Appendix J

Contact details for the proponent and the names of the persons involved in preparing the PER and work done by each

Contact details of proponent:

Department of Infrastructure, Transport, Regional Development, Communities and the Arts

Phone: 1800 075 001(within Australia) or +61 2 6274 7111 (from outside Australia)

Email: clientservice@infrastructure.gov.au

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Persons involved in preparing the PER and work undertaken:

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Kristie McDowell (KM) – Graduate Marine Environmental Consultant

Section	Personnel
Executive summary	CJ, KN
Introduction	BM, CJ, KN
Matters of national environmental significance	CJ, KN, KM
Relevant impacts	CJ, KN, KM
Avoidance and mitigation measures	CJ, KN, KM
Other requirements	BM, CJ, KN, KM
Conclusion	BM, CJ, KN

Kingston Channel Construction

Maritime Incident Response Plan

Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA)

22 November 2022

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PROJECT - : Kingston Channel Construction - Maritime Incident Response Plan

Rev	Description	Author	Review	Advisian approval	Revision date	Client approval	Approval date
A	Issued for Internal Review	L. Freeman	B. Morgan / K. Newton	B. Morgan	1 October 2022		
B	Issued for Client Review	K. Newton		B. Morgan	1 November 2022		
O	Final	L. Freeman	K. Newton	B. Morgan	22 November 2022		

Emergency Contact List

Norfolk Island Regional Council (NIRC) is responsible for emergency management, marine search and rescue, environmental protection and general marine regulation and safety and as such should be contacted in the event of a maritime incident. Other useful emergency contacts are also listed.

Relevant Authority	Contact Number
Emergency Management/Norfolk Island Regional Council	+6723 22244
Norfolk Island Police	+6723 22222
Norfolk Island Fire Service (NIFS)	+6723 22049
Ambulance/Police/Fire	955 / 000
Norfolk Island Hospital	+6723 22091
AMSA – AMSA Response Centre (for maritime casualties and shipping related pollution incidents)	+612 6230 6811 or 1800 641 792 rccaus@amsa.gov.au
DCCEEW (for biosecurity related issues)	+6723 22441
Norfolk Island Marine Park (Parks Australia)	+6723 22695
Parks Australia – Marine Duty Officer * (for any incident in an AMP)	0419 293 465 marine.compliance@environment.gov.au

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1 Introduction

1.1 Background

Norfolk Island lies within the Temperate East Marine Region. This marine region is comprised of Commonwealth waters extending from the southern boundary of the Great Barrier Reef Marine Park in Queensland to Bermagui in New South Wales (NSW). This also includes the waters surrounding Lord Howe Island and Norfolk Island. The region covers approximately 1.47 million km^2 of temperate and subtropical waters. The region extends from shallow waters on the continental shelf, 3 nautical miles (5.5 km) from shore to the deep ocean environments at the edge of Australia's exclusive economic zone (EEZ), 200 nautical miles from shore.

The *Norfolk Island Marine Safety Act 2013* (Norfolk Island Government, 2013) sets out the requirements to be adhered to for the safety and regulation of marine navigation and marine activities. A copy of the Act is provided in **Appendix A**. As part of the Act the *Norfolk Island Marine and Harbour Authority* has been established to oversee marine regulation for Norfolk Island. Norfolk Island Regional Council (NIRC) act as Harbour Master for the waters of Norfolk Island and are the main point of contact in the event of a maritime incident.

1.2 Aim

This Maritime Incident Response Plan (the Plan) aims to ensure Contractors of maritime related activities for the Kingston Channel Construction Project (the Project) understand how to classify, respond to and report maritime incidents/accidents (e.g. grounding, vessel collision, sinking, fuel/oil spills, marine fauna collision) that may occur as a result of activities associated with the Project.

1.3 Objectives

The objectives of this Plan are to:

- Ensure an integrated and coordinated approach to management of maritime incidents
- Ensure all Contractors undertaking maritime activities are made aware of maritime incidents promptly and can respond accordingly
- Ensure all Contractors understand the immediate incident reporting requirements
- Ensure all incidents are reported to enable monitoring
- Comply with statutory obligations to report certain incidents to regulators and other relevant government agencies.

1.4 Scope and Coverage

The scope of this Plan covers maritime incidents that are:

- Marine pollution by fuel, oil, oily mixtures and undesirable substances
- Marine pollution by hazardous and noxious substances
- Maritime casualties (i.e. vessels)
- Wildlife affected by vessel collision or marine incidents.

This Plan is applicable to all Project activities where maritime incidents may occur in the waters off Norfolk Island where the works are being undertaken (Figure 1-1). The requirements of this Plan must be communicated to all Contractors who are undertaking activities where maritime incidents may occur.

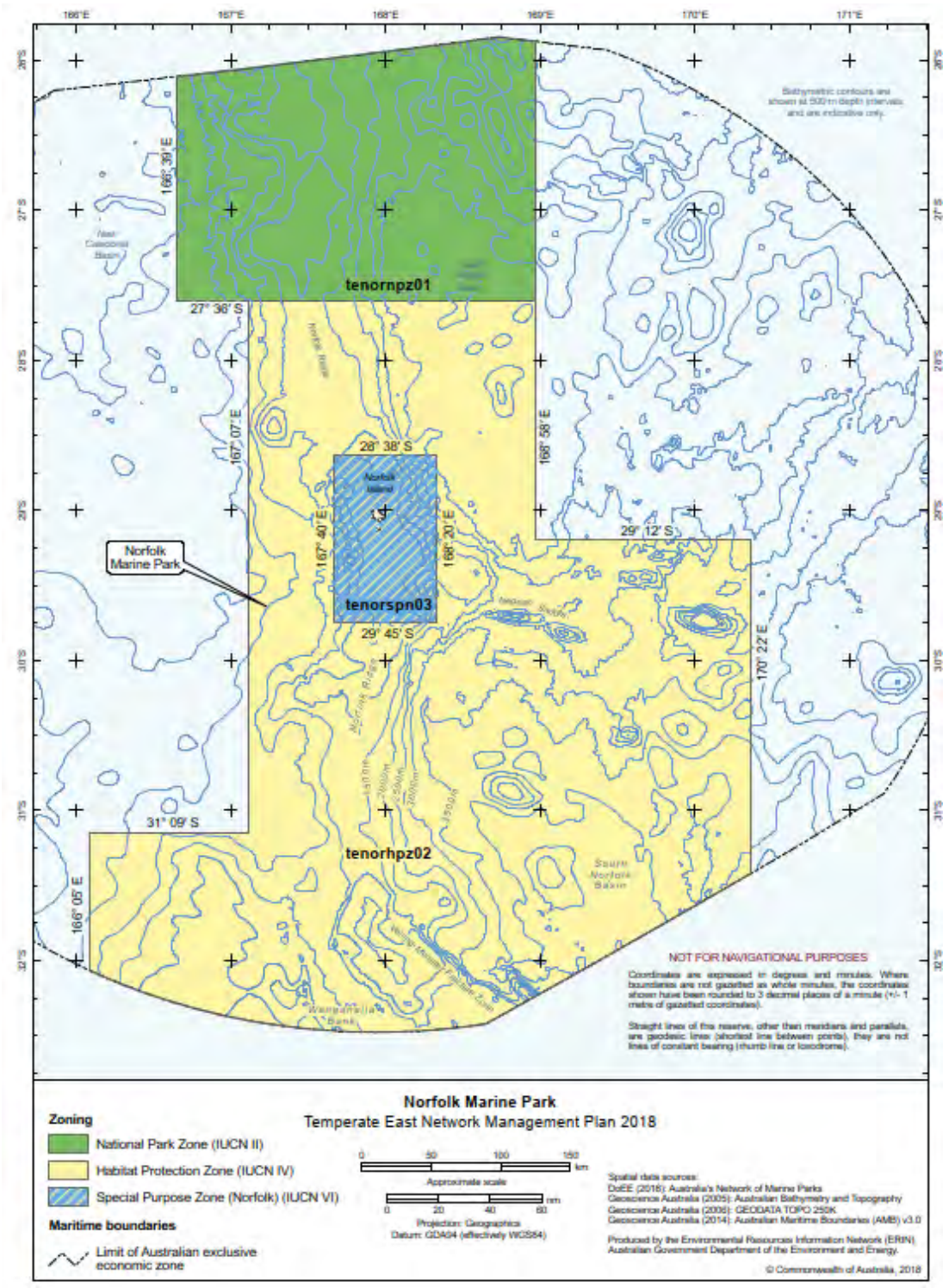

Figure 1-1 Area of Coverage

1.5 Linkages

This Plan should be read in conjunction with the following documents:

- *Norfolk Island Marine Safety Act 2013* – Act No.5 (2013) (Norfolk Island Government, 2013) (refer to **Appendix A**)
- Kingston Pier Channel Construction Project Environmental Assessment (Advisian, 2021)
- Kingston Pier Channel Construction Project Public Environment Report (Advisian, 2022)
- Kingston Pier Channel Construction Project Contractor Environmental Management Plan (Advisian, 2022), 2022)
- *National Plan for Maritime Environmental Emergencies* (AMSA, 2020) for incidents which occur in Commonwealth waters for marine pollution including hazardous and noxious substances and maritime causalities.

The *National Plan for Maritime Environmental Emergencies* (https://www.amsa.gov.au/sites/default/files/national-plan-maritime-envrironmental-emergencies-2020.pdf) consists of a range of level and administrative arrangements which are applied through a tiered management structure. Figure 1-2 depicts this structure. At the highest level international conventions and domestic legislation provide the legal context for the National Plan. This is underpinned by national policies and implemented through jurisdictional and local contingency plans.

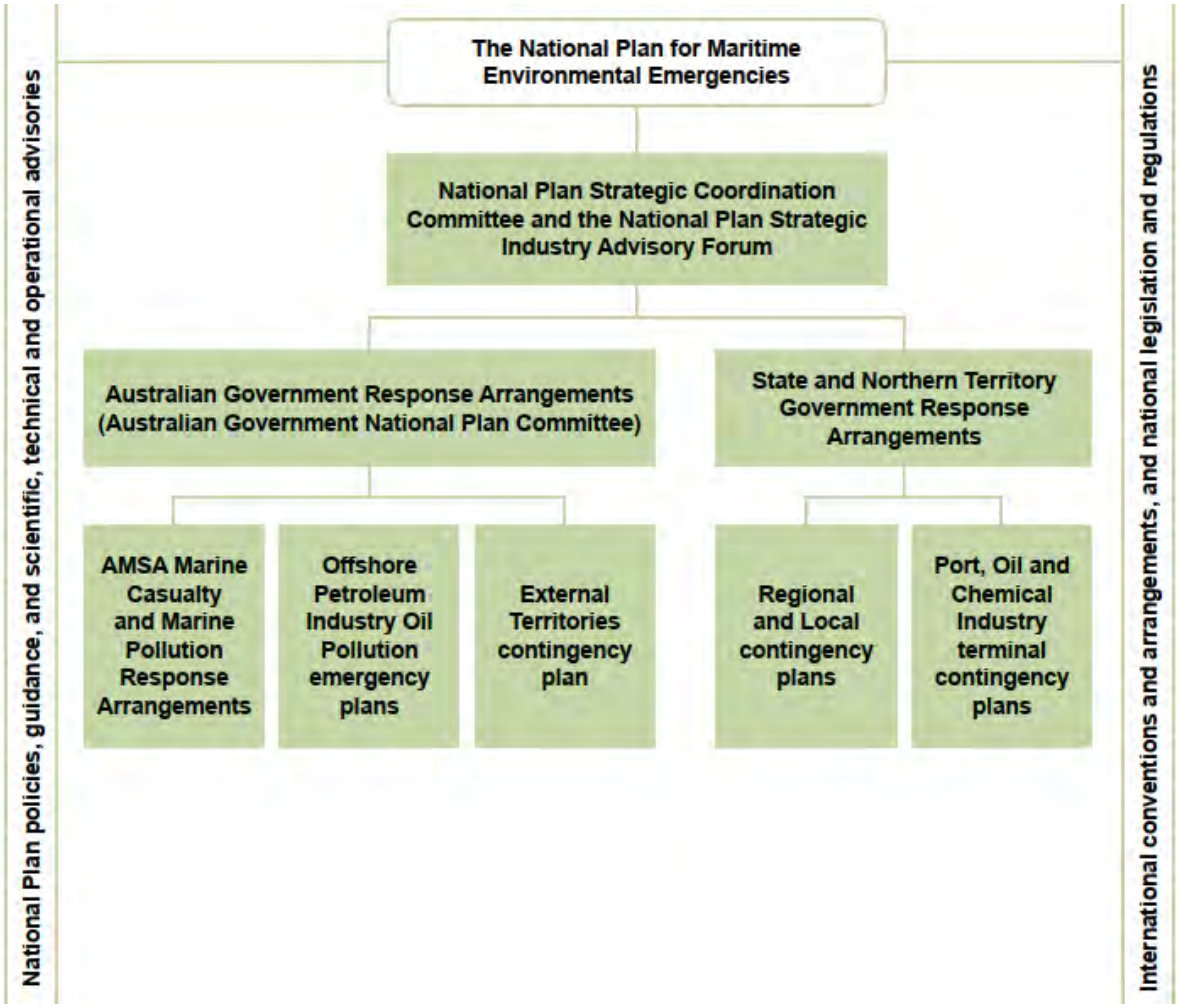

Figure 1-2 National Plan legal, administrative, and planning framework (Source: National Plan for Maritime Environmental Emergencies, 2020)

1.6 Responsibilities for Maritime Incidents

As detailed in the *National Plan for Maritime Environmental Emergencies,* the shipowner and shipmaster are responsible for undertaking prompt and effective action to ensure the safety of their vessel and cargo. These actions include all of the following:

- The engagement of emergency towage services
- The engagement of salvage contractors
- Effective communication to NIRC and relevant government organisations on the actions being taken to manage the situation.

The jurisdictional governments have agreed the following responsibilities in relation to the response to maritime incidents (Table 1-1).

Table 1-1 Responsibilities for Maritime Incidents (Source: National Plan for Maritime Environmental Emergencies, 2020)

Scenario		Responsibility / Accountability
All vessels within the Commonwealth's area of jurisdiction (except in the Great Barrier Reef Marine Park)		AMSA is responsible for the management of the maritime casualty.
Within the coastal or internal waters of the states and Northern Territory	SOLAS vessels (i.e. vessels >500 gross tonnes)	The state and Northern Territory governments are responsible for the management of the maritime casualty.
	Non SOLAS vessels (i.e. vessels <500 gross tonnes)	The state and Northern Territory governments are responsible for the management of the maritime casualty.
Within the Great Barrier Reef Marine Park	SOLAS vessels (i.e. vessels >500 gross tonnes)	AMSA is responsible for the management of the maritime casualty with the direct support of Maritime Safety Queensland (MSQ) and the Great Barrier Reef Marine Park Authority (GBRMPA).
	Non SOLAS vessels (i.e. vessels <500 gross tonnes)	GBRMPA is responsible for the management of the maritime casualty. Noting its maritime expertise, MSQ will, under agreement with the GBRMPA, manage higher risk marine casualties with the direct support of GBRMPA, and further support from AMSA, as required.
Any vessel within a port	The Commonwealth, state and Northern Territory governments are responsible for the management of the maritime casualty within their respective jurisdictions.	

2 Incident Classification

The National Plan identifies three levels of incidents as follows:

- **Level 1 Incidents** are generally able to be resolved through the application of local or initial resources only
- **Level 2 Incidents** are more complex in size, duration, resource management and risk and may require deployment of jurisdiction resources beyond the initial response
- **Level 3 Incidents** are generally characterised by a degree of complexity that requires the Incident Controller to delegate all incident management functions to focus on strategic leadership and response coordination and may be supported by national and international resources.

Table 2-1 provides detail of the general characteristics of each incident level.

Table 2-1 Guidance for Incident Classification

Characteristic	Level 1	Level 2	Level 3
MANAGEMENT			
Jurisdiction	Single jurisdiction	Multiple jurisdictions	Multiple jurisdictions, including international
Delegation	Incident Controller responsible for all functions	Some functions delegated or Sections created	All functions delegated and/or divisions created
Number of agencies	First-response agency	Routine multi-agency response	Agencies from across government and industry
Incident Action Plan	Simple/Outline	Outline	Detailed
Resources	Resourced from within one area	Requires intra-state resources	Requires national or international resources
TYPE OF INCIDENT			
Type of response	First-strike	Escalated	Campaign
Duration	Single shift	Multiple shifts Days to weeks	Extended response Weeks to months
Hazards	Single hazard	Single hazard	Multiple hazards
RESOURCES AT RISK			
Human	Potential for serious injuries	Potential for loss of life	Potential for multiple loss of life
Environment	Isolated impacts or with natural recovery expected within weeks	Significant impacts and recovery may take months. Remediation required	Significant area and recovery may take months. Remediation required
Wildlife	Individual fauna	Groups of fauna or threatened fauna	Large numbers of fauna
Economy	Business level disruption	Business failure	Disruption to a sector
Social	Reduced services	Ongoing reduced services	Reduced quality of life
Infrastructure	Short term failure	Medium term failure	Severe impairment
Public Affairs	Local and regional media coverage	National media coverage	International media coverage

Under this Plan maritime incidents are divided into four categories:

1. Maritime casualty
2. Oil spills
3. Hazardous and noxious substance spills
4. Wildlife affected by marine pollution events.

The consequences of the above can include loss of or damage to marine habitats and impacts on marine wildlife, economic losses due to impacts on shipping and tourism and social impacts due to the loss of amenity or access to coastal areas.

2.1 Maritime Casualty

Maritime casualty risks arise when a vessel is unable to:

- Independently maintain a safe distance from surrounding navigational hazards (i.e. coastline, island and reefs, other vessels, large marina fauna etc.)
- Effectively maintain the integrity of its cargo and to effectively contain its cargo carried on board.

Casualty risk may be classified as:

- Breakdown – failure of equipment essential to the navigation of the vessel or the maintenance of integrity of its cargo, rendering it in need of external assistance
- Fire or explosion
- Collision – two vessels coming together inadvertently causing significant damage
- Stranding – a vessel inadvertently making contact with the seabed and being unable to independently free itself
- Contact – a vessel striking a fixed object or a moving object such as large marine fauna.

2.2 Marine Oil Pollution

Marine oil pollution spills may occur as a consequence of a maritime casualty, bunkering operations, from oil or gas production activities or illegal dumping from ships.

2.3 Hazardous and Noxious Substance (HNS) Spills

HNS spills may occur as the result of maritime casualty, accidents occurring during loading or unloading, or as illegal discharges at sea.

3 Incident Management

3.1 Incident Management Team

An Incident Management Team (IMT) is to be established prior to the Project commencing. The IMT structure may include the following:

- Incident Controller – individual responsible for the management of all operations in response to an incident
- Planning
- Operations
- Logistic
- Finance
- Casualty Coordination
- Media.

An investigation into any incident may be conducted by the Police, Australian Maritime Safety Authority (AMSA) and other Commonwealth Agencies depending on the level of the incident. The IMT is to provide support and assistance as required including ensuring appropriate records and evidence is maintained.

3.2 Initiation Triggers

As detailed in Section 2 and Table 2-1 the following incident classifications are used:

- Level 1 – are generally able to be resolved through the application of local or initial resources only
- Level 2 – are more complex in size, duration, resource management and risk and may require deployment of jurisdiction resources beyond the initial response
- Level 3 – are generally characterised by a degree of complexity that requires the Incident Controller to delegate all incident management functions to focus on strategic leadership and response coordination and may be supported by national and international resources.

In determine the level of the response the following should be considered:

- Nature of the emergency
- Location of the emergency and the ability of responders or emergency services to access the site if required
- Requirement of resources beyond Kingston inventory
- Likely duration of the response effort
- Requirement for specialist skills.

3.3 Reporting Incidents

Norfolk Island Regional Council (NIRC) is responsible for emergency management, marine search and rescue, environmental protection and general marine regulation and safety.

All maritime incidents should be reported to NIRC via radio and telephone as well as Norfolk Island Police (refer to Table 3-1 for contact details). Parks Australia must also be contacted for any incident or emergency in or near an Australian Marine Park.

The following details are to be recorded:

- Vessel Name
- Vessel Location
- Vessel Registration (i.e. registration number and where the is vessel registered)
- Nature of the emergency
- Assistance required
- Number of Passengers (PAX)
- Actions being taken
- Name and contact details.

When an incident has been reported, the following is to be considered by the Incident Controller:

- Safety of life
- Control over the vessel is maintained
- The vessel has sufficient resources to be assisted to a safe location
- Minimise the risk to the marine environment
- Minimise the impact on shipping and port operations.

A careful assessment of the potential impact the incident may have on shipping and the marine environment will be made by the Incident Controller. Where the safety of personnel is at risk the operation will be restricted or suspended until it is safe to recommence. The impact will be managed with a view to safely facilitate all operations.

An emergency requires the co-ordination and careful allocation of available resources that may be available such as rescue vessels and craft, tugs, firefighters, and helicopters. The situation is to be assessed and resources allocated as required and available. The effectiveness of the response is to be monitored and recorded. Where tugs are used to assist a vessel, including alongside and in the anchorage, a pilot is to be transferred to the vessel to ensure the safe control of the tugs.

An initial Incident Response Report is to be provided to relevant authorities (refer to **Appendix B** for a template). An emergency contact list is provided in Table 3-1.

Table 3-1 Emergency Contact List for Maritime Incidents.

Relevant Authority	Contact Number
Emergency Management/Norfolk Island Regional Council	+6723 22244
Norfolk Island Police	+6723 22222
Norfolk Island Fire Service (NIFS)	+6723 22049
Ambulance/Police/Fire	955 / 000
Norfolk Island Hospital	+6723 22091
AMSA – AMSA Response Centre (for maritime casualties and shipping related pollution incidents)	+612 6230 6811 or 1800 641 792 rccaus@amsa.gov.au
DCCEEW (for biosecurity related issues)	+6723 22441
Norfolk Island Marine Park (Parks Australia)	+6723 22695
Parks Australia – Marine Duty Officer * (for any incident in an AMP)	0419 293 465 marine.compliance@environment.gov.au

* To report an incident or emergency in or near an Australian Marine Park call the Marine Duty Officer on 0419 293 465 as well as a follow up email to marine.compliance@environment.gov.au. The Duty Officer will then notify the relevant response agency or if the call is from a response agency/titleholder, notifying the Director National Parks (DNP) of an incident, the Duty Officer will begin processes within Parks Australia to provide the information needed by the responder.

3.4 Specific Incident Types and Response

3.4.1 Ship Stability

Where there is concern that a vessel's stability cannot be maintained within safe limits, it shall be immediately reported to the appropriate personnel (i.e. NIRC (acting as the Harbour Master) and DCCEEW). The situation shall be assessed, and all necessary steps taken to ensure the safety of the vessel.

3.4.2 Dangerous Goods

Where dangerous good are present on board the Master and crew shall assess the potential for the dangerous goods to be affected by the emergency and advise the appropriate personnel (i.e. NIRC and Department of Climate Change, Energy, the Environment and Water (DCCEEW) accordingly. The situation will be assessed, and it shall be determined whether assistance is required.

3.4.3 Fire on Vessel (Alongside, Underway and in Anchorage)

3.4.3.1 Alongside

The Incident Controller will assess the situation and allocate appropriate resources to assist the Master and crew in the response. Firefighting support, if available, will be provided to assist the vessel where

necessary. If the fire on board the vessel results in loss of power or the mooring arrangements rendered inoperable, rescue vessels/tugs will be used to hold the vessel alongside if it is considered safe to do so. Once the fire is extinguished, the damage and condition of the vessel will be assessed and a plan to remove the vessel to a safe location will be implemented.

3.4.3.2 Underway

Where a vessel is underway and suffers a fire the pilot or master is to advise the Incident Controller. The situation will be assessed with consideration given to the following:

- Severity of the fire and the location on-board
- Ability of the ship's crew to respond effectively to the fire
- Location of the vessel and its ability to reach safe water
- Assets required to assist and their availability.

Firefighting support will be sent to assist the vessel as above if available. The Incident Controller and pilot will assess the situation and determine the most suitable option including:

- Continue the passage to open water
- Anchor
- Berth.

3.4.3.3 Anchorage

Where a vessel suffers a fire in the anchorage the vessel shall remain at anchor unless approved to weigh anchor and get underway by the Incident Controller. Firefighting support will be used to assist the vessel with the response.

3.4.4 Vessel Grounding

Where a vessel grounds a careful assessment of the damage condition of the vessel will be made. The Incident Controller and Pilot will assess the height of the tide at the time of grounding and subsequent tides to determine if the vessel is likely to be refloated. Where there is sufficient tidal height and the condition of the vessel allows, the vessel will be refloated as soon as possible and shifted to an anchorage until an assessment of the vessel's damage condition can be made.

Where the vessel cannot be refloated, or the damage condition is such that the vessel cannot be safely refloated and moved to open water, the representative from NIRC will assess the situation and determine what services are required. This may include tugs to hold the vessel in place and work boats to transfer personnel and equipment to the vessel.

3.4.5 Vessel Collision

3.4.5.1 Vessel with Vessel

Where vessel collision occurs between two vessels, rescue vessel/tug assistance will be provided if required. If safe to do so, both vessels will be allocated an anchorage whilst the damage condition is assessed.

For serious collisions a careful assessment of the damage condition of both vessels will be required. Where vessels are locked together a salvage plan will be required.

3.4.5.2 Vessel with Marine Fauna

Any collisions with marine fauna should be recorded and notification made to DCCEEW, NIRC and Parks Australia.

3.4.6 Disabled Vessel in the Channel

Where a vessel is disabled in the channel, such as for a main engine failure or blackout, additional tugs/rescue vessels will be mobilised to assist the vessel. Appropriate personnel will assess the options for the vessel and determine the best course of action based on Under Keel Clearance, the speed of advance and the conditions. In general the vessel will be taken to open water where possible; if this is not possible the vessel will be towed to an emergency anchorage location.

3.4.7 Day or Cyclone Mooring Failure

Where a vessel breaks free of its mooring all shipping will be alerted to the incident and attempts will be made to make contact with the vessel. Where communications with the vessel cannot be established, other available vessels are to be used to tow or push the vessel to safety if safe to do so. The vessel will be towed to a safe location until the owner or operator can take control of the vessel.

3.4.8 Vessel Dragging Anchor

All vessels are responsible for monitoring their position and safety whilst at anchor. Where the vessel observes the anchor is not holding, this is to be reported to the appropriate personnel immediately. The Master is to assess the situation and decide whether to pay out more cable or request permission to get underway, re anchor, or steam to weather. The vessel shall keep the appropriate personnel apprised of its action and intentions.

3.4.9 Casualty Evacuation

There are limited local resources for evacuating a casualty from a ship. Where a casualty is unconscious or cannot sit upright without assistance the evacuation shall be coordinated by the Norfolk Island Marine and Harbour Authority.

If a casualty is transferred to land by boat, the Kingston Pier or Cascade Pier will be utilised for landing depending on location of the incident, local marine weather conditions and availability of berthing.

3.4.10 Dangerous Good or Noxious and Hazardous Substance Spills

In the event that a report of a spill of dangerous goods or of a hazardous and noxious substance spill which present a risk to human health or risk to the environment within the channel area is received, the following actions will be taken:

- Stop operations
- Evacuate the area of the site at risk
- Isolate where possible all potential sources of ignition

- Facilitate emergency service access to the site.

Where appropriate, consideration will be given to implementing temporary bunding arrangements to contain the dangerous goods or noxious substance.

Once the scene has been made safe the product would be recovered.

3.4.11 Oil or Chemical Spill

Table 3-2 categorises the tiers of response for oil/chemical spills.

Table 3-2 Characteristics of Tier/Levels of Oil and Chemical Spills (Transport, 2015)

Tier/Level	Oil (tiers of response)	Chemical (levels of reponse)
1	These are local spills less than 10 tonnes, which may occur frequently and would normally only require a response from the combat agency with assistance from other local agencies and organisation if necessary. The response would be escalated when it is apparent that local resources are insufficient or inadequate to effectively manage the response.	A chemical incident that only requires response within the boundaries of the berth, vessel or small geographical area. No public health and/or environmental impact or problems are anticipated outside the operations area. Combat agencies will generally be able to respond to and clean up a spill with local resources. When additional resources are required, these will generally be available from the chemical industry, local authorities or by using National Plan resources in the region or from adjacent industry operators.
2	These are generally medium spills in the order of 10 to 1,000 tonnes (approx. 10 m3 to 1,000 m3) of oil.	A significant chemical incident/emergency that can be responded to within the boundaries of the berth, vessel or geographical area, but which may have a serious impact on public health and/or the environment.
3	These are very large spills generally great than 1,000 tonnes (>1,000 m3). These spills are rare events and could require national or possibly international resources.	A chemical incident/emergency that will pose a very serious impact on human life and/or effect the environment significantly. It requires the activation of support resources up to national or international level.

The National Plan arrangements use the Oil Spill Response Incident Control System (OSRICS) to manage the response to a maritime oil or chemical spill. At a local level, for Tier One oil spills that are likely to be encountered in the port, a small team is usually sufficient to manage the response. OSRICS is implemented in a simplified structure, as shown in Figure 3-1.

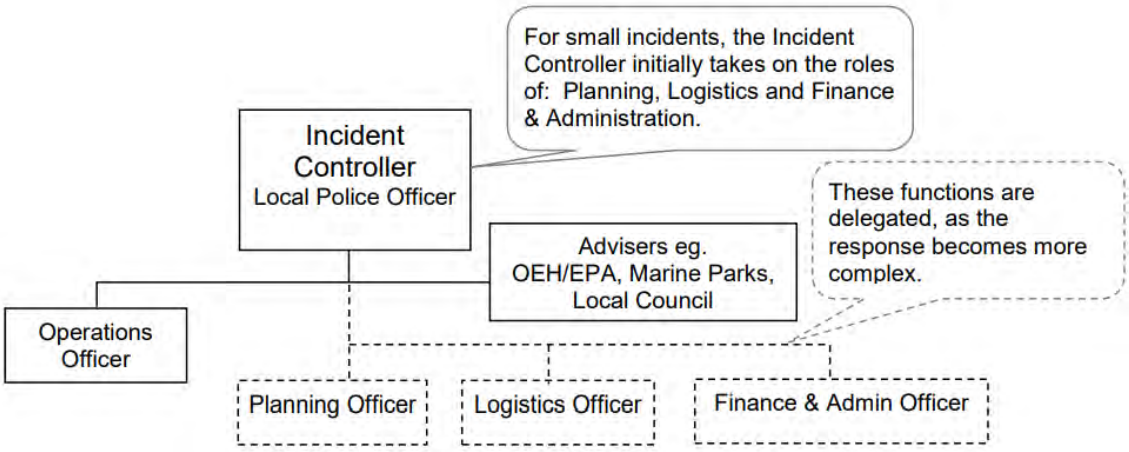

Figure 3-1 OSRICS Structure for Small Incidents (Source: Lord Howe Island Oil and Chemical Spill Contingency Plan)

A number of options exist for the treatment of oil, which has been released into the marine environment. All may be effective to a degree, according to the type of oil, the prevailing conditions and the sensitivity of the environment under threat. The following basic oil spill response options are available to the Incident Controller:

- If possible, control or stop the discharge of oil or chemical from the source
- Monitor
- Containment and recovery
- Application of dispersant
- Shoreline clean-up.

The response options for chemicals spills are limited in number due to the range of behaviours of chemicals in the marine environment and are generally not tested due to the infrequency of such spills. It is paramount that when a chemical spill does occur specialist advice is sought from DCCEEW, NIRC and Parks Australia. Before decisions can be made on a control strategy, specific local information is essential. Apart from determining the exact location of the slick, information must be obtained on:

- The quantity of oil spilled and its chemical and physical characteristics. Crude oils and petroleum products have a wide range of characteristics, which will influence spreading, evaporation, dissolution, emulsification and weathering
- The quantity of oil spilled will govern the "scale" of control operations
- Conditions affecting the direction and speed travelled by the slick. Surface-wind velocity and direction and surface-current velocity and direction will influence the movement of the slick, the current having more influence than the wind. Forecasts of wind and weather changes must be considered.
- Conditions affecting the likely choice of strategy. Surface conditions such as wave heights and directions of swells, water temperature and meteorological conditions (rain, mist, visibility,

cloud cover) will influence the practicability of either containment and recovery or chemical dispersion.

3.4.11.1 Monitor

Depending on the location of the spill, if there are no threats to environmentally sensitive areas or it is unlikely that the oil will come ashore, biological and physical processes will naturally disperse most of the oil over a period of time. In these circumstances the most appropriate action may be to do nothing other than monitor the movement of the oil. Leaving the oil to disperse and degrade naturally creates the least disturbance to the marine environment, however, the 'do nothing' option requires sound advice to the media to clearly explain why no other action, apart from monitoring the pollutant, has been taken (Transport, 2015). This advice should be provided by DCCEEW or NIRC.

3.4.11.2 Containment and Recovery

The traditional response to an oil spill is containment and recovery of the oil on the water. The decision to contain and recover the oil will be greatly influenced by prevailing weather conditions. In some cases it may be appropriate to allow the oil to come ashore, then undertake a shoreline clean-up. Oil may be recovered from the surface of the water using booms and skimmers. This method is generally only effective:

- In relatively smooth waters with a minimum influence of wind, tide or currents
- If an adequate supply of storage facilities are available for recovered oil and debris
- If access to the area is possible without causing additional damage to the environment.

Use of booms alone may protect environmentally sensitive areas, allowing oil to be deflected to other areas from where it may be recovered or allowed to degrade naturally.

3.4.11.3 Application of Dispersants

There will be occasions when offshore containment is impractical. Depending on the resources at risk and the feasibility of other response options, the use of dispersant to accelerate the dispersal of the oil slick can be an effective option. The use of dispersant should be done in conjunction with expert environmental advice.

3.4.11.4 Shoreline Clean-up

Weather and other circumstances permitting, every effort should be made to either disperse or contain and recover oil as close as possible to the source of the spill. However, it is inevitable that some oil may come ashore. The location of a spill, oil type, weather conditions, rate of oil movement and speed will determine whether the bulk of the spilled oil can be recovered before it reaches the shore.

Where oil does come ashore, the extent of clean-up of oiled shorelines is to be carefully planned with the view of minimising further environmental damage which may result from the clean-up operation.

Sometimes, oil on shorelines may best be left to weather and degrade naturally. This option must be considered where oil impacts a sensitive area such as mangroves, salt marshes, mud flats or remote areas. In these areas the clean-up operations can result in more environmental damage than the oil itself due to physical disturbance and substrate erosion.

