserve on Norfolk Island and is rich in cultural and natural heritage. Cascade Reserve contains historic, landscape and seascape heritage conservation values including important remnant native vegetation. Cascade Reserve is comprised of skeletal soils, including highly erodible red and/or brown ferritic soils, on steep ridges and areas where bedrock lies close to the surface. Cascade Road is adjacent to Cascade Reserve and is identified as one of the earliest roads in Australasia still in use.

Cascade Reserve is described as one of the most important cultural landscapes in Australasia (Varman, 1998). Historical associations and archaeological research potential at Cascade Reserve are generally associated with the following historical periods:

1. First (Colonial) Settlement 1788 – 1814.
2. Second (Penal) Settlement 1825 – 1855.
3. Third (Pitcairn) Settlement 1856 – Present.

Currently, the Old Cascade Quarry is privately owned. It was previously used as a quarry to supply stone for various construction projects on Norfolk Island.



Figure 2-2 Kingston Pier and horses at the Landing Place (c. 1910) (Source: National Library of Australia).



Figure 2-3 Buildings, structures and ruins east of Kingston Pier (c.1910) (Source: National Library of Australia).



Figure 2-4 Kingston Pier and the KAVHA (c. 1915-1935) (Source: State Library Victoria).



Figure 2-5 Cascade, looking towards the old whaling station (c. 1900) (Source: Flickr).



Figure 2-6 View of Cascade Pier and cliff, prior to establishment of the quarry (1942) (Source: Transport for NSW).

3 Environmental heritage

3.1 Heritage items

The land-based works are located on or in the vicinity of the heritage items described in Table 3-1.

Table 3-1 Heritage items.

Item	Address	Listing(s)	Significance
Within heritage item			
Kingston and Arthur's Vale Historic Area	Kingston, Norfolk Island	- UNESCO World Heritage List as one of the 11 places that make up the 'Australian Convict Sites' World Heritage serial listing - Commonwealth Heritage List (excluding areas of freehold tenure) - National Heritage List - Norfolk Island Heritage Register.	- World - Commonwealth - National - Local
In the vicinity of heritage item			
Cascade Reserve	Cascade, Norfolk Island	- Commonwealth Heritage List (nominated place) - Norfolk Island Heritage Register.	- Commonwealth (nominated place) - Local

3.2 Potential Historical Archaeology

3.2.1 Kingston and Arthur's Vale Historic Area

The KAVHA Archaeological Zoning and Management Plan (KAVHA AZMP) identifies potential archaeological remains within Precinct H (Figure 3-1). The boundary of Precinct H is based on 19th century maps and does not account for the shoreline receding at the Landing Place.

Kingston Pier itself is of low archaeological potential. Other buildings and structures part of the KAVHA in the vicinity of Kingston Pier are generally located on land identified as having high archaeological potential. This shows that the land-based subsurface surrounding these buildings and structures, which is generally covered by kikuyu grasses, has not been substantially disturbed by intrusive development.

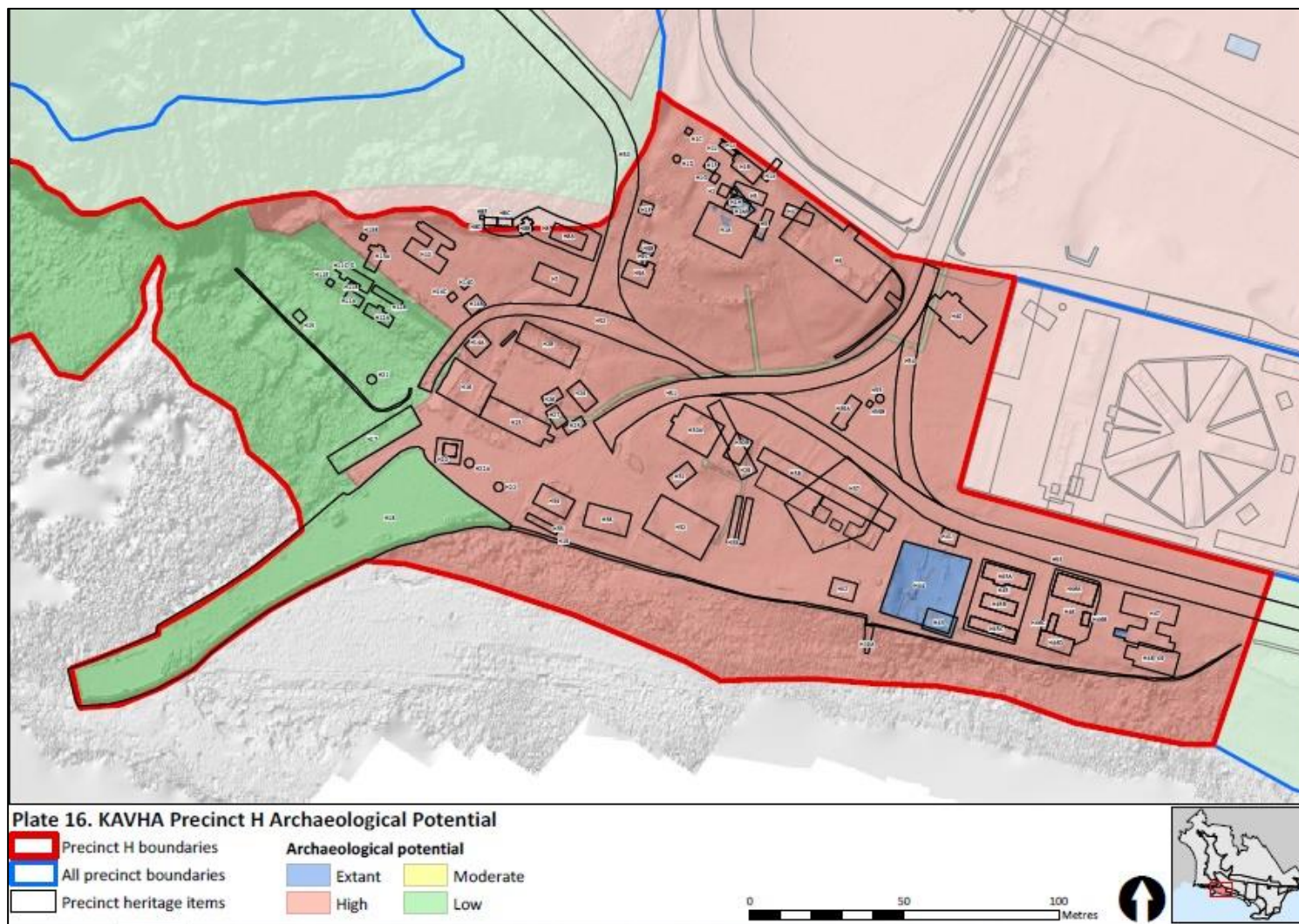


Figure 3-1 Precinct H archaeological potential (Source: Extent Heritage, 2019).

3.2.2 Old Cascade Quarry

The zoning plan (Varman, 1998) identifies and describes archaeological and historically significant sites in Cascade Reserve (Figure 3-2).

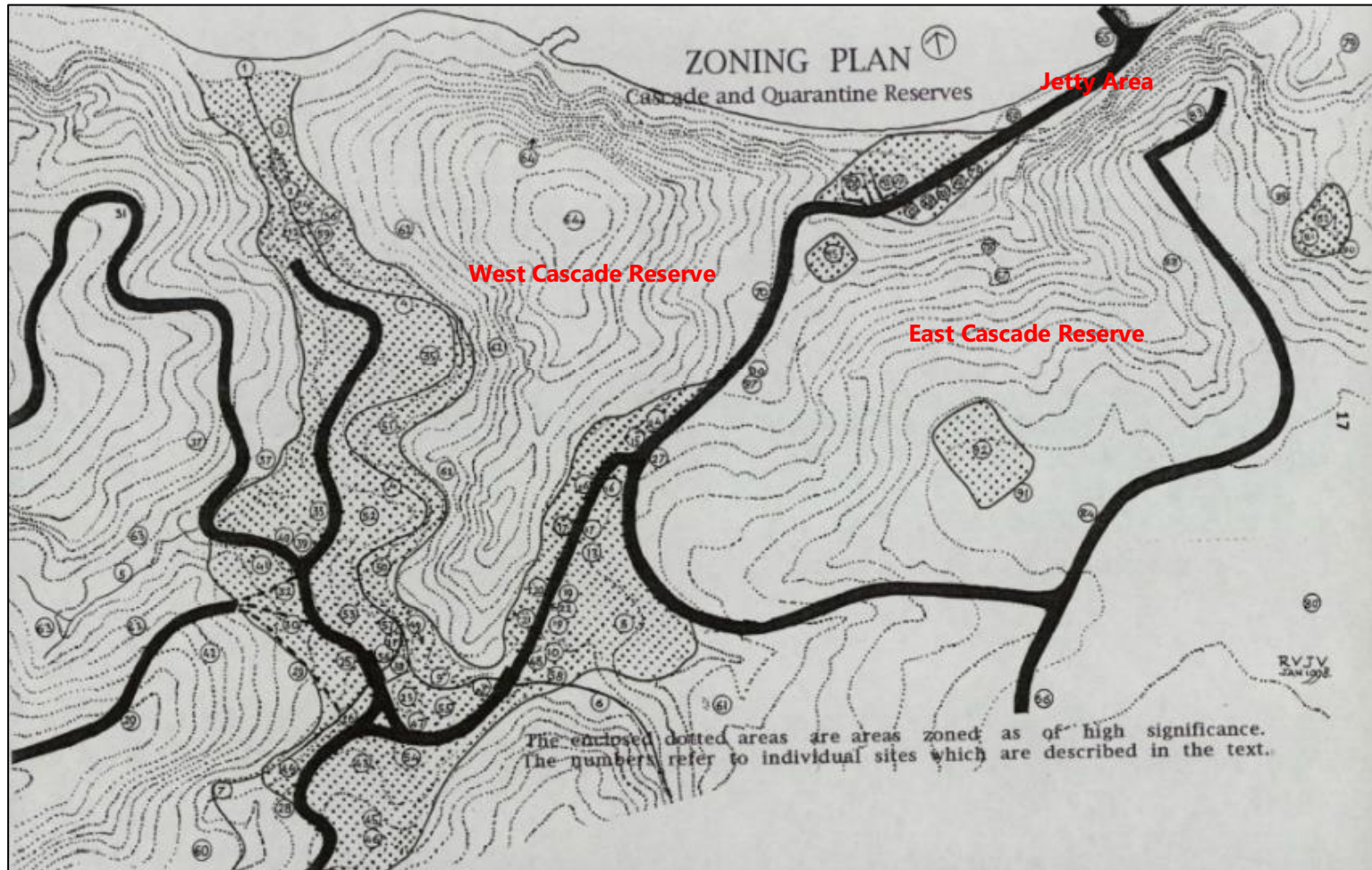


Figure 3-2 Archaeological zoning plan showing significant sites at Cascade Reserve (Source: Varman, 1998).

Significant sites located in the vicinity of the Old Cascade Quarry are described below.

3.2.2.1 Cascade Cliff (Item No. 71):

"Item: 71

Name: Cascade Cliff

Previous or Alternative Names:

Item Type: Natural environment.

Group: Renmant forests.

Area: Jetty Area Principally in the area above the Jetty and road leading up to the Jetty. Current Use:

Former Uses:

Statement of Significance: An important landscape element connected with Cascade Jetty, depicted at regular intervals since 1794. The harvesting of flax on a grand scale during the 1790s is probably partially responsible for the instability of this cliff.

Statement of Integrity: Denuded of plants and trees since the 1790s, the cliff face has become so unstable as to endanger lives on a daily basis due to regular collapses of rock.

Degree of Significance: High.

Management Recommendations: Although of high significance as an important landscape feature, it is recognized that the cliff presents a constant and unpredictable danger to all who use the road and jetty below it. Any proposal in regard to removing the danger should consider a landscape program that will emphasise the vertical as a back-drop to the jetty."

Cascade Cliff was significantly altered by major engineering work in 1999-2000. The proposed works at the Old Cascade Quarry would be located adjacent to Cascade Cliff and would have no impact on its historical value as a landscape feature, albeit modified, at the Jetty Area.

3.2.2.2 Knight's Farm (Item No. 79):

"Item: 79

Name: Knight's Farm.

Previous or Alternative Names: Lot 1.

Item Type: Archaeological. Human modified landscape.

Group: First Settlement land grants.

Area: Eastward of the east boundary of East Cascade Reserve, from the Lower Garden creek to little Cascade Stream.

Current Use: Private property, grazing, rock quarry and quarry overburden storage site.

Former Uses: Agriculture and grazing.

Statement of Significance: Important early farming site with archaeological potential associated with Cascade Farm and Phillipsburgh. The Shepherd's Hut remains could possibly be associated with Knight's Farm.

Statement of Integrity: Much of the north-west part of the site has been destroyed by stone quarrying but the masonry remains of an old cottage survive under the stockpiled overburden.

The crest of the east hill to little Cascade Stream (Simons Water) still survives.

Degree of Significance: High.

Management Recommendations: Status quo."

Knight's Farm has been highly disturbed by stone quarrying operations although it is reported that the masonry remains of an old cottage survive under the stockpiled overburden (Varman, 1998). The proposed works at the Old Cascade Quarry may impact the old cottage remains.

3.2.2.3 Fredick's Aege (Item No. 83):

"Item: 83

Name: Fredick's Aege.

Previous or Alternative Names: Fredick's Edge, Ar Bamboo, Shepherd's Hut.

Item Type: Cultural/historical.

Group: Lower Garden, Frederick Young's grant.

Area: East Cascade Reserve. The cliff end area of Young's Road overlooking the jetty.

Current Use: Recreation, lookout and grazing.

Former Uses: Agriculture. Look-out.

Statement of Significance: Of significance to the Third Settlement as an early orientation landmark from the sea still well known locally. Earlier look-out for ships. Some 'recent' confusion has resulted in the upper area also being referred to as Shepherd's Hut.

Statement of Integrity: The giant bamboo plant was removed during initial stone quarry operations and there has been a decline in the number of naturally sown trees in the area.

Degree of Significance: Medium.

Management Recommendations: If the area is to be destroyed, the name should be commemorated by a plaque and perhaps a giant bamboo plant nearby."

Fredick's Aege is of historical value as a lookout to the Jetty Area and an early orientation landmark from the sea. Given the localised nature of proposed works at the Old Cascade Quarry, there is unlikely to be an impact on the site.

In addition, for the purposes of the zoning plan, geographical features of Cascade Reserve were divided into two categories: flat land and steep land. As a general rule, the flat lands ought to be regarded as archaeologically sensitive and steeply sloping lands need not (Varman, 1998). Furthermore, it was considered that areas not regarded as archaeologically sensitive may have historical value as historic landscapes, including the cliff and hill above the Jetty Area.

4 Project description

A detailed description of the Project and the recommended construction methodology is as follows; only land-based works herein relate to this HIS:

1. Major plant and equipment is expected to be mobilised from either the east coast of Australia or New Zealand and would generally include:

- a venturi suction pipe
- a jack-up barge
- an appropriately sized backhoe
- a hopper/flat barge and skip bins
- a tug.

Where possible, local plant and equipment such as smaller excavators and trucks would be mobilised to Kingston Pier via Pier Street.

2. A land-based Contractor's working area would be established near Kingston Pier. This would include a temporary site compound area for plant and equipment as well as any temporary site offices on the hardstand area of Kingston Pier (Figure 4-1 and Figure 4-2). Additional services would need to be provided by the Contractor by portable means such as water tanks or portable generators. As required, it is expected that public access to Kingston Pier would be temporarily restricted during construction to ensure that construction activities can be undertaken safely. It is also expected that public access to the Royal Engineers Office (Museum shop and information) and Pier Store (Museum) would be maintained.

On Kingston Pier, a small screening area would be established for screening of maritime artefacts in the removed material. This requires access to seawater to assist with moving sediment through the screens.



Figure 4-1 Land at Kingston Pier and nearby structures.