The selection of shoreline clean-up techniques depends on many different factors, including:

- Type of substrate
- Characteristics of oil (tar balls, pooled, thin coating, etc)
- Amount of oil on the shoreline
- Depth of oil in the sediments
- Presence of wildlife and/or environmental or culturally significant sites
- Prevailing oceanographic and meteorological conditions
- Access for personnel and equipment.

Shoreline clean-up methods may consist of one or more of the following methods, depending on the extent of oiling and the shoreline environment:

- Removal of floating or pooled oil
- Use of sorbent materials
- Low pressure flushing
- High pressure flushing
- Mechanical collection and removal of oiled material and vegetation
- Manual collection and removal of oiled material and vegetation
- Use of bioremediation agents.

3.4.11.5 Disposal of Oil and Oily Waste

Oil recovery operations can generate large amounts of oil and oiled materials. It is therefore crucial that management strategies and disposal methods be addressed as early as possible by the combat agency and relevant authorities. As oil spills have the potential to generate differing types of waste it is important that these products be kept segregated if they are in significant quantities. A management strategy should be developed for each of the different waste streams.

Oil recovered from the sea surface may be emulsified and also contaminated with a variety of solids such as seaweed, wood, plastic materials of various types, dead birds and animals which complicate handling and disposal. Appropriate collection and disposal techniques have to be selected for the particular circumstances.

Oil recovered from the shoreline may also contain sand and gravel, pebbles, rocks, seaweed and beach debris.

When removing sand or structural material from a beach it is paramount that a minimum volume should be taken to preserve the integrity of the beach and to minimise the volume of waste requiring disposal.

Disposable personal protective equipment and other products such as absorbent materials, rags etc can also generate large amounts of waste that need a collection, management and disposal strategy to be detailed in a waste management plan.

The type and volume of waste will depend upon the size and location of the spill and the clean-up methods employed. Generally, significant volumes of solid debris will be generated and collected as a result of clean-up efforts. It has been estimated that for an oil spill at sea, the volume of any recovered oil requiring disposal will be the collected oil volume multiplied by a factor of five to take into account

the entrained water content. For shore based clean-up, the volume of collected oil should be multiplied by a factor of ten.

The collected mass of oil spill debris must be properly stored, transported and disposed of to minimise the potential for further adverse environmental impacts.

Permanent disposal of oil and oiled debris is likely to require its transport to the mainland. However, temporary storage will be required.

Temporary holding of oily debris is also possible on beaches in plastic lined pits, IBCs or open drums. Other temporary sites may be available according to priorities and the consideration of NIRC. All selected sites must meet the following criteria:

- Storage is compatible with on site and adjacent land use
- Is within a reasonable distance from impacted areas
- Is free of leachate problems and would not pose a risk to groundwater supplies
- Waste can be covered to prevent the ingress of water into containers during rain periods.

In any clean-up operation a point is reached when the marginal benefits of further clean up are outweighed by the effort and costs of continuing. The Incident Controller should determine the point at which further effort and expenditure in the clean-up becomes unreasonable and terminate the clean-up phase of the response.

It is the responsibility of the Incident Controller to ensure that:

- Shoreline areas are agreed by relevant stakeholders to be clean to a satisfactory level and "signed off" as completed
- Plant and equipment is clean and returned to its owners
- Any labour contracts are terminated
- Any requirements for ongoing site monitoring are put into place and the appropriate agency has responsibility for it
- The necessary paperwork for claims against either the polluter or the National Plan Levy Fund is completed.

3.5 Australian Marine Parks Strategy - Environmental Incident and Emergency Response

Parks Australia has published the Australian Marine Parks - Environmental Incident and Emergency Response (Parks Australia 2021) which is included in **Appendix C.**

(https://parksaustralia.gov.au/marine/pub/mpa-environmental-incident-and-emergency-response-strategy.pdf)

This Strategy applies where serious or critical incidents and emergencies occur in or adjacent to AMPs. Such events may include maritime infrastructure or transportation incidents resulting in oil/chemical spills, land based oil/chemical spills which have the potential to spread to the marine environment, vessel grounding causing damage to the marine environment, cyclones, tsunamis, heatwaves and pest and disease outbreaks.

The Director of National Parks (DNP) has responsibility for managing AMPs works to ensure that marine parks are healthy, resilient and well-managed to enhance Australia's wellbeing. In supporting responses to serious or critical environmental incidents and emergencies in and adjacent to Australian Marine Parks (AMPs), the DNP seeks to prevent or minimise impacts on marine park values (natural, cultural, heritage, social and economic), users and staff.

Generally the DNP is not responsible for coordinating responses to environmental incidents but provides advice on values and safety relating to AMPs in accordance with the National Plan for Maritime Environmental Emergencies (the National Plan) or under the Offshore Petroleum Incident Coordination (OPIC) Framework for incidents relating to oil and gas activities.

Incident and emergency response activities in AMPs must be carried out in accordance with the respective management plan which are legislative instruments. The South-west, North-west, North and Temperate East Networks and the Coral Sea Marine Park management plans are in force from July 2018 – 2028, with the prescriptions for responding to incidents and emergencies contained in 'Part 4 - Managing Activities'. The South-east Marine Parks Network Management Plan is in force from July 2013 – 2023 with the prescriptions for responding to incidents and emergencies contained in 'Part 5 - Managing Use'.

To report an incident or emergency in or near an Australian Marine Park the Marine Duty Officer must be contacted on 0419 293 465 as well as a follow up email to marine.compliance@environment.gov.au. The Duty Officer will then notify the relevant response agency or if the call is from a response agency/titleholder, notifying the DNP of an incident, the Duty Officer will begin processes within Parks Australia to provide the information needed by the responder.

This Strategy also provides a list of Commonwealth Agencies Responsible for various Critical Maritime Incidents.

- For Shipping (drifting, pollution, physical damage) – AMSA – AMSA Response Centre -1800 641 792.
- For Biosecurity (marine pests and aquatic animal health) – DCCEEW.

3.6 Salvage and Casualty Coordinator

In the event of a maritime casualty, careful management and oversight of the salvage effort is required to ensure it is effective and does not result in further risk to the marine environment or the operations of the port. The vessel owners will engage a salvor to render the casualty to a safe state and deliver the vessel to a specified location.

For Level 1 incidents a casualty coordination unit will be established within the IMT.

For Level 2 and 3 incidents, a separate casualty coordination IMT will be raised. This will work closely with the salvor and commonwealth agencies to ensure the effectiveness of the salvage effort and the protection of the marine environment.

4 References

Advisian (2021). *Kingston Pier Channel Construction Environmental Assessment.*

Advisian (2022). *Kingston Pier Channel Contractor Environmental Management Plan* .

Advisian (2022). *Kingston Pier Channel PUblic Environment Report* .

AMSA (2020). *National Plan for Maritime Environmental Emergencies.*

Norfolk Island Government (2013). Norfolk Island Marine Safety Act Act No. 5.

Transport (2015). *Lord Howe Island Marine Oil and Chemical Spill Contingency Plan.*

Appendix A
Marine Safety Act 2013

NORFOLK ISLAND

MARINE SAFETY ACT 2013

Act No. 5 of 2013

Contents

NORFOLK ISLAND

MARINE SAFETY ACT 2013

Act No. 5 of 2013

An Act to provide for the safety and regulation of marine navigation and marine activities, the establishment of a Marine and Harbour Authority, to clarify and confirm responsibility for search and rescue operations and for related purposes

BE IT ENACTED by the Legislative Assembly of Norfolk Island as follows —

Part 1 — Preliminary

1. Name of Act

This Act is the *Marine Safety Act 2013*.

2. Commencement

(1) This Act other than Part 4 and divisions 2, 3, 4 and 5 of Part 5 commence on the day notice of assent is published in the Gazette.

(2) Part 4 and divisions 2, 3, 4 and 5 of Part 5 shall commence on a day or days fixed by the Administrator by notice in the Gazette.

3. Objects of Act

(1) The objects of this Act are as follows—

(a) to ensure the safe operation of vessels operating from, and in the seas adjoining, Norfolk Island;

(b) to promote the responsible operation of vessels so as to protect the safety and amenity of other users and the amenity of occupiers of adjoining land;

(c) to ensure the safe operation of marine activities;

(d) to provide for the investigation of marine accidents and for appropriate action following any such investigation; and

(e) to provide for the investigation by the Coroner of deaths at sea.

(2) To give effect to paragraph (1)(e), the *Coroners Act 1993* is amended as provided in Schedule 2.

4. Definitions

(1) In this Act—

Authorised officer means—

(a) a police officer; or

(b) the Harbour Master;

(c) the Collector of Customs and an officer appointed under the *Customs Act 1913*;

(d) an authorised person under the *Immigration Act 1980*;

(e) a person (or a person of a class) appointed as an authorised officer under section 61.

Authority means the Norfolk Island Marine and Harbour Authority established in Part 9.

commercial vessel means any vessel used or intended to be used for or in connection with any business or commercial activity, including a fishing vessel, and includes (but is not limited to) a vessel used or intended to be used wholly or principally for—

(a) carrying passengers or cargo for hire or reward, whether within or outside Norfolk Island waters or in the course of overseas voyages, or

(b) providing services to vessels for reward.

crew of a vessel means the persons (including the master of the vessel) whose duty it is to navigate or work the vessel or to carry out other operations on the vessel.

Crown Counsel means the legal practitioner holding from time to time the position of Crown Counsel in the service of the Administration of Norfolk Island and includes a legal practitioner holding the position of deputy or assistant to the Crown Counsel or who is the delegate of the Crown Counsel or is acting in his or her stead.

exercise a function includes perform a duty.

fishing vessel means a vessel used or intended to be used for catching fish, crustaceans, or other living resources of the sea or seabed for profit or reward.

function includes a power, authority or duty.

Harbour Master means the person appointed under section 106.

marine activity means an activity carried on for commercial purposes that may or may not involve the use or utilisation of a vessel and includes—

(a) underwater diving equipment;

(b) submerged or partially submerged structures;

(c) underwater cages intended for the protection of persons in water (whether or not open on any side or sides);

(d) any activity connected with the sea declared by regulation to be a marine activity.

marine search and rescue operation means an operation that is carried out with a view to effecting any of the purposes referred to in section 71.

master of a vessel means the person having the command or charge of the vessel.

Minister means (unless the context otherwise requires) any Norfolk Island Minister appointed under the *Norfolk Island Act 1979* (Cth) for the time being with responsibility for this Act or any delegate thereof.

navigable waters means all waters within the territory of Norfolk Island that are from time to time capable of navigation by a vessel (including something declared not to be a vessel) and are open to or used by the public for navigation or the carrying out of marine activities or both.

Navigation aid means any device used for the safety of navigation (such as a beacon, buoy or marine mark), but does not include a device on board a vessel.

Norfolk Island Marine and Harbour Authority—see Part 9.

operate a vessel includes—

(a) to determine or exercise control over the course or direction of the vessel or over the means of propulsion of the vessel (whether or not the vessel is underway); and

(b) to pilot the vessel; and

(c) in the case of the owner of the vessel, to cause or allow the vessel to be operated by someone else.

Norfolk Island waters means any navigable waters within the limits of the territory of Norfolk Island as defined in Schedule 1 of the *Norfolk Island Act 1979*.

officer in charge means the person from time to time in charge of the Norfolk Island Police.

overseas voyage means a voyage that has as its intent a voyage from Norfolk Island to any other place.

owner of a vessel is defined in section 7.

personal water craft or **PWC** is a vessel propelled by an inboard motor powering a water jet pump. The operator sits, stands or kneels on the vessel and uses handle bars to steer the craft.

port includes any of the following waters (or any part of those waters)—

(a) any harbour or haven, whether natural or artificial;

(b) any navigable water in which vessels may lie for shelter or for the transfer of cargo or passengers.

recreational vessel means a vessel other than a commercial vessel that is used, or is intended to be used, wholly for recreational or sporting activities (whether or not let, or intended to be let, for hire or reward or consideration of any kind).

Registrar means the Marine Registrar established by section 26.

sailboard includes small floating devices usually controlled and operated by one person and powered by a sail attached to the board or by a kite or similar device attached to the person controlling the board;

Example: "wind surfer", "wave jumper", "kite surfer".

(2) For the purposes of this Act, a vessel is taken to be proceeding on a voyage from when it gets underway for the voyage until it gets underway for another voyage.

(3) Notes in the text of this Act do not form part of this Act.

5. Meaning of "vessel"

(1) In this Act, **vessel** includes water craft of any description used or capable of being used as a means of transportation on or beneath the surface of water.

(2) Without limiting the above, a vessel includes—

(a) any non-displacement craft; and

(b) a seaplane, but only while it is on water.

(3) However, a vessel does not include anything declared by the regulations not to be a vessel and includes anything used on water that is declared by the regulations to be a vessel.

Note—a **non-displacement craft** refers to such vessels as "air-cushion" vessels known as hovercraft and hydrofoils.

6. Meaning of vessel "connected with Norfolk Island"

A vessel is **connected with Norfolk Island** for the purposes of this Act if—

(a) the vessel is owned by a person who is ordinarily resident in Norfolk Island; or

(b) the vessel is owned by a person whose place of business, or principal place of business, is in Norfolk Island; or

(c) the vessel is owned by a person whose principal place of business for managing the vessel's operation is in Norfolk Island; or

(d) the vessel is declared by the Regulations to be a vessel connected with Norfolk Island.

7. Meaning of "owner" of vessel and "owner" of "marine activity"

(1) In this Act, **owner** of a vessel or of a marine activity means (subject to this section) the person who owns—

(a) the vessel; or

(b) the business of the marine activity or the property or services used in their provision for the marine activity.

(2) A reference in this Act to the owner of a vessel includes a reference to a person who is the charterer of the vessel.

(3) A reference in this Act to the owner of a vessel or of a marine activity includes a reference to a joint owner of the vessel or of the marine activity.

(4) A reference in this Act to the owner of a vessel or of a marine activity includes a reference to any person who, whether on the person's own behalf or on behalf of another—

(a) exercises any of the functions of the owner of the vessel or of the marine activity; or

(b) publicly represents that the person has those functions or accepts the obligation to exercise those functions.

(5) For the purposes of this Act, a person does not cease to be an owner of a vessel because the vessel is mortgaged, chartered, leased or hired.

8. Vessels and waters to which Act applies

(1) This Act applies to and in respect of the following vessels (and their owners, masters, crew and passengers)—

(a) all vessels that are in Norfolk Island waters (including vessels proceeding on overseas voyages);

(b) all vessels that are proceeding on voyages other than overseas voyages (including vessels that have left Norfolk Island waters);

(c) all vessels connected with Norfolk Island, wherever they may be.

(2) This section is subject to any express provision of this Act to the contrary.

Note: — Part 4 (relating to requirements for vessels) applies to a restricted class of vessels and persons, and Part 5 (relating to investigations) applies to a wider class of vessels and persons.

(3) Subsection (1) and this Act generally does not apply to any matter that is dealt with by the *Navigation Act 2012* (Cth) that also has application to Norfolk Island or to a vessel within Norfolk Island waters or to a vessel that would but for that Act be within the jurisdiction of Norfolk Island.

9. Act does not apply to Defence Force vessels

This Act does not apply to or in respect of a vessel belonging to the Defence Force of Australia or to the naval, military or air forces of any other country.

Part 2 — Safety of navigation

10. Regulations for prevention of collisions at sea or in other navigable waters

(1) The regulations may make provision for or with respect to the prevention of collisions in navigable waters (including the use on vessels of lights, shapes and signals).

(2) The regulations under this section may adopt, with or without modification, international regulations for preventing collisions at sea.

(3) The master or any other person concerned in the operation of a vessel who contravenes the regulations under this section, or who causes those regulations to be contravened, is guilty of an offence.

Maximum penalty: 50 penalty units.

11. Speed limits, no wash zones and other restrictions on the operation of vessels in navigable waters by display of notice

(1) The Minister, on the advice or recommendation of the Authority, may prohibit or regulate the operation of vessels in navigable waters by a notice displayed in or in the vicinity of those waters.

(2) The Minister, on the advice or recommendation of the Authority, may, by such a notice, impose any restriction considered appropriate for the safety of the public or for the protection of vessels or other property. In particular, the Minister may impose restrictions on—

(a) the speed of vessels; or

(b) the creation of wash by vessels; or

(c) the mooring or anchoring of vessels; or

(d) the use of vessels for particular purposes.

(3) A notice under this section may apply—

(a) to vessels generally or to any class of vessels specified in the notice; and

(b) at all times or at such times as may be specified in the notice; and

(c) to an area of navigable waters specified in the notice; and

(d) in any other circumstances specified in the notice.

(4) A person who operates a vessel to which a notice under this section applies in contravention of the notice is guilty of an offence.

Maximum penalty: 10 penalty units.

(5) The regulations may exempt vessels from compliance with a notice under this section.

(6) The regulations may make provision for or with respect to the admission in evidence and the effect of certificates, in proceedings for offences against this section, of the measurement of the speed or other matter relating to the use of vessels by measuring devices.

(7) In any proceedings for an offence against this section, proof of the display of a notice in accordance with this section is not required until evidence is given to the contrary.

12. Reckless, negligent, dangerous navigation

(1) **Reckless or negligent navigation** — A person must not operate a vessel in any navigable waters recklessly or negligently.

Maximum penalty: 50 penalty units.

(2) **Dangerous navigation** — A person must not operate a vessel in any navigable waters at such a speed or otherwise in any way that is dangerous to the public.

Maximum penalty: 50 penalty units.

(3) **Other dangerous acts** — A person who is on a vessel in navigable waters, or is being towed by such a vessel, must not do anything that is dangerous to the public.

Maximum penalty: 50 penalty units.

(4) Definition in this section—

dangerous to the public includes anything that causes or is likely to cause injury to any person or damage to any property.

13. Unreasonable interference by operation or use of vessel

A person must not—

(a) operate a vessel in any navigable waters; or

(b) make any other use of a vessel in any navigable waters,

in a manner that interferes unreasonably with the lawful use of those waters (or of adjoining land) by other persons.

Maximum penalty: 50 penalty units.

14. Protection of navigation aids

(1) A person must not, without reasonable excuse, remove, damage, interfere with or obstruct the use of any navigation aid.

Maximum penalty: 50 penalty units.

(2) A person may be charged with this offence and with an offence under section 164 of the *Criminal Code 2007* (Removing or concealing buoys, etc) but may only be convicted of one offence in respect of the same conduct or action.

15. Removal of obstructions in navigable waters

(1) In this section, **obstruction to navigation** means anything in, over or on navigable waters (including a vessel, whether wrecked or not) that—

(a) is a danger to the safe navigation of vessels; or

(b) is moored, berthed or placed in contravention of any regulation or enactment,

but not including anything lawfully erected in, over or on navigable waters.

(2) The Harbour Master, on the advice or recommendation of the Authority, may direct the owner of or person responsible for an obstruction to navigation to remove the obstruction within such time as is specified in the notice. Any such owner or person who fails, without reasonable excuse, to comply with the direction is guilty of an offence.

Maximum penalty: 50 penalty units.

(3) The Harbour Master, on the advice or recommendation of the Authority, may remove, or authorise the removal of, any obstruction to navigation in such manner as the Authority thinks fit (whether or not the Authority has issued a direction for its removal under this section). The obstruction may be removed by its destruction if it is reasonable to do so in the circumstances.

(4) The Harbour Master, on the advice or recommendation of the Authority may, subject to and in accordance with the regulations, dispose of anything removed under this section.

(5) The Harbour Master may recover as a debt in a court of competent jurisdiction the reasonable costs and expenses incurred by the Harbour Master in the exercise of the Harbour Master's powers under this section from the owner of or person responsible for the obstruction to navigation.

(6) Nothing in this section requires the Harbour Master to obtain or first receive any advice or recommendation from the Authority before issuing any direction or taking any action.

16. Regulation of aquatic activities in navigable waters

(1) In this section—

aquatic activity means—

(a) an activity by one or more persons involving vessels or equipment that is conducted in or on any navigable waters and that restricts or may have an adverse effect upon the availability of those waters for normal use by the public; or

(b) a race or exhibition involving vessels or equipment that is conducted in or on any navigable waters.

conduct an aquatic activity includes promoting or organising the activity for a purpose or carrying out the activity by an individual whether or not in concert with others and whether or not for profit.

(2) Activities to which this section is intended to apply include the operation of PWC's, and sailboards.

(3) The regulations may prohibit or regulate the conduct of aquatic activities.

(4) Any such regulation may—

(a) prohibit the conduct of aquatic activities without a licence or other approval from the Authority;

(b) designate an area or areas of navigable waters to be closed to particular aquatic activities permanently or from time to time;

(c) provide for the seizure of a vessel or equipment used in contravention of the regulations and for their disposal by order of a court; and

(d) provide for penalties not exceeding 10 penalty units for breach of the regulations.

17. Regulations relating to safety of navigation

(1) The regulations may make provision for or with respect to the safety of navigation.

(2) In particular, the regulations may make provision for or with respect to—

(a) the operation of vessels in navigable waters; and

(b) vessels or objects that have been abandoned in navigable waters; and

(c) the activities of persons that affect navigation (including PWC, sailboards, divers or other persons in or on navigable waters including persons carried on vessels); and

(d) navigation aids; and

(e) cables, wires, pipes or other material crossing over or under any navigable waters, and their supporting structures; and

(f) the safety of port or jetty operations relating to vessels, passengers and cargo.

(3) The regulations may provide that a person may apply to the Administrative Appeals Tribunal for a review of a decision made under the Act or the regulations other than a decision to prosecute or hold any inquiry or conduct any investigation.

Part 3 — Boating safety — Alcohol and drugs

18. Definitions

(1) In this Part—

drug has the same meaning as it has in the *Traffic Act 2010.*

juvenile means a person who is not more than 16 years of age.

major offence means—

(a) a crime or offence by which the death of or bodily harm to another person was caused by or arose out of the operation of a vessel; or

(b) an offence against this Part.

operate a vessel includes —

(a) being towed by a vessel, whether on a water ski, aquaplane, paraflying device or other device; or

(b) act as observer on a vessel, for safety purposes, of any person being towed by the vessel.

(2) A reference in this Part to this Part includes a reference to Schedule 1.

19. Application of Part

(1) This Part applies to all vessels. However, this Part does not apply to a surfboard or similar device used by a swimmer or surfer to support the swimmer or surfer in the water (other than a sailboard or a device being towed by a vessel).

(2) This Part applies to a vessel only while the vessel is underway.

(3) This Part applies to all navigable waters.

20. Prescribed concentrations of alcohol

A reference in this Part to a special range prescribed concentration of alcohol is reference to one of the following —

(a) the **novice range prescribed concentration of alcohol** is reference to a concentration greater than zero but less than 0.08 grams of alcohol in 100 millilitres of blood;

(b) the **low range prescribed concentration of alcohol** is a reference to 0.08 grams or more, but less than 0.10 grams, of alcohol in 100 millilitres of blood; and

(c) the **middle range prescribed concentration of alcohol** is a reference to a concentration of 0.10 grams or more, but less than 0.15 grams, of alcohol in 100 millilitres of blood; and

(d) the **high range prescribed concentration of alcohol** is a reference to a concentration of 0.15 grams or more of alcohol in 100 millilitres of blood.

21. Operating vessel under influence of alcohol or other drug

(1) A person must not operate a vessel in any waters while under the influence of alcohol or any other drug.

Maximum penalty: 15 penalty units.

(2) The master of a vessel must not permit a person to operate in any waters a vessel in the charge of the master if the master is aware, or has reasonable cause to believe, that the person is under the influence of alcohol or any other drug.

Maximum penalty: 15 penalty units.

(3) If a person is charged with an offence under this section—

(a) the information may allege the person was under the influence of more than one drug and is not liable to be dismissed on the ground of uncertainty or duplicity if each of those drugs is described in the information; and

(b) the offence is proved if the court is satisfied beyond reasonable doubt that the defendant was under the influence of—

(i) a drug described in the information; or

(ii) a combination of drugs any one or more of which was or were described in the information;

(c) the court may be satisfied under paragraph (b) without evidence of a breathalyser or other instrument.

22. Operating vessel or supervising juvenile with prescribed concentration of alcohol in blood

(1) A person who operates a vessel in any waters while there is present in the person's blood the novice range prescribed concentration of alcohol is guilty of an offence if—

(a) the person is under 18 years of age; or

(b) the person operates the vessel for commercial purposes.

Penalty: (a) in the case of a first offence—to a penalty not exceeding 5 penalty units; or

(b) in the case of a second or subsequent offence—to a penalty not exceeding 10 penalty units.

(2) A person who operates a vessel in any waters while there is present in the person's blood the prescribed concentration of alcohol greater than the novice range is guilty of an offence.

(3) A person who—

(a) is required by or under this Act to supervise a juvenile operator of a motor vessel; and

(b) permits the juvenile to operate the motor vessel in any waters while a concentration in the novice range or above is present in the blood of the person,

is guilty of an offence.

(4) A person who is guilty of an offence under this section is liable, if there is present in the person's blood the **low range prescribed concentration of alcohol—**

(a) in the case of a first offence—to a penalty not exceeding 5 penalty units; or

(b) in the case of a second or subsequent offence—to a penalty not exceeding 10 penalty units.

(5) A person who is guilty of an offence under this section is liable, if there is present in the person's blood the **middle range prescribed concentration of alcohol**, to a penalty not exceeding 10 penalty units, or to imprisonment for a period not exceeding 6 months, or both.

(6) A person who is guilty of an offence under this section is liable, if there is present in the person's blood the **high range prescribed concentration of alcohol—**

(a) in the case of a first offence—to a penalty not exceeding 15 penalty units, or to imprisonment for a period not exceeding 9 months, or both; or

(b) in the case of a second or subsequent offence—to a penalty not exceeding 20 penalty units or to imprisonment for a period not exceeding 12 months, or both.

(7) For the purposes of this section, if a person is guilty of an offence under this section, that offence—

(a) is a second or subsequent offence under this section if and only if, within the period of 5 years immediately before being convicted of the offence, the person was convicted of a major offence; and

(b) in any other case is to be treated as a first offence.

23. Double jeopardy

(1) A person is not liable to be convicted (in respect of the same act or omission) of both—

(a) an offence under section 21 of operating a vessel while under the influence of alcohol; and

(b) an offence under section 22.

(2) A person is not liable to be convicted (in respect of the same act or omission) of both —

(a) an offence under section 21 of operating a vessel while under the influence of alcohol; and

(b) an offence of refusing or failing to submit to a breath analysis or to provide a sample of blood or urine.

24. Breath analysis and other related provisions

The provisions of the Schedule apply and until such time as regulations may prescribe for this Part, section 32 (and the Regulations for the purposes of that section) of the *Traffic Act 2010* apply so far as they may be applicable and are not inconsistent with the provisions of this Part (including the use of equipment and machines for breath testing).

Part 4 — Marine certificates

Division 1 — General

25. Types of marine certificates

For the purposes of this Act, there are the following types of marine certificates—

(a) vessel registration certificate—being a marine certificate for a vessel that is required by division 2 of Part 5;

(b) seaworthy certificate—being a certificate that is required by division 3 of Part 5;

(c) a boat driving licence — being a licence to operate a power driven recreational vessel that is required by division 4 of Part 5;

(d) any other certificate or licence or approval that is declared by the regulations to be a marine certificate (whether for the purposes of all or only specified provisions of this Act).

Division 2 — Grant of marine certificates and related matters

26. The Marine Registrar and Deputy Marine Registrar

(1) For the purposes of this Act, there is a Marine Registrar who is the person from time to time appointed as the Registrar of Motor Vehicles under the *Traffic Act 2010*.

(2) The Registrar shall exercise such powers and functions as are prescribed.

(3) The powers of the Registrar include—

(a) the power to do any act or thing, or to exercise any function or duty required of the Registrar or as prescribed;

(b) the power to determine the nature, type, description, and category of any class or classes of vessel for which a licence may be issued;

(c) the power to determine the content, manner, venue, and nature of any test required for the issue of a marine certificate, and to determine the level or standard for passing such test; and

(d) the power to determine the particulars, nature, class, or category of any endorsement and condition to be attached to the issue of any marine certificate.

(4) There shall be a Deputy Marine Registrar who is the person from time to time appointed as Deputy Registrar of Motor Vehicles under the *Traffic Act 2010.*

(5) The Deputy Registrar shall have and may exercise all the powers of the Registrar —

(a) when the Registrar is for any reason unable to act; and

(b) during a vacancy in the office of Registrar; and

(c) subject to the control and direction of the Registrar - at any other time.

(6) Where, under this Act —

(a) the exercise of a power or function by the Registrar; or

(b) the operation of this Act,

is dependent on the opinion, belief or state of mind of the Registrar in relation to a matter —

(c) that power or function may be exercised by the Deputy Registrar; or

(d) that provision may operate,

on the opinion, belief or state of mind of the Deputy Registrar in relation to the matter.

27. Grant of certificates and conditions

(1) Marine certificates are to be granted by the Registrar.

(2) The Registrar may approve or refuse applications for marine certificates in accordance with this Act and the regulations.

(3) The Registrar may take such advice from the Authority in connection with compliance with standards for the grant of a marine certificate as the Registrar considers necessary or appropriate or as may be required by regulation.

(4) Marine certificates may be granted unconditionally or subject to conditions.

(5) Any such condition may relate to any matter concerning marine safety, including insurance coverage, or indemnities, for damage or injury caused in connection with the activity to which the licence relates.

(6) After granting a marine certificate, the Registrar may, by notice in writing to the holder of the certificate—

(a) impose conditions or further conditions on the certificate; or

(b) vary or revoke any of the conditions to which the certificate is subject.

(7) A marine certificate is also subject to such conditions as are prescribed by the regulations. Any such condition cannot be varied or revoked by the Registrar under this section.

(8) A boat driving licence can not be issued to a person under the age of 15 years.

(9) A condition under this section may restrict or limit an activity authorised by the certificate.

28. Offence to contravene conditions of certificate

The holder of a marine certificate must not, without lawful excuse, contravene any condition to which the certificate is subject.

Maximum penalty~~5~~0 penalty units.

29. Duration of certificate

(1) A marine certificate remains in force (unless sooner cancelled) for the period specified in the certificate or (if no such period is specified) until cancelled.

(2) A marine certificate is not in force during any period it is suspended.

30. Fees for certificates

The fees payable in respect of applications for certificates are to be determined by regulation.

31. Offences

(1) A person must not pretend to be the holder of a marine certificate.

(2) A person must not, for the purpose of obtaining a marine certificate, provide any information or produce any document that the person knows is false or misleading in a material particular.

(3) A person must not operate a recreational vessel for which a boat driving licence is required unless that person is the holder of a boat driving licence that permits the person to operate a recreational vessel of the type being operated.

Maximum penalty~~5~~0 penalty units.

(4) If a person in breach of subsection (3) is a person under the age of 16 years the owner of the recreational vessel concerned is liable for any penalty imposed upon the offender as principal offender.

32. Regulations relating to certificates

(1) The regulations may make provision for or with respect to marine certificates.

(2) In particular, the regulations may make provision for or with respect to the following—

(a) the classes of a particular type of certificate;

(b) restrictions on the authority conferred by a particular type of certificate or class of certificate, whether by reference to the length of the vessel concerned or otherwise;

(c) applications for certificates;

(d) the eligibility of applicants (including age, qualifications, knowledge, experience, training and health);

(e) the testing or examination of applicants or the holders of certificates to determine whether they are or continue to be eligible to hold a certificate;

(f) the continuing education and training of holders of certificates;

(g) the grant of further certificates after the expiry of certificates;

(h) the granting of different types of certificates in the same document;

(j) the replacement of certificates that are lost, destroyed or defaced;

(k) the return of certificates that require alteration;

(m) fees payable in connection with certificates and applications for certificates.

Division 3 —Suspension or cancellation of marine certificates

33. Suspension or cancellation of certificates by Minister

(1) A marine certificate may be cancelled—

(a) by the Minister in accordance with section 78; or

(b) by the Registrar—

(i) if the person concerned is not qualified, or is no longer qualified, to hold the certificate; or

(ii) in such other circumstances as are prescribed by regulation.

(2) The Minister may at any time remove the suspension of a marine certificate (except a suspension imposed by a court) cancelled under paragraph 1(a), or if cancelled by the Registrar under paragraph 1(b), upon the recommendation of the Authority.

34. Suspension or cancellation of certificates by court in connection with offence

(1) A court that convicts the holder of a marine certificate of a marine safety offence in connection with activities to which the certificate relates may, by order—

(a) cancel or suspend the certificate; and

(b) disqualify the convicted person from holding or obtaining such a certificate for a period specified by the court; and

(c) order the seizure of a vessel involved in the commission of the offence and that it be held for a specified period or sold or destroyed.

(2) Any disqualification under this section is in addition to any penalty imposed for the offence.

(3) In this section, a **marine safety offence** means any offence relating to the operation of a vessel that causes the death or injury of a person or damage to property, or that causes a risk of any such death, injury or damage.

35. Return of suspended or cancelled certificate

The holder of a marine certificate suspended or cancelled under this Act must deliver the certificate to the Registrar as soon as practicable after the certificate is suspended or cancelled.

Maximum penalty—10 penalty units.

Division 4 — Review by Administrative Appeals Tribunal

36. Definition of "Tribunal"

In this division, **Tribunal** means the Administrative Appeals Tribunal established by the *Administrative Appeals Tribunal Act 1975* (Cth).

37. Rights of review

A person who is dissatisfied with any of the following decisions under this Act may apply to the Tribunal for a review of the decision—

(a) the refusal to grant a marine certificate to the person;

(b) the imposition of conditions on the person's marine certificate (otherwise than by regulation);

(c) the suspension or cancellation of the person's marine certificate (otherwise than by a court).

38. Failure to make decision

For the purposes of this division, an application for the grant of a marine certificate is taken to have been refused if the certificate is not granted within 60 days (or such other period as is prescribed by the regulations) after the application was duly made.

Part 5 — Requirements for vessels

Division 1 — Unsafe vessels

39. Definition of "unsafe vessel"

(1) A vessel is an **unsafe vessel** for the purposes of this division if, because of—

(a) the condition or equipment of the vessel; or

(b) the manner or place in which cargo or equipment on the vessel is stowed or secured; or

(c) the nature of the cargo; or

(d) the overloading of the vessel with persons or cargo (including the submergence of the vessel's load line); or

(e) the number or qualifications of its crew; or

(f) any other reason—

the operation of the vessel is a danger to human life.

(2) A danger to human life includes anything which is likely to be a danger to human life.