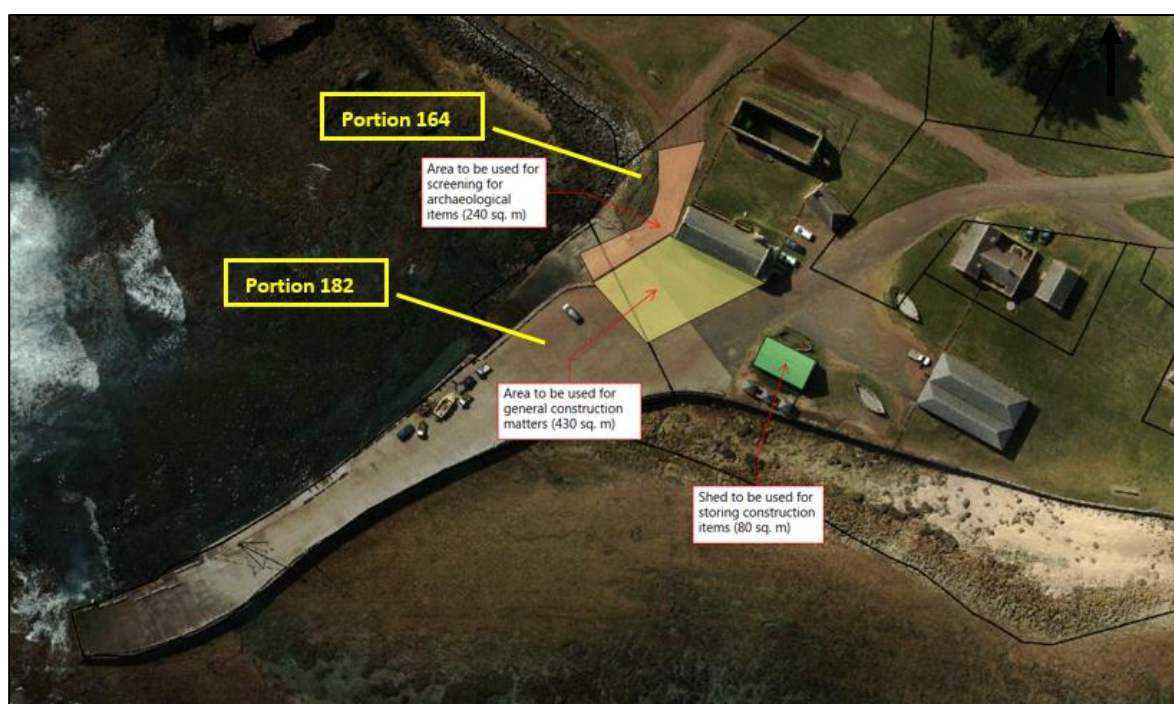


Figure 4-2 Temporary site compound at Kingston Pier.

3. A pre-construction hydrography survey would be undertaken by the Contractor.
4. The augmentation of approximately 5,000 cubic metres (m³) of seabed material at the existing channel to enable the deepening and widening of the channel to between approximately -2.7

metres to -3.2 metres Mean Sea Level. The seabed material (including loose sediment, calcarenite rock and tuff rock) has been assumed to bulk out by 10% once onshore, resulting in a volume of up to 5,500 m³.

Remove loose sediment material (with potentially culturally significant artefacts) from the existing channel, and gullies and cracks of the calcarenite layer using a venturi suction pipe, which would transfer the material into a perforated sediment box sitting on the seabed. The process is as follows:

- the sediment box once sufficiently filled would be lifted onto Kingston Pier using the fisherman's crane and sieved through to identify any artefacts. There is an opportunity to involve the local community in the sieving of the artefacts
- the artefacts would be moved to a secure location (potentially an available building near Kingston Pier) for assessment of significance and subsequent management. Previously, a KAVHA building adjacent to Kingston Pier was made available during the 2007 refurbishment of Kingston Pier and enquiries would be made to see if it could be made available again
- all artefacts found would be recorded, and the significant artefacts would be transferred to KAVHA ownership and managed appropriately (i.e. for storage or display in the KAVHA museum, while the remainder would be reburied in the water near the site or discarded)
- the remaining spoil transported by truck to the land-based disposal site at the Old Cascade Quarry.

Remove the calcarenite layer with a backhoe mounted on a jack-up barge and using hand tools near Kingston Pier. The calcarenite would be placed directly into trucks on Kingston Pier, or the platform of the jack-up barge and transferred to Kingston Pier with a floating hopper or flat topped barge. Given the existing wave climate, it is not considered appropriate for a floating barge to be moored for extended periods of time while it is being progressively filled with excavated material. Skip bins on the jack-up barge could be considered to be filled with excavated material and then transported to Kingston Pier to improve material handling efficiency. The size of the skip bins would be subject to the allowable load for the jack-up barge and trucks to operate. Furthermore, the skip bins could be fitted with a filter over the sump to assist with dewatering the material. The dewatering would be progressively released into the harbour within a silt boom or similar. Once the material is onshore, it would be transported to the land-based disposal site and then screened for artefacts at the required frequency (to be determined as part of the Kingston Pier Underwater Archaeological Management Plan (KPUAMP), where for example, one bin/load sampled out of three). Screening could involve manually breaking up calcarenite over a sieve. Recovered artefacts would be managed as previously described.

Remove the tuff rock material using a backhoe mounted on a jack-up barge and using hand tools near Kingston Pier. The material would be transported to the land-based disposal site and then screened for artefacts. The screening process is either not expected to be required or screened at a lesser frequency than the calcarenite (to be determined as part of the KPUAMP).

5. All spoil would be dumped from the back of the trucks into stockpiles at the land-based onshore disposal site (Figure 4-3). It is estimated that there would be approximately 150 truck movements in total along the proposed route to Old Cascade Quarry. The height of the loose stockpiles would be limited to 3m prior to reworking. The loose sediment material and tuff rock material would be placed directly at the disposal site. The calcarenite would first be placed in a specified sorting area at the disposal site, crushed and then stockpiled. Any spoil that is stockpiled for an extended period of time, albeit unlikely, would be vegetated and moved to flat ground that does not

impede flow paths at the disposal site. Finally, the Contractor will implement erosion and sediment controls around the stockpiles.



Figure 4-3 Land at Old Cascade Quarry.

The spoil has been tested for acid sulfate soils and contamination and has been assessed as suitable for beneficial reuse.

The calcarenite material would be suitable to use as a general fill with good drainage properties, a capping layer to improve storage sites, or as a low-grade sub-base for light traffic roads such as the entry to Old Cascade Quarry. Cement stabilisation could aid the bearing strength of the calcarenite, if required.

The tuff rock material, whilst being a form of rock, is easily broken down into finer particles effectively becoming a soil. The tuff could be broken down using the tracks of an excavator prior to being used as fill material.

Earthworks Design at Old Cascade Quarry

During the modelling of fill options at the onshore disposal site, it was assumed a range of dredge disposal volume between 4,140 m³ and 6,160 m³. As such in the design development, the boundaries of the top of batter varies depending on the total dredge disposal volume, while the footprint of the disposed material remains constant.

The surface of the disposal volume would be graded from south-west to north-east at a grade of -0.8%, allowing rainwater to runoff towards the north-east of site. The batter of the disposed material would be graded at a 3H:1V. A minimum of 200mm topsoil sourced from the site will be spread across the disposed material. This corresponds with a rough surface area between 2,600 to 2,700 m² of topsoil required.

The design slopes and revegetation are required to provide adequate surface drainage and reduce the impact of substantial strength loss of the underlying tuff material when wet.

Construction Methodology

It is expected that the quarry rehabilitation works would be sequenced based on the following construction methodology (to be finalised by the Contractor):

- relocate the 1,400 m³ of topsoil to the north-east corner of the site
- relocate the 350 m³ of rock stockpiles to the north-east corner of the site
- dredge spoil to be properly drained. The tuff material should be drained slightly below the Standard Optimum Moisture Content level in preparation for compaction
- the disposal sediment to be blended with marine sediment to be more trafficable
- trucks transporting spoil would access the site via the access road and unload the spoil to the south of the site for earthworks. Earthworks should be carefully planned and scheduled to maintain good cross-falls during construction
- proceed disposing of the spoil at the south of the site and progressively fill up the southern portions of the site and then work towards the north
- spoil to be compacted in stages
- spoil to be regraded in accordance with design slopes.

For further detail, refer to the Old Cascade Quarry Fill Plan at Figure 4-4 and Appendix D to the EIS.

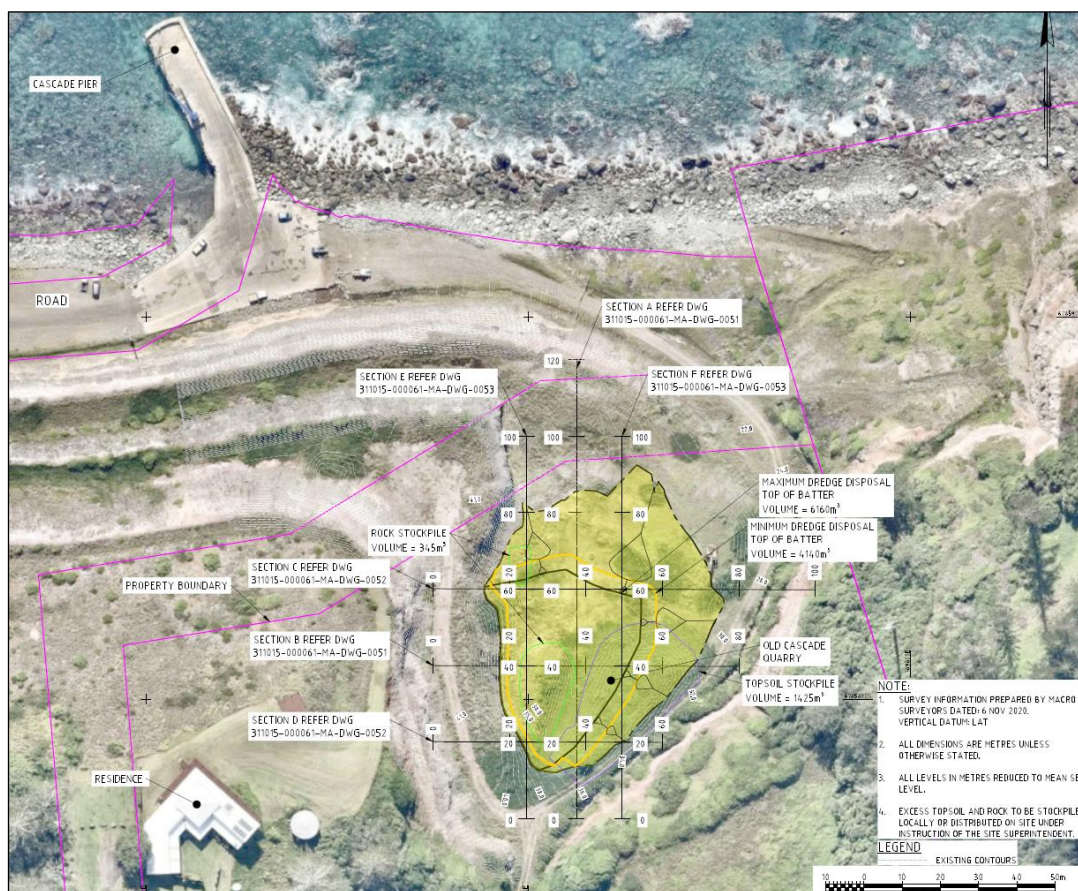


Figure 4-4 Proposed earthworks at Old Cascade Quarry.

6. Pier stabilisation works would be undertaken to mitigate structural impacts, if any, of the channel deepening on Kingston Pier. This would potentially involve concrete plugs and welding existing steel sheet piles as described below.

Previous refurbishment of Kingston Pier was undertaken in 2007. Early refusal was encountered during the installation of some of the steel sheet piles on the western side of Kingston Pier. As a result, there is the potential for undermining of the existing steel sheet pile wall during the Project.

In addition, a recent hydrographic survey and underwater visual assessment by divers showed that this undermining was already occurring, with evidence of loose gravel fill escaping from between the old and existing steel sheet pile wall.

A preliminary structural stability assessment of the existing steel sheet pile wall to withstand the reported vertical design dead and live loads is shown in Figure 4-1.

Table 4-1 Vertical design live loads.

Item	Live Load
250 thick deck	25kPa or 500kN point load over 700mm x 700mm area
200 thick deck south of fisherman's crane	5kPa or 20kN point load over 150mm x 150mm area
200 thick deck north of fisherman's crane	25kPa or 25kN wheel load

The preliminary assessment concluded that:

- the piles are currently highly stressed in bending under the vertical design live loads
- there are six locations along Kingston Pier where the existing sheet pile toe levels are within 300 millimetres (mm) of the -3.2m MSL and may be susceptible to undermining
- structural upgrades for Kingston Pier ought to be considered to support loads imparted by heavier cranes – up to and including 60-tonne.

The preliminary assessment recommended the following to reduce the bending stress to acceptable levels and improve the structural stability of Kingston Pier:

- underwater welding of the clutches at the toe of the existing sheet pile wall
- concrete plugging the six locations with potential for undermining the existing sheet pile wall to prevent loss of material from behind the wall
- seabed material ought not be removed from the toe of existing stone walls at Kingston Pier and the foundation preserved
- augmentation of the existing channel at the toe of Kingston Pier ought to potentially be undertaken using hand-tools to minimise risk of undermining
- to confirm the assumptions of the preliminary assessment, three test pits would be dug, centred on the tidal stairs and approximately 20m apart, each 0.6m wide and 2m deep.

The detailed design of the stabilisation of Kingston Pier would include:

- concrete plugging and grouting up cavities behind the existing sheet pile wall to form a gravity retaining wall system
- welding the existing sheet piles to distribute stress across the entire wall

- forming a concrete toe in front of the existing sheet pile wall below the seabed to prevent future undermining.
7. Pier stabilisation works would be undertaken to mitigate structural impacts of the channel deepening on Kingston Pier. This would most likely involve welding together each sheet-pile of the existing sheet-pile wall, grouting up the loose gravel fill between the old sheet-pile wall and the existing sheet-pile wall and installing a concrete toe in front of the sheet-pile wall.
 8. For the remediation of the rock revetment and extension to Flagstaff Hill, the construction will utilise as much rock as available on site and sourced from the island. The rock will be moved or placed with an excavator, progressively tracking along the freshly replaced rock on the top of the revetment. The rock will be placed to the design slopes and levels which match the existing revetment and extend to Flagstaff Hill. Individual rocks would be placed according to the design by an excavator. Minor earthworks may be required to reprofile the site prior to rock placement.
 9. The Slaughter Bay Seawall to be repaired using standard masonry techniques of regrouting and repointing and rebuilding from existing stone units. Some mass concrete may be used to repair wall sections with significant loss of stones.
 10. A single piled channel marker would be installed at the rock-shelf edge. The marker would be constructed from a steel pile potted into the rock shelf while working during the lower tides.
 11. A post-construction hydrography survey would be carried out to ensure the channel has met the design channel depth. The seabed would be made clean by removal of any loose or stray rocks in the area.
 12. Construction site would be demobilised and plant removed from Norfolk Island.

5 Legislative and statutory planning controls

5.1 Commonwealth legislation

5.1.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act, a referral is required to the Department of Agriculture, Water and the Environment for actions that have the potential to significantly impact on Matters of National Environmental Significance (MNES) or the environment where: a) actions proposed are on, or will affect Commonwealth land and the environment, or b) Commonwealth agencies are proposing to take an action.

World Heritage properties and National Heritage places are listed as MNES under the EPBC Act. This includes the KAVHA.

5.2 Local legislation

5.2.1 Planning Act 2002 (NI)

The *Planning Act 2002 (NI)* provides for the *Norfolk Island Plan 2002 (NI)* which establishes the controls for the use and development of land in Norfolk Island and for related purposes.

5.2.2 Norfolk Island Plan 2002 (NI)

The *Norfolk Island Plan 2002 (NI)* has been prepared in accordance with the provisions of the *Planning Act 2002 (NI)*. It is the strategic and statutory framework for land management and the future development of Norfolk Island. The *Planning Act 2002 (NI)* and *Norfolk Island Plan 2002 (NI)* apply to land-based works located above the MHWL. Land-based works are subject to environmental assessment and planning approval from the NIRC pursuant to the provisions of these environmental planning instruments.

Kingston Pier is zoned "Conservation". Pursuant to Clause 50(1), the objectives for the Conservation zone are as follows:

- "(a) provide opportunities for a very limited range of low impact use or development;*
- (b) give highest priority to ecologically sustainable development practices that contribute to biodiversity maintenance and preservation;*
- (c) encourage management goals and practices that promote the conservation and protection of areas with very high natural and/or heritage conservation values;*
- (d) allowance should be made to enable continuation of practices that have important cultural significance to Norfolk Island's residents; and*
- (e) encourage management goals and practices that promote cliff and foreshore stability in the coastal portion of the zone."*

The Old Cascade Quarry is zoned "Rural". Pursuant to Clause 10(2), the objectives for the Rural zone are as follows:

- "(a) preserve larger parcels of land so that viable agriculture can be maintained;*

(b) encourage use or development within the zone so that the existing landscape quality and visual amenity is maintained and preserved;

(c) preserve large parcels of land that contribute to the maintenance and protection of biodiversity by preserving remnant native vegetation and habitat;

(d) avoid fragmentation of the land in the zone. Retention of large parcels of land will continue to contribute to maintenance of water quality by retaining vegetation and minimising erosion;

(e) encourage use or development of land within the zone for low intensity, predominantly rural use or development to buffer sensitive conservation areas and provide valuable open space; and

(f) encourage ecologically sustainable development practices that contribute to biodiversity maintenance and preservation."

Kingston Pier is identified on the Heritage Map Overlay within the KAVHA, listed on the Norfolk Island Heritage Register. The Old Cascade Quarry is not identified on the Heritage Map Overlay; however, it is located in the vicinity of Cascade Reserve, listed on the Norfolk Island Heritage Register. Pursuant to Clause 74(1) of the *Norfolk Island Plan 2002* (NI), land-based works located on land identified on the Heritage Overlay Map may only be carried out with development approval.

5.2.3 Heritage Act 2002 (NI)

The *Heritage Act 2002* (NI) provides for the conservation of the heritage of Norfolk Island and for related purposes. It contains the provisions for the establishment of the Norfolk Island Heritage Register which lists objects and places of significance to the heritage of Norfolk Island. The KAVHA is listed on the Norfolk Island Heritage Register.