40. Owner or master not to operate unsafe vessel

(1) The owner of a vessel must not operate, or permit to be operated, the vessel if the owner knows that it is an unsafe vessel.

Maximum penalty—100 penalty units or 2 years imprisonment, or both.

(2) The master of a vessel must not operate, or permit to be operated, a vessel if the master knows that it is an unsafe vessel.

Maximum penalty—100 penalty units or 2 years imprisonment, or both.

(3) The fact that an unsafe vessel has been detained under this division does not prevent a prosecution for an offence against this section.

(4) Knowledge that a vessel is an unsafe vessel includes where a reasonable person would know or ought reasonably to know that a vessel is unsafe in the circumstances of the case.

41. Detention of unsafe vessels

(1) The Harbour Master, may order a vessel to be provisionally detained if it appears to the Minister, the Harbour Master, or the Registrar to be an unsafe vessel. The vessel may not be provisionally detained unless it is in Norfolk Island waters.

(2) When a vessel has been ordered to be provisionally detained the following provisions apply—

(a) the Harbour Master must, as soon as practicable, cause to be served on the master or owner of the vessel a notice of the detention and a written statement of the reasons for the detention;

(b) the Harbour Master, is required to appoint an investigator to investigate the vessel in accordance with Part 6 and report to the Minister.

(c) The Minister may, on receipt of the report—

(i) order its release; or

(ii) if of the opinion that it is an unsafe vessel, order it to be finally detained either absolutely or until the performance of such conditions as the Minister considers necessary to ensure that the vessel is not an unsafe vessel.

(d) The Harbour Master may at any time (and without any report) order the release of the vessel (with or without conditions) if satisfied that the vessel is not an unsafe vessel.

(e) Before an order for final detention is made, the Harbour Master must cause a copy of the report to be served on the master or owner of the vessel.

(f) The Harbour Master must cause a copy of an order for final detention to be served on the owner and master of the vessel (if their identity and whereabouts are known to the Harbour Master).

(3) When any order for the final detention of a vessel is made, the vessel must not be released until the Harbour Master is satisfied that its further detention is no longer necessary, and orders its release.

42. Operating detained vessel

(1) The owner of a vessel must not cause or allow the vessel to be taken on a voyage if the owner knows that the vessel has been detained under this division and has not been duly released.

Maximum penalty—100 penalty units or 2 years imprisonment, or both.

(2) The master of a vessel must not take the vessel on a voyage if the master knows that the vessel has been detained under this division and has not been duly released.

Maximum penalty—100 penalty units or 2 years imprisonment, or both.

(3) An agent for a vessel that has been detained under this division and has not been duly released must not assist the owner or master of the vessel to contravene this section.

Maximum penalty—100 penalty units or 2 years imprisonment, or both.

(4) A person must not obstruct or fail to comply with any reasonable requirement of a person appointed by the Minister or the Harbour Master to take charge of a vessel detained under this division in connection with the exercise of that person's functions.

Maximum penalty—20 penalty units.

43. Costs of detention

If a vessel is detained under this division without reasonable cause, the Administration is liable to pay the owner of the vessel compensation for any loss or damage resulting from the detention.

Division 2 — Vessel registration

44. Vessels requiring registration

(1) All commercial and recreational vessels that operate in Norfolk Island waters are required to be registered under this Act unless exempt from registration.

(2) A vessel that is required to be registered under this Act is a **registrable vessel** for the purposes of this Act.

45. Vessels exempt from registration

(1) A vessel is exempt from registration under this Act if the vessel is in Norfolk Island waters and is proceeding on an overseas voyage. An Australian fishing vessel is exempt from registration under this Act if it is in Norfolk Island waters and is proceeding on an overseas voyage.

(2) A vessel is exempt from registration under this Act if the vessel—

(a) is not ordinarily operated in Norfolk Island waters, and

(b) has been in Norfolk Island waters for less than 3 months, and

(c) is registered under the law of the Commonwealth, a State, or a Territory, or of another country, and is operated in accordance with that law.

(3) A vessel is exempt from registration under this Act if it is of a class exempted by the regulations.

(4) A vessel is exempt from registration under this Act if the Minister exempts it from registration by order in writing given to the owner or master of the vessel.

46. Offence to operate unregistered vessel

(1) The owner of a registrable vessel must not operate the vessel in Norfolk Island waters unless the vessel is registered under this Act and the owner is the holder of the vessel registration certificate.

(2) The master of a registrable vessel must not operate the vessel in Norfolk Island waters if the vessel is not registered under this Act or is being operated in contravention of any conditions of its vessel registration certificate. It is a defence to a prosecution under this subsection if the master establishes that he or she did not have any reasonable cause to believe that the vessel was not registered or was being so operated.

Maximum penalty~~–~~50 penalty units.

Note:—The registration of a vessel is a marine certificate--Part 4 deals with the grant of, and other matters relating to, any such certificate. A contravention of the conditions of such a certificate by the owner is an offence - see section 28.

47. Additional grounds for refusal, suspension or cancellation of registration

In addition to any other ground on which the Registrar may refuse to register a vessel or may suspend or cancel its registration, the Registrar may, or may upon the recommendation of the Harbour Master, do so on the following grounds—

(a) **on environmental grounds**~~–~~that is, the vessel causes or will cause unreasonable noise, air or other pollution because of its design, construction or equipment;

(b) **on aesthetic grounds**~~–~~that is, the vessel is or will be an eyesore in the port or other area in which it operates or is moored or in which it is proposed to operate or be moored.

Division 3 — Seaworthy certificates for commercial vessels

48. Offence to operate commercial vessel without seaworthy certificate

(1) The owner of a registrable vessel that is a commercial vessel must not operate the vessel in Norfolk Island waters unless the vessel has a seaworthy certificate under this Act.

Maximum penalty—100 penalty units.

(2) The master of a registrable vessel that is a commercial vessel must not operate the vessel in Norfolk Island waters if the vessel does not have a seaworthy certificate under this Act or is being operated in contravention of any conditions of its seaworthy certificate. It is a defence to a prosecution under this subsection if the master establishes that he or she did not have any reasonable cause to believe that the vessel did not have such a seaworthy certificate or was being so operated.

Maximum penalty—100 penalty units.

(3) A seaworthy certificate is not required for a commercial vessel if—

(a) the vessel is of a class exempted by the regulations; or

(b) the Registrar exempts the vessel by order in writing given to the owner or master of the vessel or by a condition of its registration under this Act.

Note: — A seaworthy certificate for a vessel is a marine certificate—Part 4 deals with the grant of, and other matters relating to, any such certificate. A contravention of the conditions of such a certificate by the owner is an offence--see section 28.

49. Grant of seaworthy certificate and seaworthy schedule for commercial vessels

(1) A seaworthy certificate is not to be granted for a registrable vessel unless the Registrar is satisfied that the vessel is safe to operate and complies with such requirements as may be prescribed.

(2) Without limiting subsection (1), the Registrar may refuse to grant a seaworthy certificate for a registrable vessel if the Registrar decides to refuse any application for the registration of the vessel.

(3) The Registrar may issue a schedule with a seaworthy certificate and require the vessel, as a condition of the seaworthy certificate, to be inspected in accordance with that schedule to ensure that it continues to comply with relevant requirements and to be safe to operate.

Division 4 — Boat driving licences for power-driven recreational vessels

50. Vessels to which division applies

(1) This division applies to any power-driven recreational vessels operating in or from Norfolk Island waters, other than vessels exempted by the regulations and vessels that are not registrable vessels.

(2) In this division, **recreational vessel** includes a commercial vessel while hired or used for recreational or sporting purposes and not hired or used for any commercial industrial purpose.

51. Offence to operate recreational vessel without boat driving licence

A person must not operate a recreational vessel to which this division applies as its master if the person does not hold a boat driving licence under this Act.

Maximum penalty—15 penalty units.

Note:— A boat driving licence is a marine certificate—Part 4 deals with the grant of, and other matters relating to, any such licence.

52. Exemption from requirement to hold boat driving licence

A person is exempt from the requirement to hold a boat driving licence if the person—

(a) is not ordinarily resident in Norfolk Island; and

(b) has been operating power-driven recreational vessels in Norfolk Island waters for less than 3 months; and

(c) is licensed under the law of the Commonwealth, a State, or a Territory, or of another country, and is operating the vessel in accordance with the conditions of that licence.

Division 5 — Miscellaneous provisions relating to vessels

53. Recognised marine certificates

(1) This section applies to a marine certificate that is a vessel registration certificate or a seaworthy certificate required to be held by this Part.

(2) A marine certificate under this Act may take the form of the grant of recognition for a marine certificate (or similar licence) granted under the law of the Commonwealth, of a State or an Australian Territory or of another country.

(3) In that case—

(a) a reference in this Act to the grant of the relevant marine certificate is a reference to the grant of recognition of the licence, and

(b) a reference in this Act to the cancellation or suspension of the relevant marine certificate is a reference to the withdrawal of recognition indefinitely or for a period, and

(c) a reference in this Act to the disqualification of the holder of the relevant marine certificate includes a reference to the disqualification of the person from having a licence recognised.

54. Mutual recognition of marine certificates

(1) The regulations may provide for automatic recognition for any marine certificate to which section 53 applies.

(2) Any such recognition is subject to compliance with the conditions of the licence and of any law of the jurisdiction in which the licence was issued that relates to authority conferred by the licence.

55. Regulation of marine safety equipment or facilities for recreational or other vessels

(1) The regulations may require the installation or carriage on recreational or other vessels of marine safety equipment or facilities.

(2) The requirements of any such regulation may extend to the wearing of safety equipment by persons driving and passengers on PWC, sailboards, water skiers, paragliders, and others engaged in similar aquatic activities.

56. Regulation of design and construction of recreational vessels

The regulations may make provision for or with respect to the design and construction of recreational vessels.

57. Regulation of passengers

The regulations may make provision for or with respect to—

(a) the maximum number of passengers or other persons to be carried on vessels; or

(b) the conduct of passengers on vessels, including the removal of passengers from vessels; or

(c) the wearing of safety apparel by passengers on vessels.

58. Vessel identification, etc

The regulations may require identifying and other information to be displayed on vessels (including the display of particulars of registration of vessels or the maximum carrying capacity of vessels).

Part 6 — Marine investigation and enforcement

Division 1 — Preliminary

59. Definitions

(1) In this Part—

incompetence of the holder of a marine certificate includes the inefficient performance of any lawful duty required of the holder of that licence.

marine accident means any of the following events involving a vessel operating in navigable waters—

(a) the loss of life of, or injury to, any person on board the vessel;

(b) the loss of a person from the vessel;

(c) the loss of life or injury to a person that is caused by the vessel;

(d) the loss, or presumed loss, of the vessel (including the sinking or abandonment of the vessel);

(e) the capsizing, grounding or flooding of the vessel;

(f) the collision of the vessel with another vessel or with any object;

(g) the vessel being disabled at sea (in any case in which it requires assistance);

(h) any fire on board the vessel;

(i) any damage being caused to the vessel (including any structural failure);

(j) any damage to the environment caused by the vessel or by any substance on, or discharged from, the vessel;

(k) any incident that causes danger of any of the above;

but does not include anything excluded from this definition by the regulations.

misconduct by the holder of a marine certificate includes—

(a) carelessness in carrying out any lawful duty required of that holder; or

(b) carrying out any duty while under the influence of alcohol or any other drug; or

(c) any other act or omission that indicates that the person is not a fit and proper person to act in the capacity required by the licence.

(2) In this Part, a reference to the **holder** of a marine certificate includes a reference to a person whose licence is suspended or cancelled or has otherwise ceased to have effect.

60. Application

This Part extends, in the case of the holder of a marine certificate, to the investigation of a marine accident or any incompetence or misconduct by the holder, even though it occurred or is alleged to have occurred anywhere outside Norfolk Island.

61. Appointment of authorised officers (other than ex-officio authorised officers)

(1) The Minister may appoint, as an authorised officer for the purposes of the marine legislation, any person (including a class of persons) who is a public sector employee.

(2) The authorisation of such a person as an authorised officer can be given generally, or subject to conditions and restrictions or only for limited purposes. If the authorisation is subject to conditions or restrictions or only for limited purposes, nothing in this Act authorises or requires the authorised officer to act in contravention of the condition or restriction or for other purposes.

Note: — An **authorised officer** is defined in section 4 and includes a person appointed under this section.

62. Identity cards for authorised officers

(1) The Registrar is required to give an identity card to each authorised officer.

(2) An identity card is to be in a form approved by the Minister.

(3) An authorised officer when exercising the functions of the officer is required to produce his or her identity card if requested to do so by an affected person. This subsection does not apply if the officer gives a direction by radio or other communication device.

(4) A person who has been issued with an identity card must return it to the Registrar on demand.

Maximum penalty—10 penalty units.

(5) Until an authorised officer is given an identity card, the officer's instrument of appointment is taken to be an identity card for the purposes of subsection (3).

Division 2 — Duties of masters and owners in case of marine accidents

63. Requirements of masters in case of accident involving vessels

(1) The master of a vessel involved in a marine accident involving 2 or more vessels or the death of or injury to any person—

(a) must stop the vessel; and

(b) must give any necessary assistance that the master is able to give to any person injured or vessel damaged in the accident.

(2) The master of a vessel involved in a marine accident, if required to do so by any person having reasonable grounds for so requiring—

(a) must produce any marine certificate required under this Act to be held by the master; and

(b) must give particulars of his or her name and place of residence, the name and address of the owner of the vessel, the name of the vessel and any distinguishing number that is, or is required to be, displayed on the vessel by law.

(3) The master of a vessel involved in a marine accident, if required so to do by any authorised officer, must give such particulars of the marine accident as the officer requires and the master is able to give.

64. Duty to report marine accidents, etc

(1) When a marine accident occurs in connection with a vessel, the master of that vessel (and the owner of the vessel if aware of the accident) must send a report to the Harbour Master and the officer in charge, and if a death has occurred, the Coroner, containing particulars of the accident as soon as practicable by the quickest means available.

(2) A report is not required to be sent—

(a) if a report of the marine accident has already been sent by the owner or master, or

(b) in any other case prescribed by the regulations.

(3) After receiving a report of a marine accident, the Harbour Master or the officer in charge may require further information from the owner or master of a vessel involved in the accident to determine whether an investigation should be ordered into the marine accident.

(4) The provision of a report of a marine accident to any officer of the Norfolk Island police will be sufficient compliance with this provision.

(5) Where any police officer in Norfolk Island receives a report of a marine accident, such police officer shall ensure a copy thereof is provided to the officer in charge and the Harbour Master and if a death has occurred, the Coroner.

65. Marine accident particulars

The particulars of a marine accident required to be furnished or reported under this division are as follows—

(a) the time, place and nature of the marine accident;

(b) the name and distinguishing number (if any) of each vessel involved in the marine accident;

(c) the name and address of each person who was involved in or was a material witness to the marine accident;

(d) any loss of life or the estimated extent of any injury or damage resulting from the marine accident.

66. Preservation of evidence

The owner or master of a vessel involved in a marine accident (or other person concerned in the accident) must take all reasonable measures to preserve any evidence relating to the marine accident (including nautical charts, log books and other documents) if he or she has reason to believe that the evidence may be required for an investigation into the marine accident.

67. Offence

A person who—

(a) without reasonable excuse fails to comply with any provision or requirement of this division; or

(b) furnishes any particulars or information under this division that the person knows to be false or misleading—

is guilty of an offence.

Maximum penalty—~~5~~0 penalty units.

Division 3 —Investigation of marine accidents and other marine safety matters

68. Ordering of investigation

(1) The Minister may order an investigation into any of the following—

(a) a marine accident that has been reported under division 2 or that the Harbour Master believes may have occurred;

(b) any situation that has the potential to cause marine accidents;

(c) any incident requiring a marine search and rescue operation;

(d) any alleged incompetence or misconduct of the holder of a marine certificate;

(e) a vessel that has been provisionally detained as an unsafe vessel;

(f) any incident in connection with a port facility that has caused, or has the potential to cause, a danger to life or serious damage to property.

(2) Nothing in this Act or in any regulation shall prevent or hinder or delay in any way the undertaking of any investigation or inquiry into any matter in subsection (1) by any police officer, officer appointed under this Act, any officer as defined by the *Immigration Act 1980*, any other law enforcement or marine safety authority, any Commissioner acting under the *Royal Commissions Act 1928* or by any Coroner.

69. Principal purposes of investigation

The principal purposes of an investigation under this division are—

(a) to determine the circumstances of or concerning the marine accident or other incident as they affect marine safety; and

(b) to make recommendations to prevent the recurrence of any similar marine accident or other incident.

70. Appointment of investigator

(1) The Minister may appoint as the investigator for the purposes of an investigation—

(a) an authorised officer; or

(b) any other person possessing qualifications or experience relevant to the investigation.

(2) Two or more persons may be appointed as joint investigators for the purposes of an investigation.

(3) An investigator is subject to the control and direction of the Minister, except in relation to the contents of any report made by the investigator.

71. Powers of investigator

For the purpose of conducting an investigation, an investigator is an authorised officer and has all the powers and other functions of an authorised officer under this Part.

72. Conduct of investigations

(1) An investigator is to conduct the investigation in such manner as the investigator considers appropriate having regard to the principal purposes of the investigation.

(2) An investigation may extend to all relevant events and circumstances preceding the marine accident or other incident.

(3) At any time during the course of an investigation the Minister may determine that the investigation be discontinued and that a report be prepared and submitted by the investigator.

(4) For the purposes of an investigation, the investigator may rely on any evidence relating to the matter under investigation given in any criminal or civil proceedings or in any coronial or other judicial inquiry.

73. Report to Minister of investigation

(1) On the completion of the investigation, the investigator must prepare and submit a report to the Minister.

(2) The report must include—

(a) findings as to the facts of the marine accident or other incident, and where the facts cannot be established with certainty, an opinion as to the most probable facts; and

(b) in the case of a marine accident, the cause or most probable cause of the accident; and

(c) any observations and recommendations to prevent the recurrence of similar marine accidents or incidents that the investigator considers should be made.

(3) The investigator may, at any time during an investigation, prepare an interim report and submit it to the Minister.

74. Representations by persons affected by report

(1) If a report, or any part of a report, relates to a person's affairs to a material extent, the investigator must, if it is reasonable to do so, serve that person with a copy of the report or the relevant part of that report.

(2) Any such person may, within 14 days after receiving it, make written representations relating to the report or the relevant part of the report to the investigator.

(3) The investigator is to consider any such representations.

(4) The investigator—

(a) may make further investigations; and

(i) amend the report; or

(ii) make no change to the report; and

(b) is to notify the person who made the representations of the result of the person's representations; and

(c) is to submit a final report to the Minister (setting out the substance of the representations and the conclusions and action taken by the investigator with respect to them).

75. Suspension of marine certificate pending investigation

(1) If the Minister has ordered an investigation under this division that involves any alleged incompetence or misconduct of the holder of a marine certificate, the Registrar may suspend the licence pending the investigation and determination of the matter if the Registrar has reason to believe that it would be dangerous for the holder of the licence to continue the activities authorised by the licence.

(2) A suspension under this section may not exceed 14 days.

(3) The Registrar may only extend the suspension beyond that period if authorised to do so by order of the Chief Magistrate. The Chief Magistrate may, on application by the Registrar, make such an order if satisfied there is reasonable cause to do so.

76. Action by Minister following report of investigation

(1) The Minister may take any action that is available to the Minister in connection with a report submitted by an investigator.

(2) In particular, the Minister may do any of the following—

(a) take no action;

(b) take action to improve marine safety procedures;

(c) reprimand the holder of a marine certificate for any incompetence or misconduct;

(d) suspend or cancel a marine certificate, or impose conditions on any such certificate, for any incompetence or misconduct of the holder;

(e) inform any other marine safety authority that has granted any similar certificate to the person concerned of the report and action taken by the Minister on the report;

(f) recommend to the Crown Counsel or the Norfolk Island Police that criminal or other legal proceedings be taken against a person.

(3) Any action that may be taken by the Minister under paragraphs (2)(d) or (e) may be taken by the Registrar at the direction of the Minister.

(4) Before taking action under this section, the Minister may conduct a further investigation of the matter or refer the matter to the same or a different investigator for further investigation and report under this division.

(5) Any action taken under this section may extend to more than one marine certificate held by a person.

(6) The Minister or the Registrar must give written notice to the holder of a marine certificate of any action taken under this section against that holder, together with a copy of the final investigation report.

77. Public release of report

(1) The investigator may, at any time during the course of an investigation, make recommendations to the Minister. The Minister, subject to any requirements or advice of the officer in charge, may cause them to be made public if the Minister in accordance with the advice of the officer in charge considers that it is in the interests of marine safety and the administration of justice to do so.

(2) Subject to subsection (1), the Minister may publicly release a report (or parts of any report) made to the Minister by an investigator.

(3) The Minister is not to publicly release a report or any part of it if it might prejudice the rights of any person in any criminal proceedings instituted in connection with the matter or if it might prejudice any criminal or coronial investigation in connection with the matter.

78. Protection from liability

Civil proceedings may not be brought against the Administration, the Minister, an investigator or any person who has supplied any information to the Minister or to an investigator in connection with an investigation under this division in respect of any matter contained in that information that is or is alleged to be defamatory or a breach of confidence.

Division 4 - Investigative powers of authorised officers

79. Application of Division

(1) This division applies to the following investigations—

(a) investigations to determine whether the marine legislation has been or may be contravened; or

(b) investigations under division 3.

(2) A power conferred by this division in respect of a vessel (other than a power to detain the vessel) may be exercised for the purpose of conducting random investigations of compliance with marine safety requirements.

(3) The provisions of this division are in addition to and do not derogate from the powers in sections 6-10 of the *Summary Offences Act 2005*.

(4) A person can not be charged with both an offence under this Act and the *Summary Offences Act 2005* if the matters constituting the alleged offence are substantially the same under each enactment.

(5) An authorised person who is a member of the Police Force exercising powers under this Act or the *Summary Offences Act 2005* is taken to have acted lawfully with respect to action by the officer leading to charging a person with an offence under one Act if the officer's actions are permissible under that Act or the other.

(6) The powers under the *Customs Act 1913* or the *Immigration Act 1980* of a person who is an authorised officer described in paragraphs (c) and (d) of the definition of authorised officer in subsection 4(1), are not affected by the provisions of this Act and may be exercised independently of any powers they may have under this Act.

80. Power to stop and board vessels

(1) For the purpose of conducting an investigation, an authorised officer may at any reasonable time—

(a) stop any vessel; and

(b) board any vessel; and

(c) enter any land for the purpose of boarding any vessel (other than land used for residential purposes); and

(d) take along any assistants or equipment required to assist the investigation.

(2) For the purpose of boarding the vessel, the authorised officer may direct the person operating the vessel to manoeuvre it in a specified manner or to a specified place or to secure it in a specified manner.

81. Other powers of entry

(1) For the purpose of conducting an investigation, an authorised officer may, at any reasonable time in the daytime or at any time when work is carried on there, enter any premises (other than premises used for residential purposes).

(2) The authorised officer is to give the occupier of premises reasonable notice of an intention to enter premises under this section unless—

(a) the entry is made with the consent of the occupier; or

(b) the entry is made to a part of the premises that is open to the public; or

(c) the entry is required urgently; or

(d) the giving of notice would defeat the purpose for which it is intended to exercise the power of entry.

(3) In this section, **premises** includes any vessel.

(4) Subject to this Act, the power to enter premises under this section includes a power to search for and to seize anything which in the opinion of the authorised officer may provide evidence of an offence under this Act, under any regulation or under any other law applicable to Norfolk Island notwithstanding the provisions of the *Criminal Procedure Act 2007*.

82. General investigative powers

For the purposes of conducting an investigation, the authorised officer may, in addition to any other power provided under this Act or under any other law applicable to Norfolk Island, do any of the following on any vessel boarded or premises entered under this division (or in connection with any vessel stopped but not boarded under this division)—

(a) search the vessel or premises;

(b) make inquiries of any person;

(c) take measurements and photographs and make recordings or gather information or evidence;

(d) examine or test any equipment or substance;

(e) take possession of any equipment or substance and detain it—

(i) for examination and testing; or

(ii) to ensure that it is available for use in evidence in any proceedings for an offence;

(f) require the production of any relevant document, and take possession or copies of, or examine, the document or any entry in that document;

(g) require any person to give the investigator any facilities and assistance within that person's control that are necessary to facilitate the conduct of the investigation.

83. Detention of vessel for purposes of investigation

(1) An authorised officer may detain a vessel for the purposes of an investigation, but only for so long as is necessary for the purposes of the investigation.

(2) An authorised officer may not detain a vessel for more than 48 hours unless authorised to do so by order of the Chief Magistrate. The Chief Magistrate may, on application by an authorised officer, make such an order if satisfied there is reasonable cause for doing so.

(3) The authorised officer may give the master or owner (or any other person) any directions required for the purpose of detaining the vessel.

84. Production of marine certificates

(1) The holder of a boat driving licence is required to carry the licence when doing anything for which the licence is required.

(2) An authorised officer may require the holder of a marine certificate who is doing anything for which the certificate is required to produce the holder's certificate.

(3) The holder of a marine certificate (other than a boat driving licence) is not required to produce the certificate at the time the requirement is made if the holder does not have the certificate in his or her possession at the time. In that case, the holder is required to produce the certificate to an authorised officer within 24 hours or within any longer period approved by an authorised officer.

(4) An authorised officer may seize any marine certificate that has been cancelled or otherwise ceased to have effect or that the officer has reason to believe is false.

85. Identification of person suspected of committing offence

An authorised officer may require a person whom the authorised officer has reason to suspect has committed an offence against this Act to state his or her full name and residential address.

86. Identification of owner and master of vessel

(1) An authorised officer may require information about the owner or master of a vessel under this section for the purpose of an investigation.

(2) A person must, if an authorised officer requires the person to do so, supply all the information the person has regarding the identity and address of the owner or the master of a vessel.

87. Power to require persons to attend to answer questions or produce documents or other things

(1) An authorised officer may, by notice in writing, require either or both of the following—

(a) the attendance of any person at any place to answer questions at an inquiry for the purposes of an investigation;

(b) the production of any documents or other things required by the authorised officer for the purposes of the investigation.

(2) At any such inquiry, the authorised officer—

(a) is not bound by the rules of evidence; and

(b) may conduct the inquiry without regard to legal forms; and

(c) may inform himself or herself in such manner as the officer thinks fit.

(3) At any such inquiry, the authorised officer may administer an oath or require any statement to be verified by statutory declaration.

88. [omitted]….

89. General provisions relating to functions under this division

(1) In the exercise of a function under this division, an authorised officer is to do as little damage as possible.

(2) A requirement that an authorised officer may make under this division may specify a reasonable time within which it is to be complied with. If no such time is specified, the requirement is to be complied with as soon as practicable after it is made.

90. Offences

(1) A person must not, without reasonable excuse, prevent or obstruct any person exercising a function under this division.

(2) A person must not, without reasonable excuse, refuse or fail to comply with a requirement made of the person under this division.

(3) A person must not give any information or make a statement pursuant to any requirement made under this division that the person knows is false or misleading.

Maximum penalty~~–5~~0 penalty units.

Part 7 — Legal proceedings

91. Penalty notices

(1) A police officer may serve a penalty notice on a person if it appears to the officer that the person has committed an offence against the marine legislation, being an offence prescribed by the regulations.

(2) A penalty notice is a notice to the effect that, if the person served does not wish to have the matter determined by a court, the person may pay, within the time and to the person specified in the notice, the penalty prescribed by the regulations for the offence if dealt with under this section.

(3) A penalty notice may be served personally or by post.

(4) If the amount of the penalty prescribed for an alleged offence is paid under this section, no person is liable to any further proceedings for the alleged offence.

(5) Payment under this section is not an admission of liability for the purposes of, and does not affect or prejudice, any civil claim, action or proceeding arising out of the same occurrence.

(6) The regulations may—

(a) prescribe an offence for the purposes of this section by specifying the offence or by referring to the provision creating the offence; and

(b) prescribe the amount of penalty for an offence if dealt with under this section; and

(c) prescribe different amounts of penalty for different offences or classes of offences.

(7) The amount of penalty prescribed under this section for an offence may not exceed one half of the maximum amount of penalty that could be imposed for the offence by a court.

(8) This section does not limit the operation of any other provision of, or made under, this or any other Act relating to proceedings which may be taken in respect of offences.

92. Summary proceedings for offences

Proceedings for an offence under this Act or the regulations—

(a) may be dealt with summarily before the Court of Petty Sessions;

(b) if commenced by or at the request of the Minister, Registrar, or an authorised officer shall be brought in the name of the Administration as informant.

93. Time within which proceedings may be commenced

Notwithstanding any other Act prescribing a time limit for prosecution commencement, proceedings for an offence under this Act or the regulations can not be commenced later than 2 years after the date alleged to be the date on which the offence was committed.

94. Offences by corporations

(1) If a corporation contravenes, whether by act or omission, any provision of this Act or the regulations, each person who is a director of the corporation or who is concerned in the management of the corporation is taken to have contravened the same provision if the person knowingly authorised or permitted the contravention.

(2) A person may be proceeded against and convicted under a provision pursuant to this section whether or not the corporation has been proceeded against or been convicted under that provision.

(3) Nothing in this section affects any liability imposed on a corporation for an offence committed by the corporation against this Act or the regulations.

95. Proof of lawful or reasonable excuse

If an act or omission is, by the marine legislation, made an offence when done or omitted without lawful or reasonable excuse, proof of the lawful or reasonable excuse lies on the accused.

96. Proof of certain matters not required

(1) A certificate signed or purporting to be signed by the Registrar and stating that—

(a) a person named in the certificate was or was not at a specified time the holder of a marine certificate or exemption under the marine legislation of a specified kind; or

(b) any such certificate or exemption held by a specified person was or was not subject to a specified condition—

is admissible in any legal proceedings and is evidence of the matters stated in the certificate.

(2) In any legal proceedings under the marine legislation, proof is not required (until evidence is given to the contrary) of the following—

(a) any order or action of the Minister, the Harbour Master or the Registrar;

(b) the fact that a vessel is subject to a provision of this Act in question;

(c) the fact that the defendant is, or at any relevant time was, the master of any vessel in question;

(d) the fact that the defendant is, or at any relevant time was, the owner or agent of any vessel in question;

(e) the fact that, at any relevant time, any vessel was not used solely for recreational or sporting purposes or was used for commercial purposes;

(f) the fact that any vessel was, at any relevant time, of such a tonnage or length that any provision of this Act applied to it;

(g) the appointment of any person under this Act;

(h) the fact that the defendant is, or at any relevant time was, the owner or occupier of, or in possession, control or charge of, any land or other thing in question;

(j) the fact that any land in question is, or at any relevant time was, vested in the Crown, the Administration, or any statutory body.

(3) In any legal proceedings under this Act, evidence that—

(a) a message or signal was transmitted, given or made by an authorised officer or a delegate of the Minister in the course of his or her duties; and

(b) the vessel to which the message or signal was transmitted, given or made was so located as to be able to receive the message or signal,

is evidence that the message or signal was received by the master of the vessel concerned.

97. Service of instruments (except in proceedings for offences)

(1) Any notice or other instrument issued, made or given for the purposes of the marine legislation may be served—

(a) by delivering it personally to the person to whom it is addressed; or

(b) by delivering it to the place of residence or business of the person to whom it is addressed and by leaving it there, with some person apparently over the age of 16 years, for him or her; or

(c) by posting it to the person addressed to the place last shown in the records of the Registrar; or

(d) in any manner in which any summons or other process in any proceedings for an offence under the *Court of Petty Sessions Act 1960* may be served; or

(e) if it is to be served on a person on board a vessel—by transmitting its contents to the master of the vessel in any manner or by any other manner authorised by this section.

(2) For the purposes of this section, a person's place of residence or business includes a vessel on which the person resides or works.

98. Service of summons and other process in legal proceedings

(1) Any summons or other process to be served on the owner or master of a vessel in any proceedings for an offence may be sufficiently served by serving it on the agent of the vessel in any manner in which it might otherwise have been served on the owner or master.

(2) A summons or other process so served on the agent of the vessel is taken to have been served on the owner or master of the vessel.

(3) In this section, **agent** of a vessel includes—

(a) the agent for the berthing or working of the vessel while it is in port; or

(b) if the vessel has left port —that agent or, if there was another agent for the vessel when it left port, that other agent.

Part 8 — Search and rescue

99. Control and management of search and rescue operations

(1) Notwithstanding the provisions of the *Disaster and Emergency Management Act 2001*, the provisions of this Part apply to the proper carrying out in or from Norfolk Island of operations required for the purpose of searching for or bringing to safety—

(a) persons in danger at sea;

(b) persons in need of assistance as a result of a casualty occurring at sea; or

(c) persons suffering from illness or injury at sea who require assistance that is not immediately available to them.

(2) Subject to subsection (4) where it appears to the officer in charge (the **officer**) that circumstances have arisen in which a marine search and rescue operation should be carried out at or from Norfolk Island the officer shall take such steps as appear to him or her to be necessary and practicable to ensure that the operation is carried out.

(3) For the purpose of discharging his or her duties under this section the officer may enter into and carry out agreements or arrangements with any person for the provision of a service or the carrying out of an operation.

(4) If the officer is not also a member of the Australian Federal Police he or she shall pass responsibility for the officer's functions under this section to an officer of the Australian Federal Police as the designated Search and Rescue mission coordinator for Norfolk Island under the Inter-Governmental Agreement on National Search and Rescue Response Arrangements made 30 June 2004 and for the purposes of this Part that officer shall have all the powers and responsibilities of the officer in charge.

(5) The officer may delegate any of his or her functions under this section to such person as the officer thinks fit.

(6) A delegation under subsection (5) is revocable at the will of the officer and does not prevent the exercise by the officer of any of the delegated functions.

100. Payments in respect of losses, etc, incurred in certain operations

(1) Where in the carrying out of an approved operation a person suffers death or injury, or loss of or damage to property, or any other financial loss the Minister may, subject to this section, pay to that person, or, if he has died, to his personal representatives, such sum as the Minister may determine in respect of that death or injury or as compensation, in whole or in part, for that loss or damage.

(2) No payment shall be made under this section except on the recommendation of the officer.

(3) Nothing in this section affects the operation of any agreement entered into under this Act.

(4) For the purposes of this section an approved operation is a marine search and rescue operation arrangement for the carrying out of which have been made by or on behalf of the officer in the exercise of his functions under this Act.