Section 28 states that, for a Development Application under the *Planning Act 2002* (NI) that is in relation to, or is likely to affect a heritage item, a HIS is to be prepared.

5.2.4 Public Reserves Act 1997 (NI)

The *Public Reserves Act 1997* (NI) provides for the management and protection of public reserves on Norfolk Island.

Kingston Common Reserve

Kingston Pier is located in the vicinity of Kingston Common Reserve (Figure 5-1). The Rock Revetment and Slaughter Bay Seawall are located within the Kingston Common Reserve.

In accordance with the Kingston Common Reserve Plan of Management and Part 5 of the *Public Reserves Act 1997* (NI), it is expected that the Project would not be a controlled activity. There would be no adverse impacts to the Kingston Common Reserve. The repair works to the Rock Revetment and Slaughter Bay Seawall to be undertaken using appropriate conservation techniques under the supervision of the KAVHA Conservation Services Coordinator and the KAVHA Project Manager in accordance with Section 15.6.1 of the Kingston Common Reserve Plan of Management. As a result, an approval and/or permit would not be required from the KAVHA Project Manager and/or the Conservator of Public Reserves.

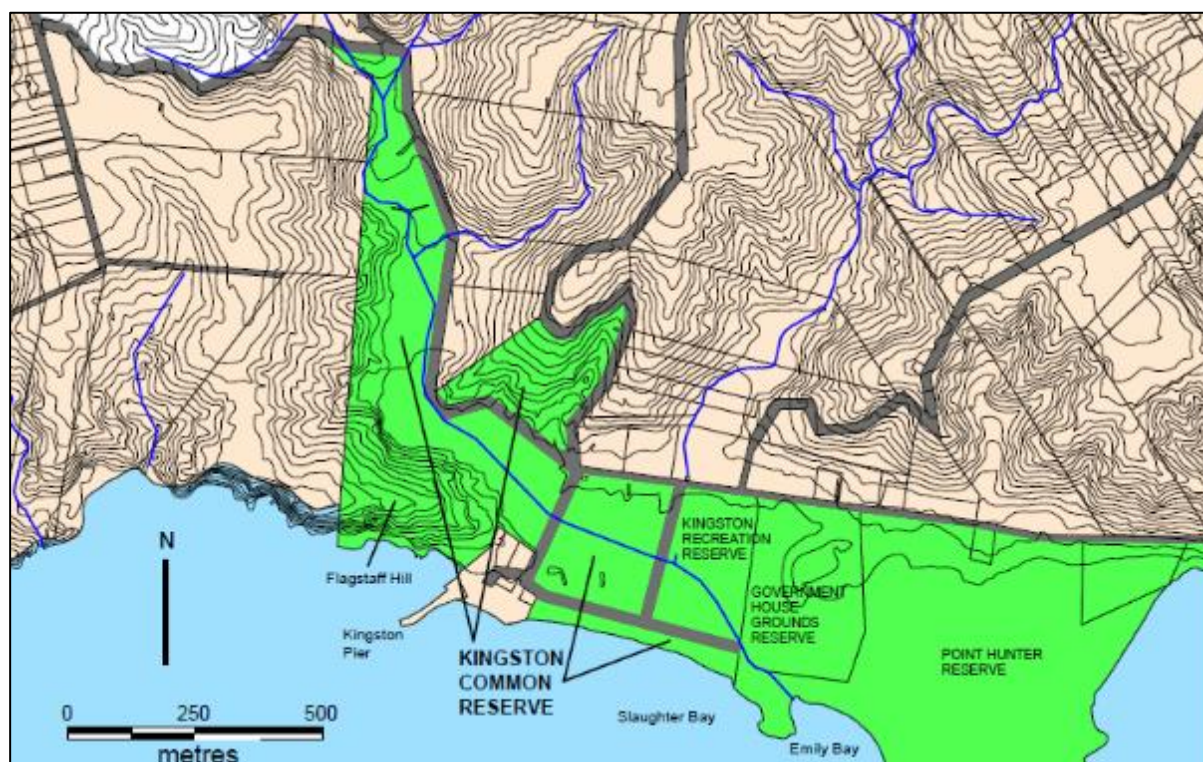


Figure 5-1 Kingston Common Reserve (Source: Norfolk Island Parks and Forestry Service, 2003a).

Cascade Reserve

The land-based works at Old Cascade Quarry are located in the vicinity of Cascade Reserve (Figure 5-2). The privately owned Old Cascade Quarry is located east of Cascade Pier and immediately adjacent to Cascade Cliff.

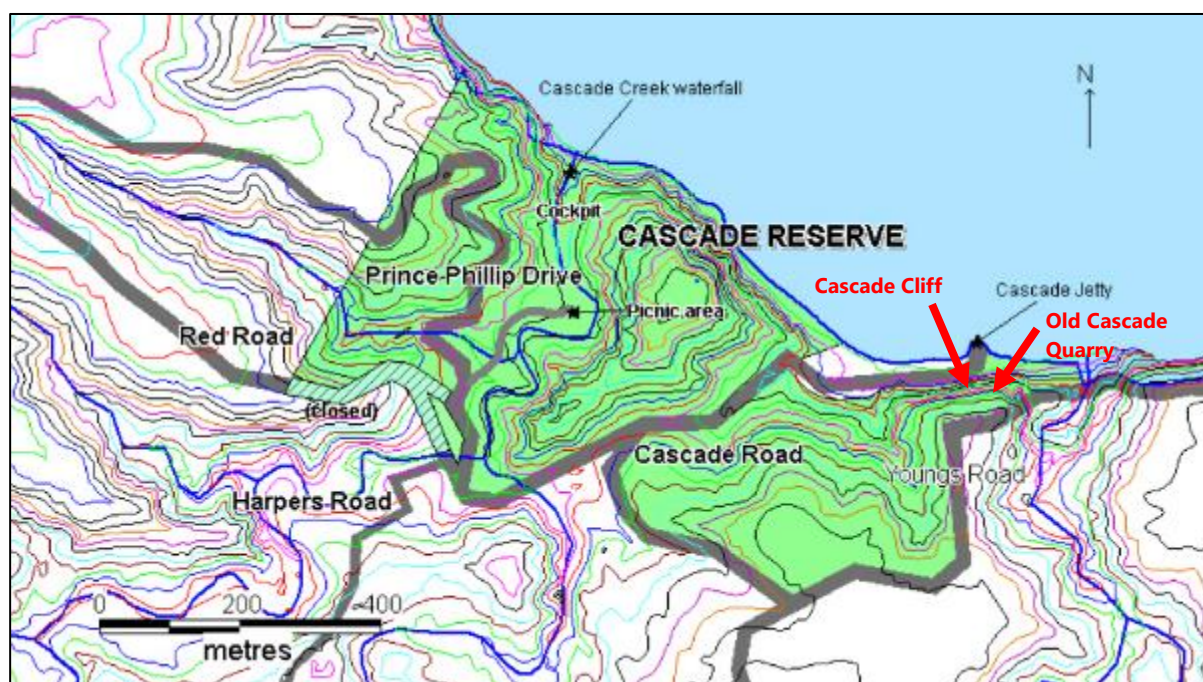


Figure 5-2 Cascade Reserve (Source: Norfolk Island Parks and Forestry Service, 2003b).

The use of public reserves to stockpile spoil is not within the objects of the *Public Reserves Act 1997* (NI) (Norfolk Island Parks and Forestry Service, 2003c). Furthermore, it is noted that:

"The dumping and/or stockpiling of soil, spoil or fill shall not be permitted in a reserve unless that stockpile is in accordance with a plan of management, or in the opinion of the Conservator of Public Reserves, is essential to undertaking or completing works in a public reserve to:

- *ensure public safety; and/or*
- *conserve the environment".*

The Cascade Reserve Plan of Management does not describe Old Cascade Quarry nor contain provisions for the stockpiling of spoil.

5.3 Kingston and Arthur's Vale Historic Area Draft Development Control Plan 2019

The Project has had consideration for the relevant provisions of the draft Development Control Plan (DCP). In the case of any inconsistencies between the draft DCP and the *Norfolk Island Plan 2002* (NI), the provisions of the *Norfolk Island Plan 2002* (NI) prevail. It is noted that it is:

"the preference of NIRC that, should a proposal require approval under the EPBC Act that this process should be pursued prior to lodging a Development Application."

Section 4 of the DCP describes the controls for 'Precinct H – Landing Place Ridge (known as Kingston Pier)' (Precinct H). In addition, Section 6 describes the general provisions of the KAVHA.

The Project has had consideration for the relevant objectives and controls of the draft DCP.