101. Recovery of cost of certain operations

(1) Where any expense is incurred under this Act by or on behalf of the officer in the carrying out of a marine search and rescue operation, the whole or a part of that expense may, in accordance with this section, be recovered from—

(a) the owner of the vessel or aircraft in relation to which the operation was carried out; or

(b) any person for the assistance of whom the operation was carried out.

(2) No sum may be recovered from a person under this section except with the approval of the Crown Counsel and the Minister given on the recommendation of the officer.

(3) A sum that is recoverable under this section may be recovered by the officer by action in a court of competent jurisdiction as a debt due to the Administration.

(4) Nothing in this section affects the law relating to salvage and no sum may be recovered under this section in respect of a service for which there is a right to a salvage reward.

Part 9 — Norfolk Island Marine and Harbour Authority (NIMAHA) and Harbour Master

102. Norfolk Island Marine and Harbour Authority

(1) The Norfolk Island Marine and Harbour Authority is established.

(2) Members of the Authority are not entitled to payment of any remuneration or reimbursement of expenses for attending meetings of the Authority or attending to its business.

(3) The Chief Executive Officer may provide such accommodation, staffing and other assistance as may be reasonably required by the Authority for the conduct of its affairs.

103. Objects of the Authority

The objects of the Authority are to—

(a) advise and provide recommendations to the Minister on matters relating to Norfolk Island waters including—

(i) the establishment and use of harbours, piers and jetties;

(ii) the establishment and maintenance of safe moorings;

(iii) the designation of places for the mooring or anchorage of vessels for purposes of customs and immigration;

(iv) the designation of places for the mooring or anchorage of vessels for purposes of loading and unloading cargo and passengers;

(v) the appointment of marine safety inspectors and other persons for the purposes of this Act, other than the appointment of police officers as authorised persons.

(b) inquire into and make recommendations concerning marine safety and such other matters as the regulations may provide or as the Minister may request; and

(c) perform such other functions as may be directed by this or any other enactment.

104. The Authority

(1) The Authority consists of not more than 10 persons as follows—

(a) two persons appointed by the Minister, one of whom must be or be eligible to practise as a legal practitioner, and one with experience in maritime or harbour matters one of whom shall be designated the Chairperson and the other the Deputy Chairperson;

(b) two persons representing the Norfolk Island Fishing Association (one of whom must be the President from time to time);

(c) the officer in charge of the Norfolk Island Police Force or the nominee thereof;

(d) the Collector of Customs or the Collector's nominee;

(e) the Immigration Officer or nominee or another person appointed by the Minister responsible for the *Immigration Act 1980*;

(f) the Officer in Charge of the Lighterage Service or the Officer's nominee;

(g) one person representing the Commonwealth; and

(h) one person appointed by the Minister nominated by, and representing, commercial maritime businesses.

(2) Where a person referred to in subsection (1) the **principal** may be represented by a nominee, the principal must, in writing, notify the Chairperson of the appointment of a nominee.

(3) A nominee may attend and vote at meetings of the Authority at which the principal is not present.

105. Meetings and quorum

(1) The Authority shall meet at least quarterly at a time and place notified by the Chairperson.

(2) A meeting of the Authority may be adjourned from time to time.

(3) The quorum for a meeting of the Authority is 5 members present in person or by their nominee.

106. Harbour Master

(1) (a) The Chief Executive Officer shall appoint a suitably qualified person to be Harbour Master.

(b) The Harbour Master is a public sector employee.

(2) The Harbour Master shall be *ex officio* a member of the Authority with the right to receive notices, attend and speak at meetings of the Authority but not to vote upon any matter put to a vote of members of the Authority.

(3) The Harbour Master is, subject to this Act and the Regulations, responsible for—

(a) day to day management of the ports including—

(i) permission to enter and leave the ports;

(ii) control of ship movements entering or leaving port;

(iii) co-ordination of nautical service providers (including lighterage, supplies, fuel);

(iv) the safe loading and unloading of passengers and cargo to and from vessels;

(b) ensuring the general safety level in the port (by monitoring and enforcing port bylaws, working safety and conditions on vessels and on shore);

(c) managing vessel movements, including those involved in leisure activity;

(d) liaising with customs, immigration and environmental protection agencies and personnel in connection with the arrival and departure of vessels from the port;

(e) ensuring compliance with dangerous goods regulations applicable to a vessel or the port;

(f) co-ordinating and/or assisting in calamity abatement;

(g) gathering information for administrative purposes.

(4) A lawful decision of the Harbour Master can only be countermanded or set aside by a direction of—

(a) a person exercising powers under the *Immigration Act 1980* or the *Customs Act 1913;*

(b) the Minister in the exercise of a power under this or another applicable enactment;

(c) The Administrator or the Commonwealth Minister or other person in the exercise of a power under an applicable Act of the Commonwealth;

(d) the officer in charge of the Norfolk Island Police in the exercise of police powers under this or any other enactment.

107. Recommendation of the Authority

(1) The Minister is not obliged to accept all or any advice of the Authority.

(2) Nothing in this Act or in any regulation requires the Minister to obtain or first receive any advice or recommendation from the Authority before issuing any direction, making any rule or taking any action under this Act or any regulation.

Part 10 — Miscellaneous

108. Delegation by Minister

(1) The Minister may, by instrument, delegate any of the powers of the Minister under this Act except this power of delegation.

(2) A delegation may be made—

(a) to a specified person; or

(b) to the holder for the time being of a specified office or position.

(3) A delegate, in making a decision in accordance with a delegation under this section, must comply with the requirements of this Act which the Minister is required to comply with in making such a decision.

109. Act binds Crown

This Act binds the Crown in right of Norfolk Island and, in so far as the legislative power of the Legislative Assembly permits, the Crown in all its other capacities.

110. Rules

(1) The Minister may make rules with respect to—

(a) necessary skills and experience for the licensing of operators of commercial and recreational vessels;

(b) standards for safety equipment to be carried by commercial and recreational vessels and the wearing of safety devices by passengers and operators;

(c) the appointment of and qualifications required for persons providing training to persons seeking a marine certificate under regulations made for Part 4.

(2) A rule made under this section—

(a) need not be in accordance with any advice of the Authority;

(b) is not enforceable until it has been notified in the Gazette;

(c) is a disallowable instrument; and

(d) cannot create an offence punishable by a penalty exceeding 10 penalty units.

111. Regulations

(1) The Administrator may make regulations, not inconsistent with this Act, for or with respect to any matter that by this Act is required or permitted to be prescribed or that is necessary or convenient to be prescribed for carrying out or giving effect to this Act.

(2) A regulation may create an offence punishable by a penalty not exceeding 100 penalty units.

112. Adoption of standards and other documents

(1) The rules or regulations may incorporate by reference, wholly or in part and with or without modification, any standards, rules, codes, specifications or methods, as in force at a particular time or as in force from time to time, prescribed or published by an authority or body (whether or not it is a Norfolk Island authority or body).

(2) Without limiting subsection (1), a rule or regulation may adopt, wholly or in part and with or without modification any Australian Standard or any standard of another country.

113. Exemptions

(1) The regulations may exempt, or provide for the exemption of, any person or vessel from any requirement of the regulations.

(2) If this Act confers a power to make regulations to exempt any person or vessel from a requirement of this Act or the regulations, the power extends to making a regulation authorising the Minister or other person to grant the exemption.

(3) An exemption granted by the regulations or by an order of the Minister or other person may be made subject to any condition specified in the regulation or order.

(4) The exemption does not apply during any period that any such relevant condition is not complied with.

Note: — Sections 11, 45, 48 and 52 make provision for the granting of exemptions.

114. Review of Act

(1) The Minister is to review this Act to determine whether the policy objectives of the Act remain valid and whether the terms of the Act remain appropriate for securing those objectives.

(2) The review is to be undertaken as soon as possible after the period of 12 months from the date of assent to this Act and a report of the outcome of the review is to be tabled in the Legislative Assembly within 3 months thereafter.

(3) Nothing in this section restricts the power of the Minister to review the Act at any time or the powers of the Authority to review and make recommendations to the Minister at any time.

Schedule 1 — Powers of authorised officers

1. Powers of authorised officers

(1) An authorised officer may for the purposes of Part 3 of this Act and this Schedule exercise the following powers—

(a) direct or signal a person who is operating a vessel to manoeuvre the vessel in a specified manner or to a specified place;

(b) direct or signal a person to stop the vessel and secure it in a specified manner;

(c) board a vessel for the purpose of investigating an offence the authorised officer reasonably suspects to have been committed while the vessel was underway;

(d) require any person whom the authorised officer reasonably suspects of having committed an offence against this Schedule or the regulations or who, in the opinion of the authorised officer, is in a position to give evidence relating to the commission of an offence, to state his or her full name and residential address;

(e) require persons suspected of an offence to provide specimen of breath or blood for testing;

(f) seize anything which may afford evidence of the commission of an offence.

(2) A person who—

(a) fails or refuses to comply with a requirement under this clause; or

(b) hinders an authorised officer acting in the exercise of the officer's powers under this clause; or

(c) when required to state his or her name and residential address, states a false name or address,

is guilty of an offence.

Maximum penalty—10 penalty units.

(3) A person is not guilty of an offence of failing or refusing to comply with a requirement under subclause (1)(c) or (d) unless it is established that the authorised officer—

(a) warned the person that a failure or refusal to comply with the requirement is an offence; and

(b) identified himself or herself as an authorised officer.

2. Identification of offender

(1) If a person is reasonably suspected by an authorised officer to have committed an offence against Part 3 of this Act or this Schedule, the owner of the vessel concerned or person in charge of the vessel at the time of the alleged offence may be required to give information as to the full name and residential address of the person suspected of committing the offence and any other person may be required to give any information that may lead to the identification of the person.

(2) The owner or person in charge may be required to give the information in the form of a written statement signed by the owner or person in charge.

(3) A person who fails to comply with a requirement under this clause is guilty of an offence.

Maximum penalty—10 penalty units.

(4) A person is not guilty of an offence under this clause if it is established that the person did not know and could not with reasonable diligence have established the name and address of the person.

(5) A written statement purporting to be furnished under this clause and to contain particulars of the name and residential address of a person at the time of commission of an alleged offence against Part 3 of this Act or this Schedule is evidence in proceedings against the person that he or she was the operator of the vessel at the time of commission of the alleged offence without proof of signature if the person does not appear before the court.

Schedule 2 — amendment of the *Coroners Act 1993*

The *Coroners Act 1993* is amended as follows—

(1) Following subsection 11(1), insert—

"**(1A)** For purposes of clarification, subsection (1) includes an inquiry into the death of a person—

(a) within Norfolk Island waters whether the person dies or is found dead on or below the surface and whether or not on a vessel; and

(b) beyond Norfolk Island waters if—

(i) the deceased had a connection with Norfolk Island such as being a permanent resident or the holder of a permit under the *Immigration Act 1980*; or

(ii) the deceased had last been seen alive within Norfolk Island waters,

but only if it is more convenient to hold the inquest in Norfolk Island than in another place and no other jurisdiction claims the right to hold an inquest.".

(2) Following subsection 13(1), insert—

"**(1A)** Subsection (1) includes an inquiry into the causes of a fire where property is destroyed or damaged by fire on a vessel within Norfolk Island waters.".

Notified Gazette No. 7, 12 February 2013.

This Act other than Part 4 and divisions 2, 3, 4 and 5 of Part 5 commenced on gazettal; Part 4 and divisions 2, 3, 4 and 5 of Part 5 will come into operation on a day or days to be fixed by the Administrator by notice in the Gazette.

Printed on the authority of the Administrator.

Appendix B
Incident Response Report Template

Report prepared by:			Contact Details:
Location:			
		Latitude:	Longitude:
Original Report Source:			Date/Time of Incident:
			Date/Time Reported:
Safe Approach Possible: ☐ Yes ☐ No			Injuries: ☐ Yes ☐ No
Description of Injuries:			
Description of Incident:			
Sea/Tide (calm etc./ebb, flood):			Movement & Speed of Pollution:
Weather:			Wind Speed & Direction:

POLLUTION INCIDENT:

Type of Substance:			
Alleged Source of Spill:			
Current Situation:	**Yes**	**No**	**Remarks:**
Has discharge stopped?	☐	☐	
Estimated volume (specify units)			
Size of spill (length & width)			
Fauna affected	☐	☐	
Samples taken	☐	☐	
Photographs/video taken	☐	☐	
Records of interview taken	☐	☐	
P&I Club undertaking obtained	☐	☐	
Financial guarantee obtained	☐	☐	
Salvor engaged	☐	☐	
Any additional comments			
Response Action Taken:			

Construction Environmental Management Plan

Kingston Channel Construction

Department of Infrastructure, Transport, Regional Development, Communications and the Arts

22 November 2022

Advisian
Worley Group

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PROJECT 311015-00061: Construction Environmental Management Plan - Kingston Channel Construction

Rev	Description	Author	Review	Advisian approval	Revision date	Client approval	Approval date
A	Issued for Internal Review	L. Freeman	K. Newton, B. Morgan		26.10.11		Approval date
B	Issued for Internal Review	L. Freeman	K. Newton, C. Jones	B. Morgan	28.10.11		
C	Issued for Client Review	K. Newton		B. Morgan	4.11.22		
O	Final	K. Newton, C. Jones, B. Morgan		B. Morgan	22.11.22		

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1 Introduction

Advisian has been commissioned by the Australian Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA) to prepare a Construction Environmental Management Plan (CEMP) for the Kingston Pier Channel Construction Project (the Project).

This CEMP has been prepared to outline the environmental risks associated with the Project's construction (Section 5) and the environmental management/mitigation measures (Section 6) required to be implemented during construction to avoid or minimise potential environmental impacts as identified in the Kingston Pier Channel Construction Project Environmental Assessment (EA) (Advisian 2021) and the Kingston Pier Channel Construction Project Public Environment Report (PER) (Advisian 2022). The CEMP also identifies roles and responsibilities for implementation (Section 3), environmental legislative requirements, policies and guidelines (Section 4) and guidance for inspections, reporting and auditing (Section 7). The environmental management/mitigation measures outlined have taken into account substantial consultation with, and environmental management requirements of, various Government agencies and local stakeholders.

1.1 Background

1.1.1 Project Background and Objectives

Kingston Pier has been a historically and culturally important link to Norfolk Island, supporting community and economic development. Today, it is considered critical infrastructure for both minor freight operations and cruise ship passengers to access Norfolk Island. However, the existing entrance and interior channel dimensions of the harbour adjacent to Kingston Pier are inadequate for safe navigation during all tides, and do not meet required navigation standards and guidelines. In addition, the existing limited water depth adjacent to Kingston Pier at lower tides is a safety risk for users due to inadequate under-keel clearance. This has the effect of limiting the use of Kingston Pier by vessels.

The Project will involve augmenting the existing channel bed at Kingston Pier by increasing its depth and width, to improve vessel access and safety and ensure that it meets required navigation standards. In doing so, it would also support the potential for greater use of Kingston Pier by various vessel operators.

The key objectives of 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 possible and appropriate;
- Ensure the Project is sympathetic to and complies with the Kingston and Arthur's Vale Historic Area Heritage Management Plan (KAVHA HMP);
- 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, such as selection of the preferred design channel; and

- Consider future allowance for larger vessels to enter the channel.

1.1.2 Planning and Approvals History

In 2009, an EPBC Act Referral (EPBC 2009/5183) was prepared under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and submitted to the Department of the Environment, Water, Heritage and the Arts (DEWHA) by The Administration of Norfolk Island. This EPBC Act Referral proposed the augmentation of the seabed adjacent to Kingston Pier as well as the construction of an associated temporary ramp to facilitate the works, extending from the shore along the working side of Kingston Pier. On 8 December 2009, DEWHA determined the proposed action was a controlled action and would require assessment and approval under the EPBC Act before it could proceed. On 28 February 2014, the Department of the Environment (DoE) (formally DEWHA) declared the proposed action had lapsed.

In 2016, WorleyParsons was commissioned by the then Department of Infrastructure and Regional Development (DIRD) to prepare a feasibility report exploring potential augmentation options at Kingston Pier. The findings and recommendations of the report have informed the Project design.

From 2020, an environmental impact assessment for the Project was undertaken by Advisian in the form of an Environmental Assessment (EA) issued to DITRDCA (Advisian 2021) and an Environmental Impact Statement (EIS) for land-based works issued to Norfolk Island Regional Council (NIRC). Preparation of these documents included undertaking a number of specialist studies including marine and terrestrial ecology, marine water and sediment quality, wave modelling, dredge plume modelling, underwater cultural heritage and cultural heritage impact assessments, A Draft Water Quality Management Plan (WQMP) was also prepared (Advisian 2021).

The Project was referred under the EPBC Act to the Minister for the Environment on 17 February 2022 (EPBC 2021/9124). The delegate for the Minister determined on 4 April 2022, that the action is a controlled action and approval is required with assessment by Public Environment Report (PER). A PER has since been prepared by Advisian (2022). The PER will be used by Minister for the Environment and Water to make an informed decision on whether or not to approve the action under Part 9 of the EPBC Act.

The PER Guidelines for the Kingston Pier Channel Construction Project, Norfolk Island (EPBC 2021/9124) (Department of Agriculture, Water and the Environment (DAWE[1]), May 2022) included that "a detailed outline of an Environmental Management Plan (EMP)" be included in the PER for the Project. Specific requirements for the EMP are provided in Table 1-1. The Project was declared as 'significant development' under the *Planning Act 2002* (NI) and *Planning Regulation 2004* (NI) by the Administrator of Norfolk Island as the Commonwealth Minister's delegate on 12 May 2021 in accordance with Section 28C(5)(a) of the *Planning Act 2002* (NI). Development Application DA.BA 48/2021 was approved on the 1 July 2022 and Conditions 14, 15 and 16detail requirements of which relate to the preparation of a CEMP as outlined in Table 1-2.

[1] Renamed to Department of Climate Change, Energy, the Environment and Water (DCCEEW)

1.2 Purpose of the CEMP

The purpose of this CEMP is to provide the basis for environmental management for all construction activities associated with the Project. This CEMP has been prepared in accordance with the relevant requirements of the:

- AS/NZS ISO 14001: 2016 Environmental management systems;
- Environmental Management Plan Guidelines (DoE,2014);
- Kingston Pier Channel Construction Project Environmental Assessment (Advisian, 2021);
- Kingston Pier Channel Construction Project Environmental Impact Statement (Advisian, 2021);
- EPBC Act Referral (2021/9124);
- EPBC Act Referral Decision (EPBC 2021/9124) issued by DAWE dated 4 April 2022 for the Project to be assessed by PER;
- EPBC Act Approval (2021/9124); – [details to be added once received].
- Development Application DA.BA 48/2021 approved on the 1 July 2022, Conditions 14, 15 and 16 (see Table 1-2);
- Norfolk Island Plan 2002;
- KAVHA Heritage Management Plan (HMP); and
- Development Control Plan No. 7 – Kingston and Arthur's Vale Historic Area.

In accordance with the Development Application DA.BA 48/2021 the CEMP is to be prepared and submitted to the General Manager of NIRC prior to the commencement of the site works.

The CEMP must also be submitted to DCCEEW alongside the PER for review and approval.

The intent of this CEMP is to achieve the following overarching objectives:

- Understand and mitigate/manage potential environmental impacts associated with the Project during construction;
- Ensure that all personnel and Contractor(s) clearly understand their roles and environmental obligations and receive appropriate training to perform their duties in a competent manner;
- Comply with all relevant Commonwealth, State and local environmental requirements;
- Comply with relevant Australian and other recognised standards; and
- Aim for zero significant environmental incidents and/or non-conformances during construction.

Environmental performance objectives for each environmental element relevant to construction activities are set out in Section 6.

Compliance with this CEMP is mandatory for all personnel and Contractor(s) carrying out construction activities for the Project. The term 'Contractor' means the Head or Principal Contractor for any contractor package. This includes any direct employees, sub-contractors or sub-consultants. The Principal refers to DITRDCA.

1.3 Requirements Matrix

The CEMP addresses a number of the requirements of *Section 5. Avoidance and Mitigation Measures* of the PER Guidelines for the Kingston Pier Channel Construction Project, Norfolk Island (EPBC 2021/9124) (DAWE, May 2022) that stated that "a detailed outline of an Environmental Management Plan (EMP)" be included in the PER for the Project. Specific requirements for the EMP are provided in Table 1-1.

Table 1-1 Specific requirements for inclusion in the EMP outline within the PER (DAWE 2022)

Section and Page Number	Requirement	Reference
Section 5, page 18	The PER must include a detailed outline of an Environmental Management Plan (EMP) that: • sets out the framework for management, mitigation and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing • addresses the project phases (construction, operation) separately • states the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing for each environmental issue • describes contingencies for events such as failure of sewerage systems, heavy or prolonged rainfall, or saltwater intrusion into groundwater • a response plan for maritime incidents/accidents involving vessels used in operations e.g., grounding/sinking/fuel spills. The PER should also include the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program and who will be responsible for implementing these.	CEMP Maritime Incident Response Plan (Appendix B)
Sections 5.1, 5.2, 5.3 and 5.4, page 18-19	In addition to the general requirements for mitigation measures described above, the specific matters below were identified at the referral stage as requiring further detail in the development of mitigation measures. 5.1 Quantification of the observation and exclusion zones to be implemented to mitigate underwater noise impacts on marine fauna, and the reasoning and justification for the chosen distances for these zones. 5.2 Details about how mitigation measures to prevent vessel strike are consistent with the EPBC Act Regulations Part 8 - Interacting with cetaceans and whale watching, in addition to the Australian National Guidelines for Whale and Dolphin Watching (2017). 5.3 A detailed description of all biosecurity procedures to be implemented for the proposed action, including procedures for the cleaning and surveying of marine vessels carrying construction equipment and vehicles. 5.4 Development of the Kingston Pier Underwater Archaeological Management Plan, previously identified in the referral information as a	CEMP Kingston Pier Underwater Archaeological Management Plan (Appendix A)

Section and Page Number	Requirement	Reference
	mitigation measure, in accordance with the 'key principles' for an environmental management plan as outlined in the Environmental Management Plan Guidelines (Department of Environment, 2014). This plan should also apply to works associated with the stabilisation of Kingston Pier.	

The CEMP addresses the requirements of the Conditions 14, 15 and 16 of the NIRC Development Approval for the Project as shown in Table 1-2.

Table 1-2 Matrix outlining NIRC development application CEMP requirements and section of CEMP where addressed

Condition Number	Requirement	Reference
14.	Section 7 of the EIS, 'Compilation of measures to mitigate adverse effects' prescribes actions required to manage the potential environmental impact of the proposed development through detailed design, construction and/or operation of the development. A Construction Environmental Management Plan shall be prepared and will incorporate the mitigation measures that are relevant to this development approval. For each relevant mitigation measure, the Construction Environmental Management Plan will identify the Impact, Environmental Safeguards, Responsibility and Timing similarly to that shown in Table 7-1 of the EIS.	This CEMP.
15.	The Construction Environmental Management Plan shall include a management training and monitoring plan consistent with the environmental controls detailed in the Environmental Impact Statement.	Section 3.3.
16.	The Construction Environmental Management Plan must be prepared and submitted to the General Manager of NIRC for approval prior to the commencement of the works.	To be undertaken by proponent prior to works being undertaken.

1.4 CEMP Approval, Distribution and Revision Process

This CEMP and any subsequent revisions will be distributed to all authorised Project personnel via the Project document control management system.

This document is uncontrolled when printed.

Six month periodic reviews of the CEMP will be conducted by the Principal, in addition to reviews in response to audits, incidents and any changes to the scope of works. Any amendments to the above, will be formally communicated by the Principal to the Contractor.

The Contractor shall advise the Principal of any changes to the scope of work or construction methodology and changes to the associated environmental risks and management measures as they arise, to ensure the CEMP remains in date.

2 Project Description

2.1 Extent of Works

The Project works to be carried out shall include the supply of all materials, plant, equipment and labour required for the completion of construction activities which form part of the Kingston Pier Channel Construction Project. The site is shown on Figure 2-1.

Figure 2-1 Plan of the Project Site

The Project works generally consist of the following:

- Preparation of the Contractors management plans and details;
- Undertaking Preliminaries;
- Establishment and maintenance of the environmental controls as required for the project;
- Dredging of up to 5,000 m^3 (including dredging tolerance) of material from the Kingston Pier Channel (Figure 2-2);
- Screening dredged material as required for archaeological artefacts;
- Beneficial reuse of the dredged material to assist with the restoration of Old Cascade Quarry;
- Installation of a navigation aid on the rock shelf;
- Remedial work to the Kingston Pier Sheet Piling; and
- Completion.

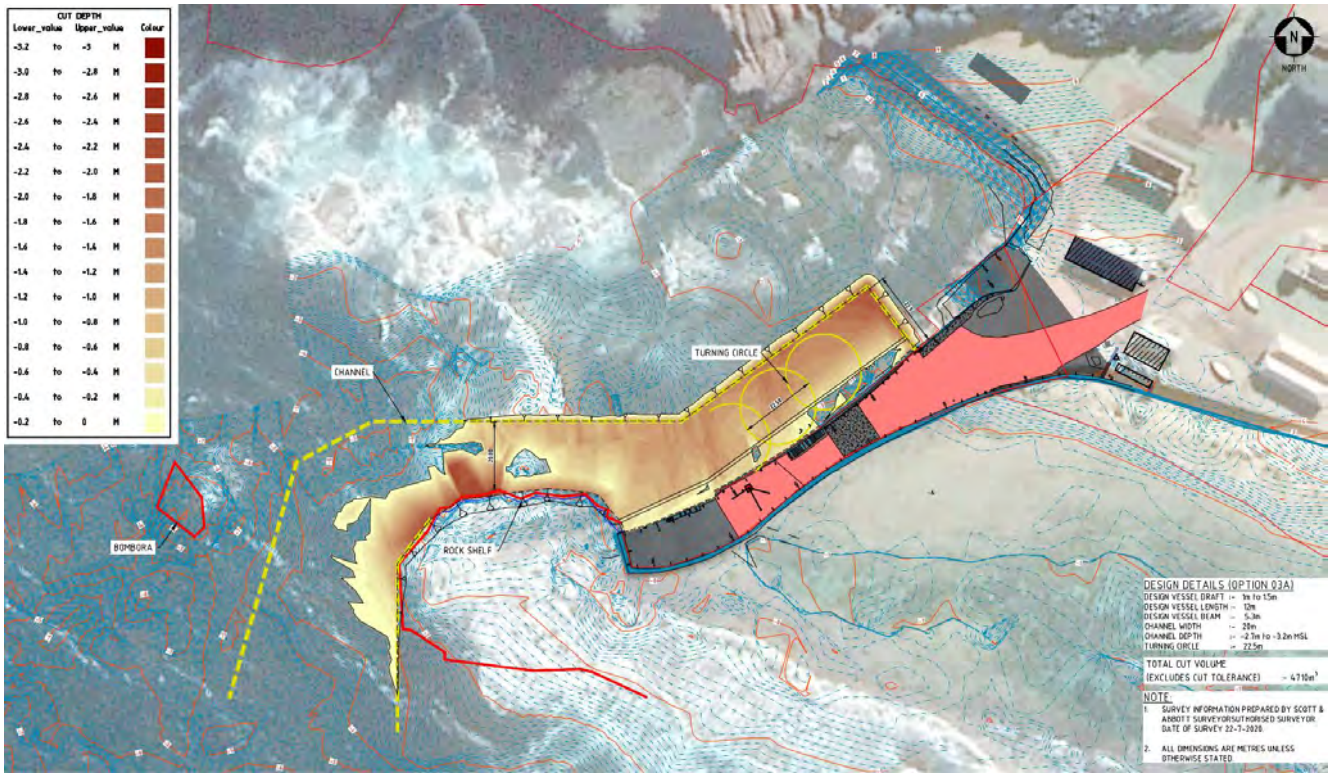


Figure 2-2 Kingston Pier Channel Construction Cut Plan

The detailed scope of works shall include but are not limited to the following:

Contractor's Management Plans and Details

- Contractor's Management Plans and details including but not limited to a construction program and Method Statement, Survey Quality Project Plan, Quality Plan, Inspection and Test Plans, Project WHS Management Plan and relevant Safe Work Method Statements, Traffic Management Plan, Contractor's EMP and pre-construction Dilapidation Report.

Preliminaries

- Mobilisation of all plant and equipment;
- Install site security fence and gates around the landward portion of the Site as agreed with the Superintendent, including maintenance/repair and relocation of the fence and gates as required;
- Install site offices and compound with security fencing;
- Survey set-out of the Works;
- Prepare material storage areas (Figure 2-1); and
- Dilapidation survey.

Environmental Controls

- Silt boom and curtain;
- Water quality monitoring; and
- Any other requirements environmental requirements noted in the approved Contractor's EMP.

Survey

- Survey Project Quality Plan of proposed surveys including issues such as personnel, equipment, calibration etc;
- Channel, Pier and Navigation Aid Surveys to include:
  - Pre-construction Survey;
  - Progress Surveys;
  - Construction Compliance Survey;
  - Clearance Survey.
- Fill Platform Surveys
  - Pre-construction Survey;
  - Progress Surveys; and
  - Construction Compliance Survey.

Sheet Pile Wall Remediation

- Repair exposed sheet pile toes with steel patch;
- Grout-fill existing gravel-filled cavity between sheet pile walls, this requires a performance-based solution to be put forward in an ITP for approval by the Superintendent;
- Install mass concrete toe beam;
- Weld sheet pile clutches above seabed; and
- Remove and replace existing hard fendering.

Channel Dredging

- Dredging the Kingston Pier Channel to the extents, depths and batter slopes as shown on the design drawings;
- Removal of a portion of the sediment layer using a diver managed suction dredge, and screen the material at Kingston Pier for archaeological artefacts as required, and the remainder of sediment layer removed with a backhoe dredge;
- Removal of the calcarenite layer using a backhoe dredge and screen the material for archaeological artefacts at Old Cascade Quarry as required;
- Removal of the tuff layer using a backhoe dredge (screening of fresh tuff material for archaeological artefacts is not required);
- Make available equipment to remove sporadic basalt core stones and inclusions, and removal of this material if encountered;
- Archaeological screening for artefacts by a qualified Maritime Archaeologist – all identified artefacts are to be recorded and significant artefacts are to be transferred to a representative of the Kingston and Arthur's Vale Historic Area (KAVHA) Committee;
- Protection of the Kingston Pier deck surface from abrasion and damage;
- Transfer of material to the Kingston Pier deck and dewatering; and
- Transfer of material into covered trucks and transport to the land disposal site at the Old Cascade Quarry.

Beneficial reuse of the dredged material to assist with the restoration of Old Cascade Quarry Works are to include but not be limited to:

- Removal and local stockpiling of existing topsoil and rock located in the land disposal site;
- Sorting of a portion of the calcarenite spoil and screening for archaeological artefacts;
- Crushing of tuff rock into fine material to be spread out (expected to be crushed during handling and tracking over by the excavator when dry);
- Attendance by an experienced geotechnical engineer during spreading;
- Handling and spreading out of spoil at the land disposal site to the extents and levels shown on the design drawings; and
- Respreading of topsoil and seeding with Kikuyu grass.

Navigation Aid

- Supply and install a navigation aid (painted steel pile with daymark bolted to the rock shelf).

Completion

- Clearing the site of all surplus materials, spoil, plant, site sheds, notice boards, and temporary offices;
- Diver's survey with photos showing the seabed is clear of all loose foreign objects at the completion of the works; and
- Post construction Dilapidation Survey.

2.2 Dredge Methodology

2.2.1 General

The extent of work is shown on the design drawings and also detailed in Section 2.1. Dredging involves the removal of up to 5,000 m^3 of the seabed material adjacent to the western side of Kingston Pier. The actual quantity of material to be removed shall be determined from the pre-dredging survey levels and quantity of dredge tolerance used. All dredged material shall be brought onshore for disposal.

The sequencing of dredging in different areas of the dredging footprint may also be dictated by operational limits of plant and equipment and prevailing environmental conditions.

The sequencing of dredging shall also consider the Pier Remediation Works.

The Contractor shall develop and submit a proposed sequence to complete the Works within a detailed construction program and Safe Work Method Statement, which shall be approved by the Superintendent prior to commencement. Where methods described below can be optimised or alternatives offered, the Contractor shall submit an alternative methodology for approval.

2.2.2 Removal of the sediment layer

The method of removal shall be confirmed in accordance with the Contractor's Safe Work Method Statement. It is proposed that sediment material that requires screening is removed by divers using a hand-held venturi suction pipe and transferred into a perforated sediment box sitting on the seabed. Once the sediment box is filled, it is lifted onto the Pier with a crane and transferred to the sieve station where workers sieve through the sediment material for marine artefacts in accordance with

Section 8.6 of the Technical Specification (Advisian, 2022). The sieved material is then transferred to the spoil disposal ground using trucks. Areas that are not required to be screened for maritime artefacts can be removed via a backhoe.

2.2.3 Removal of the calcarenite layer

The method of removal shall be confirmed in accordance with the Contractor's Safe Work Method Statement. It is proposed that divers shall initially inspect the cracks and gullies of the calcarenite rock for maritime potential in accordance with Section 8.6 of the Kingston Technical Specification (Advisian, 2022) and this may also occur during removal of the sediment layer. The calcarenite material is proposed to be removed by a backhoe mounted on a jack-up barge and material lifted onto skip bins on the jack-up barge. Once the skip bins are filled, they shall be dewatered and lifted onto the Pier by a crane and transported to the spoil disposal ground using trucks and placed in stockpiles for remediation of the Old Cascade Quarry.

Material would be screened for marine artefacts in accordance with Section 8.6 of the Technical Specification (Advisian, 2022) at the spoil disposal site. Calcarenite material shall be stockpiled separated from the underlying tuff material where practical.

2.2.4 Removal of the tuff layer

The method of removal shall be confirmed in accordance with the Contractor's Safe Work Method Statement. The tuff material is proposed to be removed by a backhoe mounted on a jack-up barge. The material shall be lifted onto skip bins on the jack-up barge. Once the skip bins are filled, they shall be dewatered and lifted onto the Pier by a crane and transported to spoil disposal ground via trucks and placed in stockpiles for remediation of the Old Cascade Quarry. The tuff layer is unlikely to contain maritime archaeological potential and therefore is not proposed to be screened for maritime artefacts.

Note basalt formations may be found within the dredge profile, primarily in the tuff layer, which would be harder rock and would require a rock-breaker attachment or similar to break up the basalt prior to removing with the backhoe. The Contractor shall make provision for removing basalt rock within the design channel if encountered and mobilise any specialist plant and equipment prior to the commencement of the Works at no additional cost to the Principal.

2.2.5 Removing material close to the Pier

All dredging undertaken adjacent to the Pier will occur after or immediately before remediation of a specific section of the sheet pile wall. All dredging undertaken shall be undertaken carefully not to undermine or damage the Pier, and strictly achieve the construction tolerances. The Contractor shall develop a construction methodology that avoids impact of plant and machinery with the Pier and can consider precutting material with hand tools. Upon commencement of dredging immediately adjacent to Pier, the Contractor shall demonstrate to the Superintendent that the criteria in this section is being achieved. If the criteria in this section is not achieved at any time during the Works, the Contractor shall stop work and develop and use a refined construction methodology to be approved by the Superintendent and at no additional cost to the Principal.

2.2.6 Onshore handling and transport

All dredged material shall be brought onshore at Kingston Pier via the crane pad area as shown on the design drawings. Once the remediation works at Kingston Pier that form part of this Project are complete, the structure can accommodate a 10kPa loading. Prior to the proposed remediation works at the Pier, the structure can accommodate a 5kPa loading. The Contractor shall demonstrate that their proposed construction methodology complies with this loading limitation of the Pier.

The screening of sediment material where required shall be undertaken at the top of the ramp as shown on the design drawings and in accordance with the Technical Specification (Advisian, 2022).

All dredged material shall be transported via trucks to the spoil disposal ground within the Old Cascade Quarry located on the north side of the island. The preferred transport route is documented in the Principal's EA. Consideration shall be given to the load capacity of the Pier Street Bridge and the Contractor shall demonstrate in their Construction methodology how this can be accommodated. The Contractor shall place 25 mm steel road plate over the full deck area of the Pier Street Bridge for the full construction traffic period. The onshore handling and transport of material shall be undertaken in accordance with the Contractors EMP and Construction Traffic Management Plan.

2.2.7 Method of placement

It is proposed to initially relocate the existing stockpiles of topsoil and rock locally or distributed on the Site under instruction of the Superintendent. The Site would then be stripped of reusable topsoil as directed by the Superintendent and be added to the relocated topsoil stockpile.

It is proposed to commence filling from the southern and western portions of the fill platform footprint. All spoil would be unloaded from the back of the trucks into stockpiles and reworked as required. The height of the loose stockpiles would be limited to 3 m prior to reworking. The stockpiled material may be required to dry out prior to reworking. Prior to use, the tuff material is also required to be crushed into finer material that is expected to be achieved by general handling and tracking over by the excavator once the material is dry enough.

The screened sediment and calcarenite that does not require screening, and the tuff rock material can be placed directly on the fill platform footprint. Calcarenite that requires screening would first be placed in a specified sorting area at the Site, managed in accordance with the Kingston Pier Maritime Archaeological Underwater Management Plan prior to being used for the Works. 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. Erosion and sediment controls would be implemented around the stockpiles.

The available topsoil stockpile is to be reused over the constructed fill platform and then grassed. It is proposed a 200 mm thick layer of topsoil is spread across the fill platform however, this may be reduced to 100 mm subject to availability. The Contractor shall allow for the relocated rock stockpile to be moved again within the Site as directed by the Superintendent.

2.2.8 Scheduling

The Project, including mobilisation and demobilisation, is expected to occur from early June 2023 to early March 2024. This includes an allowance of 7 weeks of weather delays. Without any weather delays, all dredging activities would be completed by mid-November 2023 (refer to Table 2-1).

The in-water channel works are proposed to occur between October and December 2023 to avoid the larger winter swells (that would result in more down time), stronger winds from the North and West (that present conditions that are more difficult in containing any sediment plume) and the coral spawning season. The coral spawning season in Norfolk Island is reported to commence as early as late December and through to late January, occurring after the full moon. In 2023 the full moon will occur on 27 December and coral spawning at this time is possible based on previous coral spawning event timing on Norfolk Island. The next full moon is forecasted to occur on 26 January 2024.

The Proposed schedule that includes seven weeks of weather delay is presented in Table 2-1.

Table 2-1 Proposed Schedule.

Activity	Duration	Start Date	Finish Date
Mobilisation	6 weeks	05 Jun 2023	14 Jul 2023
Site set-up	4 weeks	17 Jul 2023	11 Aug 2023
Dredging of sediments	2 weeks	02 Oct 2023	13 Oct 2023
Dredging of Calcarenite	2 weeks	16 Oct 2023	27 Oct 2023
Dredging of Tuff	3 weeks	30 Oct 2023	17 Nov 2023
Weather delays	7 weeks	20 Nov 2023	01 Jan 2024
Onshore handling operations	18 weeks	16 Oct 2023	16 Feb 2024
Pier Stabilisation	8 weeks	14 Aug 2023	03 Nov 2023
Demobilisation	6 weeks	08 Jan 2024	16 Feb 2024
Make good and site clean-up	2 weeks	16 Feb 2024	02 Mar 2023
Total Duration	**28 weeks**	**05 Jun 2023**	**02 Mar 2023**

2.2.9 Work Hours

The Project is generally expected to be carried out during the following recommended standard hours for construction work:

- Monday to Friday: 7am to 6pm;
- Saturdays: 8am to 1pm;
- No work on Sundays or public holidays.

2.2.10 Workforce

The estimated workforce is yet to be confirmed. However, a key objective is to use local labour and resources where possible and appropriate.

3 Roles and Responsibilities

3.1 Responsibilities and Authorities

The Principal is responsible for the overall compliance with the Project's approvals and permits and adhering to the commitments made within the CEMP. Table 3-1 identifies the responsibilities associated with the key management positions during construction activities.

Table 3-1 Roles and Responsibilities.

Position	Responsibility
Principal (DITRDCA)	• Overall responsibility for implementation of the CEMP • Overall responsibility to ensure compliance with Statutory Requirements • External Communication in Relation to matters concerning the Project
Superintendent	• Lead representative of the Principal in the day-to-day administration and management of the construction contract • Undertakes and/or delegates a day-to-day surveillance of the Contractor Site activities
Contractor	• Responsibility to ensure its construction activities are carried out in compliance with this CEMP • Responsibility to ensure its construction activities are carried out in compliance with Statutory Requirements • Manages the environmental risks specifically related to its scope of work on the Project
Contractor's Authorised Person (CAP)	• Lead Representative of the Contractor • Implements the requirements of this CEMP • Provides induction/s for all personnel involved in the Project • Ensures adequate training of all staff within area of responsibility
Project Environmental Representative and Health and Safety Advisor (PER/HSA)	• As a member of the Principal's team (that may also be a Superintendent) and in a dual role provides advice on all construction related environmental and work health and safety issues • Provides surveillance of the Contractor's implementation of environmental controls, monitoring programs, inspections and audits • Undertakes inspections of the Contractor's compliance with the CEMP • Responds to Contractor's requests for amendments to the CEMP • Advises the Principal on responses to the community regarding the environmental performance of the Project • Completes compliance reporting requirements • Prepares environmental monitoring reports as required
Communication Advisor	• Manages Project stakeholder and consultation activities • Manages the resolution of complaints

Position	Responsibility
All persons involved in Project	• Comply with the requirements of the CEMP • Comply with all Statutory Requirements insofar as they pertain to the parties' respective roles in the Project as outlined above • Exercise a duty of care to the environment at all times • Notify their supervisor all environmental incidents as soon as practical

3.2 Induction

The Contractor will develop and deliver a Project-specific induction for all sub-contractors and key staff associated with the Project works. The induction will include a summary of key environmental risks for the Project, the requirement for mandatory compliance with Project approvals and permits and the requirements of this CEMP by all personnel involved in construction activities.

3.3 Training

The Contractor's personnel will have the experience and necessary training to carry out the tasks required for the implementation of this CEMP. This will include awareness of current environmental, social and heritage measures, including the appropriate use and maintenance of equipment.

Specific environmental training will be provided by qualified persons, including:

- Potential water quality impacts and relevant spill and emergency response procedures;
- Refuelling or fuel transfer procedures;
- Marine mammal observation procedures and reporting of injuries to marine mammals;
- Noise amenity management procedures;
- Cultural awareness; and
- Ongoing monitoring requirements.

The Contractor must implement appropriate training to ensure its personnel and sub-contractors are aware of their environmental responsibilities related to the Project.

The Contractor will maintain a Training Register that records all environmental training completed by its personnel, including records of attendance at awareness training and toolbox talks, as well as competency assessments where relevant.

All environmental issues including incidents and near misses, as well as all health and safety incidents and near misses, will be raised as a regular component of toolbox talks, site meetings and transmitted electronically as necessary.

3.4 Communication

The Principal is responsible for external communication in relation to matters concerning the Project. This includes, but is not limited to, communications with the general public, media and regulators and particularly in relation to external reporting of incidents and/or non-conformances that may have

occurred and complaints management (Section 3.5). This excludes emergency calls, which may be made by anyone.

External communication in response to emergencies and incidents is detailed in Section 8.

Table 3-2 summarises the statutory requirements relating to the notification of incidents to the relevant authorities. All incidents are to be immediately reported to the relevant authority.

Table 3-2 Incident Management Requirements

Relevant Authority	Contact Number
Emergency Management/Norfolk Island Regional Council	+6723 22244
Norfolk Island Police	+6723 22222
Norfolk Island Fire Service (NIFS)	+6723 22049
Ambulance/Police/Fire	955 / 000
Norfolk Island Hospital	+6723 22091
AMSA – AMSA Response Centre (for maritime casualties and shipping related pollution incidents)	+612 6230 6811 or 1800 641 792 rccaus@amsa.gov.au
DCCEEW (for biosecurity related issues)	+6723 22441
Norfolk Island Marine Park (Parks Australia)	+6723 22695
Parks Australia – Marine Duty Officer * (for any incident in an AMP)	0419 293 465 marine.compliance@environment.gov.au

* To report an incident or emergency in or near an Australian Marine Park call the Marine Duty Officer on 0419 293 465 as well as a follow up email to marine.compliance@environment.gov.au. The Duty Officer will then notify the relevant response agency or if the call is from a response agency/titleholder, notifying the Director National Parks (DNP) of an incident, the Duty Officer will begin processes within Parks Australia to provide the information needed by the responder.

Where relevant, the Contractor will undertake all relevant actions to contain a spill. Where the release of any pollutant occurs, the Contractor (including all its employees and sub-contractors) will conduct a clean-up and remediation of the affected area to the satisfaction of the Principal, DAWE, NIRC and Parks Australia.

3.5 Complaint Management

All complaints will be registered, investigated and resolved by the Principal's Communication Advisor.

The complaints register will be maintained by the Principal's Communications Advisor for the duration of Construction. The register will record the number of complaints received, number of people affected in relation to a complaint and means by which the complaint was addressed and whether resolution was reached, with or without mediation.

3.5.1 Complaints Register

The Complaints Register will be maintained by the Principal for the duration of Construction.

The Complaints Register will record the number of complaints received, number of people affected in relation to a complaint and means by which the complaint was addressed and whether resolution was reached, with or without mediation.

3.5.2 Roles and Responsibilities

The Principal and Contractor have a role in managing community interactions and resolving complaints and issues, as outlined below:

Principal (DITRDCA):

- Respond and resolve construction related enquiries;
- Review and approve all written responses to the community;
- Ensure responses to the community are provided within the agreed timeframes;
- Assist in the investigation and resolution of complaints; and
- Ensure all contacts with the community are recorded in the stakeholder database.

Contractor:

- Notify the Superintendent and PER/HSA of any complaints within 1 hour of receipt of the complaint;
- Assist in the preparation of written responses to the community;
- Assist in the management of issues of reputational significance; and
- Upon becoming aware of a complaint, implement all reasonable and feasible mitigation measures including mitigation measures identified in this CEMP and Contractor's sub-plans to ameliorate the impacts associated with the complaint to As Low As Reasonably Practicable.

3.5.3 Privacy of Personal Information

Community members' personal information captured in the stakeholder database, complaints register or in any other form is to be collected and handled in accordance with the Federal *Privacy Act 1988* and the Principal's Privacy Policy.

Any enquiries, requests or complaints from customers related to privacy are to be referred to the Principal's Privacy Officer using the contact details in the Principal's Privacy Policy.

4 Environmental Legislative Requirements, Policies and Guidelines

4.1 Project Environmental Principles and Obligations

All personnel working on the construction of the Project will adhere to the following over-arching environmental principles and obligations:

- Comply with all relevant International Conventions, Commonwealth, State and local legislative and regulatory requirements, policies and guidelines;
- Comply with the terms of the Project's approvals and permits, and the requirements of this CEMP;
- Minimise pollution of land, air and water;
- Minimise air and noise impacts to sensitive receivers;
- Be a good neighbour to surrounding land users;
- Maintain equipment in proper working order;
- Preserve the natural and cultural heritage environment; and
- Adhere to all relevant communication and training requirements.

Copies of relevant approvals and permits will be available on-site and in relevant Project offices.

4.2 International Conventions and Agreements

International agreements applicable to the CEMP may include, but are not limited to:

- The 1996 London Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972 (ratified by Australia in 2000);
- The International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 (MARPOL 73/76) (International Maritime Organisation);
- The International Convention for the Safety of Life at Sea Regulations;
- The International Convention for the Control and Management of Ships' Ballast Water and Sediments (International Maritime Organisation);
- United Nations Convention of the Law of the Sea;
- United Nations Convention on Biological Diversity;
- Convention on Conservation of Nature in the South Pacific (Apia Convention);
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention);
- ANZECC Code of Practice for Antifouling and In-water Cleaning and Maintenance;
- The Convention on the Conservation of Migratory Species of Wild Animals (Secretariat of the Convention for the Conservation of Migratory Species of Wild Animals 1979);
- Japan-Australia Migratory Bird Agreement 1974;
- China-Australia Migratory Bird Agreement 1986;
- Republic of Korea-Australia Bird Agreement 2007;

- UNESCO World Heritage Convention; and
- UNESCO Convention on Protection of the Underwater Cultural Heritage.

4.3 Commonwealth Legislation and Guidelines

4.3.1 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the Act as Matters of National Environmental Significance (MNES). The Act establishes a process for the assessment and approval of the proposed actions when there is potential for a significant impact to any MNES.

Under the EPBC Act a referral is required to the Commonwealth Minister for the Environment and Water for actions that have the potential to significantly impact on MNES or the environment of any Commonwealth land. A Referral for the Project was prepared, and the action was deemed 'a controlled action requiring assessment and approval under the EPBC Act, assessed by Public Environment Report', as set out in the decision notice (EPBC 2021/9124). The Contractor(s) are to comply with the conditions of the EPBC Act Approval issued by DCCEEW.

4.3.2 Other Commonwealth Legislation, Policies and Guidelines

Other applicable Commonwealth legislation, regulations and guidelines include, but are not limited to, the following:

- EPBC Regulations 2000;
- Underwater Cultural Heritage Act 2018;
- Protection of Moveable Cultural Heritage Act 1986;
- Maritime Transport and Offshore Facilities Security Act 2003;
- Maritime Transport and Offshore Facilities Security Regulations 2003;
- Navigation Act 2012;
- Protection of the Sea (Prevention of Pollution from Ships) Act 1983;
- Sea Installations Act 1987;
- Work Health and Safety Act 2011;
- Work Health and Safety Regulations 2017;
- Australian Ballast Water Management Requirements (DAWE, 2020);
- Temperate East Marine Parks Network Management Plan 2018-2028 (Director of National Parks, 2018);
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018);
- KAVHA HMP 2016;
- Kingston and Arthur's Vale Historic Area Archaeological Zoning and Management Plan 2020;
- National Strategy for Ecologically Sustainable Development (Commonwealth Government of Australia 1992b);

- National Water Quality Management Strategy (Commonwealth Government of Australia 1992c);
- Intergovernmental Agreement on the Environment (Commonwealth Government of Australia 1992a);
- National Strategy for Conservation of Australia's Biological Diversity (Commonwealth of Australia 1996); and
- Australian National Guidelines for Whale and Dolphin Watching 2017.

4.4 Norfolk Island Legislation, Policies and Guidelines

Norfolk Island legislation and guidelines relevant to construction include the following:

- Planning Act 2002;
- Heritage Act 2002;
- Public Reserves Act 1997;
- Protection of Movable Cultural Heritage Act 1987;
- Protection of Movable Cultural Heritage Regulations 1988;
- Norfolk Island Plan 2002; and
- Kingston and Arthur's Vale Historic Area Development Control Plan 2020.

4.5 Environmental Policy

The Contractor is required to maintain an Environmental Policy in accordance with the Principal's requirements.

5 Environmental Risks

5.1 Environmental Assessment

An EA, PER and EIS were prepared to identify potential environmental and social impacts associated with construction and operation of the Project (Advisian 2022). The assessments considered the proposed mitigation and management measures for the Project and presented the residual risks following their implementation. This assessment identified key environmental risk areas:

- Marine water quality;
- Marine sediment;
- Aquatic ecology;
- Terrestrial ecology;
- Coastal processes;
- Air quality and greenhouse gases;
- Noise and vibration;
- Traffic;
- Utilities and Services;
- Heritage (including underwater cultural heritage and land based cultural heritage);
- Waste management; and
- Socio-economic.

At a task level, a Safe Work Method Statement will be used by all Contractor personnel to identify potential risks and appropriate control measures prior to the commencement of any task.

5.2 Ongoing Risk Analysis

The ongoing analysis of key environmental risks and mitigation measures is to be assessed against the description of activities to be undertaken during construction of the Project. Regular inspections will be completed by the PER/HSA to inform any amendments required to risks, hazards, control measures and prompt amendments to this CEMP as required.

6 Environmental Procedures

Specific environmental control measures are required to:

- Manage environmental impacts from the construction identified in the EA, PER and EIS;
- Outline the procedures to achieve the environmental performance outcomes and the mitigation measures identified in the EA, PER and EIS that have been incorporated into the CEMP; and
- Ensure compliance with Project approvals and permits.

Control measures will be complied with by the Contractor as relevant. For each environmental element, the following is identified:

- Responsibility;
- Phase; and
- Mitigation measures.

All activities will be carried out in a competent manner. Suitable equipment, facilities, training, work practices and other necessary precautions will be taken to minimise impacts to the environment and the risk of pollution. All plant and equipment installed and used for the Project must be maintained and operated in a proper and efficient manner.

The Contractor will implement reasonable and practicable measures to avoid or minimise impacts to the environment that may arise from the Project. The Contractor will ensure that work is performed in a way that minimises impacts on the natural environment and complies with this CEMP and related procedures, relevant legislation, regulations and rules, approvals and Project commitments made by the Principal.

6.1 Marine Water Quality

Mitigation Measure	Responsibility	Phase
In calmer sea conditions (i.e. offshore wave height less than 1 m), which are suitable for deployment of a silt boom and curtain, this will be implemented around any active work areas that may disturb the seabed (e.g. when removing tuff material). The silt curtain will be suitable to accommodate the active coastal marine environment within Kingston Harbour. The silt curtain may be a robust floating system such as a flexible floating hose curtain, or a fixed silt curtain attached to barge. The installation of the silt curtain/boom may be progressive to contain areas of current works; however, before construction, a Plan of Deployment and Progression will be prepared to align with the schedule of works. The Plan will implement the following measures:	Contractor	Pre-Construction and Construction

Mitigation Measure	Responsibility	Phase
▪ Installation of the silt curtain/boom will occur before starting physical works with at least one spare kept on site. ▪ Installation will be undertaken during high tide periods from a boat. The device will be designed to rise and fall with the tide to prevent disturbance. ▪ The silt boom/curtain will extend from a minimum of 100mm above the water line to 2.5m below the water line (where water depth permits) before starting work. Note the bottom of the silt curtain is to be kept 0.5m from the bottom to prevent snagging. ▪ Inspection of the device will be undertaken on a daily basis after ebbing tides, with additional inspection following storm events. Visual monitoring of turbidity inside and outside of the device will occur regularly during the day. ▪ Results of daily observations of the integrity of the silt curtain will be required to be recorded and maintained. Records will be required to be kept on the site and will be made available for inspection by the Superintendent. ▪ Decommissioning will be carried out by boat during a high tide period. ▪ Decommissioning will only be undertaken once construction activities are above seabed level (that is, no activities which disturb the seabed will occur without the silt curtain in place). Before removing the device, turbidity conditions within the silt curtain will be assessed both visually and by using a hand-held water quality meter to confirm that turbidity levels (measured as NTU) inside and outside the device are similar. This will verify that sediment has settled, resulting in similar water turbidity within the work zone to that outside the curtain. The silt curtain will not be decommissioned until the water inside and outside correspond both visually and this is also confirmed using a hand-held device.		
Bubble curtains comprise perforated air hoses anchored to the sea floor that shoot walls of air bubbles into the water column. The purpose of the bubble curtains is to form a barrier to underwater noise and deflect sediment debris from travelling past the bubble curtain. A bubble curtain will be implemented across the entrance channel in conjunction with a silt curtain/boom to assist in the control of the spread of suspended sediments. A bubble curtain will also have benefits in reducing noise impacts on marine fauna and does not restrict vessel navigation.	Contractor	Pre-Construction and Construction

Mitigation Measure	Responsibility	Phase
A Baseline Water Quality Monitoring Program will be developed and implemented prior to construction. Site-specific trigger values for Water Quality Monitoring for turbidity and other potential contaminants of concern (including physico-chemical parameters and hydrocarbons) will be determined prior to construction through an appropriate Baseline Water Quality Monitoring Program over a suitable time period which uses a combination of in-situ and lab-based testing. A Baseline Water Quality Report providing site-specific trigger values will be prepared.	DITRDCA or Contractor	Pre-Construction
The Contractor will undertake Water Quality Monitoring during construction to identify any potential spills or deficient silt curtains or erosion and sediment controls. The water quality monitoring requirements for the Project are outlined in the Water Quality Management Plan (refer Appendix C). Water quality monitoring will be implemented with other mitigation measures to manage potential impacts on the marine environment and aquatic ecology. This will include regular observations of the site for any visible indications of sediment plumes or pollution (for example, hydrocarbon spills or slicks), continuous monitoring of turbidity within Slaughter Bay and Emily Bay to ensure that turbidity levels are within site-specific trigger values (during augmentation activities).	Contractor	Construction
A Spill Management Plan will be implemented during construction and will be communicated to all staff working on site. The Plan will include information on the following: ▪ An emergency spill kit will be kept on site and maintained throughout the construction work and going forward. The spill kit will contain adequate quantities of material and will be suitable for the specific project application and site use. ▪ All construction workers and regular users of Kingston Pier will be advised of the location of the spill kit and trained in its use. ▪ Emergency contact details will be kept in an easily accessible location in vehicles, vessels, plant and site office. All workers will be advised of these contact details and procedures. ▪ Procedures on vehicle, vessel and plant maintenance and inspection for fluid leaks will be implemented. ▪ Vehicle wash-down and re-fuelling will not occur on site. ▪ Refuelling of plant and equipment and storage of hazardous materials on land and on barges will occur within a double-bunded area.	Contractor	Construction

Mitigation Measure	Responsibility	Phase
If an incident (e.g. spill) occurs, the following incident responses will be implemented: ▪ The Contract Manager will be notified as soon as practicable. ▪ In the event of a maritime spill, the Incident Response Plan (refer Appendix B) will be implemented.		
The number of jack-ups/anchor points during construction will be minimised where possible. The locations will be selected to avoid areas of sensitive natural rocky reef habitats that have not yet been disturbed by historical excavation.	Contractor	Construction
Work positioning barges and excavation of seafloor material during construction will be scheduled to occur during calm conditions wherever possible to prevent excessive and non-contained sedimentation and minimise any safety risks.	Contractor	Construction
A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP for the Project. The SWMP will identify all reasonably foreseeable risks relating to erosion, sediments and water pollution and describe how these risks will be addressed during construction. Erosion and sediment control measures will be implemented and maintained (in accordance with the *Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book)) to: ▪ Prevent sediment moving off-site and sediment-laden water entering any water course, drainage lines, or drain inlets. ▪ Reduce water velocity and capture sediment on site. ▪ Minimise the amount of material transported from site to surrounding pavement surfaces. ▪ Divert clean water around the site.	Contractor	Pre-Construction and Construction
The Contractor, NIRC and users of Kingston Pier will implement the following measures to minimise potential impacts on marine water quality, including (but not limited to): ▪ All machinery and equipment will be maintained in good working order and regularly visually inspected for leaks. ▪ All construction equipment and vessels will be inspected by qualified personnel prior to the commencement of work to reduce the risk of hydrocarbon spills or leaks. ▪ All visiting vessels will also adhere to the above two measures. ▪ Portable toilets (if required) will be positioned securely within approved compound areas and emptied on a	Contractor, NIRC and Port Users	Construction and Operation

Mitigation Measure	Responsibility	Phase
regular basis using a licenced service provider and human waste disposed of at a local sewerage treatment plant. ▪ No sewage will be released into the local waterway from vessel holding tanks. ▪ Non-toxic/biodegradable environmentally friendly/water-based chemicals will be used, where required and available. ▪ The lowest volume of hydrocarbons (oil, grease, petrol and diesel) practicable will be stored on-site. ▪ Chemical and fuel storage areas will be bunded and chemicals will be stored in accordance with the products Safety Data Sheet (SDS) and AS 1940 on board construction vessels and land-based construction areas only. ▪ Vessels (self-propelled and unpowered) will have adequate on-board communication, containment, drainage, bunding and monitoring systems to prevent discharges of unauthorised effluents.		
The Contractor's spill containment, chemicals handling, and emergency response procedures must be demonstrated to be appropriate and adequate for the proposed plant and operations. Both land and specialised marine spill booms shall be kept on site at all times and be easily accessible to the immediate working area so they can be deployed quickly as needed.	Contractor	Construction
The Contractor's procedures will describe processes for general waste handling and disposal.	Contractor	Construction
Dredging should occur between October and May to avoid the possible energetic meteorological conditions, with a higher chance of larger wind forcing from northern and western sectors (noting the coral spawning season generally occurs from late December/January for a few months and would need to be avoided).	Contractor	Operation
Dredging is allowed only during the daylight hours with a break to unload spoil onshore per day for six days per week (half a day Saturday).	Contractor	Operation

6.2 Marine Sediment

All practical measures are to be taken to minimise the disturbance of marine sediments and rock, exposure of potential contaminants and introduction of pollutants resulting from the Project.

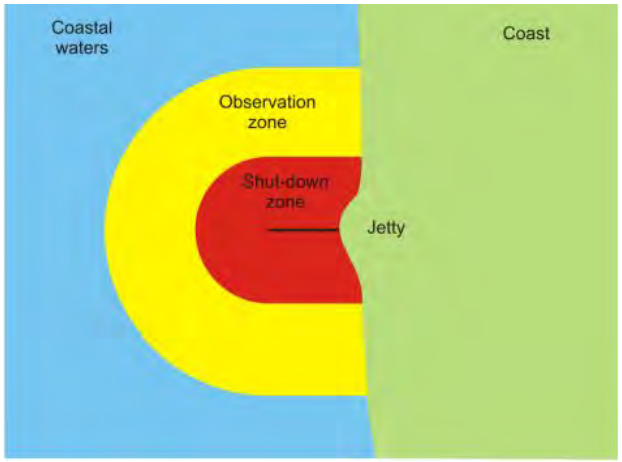
Mitigation Measure	Responsibility	Phase
The Contractor's spill containment, chemicals handling and emergency response procedures will be appropriate and adequate.	Contractor	Construction
The Contractor's procedures will describe processes for general waste handling and disposal.	Contractor	Construction

6.3 Aquatic Ecology

Mitigation Measure	Responsibility	Phase
To minimise damage to sensitive marine habitats in the study area (i.e. intertidal and subtidal rocky reefs) and the fauna they support, all construction vessels are to remain within the site boundary when working or moored/anchored within 250m offshore of the site. No marine traffic is permitted outside of this marine footprint unless shelter is being sort from adverse weather events. No vehicle movements, materials stockpiling, or other construction-related activities are permitted outside the approved land-based footprint during construction. During operation, vessels will stay within the designated channel area and not move over nearby shallow areas of sensitive marine habitat.	Contractor and Port Users	Construction and Operation
To minimise unnecessary damage to habitats and the fauna they support which occur within the construction footprint during construction, the Contractor will limit any unnecessary and/or temporary construction (i.e. through selection of the most appropriate construction methods) and materials stockpiling and limit any anchoring which is required by vessels.	Contractor	Construction
All construction works will be undertaken by a suitably qualified, experienced and site-specific trained Contractor to reduce the risk of error and accidental environmental damage and flow-on effects on habitats and fauna in a safe manner.	Contractor	Construction
All sediment and erosion controls, marine water quality and waste management mitigation measures described in this EA will be implemented.	Contractor and the NIRC	Construction and Operation
Surface level inspections for marine mammals or other large marine fauna entangled in the silt curtains must occur regularly (i.e. dedicated hourly visual observations should be maintained). If a marine mammal or other fauna is identified as being entangled in the silt curtain, the following procedures should be undertaken: • Immediate stop of all water-based construction activities.	Contractor	Construction

Mitigation Measure	Responsibility	Phase
• Contact appropriate environmental office to arrange for freeing of fauna. This may entail decommissioning of the curtain. • Water based construction activities will not commence until 30 minutes after marine mammal(s) have left the area.		
To reduce the potential impacts of adverse marine water quality on marine habitats and the fauna they support during construction and operation, mitigation measures proposed for marine water quality impacts will be implemented as well as the following additional measures: • Construction vessels will maintain their septic tanks and pumps so that they do not leak. No release of sewage into the waterway is allowed. • Both oil and sewage spill response kits will be readily available at Kingston Pier for use during construction and operation in the event of a spill. Regular users of Kingston Pier will be trained in their use.	Contractor and the NIRC	Construction and Operation
To enhance the potential for the Contractor to be able to assist in the protection of marine habitats and the fauna they support during construction, all personnel, in particular skippers, will be made aware of the areas of sensitive habitat within the study area during the general site induction, and of the potential impacts that construction works may have on these areas. Records of training will be retained.	Contractor	Construction
To reduce the spread of suspended sediments generated during excavation and the potential for sedimentation and/or smothering of nearby sensitive marine habitats and associated flora and fauna, silt curtains/booms and bubble curtains will be used around the immediate excavation area.	Contractor	Construction
Monitoring of water quality (particularly turbidity) during water-based construction activities with the potential to disturb the seafloor (i.e. during excavation and piling activities) will be undertaken and construction activities ceased if levels of suspended sediment become higher than site-specific trigger values developed for the Project.	Contractor	Construction
At the completion of construction, a seabed inspection (seabed clearance survey) and clean-up will occur to remove any construction waste and general debris from the seafloor. All waste will be removed and disposed of at a licenced facility.	Contractor	Post-Construction
To reduce the potential impacts of marine debris on fauna during construction and operation, the mitigation measures proposed for waste management will be implemented.	Contractor	Construction and Operation

Mitigation Measure	Responsibility	Phase
During operation, Kingston Pier and the channel navigation aid will be examined regularly to ensure that they are not in need of repair or have any loose parts that may fall into the waterway and cause harm to marine fauna.	NIRC	Operation
To reduce the potential for lighting-related impacts on marine fauna during construction the following measures will be implemented: • Limit the need for construction activities to be undertaken during the evening and night time to reduce the overall need for construction-related artificial lighting (on vessels and the jack-up barge) and associated impacts. • Use downward-directed and dimmed lighting on Kingston Pier (ensuring that it is still in accordance with navigation requirements).	Contractor	Construction
If possible, the risk of overhead cable strike on marine fauna during construction will be minimised by placing any floating plant on a swing mooring, where space permits and it is deemed safe to do so rather than leaving plant in a fixed mooring configuration as the reliance on a single swing mooring line will minimise cable oscillation.	Contractor	Construction
The risk of vessel strike impacting on marine fauna, specifically marine mammals, during construction and operation will be reduced through the implementation of the following measures: • All vessels associated with construction will travel at speeds no higher than 10 knots in nearshore coastal waters. • Awareness of the presence of marine fauna in the local waterway by vessel operators so that they can adopt appropriate speeds and clearance when cetaceans are nearby. • Variable or zoned (time and place) speed limits for visiting vessels during operation, particularly in relation to peak marine mammal migrating periods. • All moving vessels will adhere to the vessel approach distance requirements when travelling to and from site and while undertaking construction works as outlined in *Table 2 – summary of vessel approach distances and operation* in the Australian National Guidelines for Whale and Dolphin Watching (2017). These requirements are also in accordance with the EPBC Act Regulations Part 8 - Interacting with cetaceans and whale watching.	Contractor and Port Users	Construction and Operation

Mitigation Measure	Responsibility	Phase
Table 2—summary of vessel approach distances and operation. **Requirements** / **Distance to an adult whale** / **Distance to an adult dolphin** *No approach zone* • a zone of total vessel exclusion • no waiting in front of direction of travel • no following directly behind **Within 100 metres to the side, 300m in front and to the rear** / **Within 50 metres to the side, 150m in front and to the rear** *Caution zone* • speed must be no more than 6 knots • maximum of 3 vessels • do not enter caution zone if animals are injured, stranded, entangled or distressed • **do not enter the caution zone if a calf is present** • do not enter if operating a prohibited vessel **Between 300 and 100 metres** / **Between 150 and 50 metres** *Bow riding* • do not deliberately encourage bow riding • when animals are bow riding - do not change course or speed suddenly • if there is a need to stop – reduce speed gradually		
To reduce the potential for noise-related impacts on marine fauna (specifically marine mammals) during excavation and piling (if any) work the following measures will be implemented: • Arrange piling and excavation work outside of the main marine mammal migration period, if feasible. • Implement the following observation zone and shutdown zones for marine mammals during seabed augmentation works: o Observation zone: 500 m o Shutdown zone: 100 m These zones have been suggested with consideration of the zones outlined in Table 5 of the SA Underwater Piling Noise Guidelines (Department of Planning, Transport and Infrastructure, 2012) noting that noise impacts associated with augmentation are likely to be much less than for piling activities and there are no guidelines for dredging).  	Contractor	Construction

Mitigation Measure	Responsibility	Phase
• Implement the following piling and excavation operation procedures: o Piling and Excavation Operation Procedures: a) *Pre-Start Observation:* Marine mammal observers will visually monitor observation and shut-down zones for whales for a minimum of 30 minutes before the commencement of piling and/or excavation b) *Soft-Start Procedure:* If, after the 30 minute pre-start observation, no whale/s have been spotted within the observation or shutdown zone a soft start procedure will commence with a gradual increase in piling impact energy of no more than 50% of full impact energy for 10 minutes. The soft start procedure will be implemented after breaks in piling driving of 30 minutes or more c) *Stand By Procedure:* If a whale is spotted within the observation zone during the soft start procedure, the operator of the piling or excavation equipment will be placed on standby to shut-down the equipment and a trained crew member will continuously monitor the whale/s in sight at all times d) *Normal Procedure:* If no whale/s has been sighted during the soft-start procedure, full impact piling or excavation may commence. • The use of bubble curtains around the entrance channel will also be implemented to reduce noise impacts on marine fauna.		
To reduce the potential for noise impacts on marine fauna (specifically marine mammals) during piling and/or excavation, the following Shut-Down requirements will be implemented: • Shut-Down requirements: a) If visibility is poor and the marine mammal observer is unable to clearly identify objects to the full observation zone distance, a vessel or aircraft search will be conducted, or the action postponed until visibility has improved. b) Piling and excavation are not permitted between 6.00 pm and 7.00 am. c) If any whales are spotted within the shut-down zone, piling or excavation will cease	Contractor	Construction

Mitigation Measure	Responsibility	Phase
immediately or as soon as safe to do so until the whale/s has moved outside of the shut-down zone. d) All piling or excavation will cease for a minimum of 1 hour after the last sighting of a whale within the observation zone. Piling or excavation will recommence at the pre-start observation after the 1 hour shutdown has elapsed.		
All Contractors will undertake a Vessel Risk Assessment (VRA) prior to mobilisation to the site. The VRA may be undertaken by the vessel owner and/or operator. All vessels, floating plant and other marine-based construction equipment mobilised to the site from any place inside or outside of Australia will be subject to the VRA. The VRA will determine if a vessel inspection is required. The Contractor(s) will provide the VRA to the Principal four (4) weeks prior to mobilisation. The Contractor(s) will undertake an Invasive Marine Species (IMS) inspection of all vessels assessed in the VRA as uncertain or high risk for introduction of invasive marine species. The Contractor(s) will arrange for IMS inspections for all vessels considered high and/or uncertain risk prior to the commencement of construction either within seven days of mobilisation to the site (directly) or within 48 hours of entry to the harbour. Any construction vessels mobilised from outside of Norfolk Island will be considered high risk and will be inspected. Construction vessels entering the site from international waters will be inspected and cleaned prior to entering the site. Following inspection, the Contractor(s) will submit a revised VRA and if the vessel is classified as low risk it will be permitted to enter the waterway and begin operations. The IMS inspection will be undertaken by appropriately qualified personnel with experience in biosecurity of marine vessels, floating plant and marine-based construction equipment. The Contractor(s) is responsible for arranging the IMS inspection by suitably qualified personnel.	Contractor	Construction
The antifouling of construction and visiting operational vessels will be maintained to avoid the attachment and potential translocation of invasive species into Norfolk Island waters.	Contractor and Port Users	Construction and Operation

Mitigation Measure	Responsibility	Phase
Ballast water management will include the following measures: • Ballast water exchange by domestic vessels will be avoided. • Domestic vessels will manage ballast water in accordance with the Australian *Ballast Water Management Requirements* (Department of Agriculture, Water and the Environment 20120.* Any ballast water exchange from international vessels will be undertaken in accordance with *the International Convention for the Control and Management of Ships' Ballast Water and Sediments* (BWM) (IMO 2016) – i.e. "whenever possible, conduct ballast water exchange at least 200 nautical miles from the nearest land and in water at least 200 metres in depth, taking into account Guidelines developed by IMO" and "in cases where the ship is unable to conduct ballast water exchange as above, this should be as far from the nearest land as possible, and in all cases at least 50 nautical miles from the nearest land and in water at least 200 metres in depth".	Contractor and Port Users	Construction and Operation
For all construction vessels and/or barges, piling or other equipment mobilised to the site from overseas, the processes of the Australian Government Department of Agriculture, Fisheries and Forestry for pre-arrival, arrival and inspection, and post-arrival will be followed.	Contractor	Construction
Monitoring and inspection and/or surveillance of all construction vessels and/or barges will be undertaken in accordance with the *Biosecurity Act 2015*. The Contractor will be responsible for understanding their obligations under the *Biosecurity Act 2015* in regard to monitoring, inspection and surveillance of construction vessels and/or barges.	Contractor	Construction

* The Australian Ballast Water Management Requirements provide guidance on how vessel operators should manage ballast water when operating within Australian seas in order to comply with the *Biosecurity Act 2015*. They also align to the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004 (the Ballast Water Management Convention), which entered into force internationally on 8 September 2017.