5.4 Kingston and Arthur's Vale Historic Area Heritage Management Plan

The KAVHA HMP sets out conservation and management policies for the KAVHA. The Project has had consideration for the following relevant conservation and management policies:

- Section 8.1 Natural Environment
- Section 8.3 Structures and Objects
- Section 8.4 Archaeology
- Section 8.6 Sustainable Development

In addition, Sections 8.6.7 and 8.6.8 of the KAVHA HMP describe key elements of the approval process and impact assessment, respectively.

5.5 Kingston and Arthur's Vale Historic Area Cultural Landscape Management Plan

The Kingston and Arthur's Vale Historic Area Cultural Landscape Management Plan (KAVHA CLMP) builds upon the existing conservation and management policies outlined in the KAVHA HMP. It provides landscape management guidance for the KAVHA.

The Project has had consideration for the significant views and important visual relationships contributing to the KAVHA's cultural landscape significance.

5.6 Kingston and Arthur's Vale Historic Area Archaeological Zoning and Management Plan

The KAVHA AZMP builds upon the existing conservation and management policies outlined in the KAVHA HMP. It identifies known and potential archaeological resources within the KAVHA and their significance, and outlines strategies and policy guidelines for appropriate management of archaeological resources.

The Project has had consideration for the archaeological resources at Precinct H.

6 Assessment

This assessment has been undertaken with consideration to the following:

- the relevant provisions of the *Norfolk Island Plan 2002 (NI)*
- Section 28 of the *Heritage Act 2002 (NI)*
- the relevant Articles of *The Burra Charter*
- the relevant significant impact criteria under the MNES guidelines (Department of Environment, 2013).

6.1 Norfolk Island Plan 2002 (NI)

For the purposes of assessing the impact(s), if any, on the heritage significance of the heritage items, consideration has been given to the relevant provisions of the *Norfolk Island Plan 2002 (NI)* as shown in Table 6-1.

Table 6-1 Relevant provisions of the *Norfolk Island Plan 2002 (NI)*.

Provision	Comment
Clause 3.2.8. Objective – Protect and enhance Norfolk Island’s environmental and heritage qualities (1) The objectives will be achieved by: (a) identifying those areas that demonstrate conservation values, the protection of which, contributes to the ecological diversity, cultural and natural heritage values, and tourism appeal of Norfolk Island	The KAVHA and Cascade Reserve demonstrate conservation values which are significant to the heritage of Norfolk Island.
(b) minimising adverse impacts of use or development on the areas of unique environmental and heritage value including the National Park, reserves that have conservation values, the coastal and cliff environments, remnant vegetation, and the Kingston and Arthur’s Vale Historic Area and its landscape setting	The land-based works would not adversely impact extant buildings, structures, ruins, landscapes or land-based subsurface archaeological remains that are associated with the KAVHA. The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would respect and enhance the integrity of the structure and enable the continuity of culturally significant events and uses. It is considered to be an appropriate part of conservation to improve structural integrity and physically protect the fabric from further deterioration. The Old Cascade Quarry site, cliff and hill above the Jetty Area would have had historical value as historic landscapes prior to extensive modifications from previous works. The proposed stockpiling, earthworks and filling at the Old Cascade Quarry may disturb subsurface archaeological potential. Proposed mitigation measures are described in Section 8 to minimise potential heritage impacts.

Provision	Comment
(c) acknowledging that some areas of conservation value have existing use or development that is sympathetic with environmental and heritage qualities and that these should be maintained by using zoning and special area provision mechanisms	The land-based works would have a temporary impact on the continuation of existing uses, access and local amenity at Kingston Pier during construction.
(d) buffering areas with very high conservation value from use or development that may have a detrimental impact on these conservation areas	The land-based works would not adversely impact other historic buildings and structures within the KAVHA nor the Kingston Common Reserve.
(e) recognising, respecting and complementing existing management structures and objectives for National Park, public reserves, and the Kingston and Arthur's Vale Historic Area	The Project has had consideration for management plans for the KAVHA, Kingston Common Reserve and Cascade Reserve.
(f) ensuring that use or development proposals demonstrate that they will not have a detrimental impact on the environmental or heritage qualities of Norfolk Island	This HIS has been prepared to assess the impact(s), if any, on the heritage significance of the heritage items.
(g) encouraging use or development that has low environmental impact and where appropriate, clustering use or development that has the potential for detrimental impacts on the environment and heritage	
(h) protecting and conserving places that have special natural, cultural, and built heritage value from use or development that would otherwise cause a significant negative impact on the environmental and/or heritage values of these areas	
(i) ensuring that where use or development is carried out in a location which has heritage conservation values, that such use or development is sympathetic to the heritage values of the place	
Clause 77. Use or development in the Kingston and Arthur's Vale Historic Area (4) The specific objectives of the Plan in relation to the KAVHA are to: (a) maintain and preserve the archaeological, historical, landscape, cultural and built heritage significance of KAVHA	The land-based works would not adversely impact extant buildings, structures, ruins, landscapes or land-based subsurface archaeological remains that are associated with the KAVHA.
(b) ensure that use and development that would adversely impact on the historic integrity of the KAVHA remains prohibited	The land-based works would not have a significant impact on the historic integrity of the KAVHA which includes buildings and structures. The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would respect and enhance the integrity of the structure and enable the continuity of culturally significant events and uses.

Provision	Comment
(c) encourage use to be made of existing facilities within KAVHA that are not contrary to the approved Conservation Management Plan for the area	The land-based works would have a temporary impact on the continuation of existing uses, access and local amenity at Kingston Pier during construction. However, the existing use would be fully restored upon completion of construction.
Clause 87. Heritage (1) The principles relating to heritage are: (a) proposals for use or development shall demonstrate how that use or development will not harm and/or degrade the cultural heritage of Norfolk Island	This HIS has been prepared to assess the impact(s), if any, on the heritage significance of the heritage items. This HIS will accompany the EPBC Act Referral and EIS prepared for the Project which will also describe potential heritage impacts.
(b) use or development shall be undertaken in areas and in a manner which conserves items, sites, areas, and customs of historic and cultural value	The land-based works would not adversely impact extant buildings, structures, ruins, landscapes or land-based subsurface archaeological remains that are associated with the KAVHA. Stockpiling, earthworks and filling at the Old Cascade Quarry would assist with its future rehabilitation. However, these activities may disturb subsurface archaeological potential. Proposed mitigation measures are described in Section 8 to minimise potential heritage impacts.
(c) any use or development carried out on or in the vicinity of an item, area, feature, customary activity, or site with conservation value, shall adequately respect natural and cultural heritage values and those items, areas, features, customary activities, and sites shall be protected from use or development that threatens those values. The protection and conservation of items, sites, areas, features, and customary activities of historic and cultural importance applies to those previously identified and included in this Plan, and those which subsequently become known to the executive member	Refer to previous responses.
(d) use or development of any item, area, feature, customary activity, or site with conservation value listed in the Norfolk Island Heritage Register shall be carried out in accordance with the principles of the Burra Charter	Refer to Section 6.3.
(e) use or development involving any historic building, group of buildings, or ruins, or groups of ruins, or combination of buildings and ruins, shall respect the associated archaeological, aesthetic, historic, and social values and adequately respect the design and construction elements of the building(s) and/or ruin(s), and particularly the relationship of spaces, orientation, form, mass, scale, fenestration, detailing, style, materials and colour.	Archaeological artefacts identified from the screening of spoil would seek to be securely stored within an available building near Kingston Pier such as the single Boatshed or other nearby building for assessment and subsequent management. The proposed temporary use of an adjacent building would not impact on heritage significance.

6.2 Heritage Act 2002 (NI)

For the purposes of assessing the impacts, if any, on the heritage significance of the heritage items, consideration has been given to Section 28 of the *Heritage Act 2002 (NI)* as shown in Table 6-2.

Table 6-2 Section 28 of the *Heritage Act 2002 (NI)*

Provision	Comment
Section 28. Heritage impact statements and conservation management plans for development under Planning Act 2002 (1) For a development application under the <i>Planning Act 2002</i> that is in relation to, or is likely to affect, a heritage item — (a) the applicant shall prepare, in relation to that item, a heritage impact statement; and (b) the Minister shall also have regard to the heritage impact statement for the item.	This HIS has been prepared to assess the impact(s), if any, on the heritage significance of the heritage items.

6.3 The Burra Charter

Part B3 – General Provisions of the *Norfolk Island Plan 2002* describes the principles with which use or development shall be consistent. In accordance with Clause 87, a key principle relating to heritage is:

"(d) use or development of any item, area, feature, customary activity, or site with conservation value listed in the Norfolk Island Heritage Register shall be carried out in accordance with the principles of the Burra Charter".

The Australia ICOMOS Charter for Places of Cultural Significance 2013 provides "guidance for the conservation and management of places of cultural significance". The Project has been assessed in Table 6-3 with regard to the relevant Articles of *The Burra Charter*.