6.4 Terrestrial Ecology

Mitigation Measure	Responsibility	Phase
To minimise damage to sensitive terrestrial habitats in the study area (i.e. the terrestrial habitats of the Kingston Common Reserve) and the fauna they support, all habitats beyond the site and construction route will remain no-go zones for the duration of construction. No vehicle movements,	Contractor	Construction

Mitigation Measure	Responsibility	Phase
materials stockpiling, or other construction-related activities are permitted outside the approved land-based footprint during construction. At all times, vehicles transporting construction-related materials, equipment or trailers pulling vessels will remain on the available sealed roadways and not on any grassed areas of the Kingston Common Reserve.		
To minimise unnecessary damage to habitats and the fauna they support which occur within the construction footprint during construction, the Contractor will limit any unnecessary and/or temporary construction (i.e. through selection of the most appropriate construction methods) and materials stockpiling.	Contractor	Construction
All construction works will be undertaken by a suitably qualified, experienced and site-specific trained Contractor to reduce the risk of error and accidental environmental damage and flow-on effects on habitats and fauna in a safe manner.	Contractor	Construction
To reduce the potential for lighting-related impacts on terrestrial fauna during construction the following measures will be implemented: • Limit the need for construction activities to be undertaken during the evening and night time to reduce the overall need for construction-related artificial lighting (on vessels and the jack-up barge) and associated impacts. • Use downward-directed and dimmed lighting on Kingston Pier (ensuring that it is still in accordance with navigation requirements).	Contractor	Construction

6.5 Air Quality and Greenhouse Gases

Mitigation Measure	Responsibility	Phase
The Contractor will prepare and implement measures to minimise air quality impacts during construction such as: • All trucks used for the transportation of spoil will be securely covered to contain the material. • Any temporary stockpiling of spoil will be securely covered and located in an area not exposed to high winds. • Construction works will be reduced or stopped during strong winds and other adverse weather conditions.	Contractor	Pre-Construction and Construction

6.6 Noise and Vibration

Mitigation Measure	Responsibility	Phase
The Contractor will prepare and implement measures to manage potential construction noise and vibration impacts which are reasonable and feasible and in line with relevant NSW, QLD or other best-practice guidelines. This will include the measures identified below in relation to source controls, administrative controls, community management and construction vibration management.	Contractor	Pre-Construction and Construction
Source Controls • Use the most suitable equipment necessary for the construction works at any one time and modify methods of construction, where feasible. • Avoid/limit simultaneous operation of noisy plant and equipment within discernible range of sensitive receivers where practicable. • Where feasible and practicable, the noisiest works will be carried out during recommended standard hours. • Plant and equipment including trucks will be turned off when not used or idle. • Noisy plant and equipment will be located furthest away from sensitive receivers.	Contractor	Construction
Administrative Controls • Brief workers on the noise sensitivity of the neighbouring properties to the work sites. • Respite periods will be adopted for construction activities that are to be undertaken for extended periods of time such as augmentation. • Trucks will drive to and from the site in a forward motion to avoid the use of reversing alarms.	Contractor	Construction
Community Management • Sensitive receivers will be informed of scheduled construction works at least one week prior to the commencement of construction. • Sensitive receivers will be informed prior to the commencement of potentially noise intensive activities such as piling. • Sensitive receivers will be informed of any construction works occurring outside recommended standard hours • A complaints handling procedure, including a dedicated email and contact phone number, will be established for enquiries during construction works.	Contractor	Pre-Construction and Construction

Mitigation Measure	Responsibility	Phase
Construction Vibration Mitigation • Lower impact equipment or methodologies will be investigated were possible, for example driven and bored piling. • Construction works will be sequenced so that vibration-causing activities do not occur simultaneously.	Contractor	Pre-Construction and Construction

6.7 Traffic, Transport and Access

Mitigation Measure	Responsibility	Phase
The Contractor will prepare a Traffic Management Plan and implement the measures to manage the potential impacts of construction on traffic, transport and access. This will include measures to coordinate the movements of land-based and water-based traffic. For water-based traffic, this may include the installation of temporary buoy markers to demarcate navigable waters for existing vessel operators.	Contractor	Pre-Construction and Construction
The Contractor will consult with the NIRC as Port Manager during construction to minimise potential impacts on existing port operations.	Contractor	Construction
Where feasible and practical, the Contactor will arrange for one truck at any point in time to transport spoil from Kingston Pier to the land-based disposal site.	Contractor	Construction

6.8 Utilities and Services

Mitigation Measure	Responsibility	Phase
The Contractor will undertake investigations to ensure that all appropriate measures are implemented to minimise potential risk to existing utilities and services prior to construction.	Contractor	Pre-Construction
The Contractor will consult relevant service providers, owners, the NIRC and/or the Administration of Norfolk Island to verify the location of all existing utilities and services and to determine any potential impacts of the Project. This will include requirements for the protection, relocation or decommissioning of existing utilities and services both above and below water.	Contractor	Pre-Construction
The Contractor will verify the location of all existing utilities and services on and in the vicinity of the site and protect existing utilities and services, as necessary. This will include a Before You Dig Australia (BYDA) enquiry and survey of both	Contractor	Pre-Construction and Construction

above and below water utilities and services if available, and also using a local services locator.		

6.9 Non-Aboriginal Heritage

Mitigation Measure	Responsibility	Phase
Archaeological test excavations have been carried out over the proposed channel footprint to provide additional information on the nature, extent, variety, frequency and condition of the underwater cultural archaeological resource. The information has informed the Kingston Pier Underwater Archaeological Management Plan (KPUAMP) (Appendix A).	Project Archaeologist - completed	Detailed Design
An abbreviated KPUAMP has been prepared and will be implemented for the archaeological test excavation.	Project Archaeologist	Pre-Construction
The KPUAMP covers all aspects of the underwater archaeological investigation, including the recovery, recording and management of artefacts. The KPUAMP has been prepared in consultation with key stakeholders including the NIRC, the KAVHA Project Manager, Norfolk Island Museum as well as the Norfolk Island Community.	Project Archaeologist and Contractor	Pre-Construction and Construction
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 the shipwreck of the *HMS Sirius* or other historic shipwrecks in the area as identified in the KPUAMP.	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

6.10 Waste Management

Mitigation Measure	Responsibility	Phase
The Contractor will prepare and implement measures to manage the key waste streams.	Contractor	Pre-Construction and Construction
During construction, at a minimum, the following mitigation measures will be implemented:	Contractor	Construction

Mitigation Measure	Responsibility	Phase
• The jack-up barge, floating hopper, flat-topped barge and skip bins will not be overloaded with spoil to prevent spillage during transfer to Kingston Pier. • Domestic waste will be disposed of at appropriate receptacles or designated places such as a Waste Management Centre or a waste management facility on Norfolk Island. • All trucks transporting spoil to the Old Cascade Quarry will be covered to prevent material spillage. • Oils and lubricants will be recycled at an appropriate recycling waste facility on Norfolk Island.		
Waste management, littering and general tidiness during construction will be monitored during routine site inspections.	Contractor	Construction
All waste generated by water-based vessels during construction and operation will be stored in appropriate on-board waste holding facilities for disposal at licenced land-based facilities.	Contractor and Port Users	Construction and Operation
Appropriate measures to avoid and minimise waste generation during construction and operation will be investigated and implemented, where practicable. In addition, suitable waste receptacles will be provided on-site for users of Kingston Pier.	Contractor and the NIRC	Construction and Operation
All general waste will be classified before being disposed of to an appropriately licenced facility in accordance with Waste Classification Guidelines: Part 1 Classifying Waste (EPA 2014). Where necessary, this will include sampling and analysis, and separating wastes for potential recycling or reuse in accordance with the waste management hierarchy.	Contractor and the NIRC	Construction and Operation

6.11 Socio-economic

Mitigation Measure	Responsibility	Phase
Prepare a Contingency Plan to document the level of access various port users will have to the Kingston Pier during the channel construction works. The Plan is to be presented to Stakeholders for consultation and input prior to finalisation.	DITRDCA	Pre-Construction and Construction
The Contractor will consult with the NIRC as Port Manager during construction to minimise potential impacts on existing port operations.	Contractor	Construction

7 Inspections, Reporting and Auditing

Routine inspections, reporting and auditing will be undertaken throughout the duration of construction to ensure implementation of the requirements in this CEMP. All reports will be made available by the Principal to regulators upon request. The Contractor will refer requests by regulators to the Principal. Records and copies of reports completed as part of the CEMP will be maintained by the Principal for a minimum of five years.

7.1 Weekly Compliance Auditing

Throughout the construction period, the Contractor will undertake weekly inspections of their activities, including key environmental issues. The Contractor's Weekly Inspections are targeted to demonstrate compliance with the CEMP with a requirement to rectify any identified issues as soon as practicable.

7.2 Monthly Reporting

For the duration of construction activities, the Contractor will produce a Monthly Report in which the following topics will be reported as a minimum in relation to environmental management:

- Environmental issues raised at meetings during the period and outcomes of the issues raised;
- Environmental issues, incidents and near-misses occurring during the period and actions taken or proposed resolutions;
- A brief summary of any forecast vessel arrivals and their ports of origin;
- A summary of any interactions with marine mammals or other large marine fauna (e.g. sharks, turtles, seabirds);
- Non-conformances and corrective actions; and
- Waste and hydrocarbon use statistics.

Monthly reports will be made available to DCCEEW, NIRC or Parks Australia on request.

7.3 Specific Construction Inspections, Reporting and Monitoring

Table 7-1 provides a summary of the reporting and monitoring required during the construction phase of the Project.

Table 7-1 Reporting and Monitoring Required During Construction

CEMP Reference	Report Name	Contents	Responsibility and Recipient	Frequency/Schedule
All	Complaint Report/Notice	Any complaints from the public received by the Principal or the Contractor will be recorded in the Project complaints register and	Principal (from Contractor)	Following receipt of complaint

CEMP Reference	Report Name	Contents	Responsibility and Recipient	Frequency/Schedule
		responded to and acknowledged within the identified timeframes. The resolution and closure of the issue will be dependent on the complexity of the issue.		
All	Risk Register	Register detailing safety in design principles to minimise potential construction hazards and risks associated with the project	Contractor (from Designer)	Throughout project
All	Safe Work Method Statement	Description of how the works will be conducted in accordance with relevant WHS Acts	Contractor	Throughout project
Marine Water Quality				
Section 6.1	Water quality monitoring including turbidity monitoring in accordance with the Water Quality Management Plan	Details of the continuous monitoring undertaken during construction to identify sediment, turbidity or pollution.	Contractor	Continuous throughout construction.
Section 6.1	Spill Management Plan	Details on the procedures to be followed in the event of a spill along with emergency contact details.	Contractor	To be implemented following any spill incident.
Section 6.1	Soil and Water Management Plan	Details of risks relating to erosion, sediment and water pollution and procedures to minimise material transport from the site.	Contractor	To be adopted throughout the project.

CEMP Reference	Report Name	Contents	Responsibility and Recipient	Frequency/Schedule
Aquatic Ecology				
Section 6.3	Vessel Risk Assessment (VRA)	Statement from inspector on vessel risk.	Principal (from Contractor) (and made available to DCCEEW, NIRC and Parks Australia on request).	Prior to mobilising vessels, floating plant and equipment to Kingston.
Section 6.3	Invasive Marine Species (IMS) Inspection	All vessels to be assessed for IMS.	Principal (from Contractor)	Within 7 days of mobilisation to site or within 48 hours of entry to the harbour.
Traffic Management Plan				
Section 6.7	Traffic Management Plan	Details of on-land and sea traffic routes and management procedures.	Contractor	Construction
Non-Aboriginal Heritage				
Section 6.9	Kingston Pier Underwater Archaeological Management Plan (KPUAMP)	Details on procedure to be followed for archaeological excavation including recovery, recording and management of artefacts.	Project Archaeologist to Contractor	Construction

7.4 Audits

A monthly review/audit of Contractor compliance with the requirements set out herein will be completed by the PER/HSA. The findings and recommendations arising from the audit will be recorded in an Action Register for action and close out.

8 Emergency Contacts

The Contractor must provide and maintain sufficient emergency procedure equipment on-site for the duration of the construction program. For immediate emergences which have the potential to threaten human life, action organisations are to be contacted by the Contractor as required. Following this, notification should be made to the Superintendent.

Norfolk Island Regional Council (NIRC) is responsible for emergency management, marine search and rescue, environmental protection and general marine regulation and safety and as such should be contacted in the event of a maritime incident. Other emergency contacts are also listed.

Key emergency contacts are detailed in Table 8-1.

Table 8-1 Emergency Contacts List.

Relevant Authority	Contact Number
Emergency Management/Norfolk Island Regional Council	+6723 22244
Norfolk Island Police	+6723 22222
Norfolk Island Fire Service (NIFS)	+6723 22049
Ambulance/Police/Fire	955 / 000
Norfolk Island Hospital	+6723 22091
AMSA – AMSA Response Centre (for maritime casualties and shipping related pollution incidents)	+612 6230 6811 or 1800 641 792 rccaus@amsa.gov.au
DCCEEW (for biosecurity related issues)	+6723 22441
Norfolk Island Marine Park (Parks Australia)	+6723 22695
Parks Australia – Marine Duty Officer * (for any incident in an AMP)	0419 293 465 marine.compliance@environment.gov.au

9 References

Advisian (2021). Kingston Pier Channel Construction Project - EPBC Act Referral (2021/9124).

Advisian (2021). Kingston Pier Channel Construction Project Environmental Assessment (EA).

Advisian (2021). Kingston Pier Channel Construction Project Environmental Impact Statement (EIS).

Advisian (2022) 311015-00061-MA-SPC-001_Kingston Technical Specification – Rev B.

Advisian (2022) and Kingston Pier Channel Construction Project Public Environment Report (PER).

DAWE (2022). Kingston Pier Channel Construction Project - EPBC Act Referral Decision (EPBC 2021/9124) issued by the Commonwealth Department of Agriculture, Water and Environment dated 4 April 2022 for the Project to be assessed by Public Environment Report.

Department of Agriculture, and Water Resources and the Environment (2020). Australian Ballast Water Management Requirements.

Development Application DA.BA 48/2021 approved on the 1 July 2022 item 14, 15 and 16.

Development Control Plan No. 7 – Kingston and Arthurs Vale Historic Area.

Norfolk Island Plan 2002.

NSW Department of Infrastructure, Planning and Natural Resources (2004). Guideline for the Preparation of Environmental Management Plans.

NSW Government (2003). Environmental Management System Guidelines (NSW Government, 3rd edition, August 2013).

Appendix A

Kingston Pier Underwater Archaeological Management Plan (KPUAMP)

REFER PER APPENDIX I

Appendix B
Maritime Incident Response Plan

REFER PER APPENDIX K

Appendix C
Water Quality Management Plan

Kingston Pier Channel Construction Project

Construction Water Quality Management Plan

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

27 July 2021

311015-00061

Advisian
Worley Group

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Disclaimer

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PROJECT 311015-00061 - RevC: Kingston Pier Channel Construction Project - Water Quality Management Plan

Rev	Description	Author	Review	Advisian approval	Revision date	Client approval	Approval date
A	For internal review	K. Newton	B. Morgan	B. Morgan	26 May 2021		Approval date
B	For client review	K. Newton	C. Hickey / S. Greenshields	B. Morgan	28 May 2021		
C	For client review	K. Newton	C. Hickey / S. Greenshields	B. Morgan	8 June 2021		
O	Final for issue	K. Newton		B. Morgan	27 July 2021		

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Appendices

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Executive summary

Kingston Pier is one of two waterway import/export and access locations on Norfolk Island. Limited water depth is available in the channel adjacent to Kingston Pier at lower tides and presents a safety risk for users due to inadequate under-keel clearance. Localised deepening and widening of the channel approach and berthing areas adjacent to the pier is required to provide safer access to vessels at all tides

The Kingston Pier Channel Construction Project (the Project) involves the augmentation of approximately 5,000 m^3 of seabed material at the existing channel to enable the deepening and widening of the channel to between approximately -2.7 m to -3.2 m Mean Sea Level (MSL).

The process of augmentation, dewatering and the use of construction equipment have the potential to impact on water quality and the local marine environment. These impacts are typically related to temporary and localised increases in turbidity (causing light reductions), sedimentation of nearby sensitive receivers (e.g. temperate subtidal rocky reef and coral reef habitat) and/or release of potential contaminants (e.g. fuels/oils) into the marine environment and impacts on flora and fauna.

This Construction Water Quality Management Plan (CWQMP) has been developed in order to assist in the attainment of Project Approvals, fulfil the commitments made in the Environmental Assessment (EA) (Advisian 2021a) in regard to management of water quality and the marine environment and is intended to be appended to the overarching Construction Environment Management Plan (CEMP) for the Project (as prepared by the Contractor for the Project).

This CWQMP has been prepared to apply to the proposed construction activities associated with the Project as described.

This CWQMP contains site-specific management measures to successfully mitigate impacts identified in the EA, in particular, to avoid any significant impacts on nearby sensitive marine habitats (with special consideration of the temperate coral reefs located within Slaughter Bay and Emily Bay, to the east of the Project site).

Note – this document needs to be updated following Contractor engagement, EA approval, EPBC Act Referral approval, any other licences/permits e.g. Marine Parks Permit, preparation of CEMP etc. and ensure all correct references are included.

Acronyms and abbreviations

Acronym/abbreviation	Definition
Augmentation	Dredging
CEMP	Construction Environment Management Plan
CWQMP	Construction Water Quality Management Plan
DAWE	Department of Agriculture, Water and the Environment
DITRDC	Department of Infrastructure, Transport, Regional Development and Communications
EA	Environmental Assessment (dated x May 2021, submitted to the Secretary seeking approval to carry out the Project)
EIA	Environmental Impact Assessment
EQOs	Environmental Quality Objectives
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPBC Act	*Environment Protection Biodiversity Conservation Act 1999* (Commonwealth)
ER	Environmental Representative
HSE	Health, Safety and Environment
HSEQ	Health, Safety, Environment and Quality
IMS	Information Management System
Incident	An occurrence or set of circumstances that: • Causes, or threatens to cause, material harm to the environment, community or any member of the community, being actual or potential harm to the health or safety of human beings or to threatened species, endangered ecological communities or ecosystems that is not trivial; or • Results in non-compliance with the Infrastructure Approval.
Infrastructure Approval	Insert details of Infrastructure Approval received including date
KAVHA	Kingston and Arthur's Vale Historic Area
m^3	Cubic Metres
MSL	Mean Sea Level
NIRC	Norfolk Island Regional Council
NSW	New South Wales
NTU	Nephelometric Turbidity Units
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Principal	The Department of Infrastructure, Transport, Regional Development and Communications (DITRDC)
RTS	Response to Submissions Report - Kingston Pier Channel Construction Project, dated X Month 2021, including the Summary of Proposed Mitigation Measures
Secretary	Secretary of the Department of Infrastructure, Transport, Regional Development and Communications

Sensitive Environmental Receptors	Marine habitats (such as coral reef, subtidal temperate macroalgae dominated reef etc) that may potentially be affected by deterioration of water quality.
SSC	Suspended Sediment Concentration

1 Introduction

1.1 Background

Kingston is the capital of Norfolk Island and is Australia's second oldest town behind Sydney. Kingston Pier, located on the south side of the Island (Figure 1-1), is one of two waterway import/export and access locations on the island, the other being Cascade Pier. Break-bulk cargo is transhipped from cargo ships moored offshore using the launchers and lighters. Cargo is lifted off the lighters at the pier using either a wharf mounted crane (i.e. the fisherman's crane) or mobile crane. Limited water depth is available adjacent to Kingston Pier at lower tides and presents a safety risk for users due to inadequate under-keel clearance. Localised deepening and widening of the channel approach and berthing areas adjacent to the pier is required to provide safer access to vessels at all tides. The site is located within an environmentally sensitive area, being within the Norfolk Marine Park, and in an area of maritime archaeological significance. The site is also exposed to open ocean waves and currents.

The Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) has engaged Advisian to undertake the delivery of the Kingston Pier Channel Construction Project (the Project) including design, preparation of environmental approval documentation including an Environmental Assessment (EA) (Advisian 2021a) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Referral, a Preliminary Dredge Plume Modelling Study (Advisian 2021b), Ecology Assessment (2021c) and this Construction Water Quality Management Plan (CWQMP). The Project was declared Significant Development by the Norfolk Island Regional Council (NIRC) under the *Norfolk Island Planning Act* 2002 on 25 May 2021.

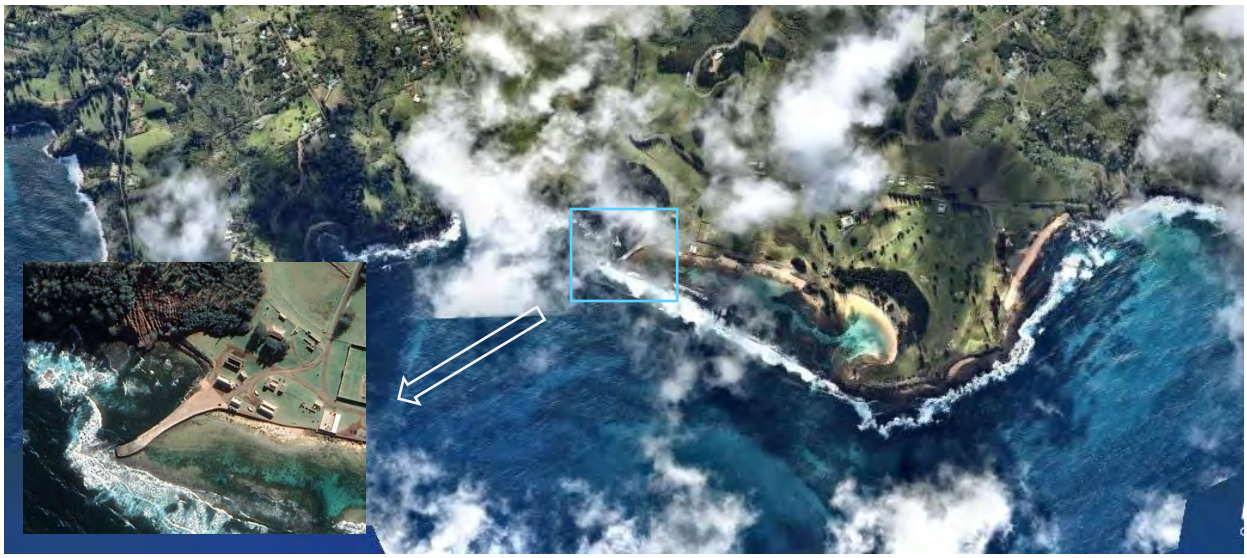


Figure 1-1 Kingston Pier and part of KAVHA, Norfolk Island.

1.2 Project Description

1.2.1 Dredging

The Project involves the augmentation of approximately 5,000 cubic metres (m^3) of seabed material at the existing channel to enable the deepening and widening of the channel to between approximately

-2.7 m to -3.2 m Mean Sea Level (MSL). 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 m^3. It is expected that major plant and equipment will be mobilised from Australia or New Zealand and that local plant and equipment will be used where possible.

It is proposed that loose sediment (with the potential for culturally significant artefacts) will be removed from the existing channel, gullies and cracks on the seabed by divers using a venturi suction pipe which will transfer the material into a perforated sediment box sitting on the seabed. The sediment box will be lifted onto Kingston Pier using the fisherman's crane and then screened for artefacts. A sandbag and sediment filter fence will be set up at the screening area to filter the runoff flowing into the harbour. Artefacts will be securely stored in an available building (i.e. the boatshed) near Kingston Pier for assessment and subsequent management. The remaining spoil will be transported by truck to Old Cascade Quarry. The calcarenite rock and tuff rock material will be removed using a backhoe mounted on a jack-up barge and using hand tools near Kingston Pier. The material will be lifted into skip bins on the jack-up barge and then transferred to Kingston Pier. The skip bins will be fitted with a filter over the sump to assist with dewatering. The dewatering will be progressively released into the harbour within a silt boom or similar sediment control device. Once onshore, the material will be transported to Old Cascade Quarry and then screened for artefacts. Recovered artefacts will be managed as previously described. Spoil will be dumped at Old Cascade Quarry into stockpiles limited to 3 m in height. Any spoil that is stockpiled for an extended period of time, albeit unlikely, will be vegetated and moved to flat ground that does not impede flow paths. The Contractor will implement erosion and sediment controls around the stockpiles.

The duration of sediment dredging is estimated to be two (2) weeks at an assumed production rate of 40 m^3/day. The duration of calcarenite and tuff dredging is estimated to be a total of five (5) weeks at an assumed production rate of 180 m^3/day and 600 m^3/day respectively. An additional seven (7) weeks have been allowed in the construction program to account for weather delays.

Dredging will occur six days a week (55 hours) during daylight hours only. The dredging program is proposed to take place in the late Spring to early summer months (between November to January) which would avoid dredging during the coral spawning period starting in late January.

1.2.2 Pier Stabilisation Works

Deepening of the seabed adjacent to Kingston Pier poses a risk of undermining the pier's existing sheet-pile wall. A recent hydrographic survey and underwater visual assessment by divers showed that undermining was already occurring, with evidence of loose gravel fill escaping from between the old and existing sheet-pile wall.

The structural capacity of the pier is highly reliant on the sheet-pile wall system. Therefore, it was recommended (based on a structural assessment) that prior to the dredging works, in order to withstand the loads of having a crane carry skip bins from a jack-up barge to the pier, the pier structure should be stabilised.

The potential expected pier-stabilisation works for Kingston Pier, based on the current sheet-pile structural assessment, include the following:

- Welding together each sheet-pile of the existing sheet-pile wall to facilitate distribution of stress across the whole wall.

- Grouting up the cavities between the old sheet-pile wall and existing sheet-pile wall to form a gravity retaining wall system.
- Installing a concrete toe at the bottom of the sheet-pile wall to prevent future undermining of the sheet-pile wall.

1.2.3 Rock Revetment Repairs

The Kingston Pier Rock Revetment, shown in Figure 1-2, is west of and adjacent to Kingston Pier. The revetment is in need of repair and upgrading, to protect the integrity of the masonry and sheet pile wall behind it and repair erosion that has occurred adjacent to the structure.

The revetment comprises a rock berm that has been constructed in front of a masonry block wall that had suffered damage since the original wall was constructed in 1839. The design for the rock berm indicates a minimum rock armour size of 300 kg, but only a single layer of primary armour. The damage to the masonry wall has the potential to allow loss of material through the structure, with the structure losing its retaining properties. There is evidence that the rock revetment is unravelling and rock armour has been displaced from the structure.

It is proposed for the western extent, profile and rock sizes of the revetment to be re-designed to extend the service life of the revetment and protect the wall behind it. This would be undertaken with land based excavator tracking along the revetment and using locally sourced rock.

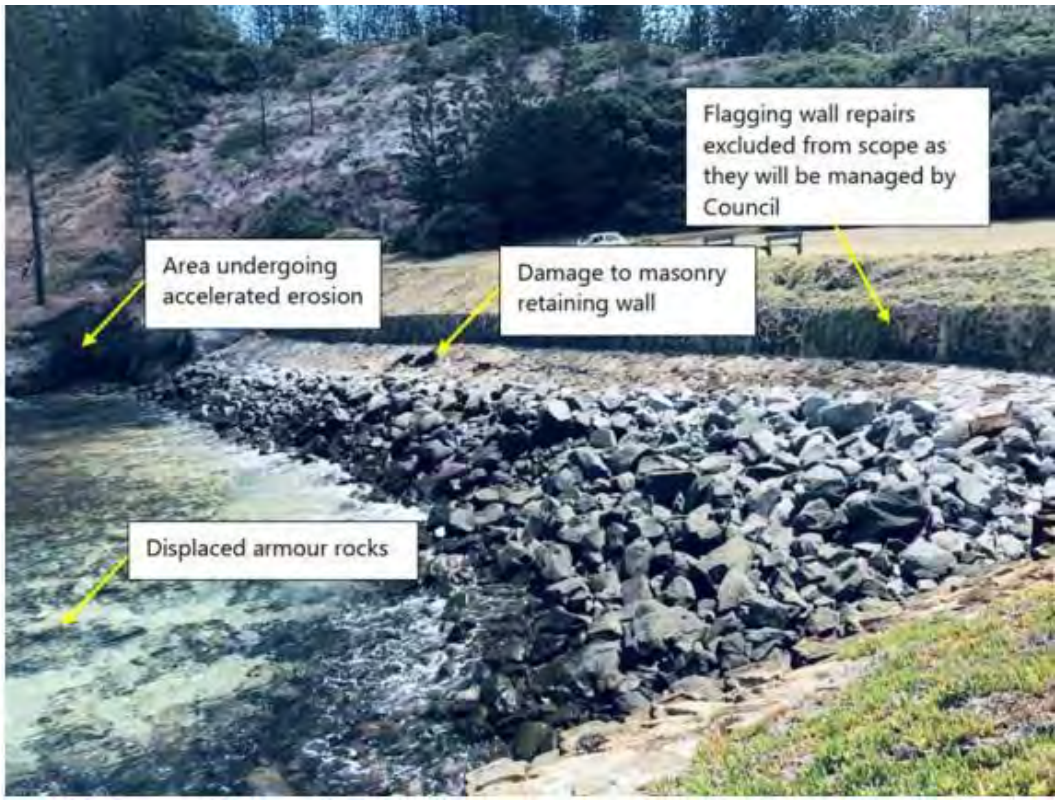


Figure 1-2 Location of rock revetment defects.

1.3 Key Project Objectives

The key objectives of the Project are as follows:

- 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 possible and appropriate.
- Ensure the Project is sympathetic to and complies with the Kingston and Arthur's Vale Historic Area (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, such as selection of the preferred design channel.
- Consider future allowance for larger vessels to enter the channel.

1.4 Purpose and Objectives of the Water Quality Management Plan

The process of augmentation, dewatering and the use of construction equipment (within the marine environment and on land) all have the potential to impact on water quality and the local marine environment. These impacts are typically related to temporary and localised increases in turbidity (causing light reductions), sedimentation of nearby sensitive receivers (e.g. temperate subtidal rocky reef and coral reef habitat) and/or release of potential contaminants (e.g. fuels/oils) into the marine environment and impacts on flora and fauna. A summary of recent data concerning the ecology and health of the Slaughter Bay and Emily Bay coral reefs is provided in Section 3.

This CWQMP has been developed in order to assist in the attainment of Project Approvals, fulfil the commitments made in the EA (Advisian 2021a) in regard to management of water quality and the marine environment and is intended to be appended to the overarching Construction Environment Management Plan (CEMP) (as prepared by the Contractor for the Project).

This CWQMP has been prepared to apply to the proposed construction activities associated with the Project as described in Section 1.2.

Throughout the construction period, the Contractor must be committed to compliance with Section 120 of the *Protection of the Environment Operations Act 1997* (POEO Act), which makes it an offence to pollute any waters.

This CWQMP contains site-specific management measures to successfully mitigate impacts identified in the EIS, in particular, to avoid any significant impacts on nearby sensitive marine habitats (with special consideration of the temperate coral reefs located within Slaughter Bay and Emily Bay, to the east of the Project site).

Following engagement of a construction Contractor, and from time to time, this CWQMP may require revision after its initial approval. Events which might trigger a review of the adequacy of the Plan may include (but are not limited to):

- The occurrence of a reportable incident (See Section 7.2).

- If the Project seeks a modification to any existing approval, authorisation or permit which results in a change to construction-related water conditions.
- A request from the Department of Agriculture, Water and the Environment (DAWE) and/or NIRC.

1.5 Project Approvals

Approvals relevant to the Project include:

- EPBC Act Referral under the EPBC Act 1999.
- Significant Development Application under the *Norfolk Island Planning Act 2002* (the Project was declared by NIRC as Significant Development on 25 May 2021).
- Authorisation from the Director of National Parks for works in the Norfolk Marine Park.
- Permit(s) issued under the *Underwater Cultural Heritage Act 2018*.

1.6 Communication / Contacts

1.6.1 Internal Communication

All environmental issues including incidents and near misses, as well as all health and safety incidents and near misses, will be raised as a regular component of toolbox talks, site meetings and transmitted electronically as per contract reporting requirements.

Contact details for key internal stakeholders (including DITRDC and Contractor) are provided in Table 1-1.

Table 1-1 Internal stakeholders.

Name	Position/Organisation	Phone	Email
Sarah Vandenbroek	First Assistant Secretary DITRDC	0428 402 229	sarah.vandenbroek@infrastructure.gov.au
Oliver Holm	Acting First Assistant Secretary DITRDC	0432 914 210	Oliver.Holm@infrastructure.gov.au
Chris Homann	Project Manager DITRDC	0404 74 3030	Chris.Homann@infrastructure.gov.au
Sharon Greenshields	Project Director DITRDC	0408 590 379	Sharon.Greenshields@infrastructure.gov.au
Name	Construction contractor	TBD	TBD
Name	Construction contractor	TBD	TBD

1.6.2 External Communication

The Principal is responsible for external communication in relation to matters concerning the Project. This includes but is not limited to communications with the general public, media and regulators and

particularly in relation to external reporting of Incidents that may have occurred and Complaints Management. This excludes emergency calls, which may be made by anyone.

The Principal's consultation activities will continue for the Project. This includes but is not limited to Project website updates, meetings and notification in the local paper, and other stakeholder consultation to describe the nature of the works, and to offer opportunity to provide feedback. Information will be provided on Project updates, the program of works and scheduling of certain activities that may impact usage of the Pier.

External stakeholders with whom communications regarding implementation of the WQMP and potential water quality issues during Project's construction may be required are listed in Table 1-2.

Table 1-2 External stakeholders.

Name	Position / Organisation	Phone	Email
Eric Hutchinson Fiona Anderson	Norfolk Island Office of the Administrator Eric – Norfolk Island Administrator Fiona – Office to the Administrator	(+6723) 22152 (Norfolk Island)	Office.Administrator@infrastructure.gov.au
Philip Reid	Norfolk Island Regional Council (NIRC) including Mayor and Councillors	T (+6723) 22001 (ext. 144) M (+6723) 52158	philip.reid@nirc.gov.nf
Martin Henery	Parks Australia	(02) 6274 1111	Martin.Henery@awe.gov.au
Kathy Colgan	Commonwealth Department of Agriculture, Water and Environment (DAWE)	(02) 6274 1111	Kathy.Colgan@awe.gov.au
add	Chamber of Commerce	add	add
Dean Burrell	Shipping agents (Transam Argosy and Norfolk Forwarding Services)	T (+6723) 22836 M (+6723) 52602	operations@transam.nf
Helen McMonagle	Norfolk Island Flora and Fauna Association	(+6723) 22502	helenmcmonagle83@gmail.com
Denis Sterling	Norfolk Island Fishing Association	(+6723) 50226	dennis@norfolk.nf anson@norfolk.nf
Ernest Nobbs	Lighterage and Stevedore Workers	(+6723) 50507	drillynobbs@hotmail.com
Dean Burrell	Wa'a Outrigger Club	T (+6723) 22836 M (+6723) 52602	dwburrell@ninet.nf

1.7 Environmental Enquiries and Complaints Management

Complaints will be managed by the Principal.

A phone number, postal address and email address will be made for the Project as a method for receiving enquiries and complaints.

The water quality methodology provides real-time notifications to Contractor and the Principal's Authorised Delegate when water quality levels are above defined trigger levels (to be determined). If an environmental complaint is lodged with the Principal, the Contractor Health Safety and Environment and Quality (HSEQ) Manager shall as soon as practicable, review the water quality monitoring data with the engaged water quality consultant to investigate the water quality levels at that particular time in accordance with the water quality complaint information.

A Complaints Register will be maintained by the Principal for the duration of Construction, and records will conform to the requirements of the Project Approval. The Complaints Register will be provided by the Principal to the Secretary upon request, within the timeframe stated in the request, and produced to any authorised officer of the DAWE who asks to see it. The complaints record will be kept for at least four years after the complaint was made. All feedback and complaints will be provided to the Projects Environmental Representative (ER) and relayed to the Principal, as relevant depending on their nature.

Note - above to be updated as necessary in consultation with DAWE and when relevant approvals/licences received and Contractor known.

2 Stakeholder and Community Consultation

This section describes the stakeholder and community consultation activities undertaken for the Project, with specific regard to matters raised regarding water quality impacts, sediment plume / sedimentation / turbidity impacts and those related impacts on sensitive receivers. Key stakeholders are listed in Table 2-1.

Table 2-1 Key stakeholders.

Key stakeholders	
Office of the Administrator	Norfolk Island Museums
Norfolk Island Regional Council (NIRC)	Norfolk Island National Park and Botanic Garden
NIRC Mayor and Councillors	Norfolk Island Flora and Fauna Association
Norfolk Island Volunteer Rescue Squad	KAVHA Advisory Committee
Transam Argosy Pty Ltd	KAVHA Community Advisory Group
Norfolk Forwarding Services	Burnt Pine Travel
Norfolk Island Fishing Association	Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) (Norfolk Island)
Lighterage and Stevedores	Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) (Canberra)
Norfolk Island Wa'a Outrigger Club	Department of Agriculture, Water and the Environment (DAWE)
Norfolk Island Chamber of Commerce	Department of Agriculture, Water and the Environment (DAWE - Parks Australia)

Stakeholders were formally engaged on three occasions during the Project:

1. Prior to the commencement of the Project design.
2. Twice during the Project design.

A fourth consultation period is proposed prior to Construction once a Contractor has been appointed.

The first round of stakeholder engagement was undertaken in February 2020. This occurred on Norfolk Island between the Project Team and key stakeholders and community groups. The second and third rounds of stakeholder engagement were held virtually in May and November 2020.

In addition, DITRDC has provided media releases, updates and fact sheets on their website to inform stakeholders and community groups of the Project.

2.1 Summary of Consultation Activities

The following key matters were raised by stakeholders in relation to water quality, sediment plume generation during augmentation and potential impacts of water quality and turbidity on local sensitive receivers (in the marine environment):

- Potential direct impacts of augmentation on marine habitat near Kingston Pier were raised. However, it was also raised that the marine ecology adjacent to the western side of Kingston Pier is not particularly unique to the area (refer to impact assessment in the EA, Advisian 2021a).
- Potential impacts of sediment plumes on the marine environment, including the coral reef in nearby Slaughter Bay (refer to impact assessment in the EA, Advisian 2021a).
- It was suggested that plumes may be easier to contain at low tide (this is a matter for the Contractor to manage).
- It was suggested that augmentation should be limited to smaller swells to help contain sediment plumes (this is a matter for the Contractor to manage).
- Management of sediment plumes during construction is needed to minimise potential impacts of plumes on the marine environment including subtidal habitats and corals (refer to Management Controls in Section 5).
- Potential impacts on the Norfolk Marine Park values (refer to impact assessment in the EA, Advisian 2021a).

In addition, the following matters were specifically raised by DAWE:

- Avoidance and mitigation measures will need to be considered for any disturbance of potentially contaminated sediment and runoff events which may enter the marine environment and impact lagoon health (refer to Management Controls in Section 5).
- Quantitative investigation of sediment behaviour, for instance through sediment plume modelling using available data, particularly as the health of Emily Bay is in poor condition from recent stormwater events. The modelling was also supported by Parks Australia (refer to Dredge Plume Modelling undertaken by Advisian 2021b – summarised in Section 3).
- Preparation of a Water Quality Management Plan (WQMP) to determine the monitoring regime (refer to this document).

Furthermore, the following matters were specifically raised by DAWE (Parks Australia):

- Consider the current state of lagoon health and demonstrate that proposed mitigation measures reduce any risks posed by the Project to lagoon health to 'low'. This would include reference to any supporting research studies, past project examples or referenced guidelines and standards (refer to impact assessment in the EA, Advisian 2021a and Management Controls in Section 5).
- Determine the likely magnitude of turbidity likely to be generated as well as the fate and spatial extent of the sediment plume (refer to the Dredge Plume Modelling Study undertaken by Advisian 2021b, which is summarised in Section 3).
- Consider potential impacts of land-based sediment disturbance which may then be flushed into the marine environment (no land based works are proposed as part of the Project – dewatering of sediments from Kingston Pier has been addressed in the Project Description and in Section 5).

- Consider potential impacts of sediment disturbance from augmentation which may create turbidity and sediment plumes and impact reef health (refer to the EA (Advisian 2021a), Ecology Assessment (Advisian 2021c) and Dredge Plume Modelling Report (Advisian 2021b).

Stakeholder consultation activities have confirmed high levels of support for the Project.

The DITRDC is committed to continuing consultation and engagement with stakeholders and the Norfolk Island community throughout the Project.

3 Slaughter Bay and Emily Bay Coral Reefs

The most accessible reefs within the Norfolk Island coral reef ecosystem include the Emily Bay and Slaughter Bay lagoonal reef, and neighbouring Cemetery Bay lagoonal reef. These reefs adjoin the Kingston lowland catchment and world heritage listed Kingston and Arthur's vale historic sites. The Slaughter Bay reef is most proximate to the proposed works area, located on the eastern side of Kingston Pier. Emily Bay and Slaughter Bay together form a ~0.18 km^2 intertidal lagoon (SIMS 2021).

Coral reefs are inherently sensitive, in addition, the Slaughter Bay and Emily Bay coral reefs are currently under particular stress as a result of an extensive coral bleaching event in 2020 (caused by unusually high sea surface temperatures) within the lagoonal reef, inshore pollution and declining water quality associated with high rainfall events and land-based run-off, and a subsequent coral disease outbreak on the reef. Each of these documented events (bleaching, land-based pollution, disease outbreaks) are known to be associated with declining coral reef health and phase-shifts from coral to algal dominated coral reef systems (SIMS 2021).

Extensive surveys of the coral reef benthic habitat were conducted by SIMS (2021) in Emily Bay and Slaughter Bay in March and November 2020, and video transects were collected by local residents in June and September 2020 to coincide with a substantial rain event causing flooding and sedimentation of the Emily Bay and Slaughter Bay lagoon. Site conditions were assessed with a combination of the following biophysical measurements: seawater temperature, salinity, tidal range, water flow speed and direction, seawater nutrient concentrations, and overall organic matter loads within reef sediments. In addition to these measurements, the quality and condition of the coral were assessed with an analysis of the bacterial diversity and community composition of key reef-building coral species (Acropora sp., Acropora plating, Montipora sp., Pocillopora sp. and Porites sp.) collected in Emily Bay.

Based on the coral reef health study undertaken by SIMS (2021), Figure 3-1 and Figure 3-2 provided on the following page have been developed by indicate the following:

- Areas with noteworthy coral diversity or unknown taxonomy.
- Proposed snorkel trails (dotted lines).
- Proposed Coral Preservation Areas for Emily Bay and Slaughter Bay (yellow, green).
- Cemetery Bay (pink and red) proposed as high conservation and management zone due to extensive coral cover.
- Map of suggested areas for scientific investigation of site rehabilitation in Slaughter and Emily Bay.
- Areas outlined for algae removal (green) and coral re-introduction following algal removal.
- Illustrative snorkel trail locations based on assessment of reef structure and management goals.
- Icons display noteworthy coral to be viewed along the trail and corals of cultural and/or ecological significance.

Note that for purposes of this WQMP, the entire Slaughter Bay and Emily Bay are considered to be sensitive areas.

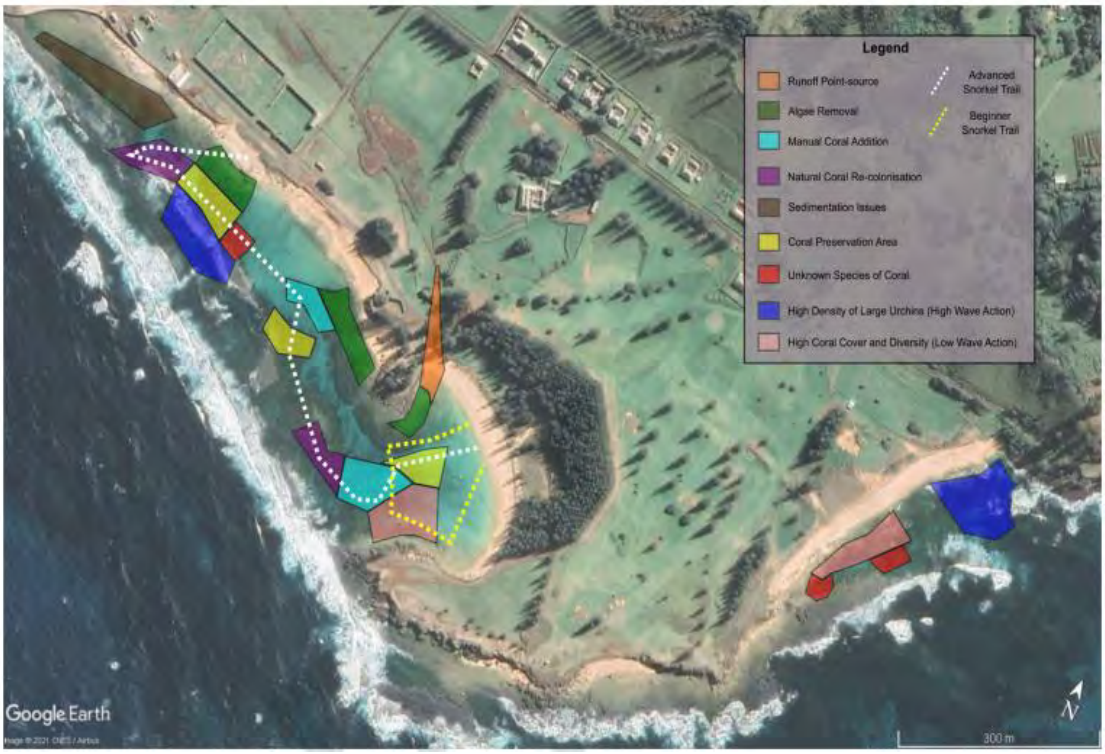


Figure 3-1 Emily Bay, Slaughter Bay and Cemetery Bay Site Orientation Summary (SIMS 2021).

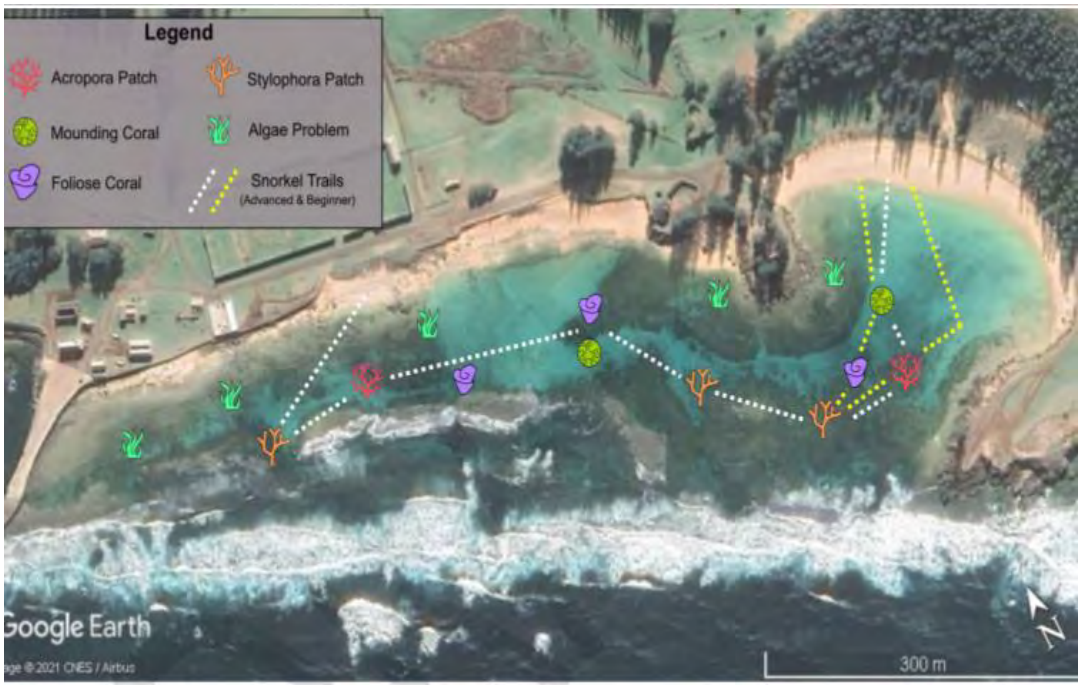


Figure 3-2 Proposed educational coral reef snorkel trail locations.

4 Dredge Plume Modelling Study

4.1 Aims

Advisian undertook a Dredge Plume Modelling Study (Advisian 2021b) to investigate the dispersion of sediments into the nearby marine area, as a result of the activities required for the Project. The purpose of the study was to inform the Environmental Assessment (EA) to obtain environmental approval for the project under the EPBC Act. The study investigated the potential risk of dispersion of sediments into the nearby lagoon and fringing reef area, as a result of the dredging works for the deepening of the harbour.

The purpose of the modelling exercise was to understand:

- The potential distribution of sediment plumes that could be generated by the dredging.
- The intensity of the sediment plumes.
- Seasonal effects on the suspension of material and sedimentation patterns in the vicinity of the harbour, to support the environmental assessment.

The Dredge Plume Modelling exercise has informed the selection of a timeframe (or season) for undertaking the project activities to minimise the risk to the sensitive reef areas, as well as informing the daily operation of the dredging to minimise any impact.

4.2 Sediment Plume Influences

Sediment plumes can be generated by dredging activities, which for this Project would involve a backhoe dredger mounted on a barge operating during daylight hours 5.5 days per week. The volume of material to be removed from the harbour is relatively small (up to 5,000 m^3) in the scheme of typical dredging projects and the disposal of the material is proposed to be onshore (as opposed to offshore sea disposal). The amount of sediment that can enter the water column as a result of the dredging depends on a number of factors that have been considered in the modelling, including:

- Schedule of activities (date and time).
- Location of the dredge plant.
- Dredging method.
- Spill volume (volume of material that is "spilled" into the water column during the dredging operation).
- Properties of the sediment material (density, proportion of fine silts, settling velocity of the sediment particles).
- Hydrodynamic conditions (waves, tidal and wind-driven currents).

When the sediment enters the water column at the site of the dredging, it is then dispersed by the action of waves, tidal and wind-driven currents, and can be carried away from the immediate Project area.

4.3 Methods

The full range of conditions that could be experienced at the site, based on analysis of historical measurements of waves, winds and currents, was modelled to understand how far the sediment plume may travel from the dredging site, and whether there would be any settling of sediments outside the immediate project area as a result of the Project. A highly conservative approach was adopted for the study (see scenarios below) with a full description of study methods, including study limitations/accuracy, provided in the Dredge Plume Modelling Study (Advisian 2021b).

4.3.1 Scenarios

Eight separate scenarios were examined, to understand the full range of possible wave and current conditions that can occur during the dredging period and assess the full extent of dispersion and movement of the plumes away from the dredge site under the different conditions. The conditions examined included:

- **Scenario 1 (ambient wind, no waves)** - a baseline scenario simulated the dredge plume dispersion under ambient winds (or "everyday" wind speeds and directions) but without waves. This scenario provided a baseline for comparison between the other scenarios and to understand the sensitivity of the model without waves. This scenario does not represent real world conditions but does demonstrate the positive effect of waves containing a sediment plume
- **Scenario 2 (ambient wind, ambient waves)** - ambient winds from all directions and with ambient (or everyday) waves. These are considered typical conditions that can be expected at the site and represent the most likely scenario that may occur during the dredging campaign.
- **Scenario 3, 4, 5 and 6 (strong winds from the north, south, east and west respectively, no waves)** – these scenarios used an extreme (95th percentile) wind speed coming from the north, south, east and west and without including the impact of waves, and therefore are conservative. The purpose of these scenarios was to determine which wind directions could result in the plume moving toward the reef and lagoon areas, and to inform which wind directions should be tested with the inclusion of waves. From these scenarios, northerly and westerly winds were found to have the greatest potential for movement of sediments toward the lagoon area. The scenarios that modelled winds from the south and east demonstrated little to no potential for sediment to move towards the lagoon area and therefore were not investigated further.
- **Scenario 7 and 8 (strong winds from the north and west respectively, ambient waves)** – these scenarios investigated the effect of ambient waves on Scenarios 3 and 6, for northerly and westerly winds, thus representing a realistic "worst-case scenario" representation of real-world conditions during the dredging period.

Predictions of the sediment plume dispersion patterns have been extracted from the dredge dispersion model for the simulated scenarios. Results are presented for the entire simulation period as spatial plots of Suspended Sediment Concentration (SSC, also referred to as Total Suspended Solids: TSS) and sedimentation.

SSC is presented as milligrams per liter (mg/L). It is noted that at SSC concentrations below 10 mg/L, the plume would not be visible to a casual observer. The appearance of turbid water with varying

concentrations of SSC is illustrated in Figure 4-1. Predictions of the sedimentation over the course of the dredging operation are presented as millimeters above seabed.

Figure 4-1 Visual representation of suspended sediment concentration.

Predictions of the suspended sediment dispersion and concentration over the course of the dredging operation have been illustrated in the model results on statistical analysis with the trigger values i.e. 80th percentile (i.e. SSC and sedimentation that would only be exceeded 20% of the time during the dredging) and 95th percentile (exceeded only 5% of the time during the dredging). It is recommended that such a visual representation is kept onsite during the construction period.

4.4 Results

The main findings of the dredge plume model are listed below with a summary of results in Table 4-1.

Scenario 1 (ambient wind, no waves)

With the proposed dredging method and time frame, the baseline scenario (under ambient wind without waves) has predicted that the dredge plume is retained within the Kingston harbour (up to 30 mg/L and 100 mg/L for the 80th and 95th percentile, respectively). For the 80th percentile, there is no plume detected for the lagoon and coral areas (Figure 4-2). For the 95th percentile, a limited level plume (less than 10 mg/L) was detected in the edge of north-west part of lagoon, away from the fringing reef area (Figure 4-3).

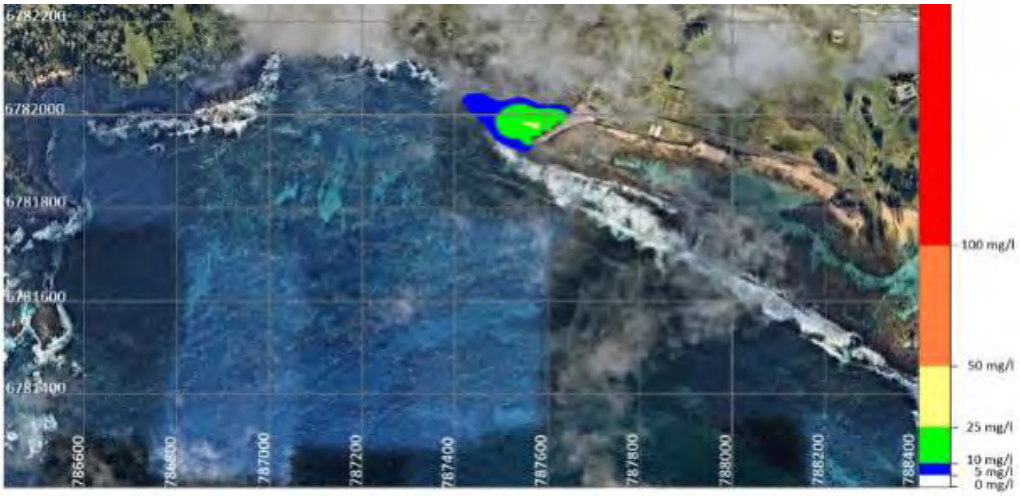


Figure 4-2 80th%ile Suspended sedimentation concentration distribution for Scenario 1 (ambient wind and no waves, wind rose for November shown).

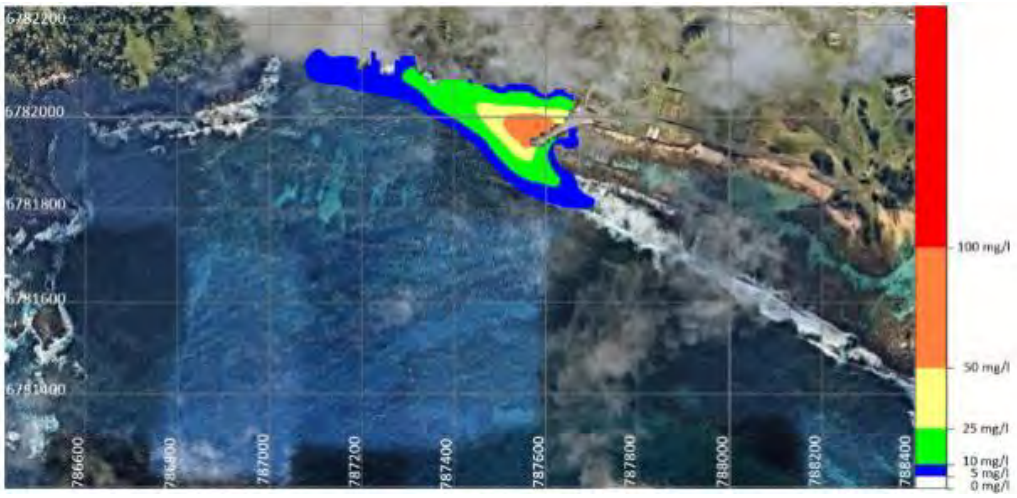


Figure 4-3 95th%ile Suspended sedimentation concentration distribution for Scenario 1 (ambient wind and no waves, wind rose for November shown).

Scenario 2 (ambient wind, ambient waves) (typical conditions - most likely scenario)

When ambient waves are included in the simulation (representing the real weather and hydrodynamic situation during the dredging operation (i.e. most likely scenario to occur during the dredging campaign) there is no plume detected for the lagoon and coral reef areas for both the 80th and 95th percentile (see (Figure 4-4 and Figure 4-5).

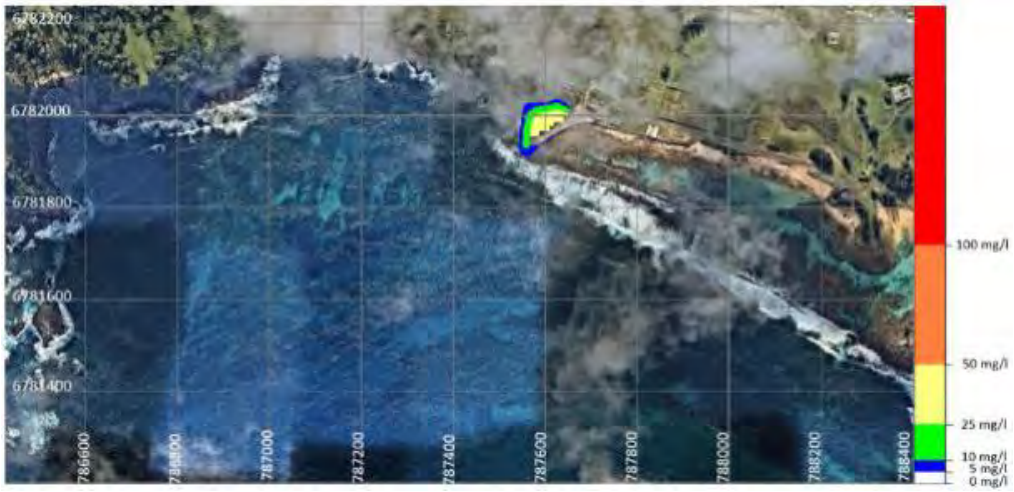


Figure 4-4 80th%ile Suspended sedimentation concentration distribution for Scenario 2, most likely scenario (ambient wind and waves).

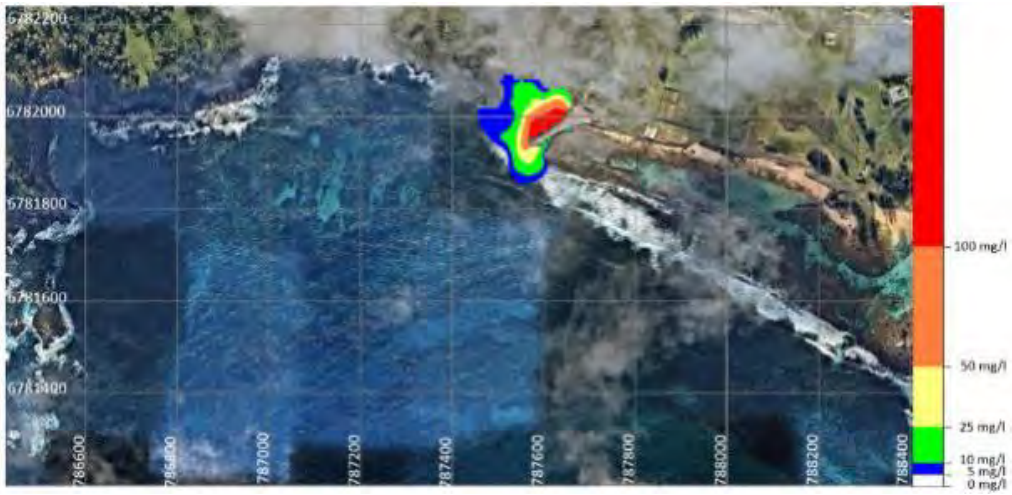


Figure 4-5 95th%ile Suspended sedimentation concentration distribution for Scenario 2, most likely scenario (ambient wind and waves).

Scenarios 4 and 5 (strong winds from south and east)

Under energetic meteorological conditions with strong winds from the south and east directions, the dredge plume model indicates no dredge plume detected for lagoon and reef areas for the 80th and 95th percentiles. The dredge plume is generally contained to the nearshore area west of the pier (see Figure 4-6, Figure 4-7, Figure 4-8 and Figure 4-9).

These modelled scenarios do not include the effects of waves they are thus conservative as the plume would be more contained under real world conditions. As such, these conservative results are considered acceptable to the Project and further refinement of these scenarios has not been undertaken.

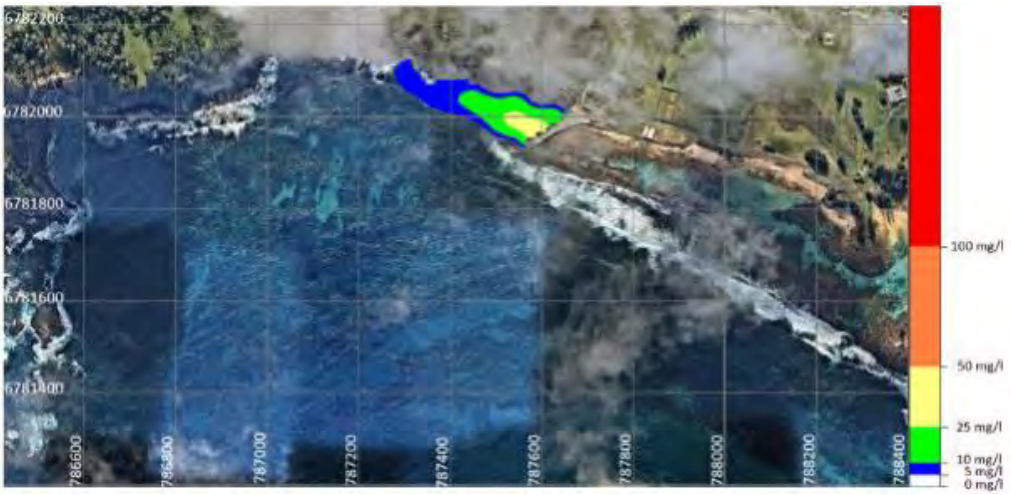


Figure 4-6 80th%ile Suspended sedimentation concentration distribution for Scenario 4 (strong south wind, no waves).

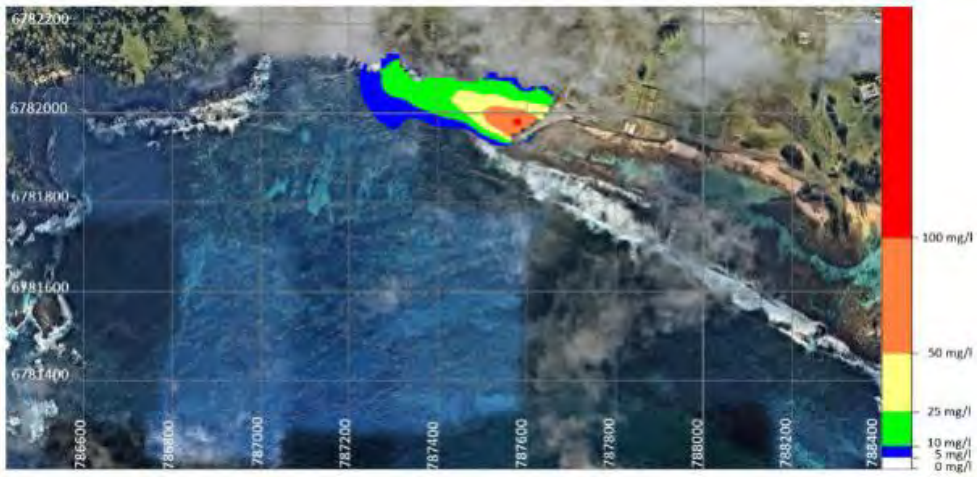


Figure 4-7 95th%ile Suspended sedimentation concentration distribution for Scenario 4 (strong south wind, no waves).