Table 6-3 Relevant Articles of *The Burra Charter*.

Article	Response
Article 7. Use	
7.1 Where the <i>use</i> of a <i>place</i> is of <i>cultural significance</i> it should be retained.	The works would have temporary impacts on the continuation of existing port operations and access to Kingston Pier during construction. There would be no adverse impact on any other heritage elements in Precinct H of the KAVHA including the Slaughter Bay Seawall that will be repaired to ensure its historic is continued. The use of the place will be retained.
7.2 A <i>place</i> should have a <i>compatible use</i> .	The use of the place will retain its cultural significance and provide for the continuation of activities and practices that contribute to cultural significance.

Article	Response
Article 8. Setting	
<i>Conservation</i> requires the retention of an appropriate <i>setting</i>. This includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the <i>cultural significance</i> of the <i>place</i>. New construction, demolition, intrusions or other changes which would adversely affect the setting or relationships are not appropriate.	The works would have a temporary impact on the visual setting of the place during construction such as significant views and important visual relationships. There would be no long-term impact on the visual setting nor the use and activities of the place.
Article 15. Change	
15.1 Change may be necessary to retain <i>cultural significance</i>, but is undesirable where it reduces cultural significance. The amount of change to a <i>place</i> and its <i>use</i> should be guided by the <i>cultural significance</i> of the place and its appropriate <i>interpretation</i>.	The Project would result in temporary changes to the place to accommodate the works. However, change would not significantly reduce cultural significance.
15.2 Changes which reduce <i>cultural significance</i> should be reversible, and be reversed when circumstances permit.	The land-based contractor's working area at Kingston Pier would be demobilised upon completion of construction. Therefore, temporary changes to the place from such activities are considered to be reversible.
15.3 Demolition of significant <i>fabric</i> of a place is generally not acceptable. However, in some cases minor demolition may be appropriate as part of <i>conservation</i>. Removed significant fabric should be reinstated when circumstances permit.	The stabilisation of Kingston Pier and repairs to the Rock Revetment and Slaughter Bay Seawall would require changes to fabric to improve structural integrity and physically protect the fabric. Therefore, changes to fabric are considered to be appropriate as part of conservation.
Article 22. New work	
22.1 New work such as additions or other changes to the <i>place</i> may be acceptable where it respects and does not distort or obscure the <i>cultural significance</i> of the place, or detract from its <i>interpretation</i> and appreciation.	New work would respect the cultural significance of the place and allow for the continuation of existing uses. The stabilisation of Kingston Pier and repairs to the Rock Revetment and Slaughter Bay Seawall would improve structural integrity and physically protect the fabric.
22.2 New work should be readily identifiable as such, but must respect and have minimal impact on the <i>cultural significance</i> of the <i>place</i>.	Stabilisation and repair works may be readily identifiable when viewed from the Landing Place, Kingston Pier and the harbour adjacent to Kingston Pier and along Slaughter Bay foreshore.
Article 33. Removed fabric	
Significant <i>fabric</i> which has been removed from a <i>place</i> including contents, fixtures and objects, should be catalogued, and protected in accordance with its <i>cultural significance</i>. Where possible and culturally appropriate, removed significant fabric including contents, fixtures and objects, should be kept at the place.	Archaeological artefacts may be stored, displayed or reburied in accordance with its cultural significance. The display of remains would contribute to the interpretation and appreciation of the cultural significance of the place.

6.4 Matters of National Environmental Significance

World Heritage properties and National Heritage places are listed as MNES under the EPBC Act. The KAVHA is of World and National heritage significance. Cascade Reserve is a nominated place on the Commonwealth Heritage List¹.

According to the MNES guidelines, the significant impact criteria are as follows:

"An action is likely to have a significant impact on the World Heritage values [and/or National Heritage values] of a declared World Heritage property [and/or National Heritage place] if there is a real chance or possibility that it will cause:

- *one or more of the World [and/or National] Heritage values to be lost*
- *one or more of the World [and/or National] Heritage values to be degraded or damaged, or*
- *one or more of the World [and/or National] Heritage values to be notably altered, modified, obscured or diminished."*

For the purposes of assessing the impact(s), if any, on the heritage significance of the heritage items, consideration has been given to the relevant significant impact criteria under the MNES guidelines as shown in Table 6-4.

Table 6-4 Heritage values associated with World Heritage properties and National Heritage places.

Heritage Values	Comment
Natural heritage values	The land-based works would not damage or alter landscape features, inhibit landscape processes or modify waterbodies in the KAVHA. In addition, the land-based works would not reduce, fragment or isolate plant and animal populations in the KAVHA Further, the land-based works would not introduce noise or pollutants with substantial, long-term or permanent impacts. As a result, the land-based works would not have a significant impact on natural heritage values.
Cultural heritage values	The stabilisation of Kingston Pier would result in the alteration and removal of some modified fabric. The remediation of the Rock Revetment and Slaughter Bay Seawall would involve alteration of existing and the addition of new fabric. However, these actions are considered to be an appropriate part of conservation to improve structural integrity and physically protect the fabric from further deterioration. The work would also be consistent with the use and conservation of KAVHA and Kingston Pier. In addition, the work would retain cultural significance and provide for the continuation of activities and practices that contribute to cultural significance. Therefore, it is considered that the stabilisation work would not substantially alter fabric nor result in a significant impact on the KAVHA. In addition, the land-based works would not adversely impact extant buildings, structures, ruins, landscapes or land-based subsurface archaeological remains that are associated with the KAVHA. As a result, the land-based works would not have a significant impact on cultural heritage values.

¹ In other words, it is not registered on the Commonwealth Heritage List.

6.4.1 Heritage values

Table 6-5 – Table 6-7 considers the potential impact on the official heritage values that constitute the heritage significance of the KAVHA as described on the World, Commonwealth and National Heritage Lists, respectively. It is considered that the heritage values of the KAVHA are generally consistent across the various heritage listings. It is also considered that the Norfolk Island Heritage Register values that comprise the heritage significance of the KAVHA are included across its World, Commonwealth and National listings.

Finally, it is noted that all heritage values of the place are protected, whether listed or otherwise, under the definition of the 'environment' in the EPBC Act.

Table 6-5 World heritage values of the KAVHA.

Heritage values	Key Attributes / Potential Impact
Criterion (iv) <i>to be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history</i>	Summary of Key Attributes As part of the Australian convict sites, the KAVHA is an example of the way in which conventional forced labour and national prison systems transformed into a system of deportation and forced labour forming part of the British Empire's vast colonial project. It illustrates a penal colony and bears witness to a penitentiary system, the objective of which ranged from punishment through to the rehabilitation of convicts. Potential Impact The works would not adversely impact extant buildings, structures, ruins, landscapes or land-based subsurface archaeological remains that are associated with, and provide an understanding of settlement and penal colony activities at the KAVHA.
Criterion (vi) <i>to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance</i>	Summary of Key Attributes The transportation of criminals, delinquents and political prisoners to colonial lands between the 18th and 20th centuries is an important aspect of human history, particularly with regard to its penal, political and colonial themes. As part of the Australian convict sites, the KAVHA provides an example of this history and the associated symbolic values derived from discussions in modern and contemporary European society. It illustrates an active phase in the occupation of colonial lands and the creation of a colonial population from punishment through to rehabilitation and social integration of convicts. Potential impact The works would not impact on the penal, political and colonial themes of the KAVHA nor the evidence which demonstrates the historical occupation and development of the land. The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would improve the integrity of the structure and enable the continuity of culturally significant events and living traditions at the place. This includes the annual Anniversary Bounty Day Celebrations which commemorate the arrival of the Pitcairn Islanders on 8 June 1856.

Table 6-6 Commonwealth heritage values of the KAVHA.

Heritage values	Key Attributes / Potential Impact
Criterion A Processes	Summary of Key Attributes KAVHA demonstrates historical processes of four distinct settlement periods. Extant features such as buildings, ruins and landscapes as well as artefacts demonstrate the historical processes and practices at the place, inclusive of fabric and artefacts associated with the <i>HMS Sirius</i>. The KAVHA is also significant for its geology and biology including the marine areas. Potential Impact The works would not impact extant buildings, ruins, landscapes or land-based subsurface archaeological remains which provide an understanding of the settlement periods. The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would improve the integrity of the structure and enable the continuity of culturally significant activities and processes at the place.
Criterion B Rarity	Summary of Key Attributes KAVHA demonstrates rare association and evidence of pre-European Polynesian settlement in Australia as well as extensive subsurface archaeological remains of early European settlement. The natural values of Cemetery Bay are unique to Norfolk Island. Potential Impact The works would not impact on land-based subsurface archaeological evidence of European settlement at the KAVHA. The works would also not impact on the natural values of Cemetery Bay.
Criterion C Research	Summary of Key Attributes KAVHA demonstrates archaeological research potential in understanding the historical occupation and colonization of Norfolk Island across different settlement periods, including artefacts and remains, ongoing culture, archives and fabric associated with engineering and technology. Potential Impact The works would not impact on land-based subsurface archaeological evidence of European settlement at the KAVHA. The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would protect fabric.
Criterion D Characteristic values	Summary of Key Attributes KAVHA demonstrates extant buildings, structures and remains indicative of the activities and historic development of settlements. Potential Impact The works would not impact extant buildings, structures, ruins, land-based subsurface archaeological remains or landscapes that are associated with settlement activities. The integrity of Kingston Pier, Rock Revetment and Slaughter Bay Seawall will be respected and enhanced.
Criterion E Aesthetic characteristics	Summary of Key Attributes KAVHA demonstrates aesthetic qualities of landscape and setting which are enhanced by elements including extant buildings, ruins, historic associations, the seascape and views.

Heritage values	Key Attributes / Potential Impact
	Potential Impact The works would have a temporary visual impact during construction on significant views and important visual relationships. However, residents and visitors would still be able to interpret and appreciate the aesthetic characteristics of the place.
Criterion G Social value	Summary of Key Attributes KAVHA demonstrates significant associations between the built and natural environment and Norfolk Island residents. It is a place of ongoing uses including continuity of the working port at Kingston Pier as well as areas for recreation, social and cultural events, and museums. Kingston Pier is of social significance to the Norfolk Island community. Potential Impact Kingston Pier is of high social value. The works would have temporary impacts on the continuation of existing port operations and access to Kingston Pier during construction. The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would improve the integrity of the structure and enable the continuity of culturally significant activities and processes at the place.
Criterion H Significant people	Summary of Key Attributes KAVHA demonstrates significant associations with early Australian identities. Potential Impact There would be no impact on associations with early Australian identities.

Table 6-7 National heritage values of the KAVHA.

Heritage values	Key Attributes / Potential Impact
Criterion A Events, Processes	Summary of Key Attributes KAVHA demonstrates historical processes of four distinct settlement periods. Extant features such as buildings, ruins and landscapes as well as artefacts demonstrate the historical events, processes and practices at the place. The KAVHA is an outstanding example of a place of severe punishment. Potential Impact The works would not impact extant buildings, ruins, landscapes or land-based subsurface archaeological remains which provide an understanding of the historical development at the place. The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would improve the integrity of the structure.
Criterion B Rarity	Summary of Key Attributes KAVHA is uncommon as a place where pre-European Polynesian settlement and the European community has lived and practiced cultural traditions. Potential Impact The works would not impact on land-based subsurface archaeological evidence of European settlement. The works would also not impact on the ongoing use of the Cemetery.

Heritage values	Key Attributes / Potential Impact
Criterion C Research	Summary of Key Attributes KAVHA demonstrates archaeological research potential in understanding pre-European Polynesian culture, exploration and settlement patterns as well as the living and working conditions of Europeans, and changes in penal practices and philosophy during the period of convict transportation. Potential Impact The works would not impact on land-based subsurface archaeological evidence of European settlement which may contribute to an understanding of the settlement history of Norfolk Island.
Criterion D Principal characteristics of a class of places	Summary of Key Attributes KAVHA demonstrates extant elements of a longstanding penal settlement including buildings, structures and remains indicative of the activities and historic development associated with settlement. The role of harsh labour as punishment is evident in the archaeological remains of extant structures such as Kingston Pier. Potential Impact The works would not impact extant buildings, structures, ruins, land-based subsurface archaeological remains or landscapes that are associated with settlement activities. The integrity of Kingston Pier, Rock Revetment and Slaughter Bay Seawall will be respected and enhanced.
Criterion E Aesthetic characteristics	Summary of Key Attributes KAVHA demonstrates aesthetic qualities of landscape and setting which are enhanced by elements including extant buildings, ruins, historic associations, the seascape and views. Potential Impact The works would have a temporary visual impact during construction on significant views and important visual relationships. However, residents and visitors would still be able to interpret and appreciate the aesthetic characteristics of the place.
Criterion G Social value	Summary of Key Attributes KAVHA demonstrates significant associations with the Pitcairn Islanders and their descendants. It is valued as a place of ongoing uses including continuity of the working port at Kingston Pier as well as areas for recreation, social and cultural events, and museums. Potential Impact The works would have temporary impacts on the continuation of existing port operations and access to Kingston Pier during construction. The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would improve the integrity of the structure and enable the continuity of culturally significant activities and processes at the place.
Criterion H Significant people	Summary of Key Attributes KAVHA demonstrates significant associations with early Australian identities.

Heritage values	Key Attributes / Potential Impact
	Potential Impact There would be no impact on associations with early Australian identities.

In addition, Table 6-8 considers the potential impact on the Norfolk Island Heritage Register values that comprise the heritage significance of Cascade Reserve.

Table 6-8 Norfolk Island Heritage Register values of Cascade Reserve.

Heritage values	Potential Impact
Location of the First Settlement township and farm of Phillipsburg	The Project is located in the vicinity of Cascade Reserve and would have no impact on artefacts associated with the settlement such as former roads, pits and dugouts.
Remnants of native coastal forest	The Project is located in the vicinity of Cascade Reserve and would have no impact on original vegetation. In addition, Old Cascade Quarry has been previously cleared and disturbed.

7 Conclusion

This HIS has addressed the relevant legislative and statutory conservation planning controls as well as the relevant significant impact criteria under the MNES guidelines (Department of Environment, 2013) and the relevant Articles of *The Burra Charter*.

The conclusions of this HIS are as follows:

- the land-based works are located in:
 - the Kingston and Arthur's Vale Historic Area (KAVHA) which is listed on the UNESCO World Heritage List as one of the 11 places that make up the 'Australian Convict Sites' World Heritage serial listing, Commonwealth Heritage List (excluding areas of freehold tenure), National Heritage List and Norfolk Island Heritage Register
 - in the vicinity of Cascade Reserve which is a nominated place on the Commonwealth Heritage List and is listed on the Norfolk Island Heritage Register.
- The stabilisation of Kingston Pier, Rock Revetment and Slaughter Bay Seawall would respect and enhance the integrity of the structure and enable the continuity of culturally significant events and uses. It is considered to be an appropriate part of conservation to improve structural integrity and physically protect the fabric from further deterioration
- The land-based works would not adversely impact extant buildings, structures, ruins, landscapes or land-based subsurface archaeological remains that are associated with the KAVHA
- The temporary use of an available building near Kingston Pier such as the single Boatshed to store archaeological artefacts would not impact heritage significance
- The stockpiling, earthworks and filling at the Old Cascade Quarry may disturb subsurface archaeological potential.

In summary, the land-based works would not have a significant impact on the World and National heritage values of the KAVHA under the EPBC Act.

Therefore, it is considered that on heritage grounds, the land-based works associated with the Project can be supported. Finally, the proposed mitigation measures in Section 8 will be implemented to minimise potential heritage impacts.

8 Proposed Mitigation Measures

The proposed mitigation measures are listed in Table 8-1.

Table 8-1 Proposed mitigation measures.

Mitigation Measure	Responsibility	Phase
The Old Cascade Quarry will be inspected and surveyed to determine whether any above-ground archaeological potential exists that may be associated with Knight's Farm (Item No. 79) or Fredick's Aege (Item No. 83).	Project Archaeologist	Pre-Construction
A no-go zone will be established at the grassed area above the existing rock revetment to protect the reported presence of subsurface archaeology.	Contractor	Pre-Construction
Screening for maritime artefacts will be carried out by a qualified maritime archaeologist to determine whether they are associated with a historic shipwreck such as <i>HMS Sirius</i> .	Project Archaeologist and Contractor	Construction
In the event that land-based archaeological artefacts are discovered, all works will cease. A qualified archaeologist will be engaged to determine and document the nature of the unexpected archaeological finds and the Commonwealth Heritage Officer contacted immediately.	Contractor	Construction

9 References

Australia ICOMOS (2013), The Burra Charter, available at: <https://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf>

Department of Environment (2013), Matters of National Environmental Significance: Significant impact guidelines 1.1, available at: https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf

Extent Heritage (2019), Kingston and Arthur's Vale Historic Area (KAVHA) Archaeological Zoning and Management Plan.

Jean Rice Architect, Context and GML Heritage (2016), Kingston and Arthur's Vale Historic Area Heritage Management Plan. Varman, R (1998), Archaeological Zoning Plan: Phillipsburgh/Cockpit Historic Site Part 1 Historical, available at: <http://dx.doi.org/10.4227/11/50B428B1465A7>.