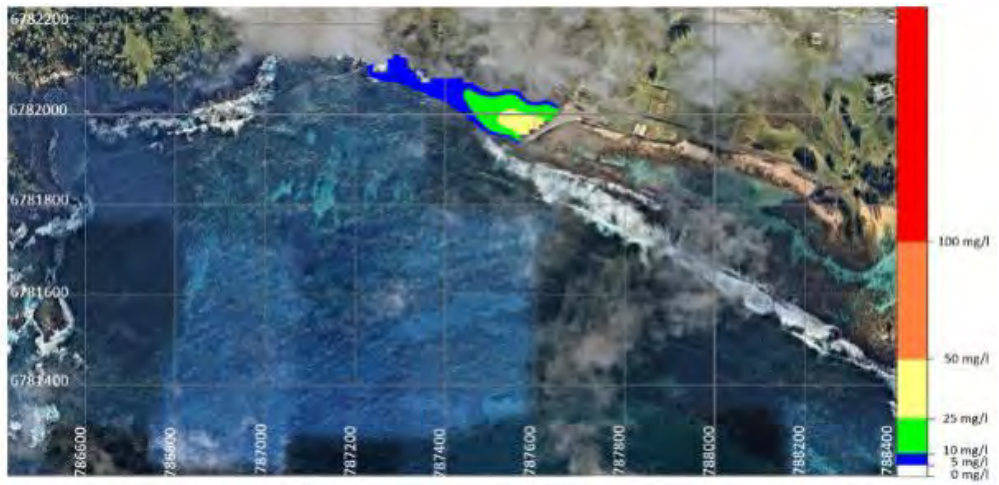


Figure 4-8 80th%ile Suspended sedimentation concentration distribution for Scenario 5 (strong east wind, no waves).

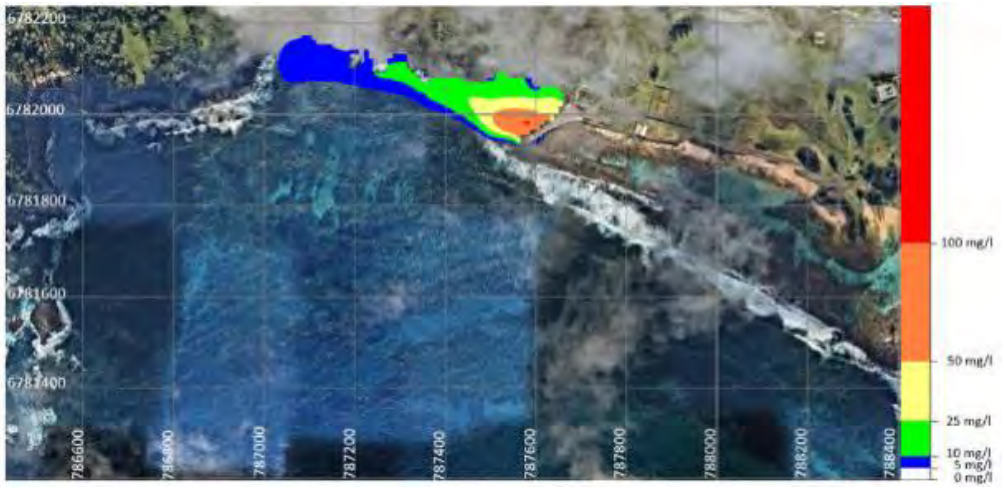


Figure 4-9 95th%ile Suspended sedimentation concentration distribution for Scenario 5 (strong east wind, no waves).

Scenarios 3 and 6 (strong winds from north and west)

Under energetic meteorological conditions with larger strong winds from the north and west directions there is a limited level of dredge plume (less than 10 mg/L) detected for lagoon and coral areas for the 80th percentile. For the 95th percentile, the dredge plume (up to 25 mg/L) was detected heading toward the lagoon and coral reef areas (i.e. the western end of Slaughter Bay). These scenarios are not realistic scenarios (as waves almost always occur at the site) and were run primarily to determine the sensitivity of the results to wind direction, i.e. to determine which wind directions could result in the plume moving toward the reef and lagoon areas so as to inform which wind directions should be tested with the inclusion of waves. As such, these modelled scenarios were refined and rerun as scenarios 7 and 8 to include ambient waves (see next section). Results from scenarios 3 and 6 are presented in the body of the Sediment Plume Modelling Report but have been superseded by scenarios 7 and 8 respectively.

Scenario 7 and 8 (strong winds from the north and west respectively, ambient waves)

When ambient waves are included in the simulation for 95th percentile northerly and westerly winds (representing a real "worst-case scenario" weather and hydrodynamic situation during the dredging operation), there is no plume detected for the lagoon and coral areas for both the 80th and 95th percentile. The inclusion of waves in the modelling is a more realistic scenario as Norfolk Island is almost always exposed to waves. Also, it is noted that winds from the east and north are more prevalent during the Spring and Summer months when the dredging is proposed (see Figure 4-10, Figure 4-11, Figure 4-12 and Figure 4-13).

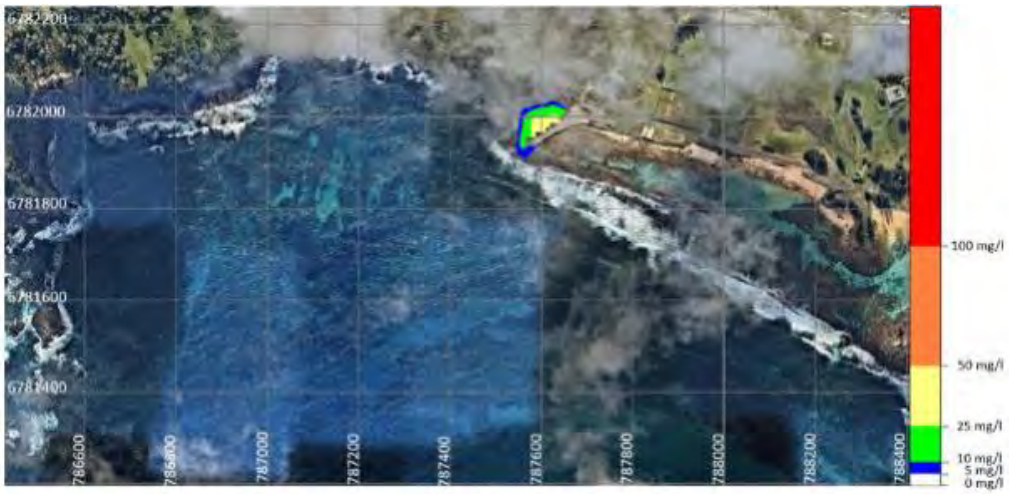


Figure 4-10 80th%ile Suspended sedimentation concentration distribution for Scenario 7 (strong north wind, ambient waves).

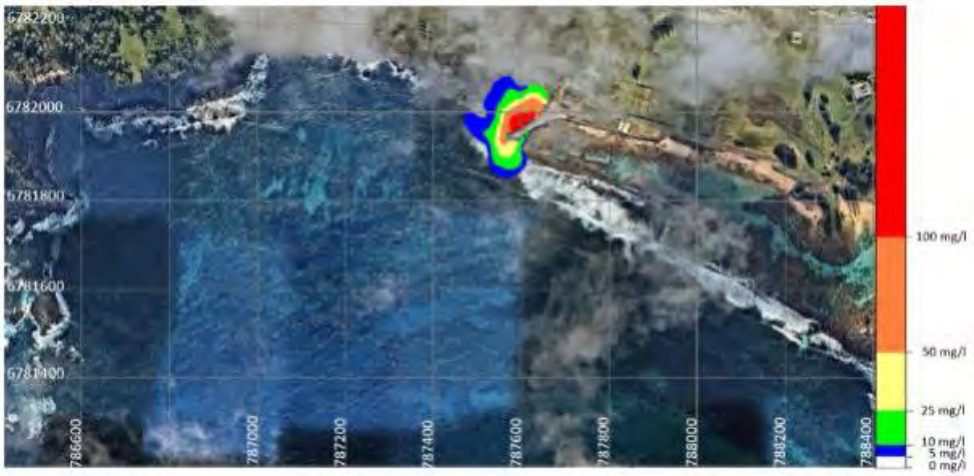


Figure 4-11 95th%ile Suspended sedimentation concentration distribution for Scenario 7 (strong north wind, ambient waves).

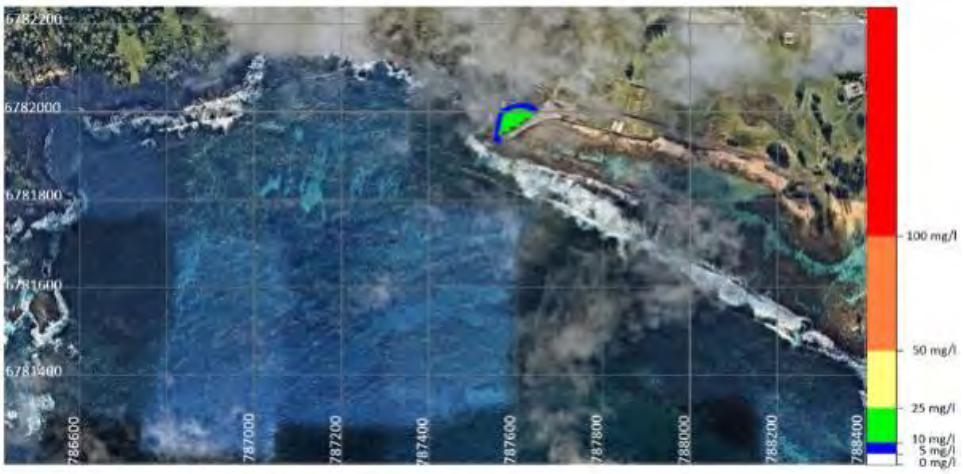


Figure 4-12 80th%ile Suspended sedimentation concentration distribution for Scenario 8 (strong west wind, ambient waves).

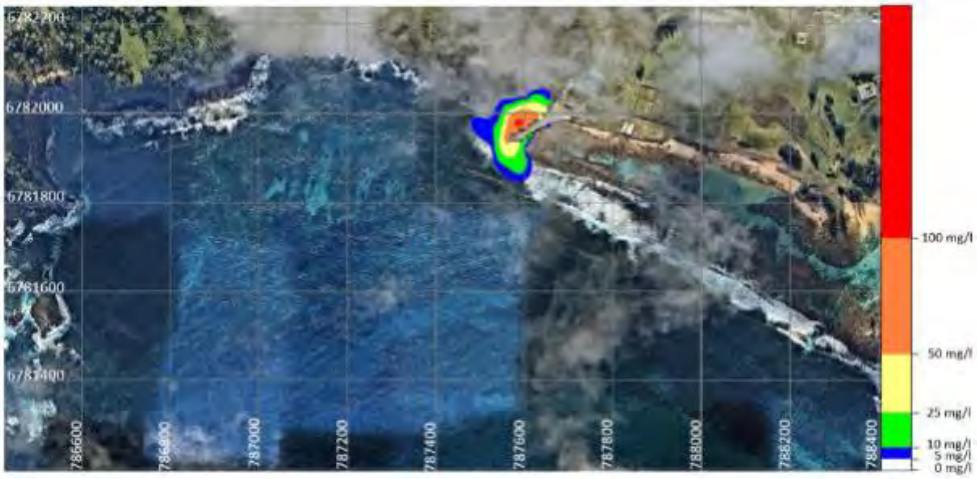


Figure 4-13 95th%ile Suspended sedimentation concentration distribution for Scenario 8 (strong west wind, ambient waves).

Sedimentation

The dredge plume model has predicted that sedimentation would be confined within the Kingston Harbour around the proposed dredging area. There is no sedimentation detected for the lagoon and coral reef areas in any scenarios. Figures presenting the sedimentation results are provided in the body of the Sediment Plume Modelling Report (Advisian 2021b).

Table 4-1 Summary of sediment plume modelling results.

Scenario	Result
Scenario 1 (baseline scenario with ambient wind, no waves)	No plume detected for the lagoon and coral reef areas for both the 80th and 95th percentile.
Scenario 2 (typical conditions - most likely scenario; ambient wind, ambient waves)	No plume detected for the lagoon and coral reef areas for both the 80th and 95th percentile.
Scenarios 4 and 5 (strong winds from south and east)	No plume detected for the lagoon and coral reef areas for both the 80th and 95th percentile.
Scenarios 3 and 6 (strong winds from north and west – unrealistic scenario)	Limited dredge plume (less than 10 mg/L) detected for lagoon and coral areas for the 80th percentile. For the 95th percentile, the dredge plume (up to 25 mg/L) was detected heading toward the lagoon and coral reef areas (i.e. the western end of Slaughter Bay).
Scenario 7 and 8 (strong winds from the north and west respectively, ambient waves – real world 'worst case' scenario)	No plume detected for the lagoon and coral reef areas for both the 80th and 95th percentile.
Sedimentation	Sedimentation confined within Kingston Harbour around the proposed dredging area. No sedimentation detected for the lagoon and coral reef areas for any scenario.

4.5 Conclusions

The modelling results have indicated that under real world conditions (i.e. the model runs that included waves) sediment plumes would not impact on the lagoon and coral areas to the east of the site, and sedimentation would not occur in these areas.

4.6 Recommendations

To ensure that the Environmental Quality Objectives for the lagoon and coral reef are met, the following recommendations are listed in the Sediment Plume Modelling Report (Advisian 2021b):

- **Dredging window:** Selection of a period of time, preferably between October and May, for the dredging operation to be undertaken to avoid the possible energetic meteorological conditions of which there will be a higher chance of strong wind from the northern and western sectors (noting the coral spawning season generally occurs from late January for a few months and would also look to be avoided). Monthly wind roses are presented in Figure 4-14.
- **Operation window:** Dredging should only take place during daylight hours with a break to unload spoil onshore per day for six days per week (half a day on Saturday). No dredging activities are to take place during the night.
- **Water Quality Management Plan** - A Water Quality Management Plan is developed and implemented for the dredging works that outlines monitoring procedures and frequency, target limits, responsibilities, and mitigation measures (i.e. this document).

These recommendations are included within the Management Controls (see Section 5).

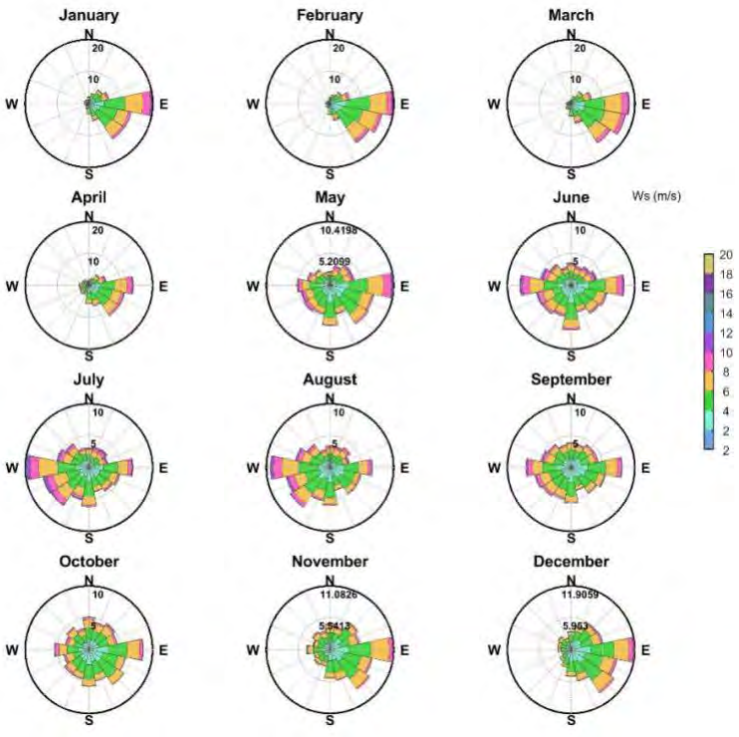


Figure 4-14 Wind rose plots by month (1940 to 2009).

5 Management Controls

Contractor will conduct their activities in accordance with the relevant measures and conditions contained within the final approved EA dated X May 2021 (Advisian 2021a) and the Marine Parks Permit (dated X) (and add any others received for project).

Specific control measures required to manage the environmental impacts during the construction works are described in the CEMP. Table 5-1 contains the specific water quality management controls that will be implemented by the Contractor on the Project.

The Water Quality Performance Objectives of the Project are to:

- Minimise the generation and migration of turbid plumes during channel augmentation activities and the associated risk of impacts on nearby sensitive marine habitats (e.g. the coral reefs of Slaughter Bay and Emily Bay), marine fauna and flora through increases in turbidity or sedimentation.
- Minimise the risk of significant spills or discharges which may cause impacts to nearby marine habitats and marine fauna and flora through spills of pollutants into the water.
- To protect marine habitats, flora and fauna as listed under the NSW FM Act 1994, BC Act 2016 and EPBC Act 1999.
- To ensure best practice management for the handling, storage and disposal of waste and hazardous materials related to construction.
- To ensure hydrocarbons are handled and stored in a manner that minimises the potential impact on the environment through leaks, spills and emergency situations.

Key Performance Indicators relating to water quality include:

- No sustained short-term impacts or long-term deterioration in water quality as a consequence of the augmentation activities.
- No detected injury/mortality to marine fauna as a result of deterioration in water quality and/or sedimentation impacts.
- No significant pollution spills and all spills to be responded to in accordance with the:
    - National Plan for Maritime Environmental Emergencies (National Plan)(AMSA 2019) https://www.amsa.gov.au/sites/default/files/amsa-496-national-plan.pdf.
    - Contractors Pollution Incident Response Management Plan.
    - Management controls listed in Section 5.
- Corrective actions to be taken by Contractor immediately if water quality exceeds the determined trigger values at the monitoring locations or if a pollution event or breach of any sediment containment devices is observed.
- Compliance with the Project EA (Advisian 2021a), the EPBC Act Referral (number), Marine Parks Permit (date) and add any other documents / licences received for Project.

A summary of the management controls / mitigation measures to be applied by Contractor to avoid or minimise potential impacts of construction on water quality and subsequent effects to nearby sensitive receptors in the marine environment are outlined in Table 5-1. (contractor is to update table with any more specifics they develop for specialised equipment etc).

Table 5-1 Proposed mitigation measures – marine water quality.

Mitigation Measure	Responsibility	Phase
In calmer sea conditions (i.e. offshore wave height less than 1 m), which are suitable for deployment of a silt boom and curtain, this will be implemented around any active work areas that may disturb the seabed (e.g. when removing tuff material). The silt curtain will be suitable to accommodate the active coastal marine environment within Kingston Harbour. The silt curtain may be a robust floating system such as a flexible floating hose curtain, or a fixed silt curtain attached to barge. The installation of the silt curtain/boom may be progressive to contain areas of current works; however, before construction, a Plan of Deployment and Progression will be prepared to align with the schedule of works. The Plan will implement the following measures: ▪ Installation of the silt curtain/boom will occur before starting physical works. ▪ Installation will be undertaken during high tide periods from a boat. The device will be designed to rise and fall with the tide to prevent disturbance. ▪ The silt boom/curtain will extend from a minimum of 100 mm above the water line to 2.5 m below the water line (where water depth permits) before starting work. Note the bottom of the silt curtain is to be kept 0.5m from the bottom to prevent snagging. ▪ Inspection of the device will be undertaken on a daily basis after ebbing tides, with additional inspection following storm events. Visual monitoring of turbidity inside and outside of the device will occur regularly during the day. ▪ Results of daily observations of the integrity of the silt curtain will be required to be recorded and maintained. Records will be required to be kept on the site and will be made available for inspection by persons authorised by the DITRDC.	Contractor	Pre-Construction and Construction

Mitigation Measure	Responsibility	Phase
▪ Decommissioning will be carried out by boat during a high tide period. ▪ Decommissioning will only be undertaken once construction activities are above seabed level (that is, no activities which disturb the seabed will occur without the silt curtain in place). Before removing the device, turbidity conditions within the silt curtain will be assessed both visually and by using a hand held water quality meter to confirm that turbidity levels (measured as NTU) inside and outside the device are similar. This will verify that sediment has settled, resulting in similar water turbidity within the work zone to that outside the curtain. The silt curtain will not be decommissioned until the water inside and outside correspond both visually and this is also confirmed using a hand held device.		
Bubble curtains comprise perforated air hoses anchored to the sea floor that shoot walls of air bubbles into the water column. The purpose of the bubble curtains is to form a barrier to underwater noise and deflect sediment debris from travelling past the bubble curtain. A bubble curtain will be implemented across the entrance channel in conjunction with a silt curtain/boom to assist in the control of the spread of suspended sediments. A bubble curtain will also have benefits in reducing noise impacts on marine fauna and does not restrict vessel navigation.	Contractor	Pre-Construction and Construction
A Baseline Water Quality Monitoring Program will be developed and implemented prior to construction. Site-specific trigger values for Water Quality Monitoring for turbidity and other potential contaminants of concern (including physico-chemical parameters and hydrocarbons) will be determined prior to construction through an appropriate Baseline Water Quality Monitoring Program over a suitable time period which uses a combination of in-situ and lab-based testing. A Baseline Water Quality Report providing site-specific trigger values will be prepared.	DITRDC or Contractor	Pre-Construction
The Contractor will undertake Water Quality Monitoring during construction to identify any potential spills or deficient silt curtains or erosion and sediment controls. The requirements of Water Quality Monitoring will be	Contractor	Construction

Mitigation Measure	Responsibility	Phase
outlined in the Construction Environmental Management Plan (CEMP) for the Project. Water Quality Monitoring will be implemented with other mitigation measures to manage potential impacts on the marine environment and aquatic ecology. This will include regular observations of the site for any visible indications of sediment plumes or pollution (for example, hydrocarbon spills or slicks), continuous monitoring of turbidity within Slaughter Bay and Emily Bay to ensure that turbidity levels are within site-specific trigger values (during augmentation activities).		
A Spill Management Plan will be implemented during construction and will be communicated to all staff working on site. The Plan will include information on the following: ▪ An emergency spill kit will be kept on site and maintained throughout the construction work and going forward. The spill kit will contain adequate quantities of material and will be suitable for the specific project application and site use. ▪ All construction workers and regular users of Kingston Pier will be advised of the location of the spill kit and trained in its use. ▪ Emergency contact details will be kept in an easily accessible location in vehicles, vessels, plant and site office. All workers will be advised of these contact details and procedures. ▪ Procedures on vehicle, vessel and plant maintenance and inspection for fluid leaks will be implemented. ▪ Vehicle wash-down and re-fuelling will not occur on site. ▪ Refuelling of plant and equipment and storage of hazardous materials on land and on barges will occur within a double-bunded area. If an incident (e.g. spill) occurs, the following incident responses will be implemented: ▪ The Contract Manager will be notified as soon as practicable. ▪ In the event of a maritime spill, the Spill Management Plan will be implemented.	Contractor	Construction

Mitigation Measure	Responsibility	Phase
The number of jack-ups/anchor points during construction will be minimised where possible. The locations will be selected to avoid areas of sensitive natural rocky reef habitats that have not yet been disturbed by historical excavation.	Contractor	Construction
Work positioning barges and excavation of seafloor material during construction will be scheduled to occur during calm conditions wherever possible to prevent excessive and non-contained sedimentation and minimise any safety risks.	Contractor	Construction
A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of a CEMP for the Project. The SWMP will identify all reasonably foreseeable risks relating to erosion, sediments and water pollution and describe how these risks will be addressed during construction. Erosion and sediment control measures will be implemented and maintained (in accordance with the *Landcom/Department of Housing Managing Urban Stormwater, Soils and Construction Guidelines* (the Blue Book)) to: ▪ Prevent sediment moving off-site and sediment-laden water entering any water course, drainage lines, or drain inlets. ▪ Reduce water velocity and capture sediment on site. ▪ Minimise the amount of material transported from site to surrounding pavement surfaces. Divert clean water around the site.	Contractor	Pre-Construction and Construction
The Contractor, NIRC (Port Manager) and users of Kingston Pier will implement the following measures to minimise potential impacts on marine water quality, including (but not limited to): ▪ All machinery and equipment will be maintained in good working order and regularly visually inspected for leaks. ▪ All construction equipment and vessels will be inspected by qualified personnel prior to the commencement of work to reduce the risk of hydrocarbon spills or leaks.	Contractor, NIRC and Port Users	Construction and Operation

Mitigation Measure	Responsibility	Phase
▪ All visiting vessels will also adhere to the above two measures. ▪ Portable toilets (if required) will be positioned securely within approved compound areas and emptied on a regular basis using a licenced service provider and human waste disposed of at a local sewerage treatment plant. ▪ No sewage will be released into the local waterway from vessel holding tanks. ▪ Non-toxic/biodegradable environmentally friendly/water-based chemicals will be used, where required and available. ▪ The lowest volume of hydrocarbons (oil, grease, petrol and diesel) practicable will be stored on-site. ▪ Chemical and fuel storage areas will be bunded and chemicals will be stored in accordance with the products Safety Data Sheet (SDS) and AS 1940 on board construction vessels and land-based construction areas only. ▪ Vessels (self-propelled and unpowered) will have adequate on-board communication, containment, drainage, bunding and monitoring systems to prevent discharges of unauthorised effluents.		
The Contractor's spill containment, chemicals handling, and emergency response procedures must be demonstrated to be appropriate and adequate for the proposed plant and operations. Both land and specialised marine spill booms shall be kept on site at all times and be easily accessible to the immediate working area so they can be deployed quickly is needed.	Contractor	Construction
The Contractor's procedures will describe processes for general waste handling and disposal.	Contractor	Construction
The NIRC as Port Manager will provide appropriate marine spill kits at Kingston Pier in case of accidental spills during operation.	NIRC	Operation
Dredging should occur between October and May to avoid the possible energetic meteorological conditions, with a higher chance of larger wind forcing from northern and western sectors (noting the coral	Contractor	Operation

Mitigation Measure	Responsibility	Phase
spawning season generally occurs from late January for a few months and would also look to be avoided).		
Dredging is allowed only during the daylight hours with a break to unload spoil onshore per day for six days per week (half a day Saturday).	Contractor	Operation

6 Construction Water Quality Monitoring Program

This CWQMP provides:

a) Details of baseline data available.

b) Details of baseline data to be obtained and when.

c) Details of all monitoring of the Project to be undertaken.

d) The parameters of the Project to be monitored.

e) The frequency of monitoring to be undertaken.

f) The location of monitoring.

g) The reporting of monitoring results.

h) Procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory.

i) Any consultation to be or already undertaken in relation to the monitoring programs (see Section 2).

6.1 Water Quality Guidelines and Coral Tolerance Limits

6.1.1 ANZG (2018) Guidelines

The ANZECC Water Quality Guidelines (ANZG 2018) provide high-level guidance on the management context, ecological descriptions, biological indicator selection and other advice for five of Australia's six marine planning regions as well as for the Great Barrier Reef Marine Park (which represents the inshore portion of the Coral Sea Marine Region). The 2018 Default Guidelines for the Temperate East Marine Region for physical and chemical stressors are not currently available online, so the default trigger values for physical and chemical stressors for south-east Australia for slightly disturbed ecosystems (from the previous ANZECC 2000 Guidelines) for south-eastern Australian marine waters are provided in Table 6-1. Note that no default guidelines are provided for physical and chemical stressors for *''high conservation/ecological value systems''* (i.e. effectively unmodified or other highly-valued ecosystems, typically (but not always) occurring in national parks, conservation reserves or in remote and/or inaccessible locations), which the Norfolk Island study area would be classified as. For these high conservation areas, ANZECC (2000) recommends the following in regard to levels of protection:

- No change beyond natural variability recommended, using ecologically conservative decision criteria for detecting change. Any relaxation of this objective should only occur where comprehensive biological effects and monitoring data clearly show that biodiversity would not be altered.
- Where reference condition is poorly characterised, actions to increase the power of detecting a change recommended.
- Precautionary approach taken for assessment of post-baseline data through trend analysis or feedback triggers.

Table 6-1 ANZECC (2000) Default Water Quality Guidelines for south-east Australian marine waters – physicochemical parameters.

Parameter	Default Trigger Value
Temperature	NA
pH	8-8.4
Salinity	NA
Conductivity	NA
Turbidity (NTU)	0.5-10 NTU
Dissolved Oxygen (DO)	90-110% saturation

Table 6-2 provides the ANZG (2018) Default Water Quality Guidelines for toxicants for the Temperate East Marine Region for the 99% and 95% protection levels for south-east Australian marine waters. These will need to be referred to for any reactive sampling undertaken during construction.

Table 6-2 ANZG (2018) Default Water Quality Guidelines for the Temperate East Marine Region – 99% and 95% Protection Levels for toxicants.

Toxicant	99% Protection Level (ANZG 2018)	95% Protection Level (ANZG 2018)
Metals		
Arsenic	-	-
Cadmium	0.7	5.5
Chromium	-	-
Copper	0.3	1.3
Lead	2.2	4.4
Mercury	0.1	0.4
Nickel	7	70
Zinc	7	15
PAHs		
Anthracene	0.01	0.4
Benzo(a)pyrene	0.1	0.2
Fluoranthene	1.0	1.4
Naphthalene	50	70
Phenanthrene	0.6	2.0
BTEX		
Benzene	500	700
Ethyl Benzene	50	80
Toluene	110	180
Xylene(-m)	50	75

6.1.2 Coral Tolerance Limits

While meaningful sets of thresholds or criteria would ideally have to incorporate the intensity, duration and frequency of turbidity (or sedimentation) events generated by the dredging activities, actual values are difficult to determine with confidence (Erftemeijer et al. 2012). This is particularly problematic with programs of the duration and extent proposed at Kingston Pier which are likely to result in small pulses of turbidity of short duration.

An example of thresholds previously used for corals during dredging projects are provided in Table 6-3 (DHI 2021). These could be applied as a way of managing potential impacts from the proposed channel augmentation. 'Time' in Table 6-3 relates to the actual dredging time. Thresholds for 'Partial Mortality' or 'Total Mortality' should be avoided at all times and a target of 'No Impact' should be adopted for the majority of the time.

Table 6-3 Suspended Sediment Thresholds for Corals (DHI 2010).

Zone	Suspended Sediment Threshold
Total Mortality	▪ Excess SSC >25 mg/l for > 10% of the time OR ▪ Excess SSC >10 mg/l for >25% of the time
Partial Mortality	▪ Excess SSC >25 mg/l for 2.5-10% of the time OR ▪ Excess SSC >10 mg/l for 10-25% of the time OR ▪ Excess SSC >5 mg/l for >25% of the time
Zone of Influence	▪ Excess SSC >25 mg/l for 0.5-2.5% of the time OR ▪ Excess SSC >10 mg/l for 0.5-10% of the time OR ▪ Excess SSC >5 mg/l for 2.5-25% of the time
No Impact	▪ Excess SSC >25 mg/l for <0.5% of the time OR ▪ Excess SSC >10 mg/l for <0.5% of the time OR ▪ Excess SSC >5 mg/l for <2.5% of the time

Note 'time' = period of dredging.

Considering the results of the Dredge Plume Modelling Study undertaken (see Section 4), 'No Impact' is the most likely outcome of the proposed activity on corals in Slaughter Bay and Emily Bay with consideration to the thresholds provided in Table 6-3. This is applicable for the model simulation representing the real weather and hydrodynamic situation to be expected during the dredging operation (i.e. most likely scenario to occur during the dredging campaign) as well as the majority of other potential weather condition simulations which were run (refer to results in Section 4).

In accordance with ANZECC (2000) for physical and chemical stressors for ''high conservation / ecological value systems'', no change beyond natural variability is recommended (this can be determined through baseline turbidity data collection).

A combination of reactive (feedback) monitoring of water quality and coral health during dredging activities and spill-budget modelling of dredging plumes to guide decisions on when to modify (or even stop) dredging appears to be the most promising approach to effectively minimise negative impacts on corals and coral reefs (Erftemeijer et al. 2012).

6.2 Baseline Water Quality Data

Limited baseline data is available for the site and additional baseline water quality data (for turbidity) should be collected prior to dredging/construction activities as recommended in Section 6.2.2.

6.2.1 Water Quality Sampling 2020

In February 2020, water quality profiling for a range of physico-chemical parameters was undertaken over a period of two days to obtain some basic background marine water quality data for the study area. Ten water quality sites were sampled. These were located in Kingston Harbour, Slaughter Bay, as well as four oceanic reference sites. Sites are listed below and shown in Figure 6-1.

1. Kingston Pier East
2. Kingston Pier - Seaward End
3. Kingston Pier West - Old Steps
4. Kingston Pier West - New Steps
5. Kingston Pier West - Bottom of Ramp / Fish Cleaning Table
6. Kingston Harbour (Middle)
7. Western Reference 1 - Offshore Flagstaff Hill
8. Western Reference 2 - Bumbora
9. Eastern Reference 1 - Slaughter Bay
10. Eastern Reference 2 - Emily Bay

In-situ measurements were taken at each site using a hand held water quality meter at the surface (i.e. 1 m below surface), midwater (i.e. half water depth) and bottom (i.e. 1 m off bottom) to measure the following physico-chemical parameters:

- Temperature (degrees Celsius)
- pH
- Dissolved Oxygen (mg/L)
- Salinity (ppt)
- Conductivity (ms/cm)
- Turbidity (NTU)

Field conditions including date, time, tidal state (ebb or flood), water depth, swell height and direction and wind strength and direction were also recorded.

Initial baseline water quality results are summarised for each parameter in Table 6-4 to Table 6-8. There was very little difference in water quality data between the two sampling dates and between the surface, midwater and bottom depths at each site. At some sites (i.e. the eastern side of Kingston Pier

and the end of Kingston Pier), measurements were only taken from a single surface depth due to shallow water depths, which only allowed for one sample.

Measurements obtained for temperature, conductivity, dissolved oxygen and pH at all sites and depths are considered typical of offshore marine waters and are in accordance with the Australian and New Zealand Water Quality Guidelines (ANZG 2018) where guidelines are available (see Table 6-1).

Turbidity was very low at all sites and at all depths sampled, with values most often <1 Nephelometric Turbidity Units (NTU). Turbidity was only very slightly higher at sites located along the edge of the Pier compared to the sites further offshore, most likely resulting from the resuspension of sandy seafloor sediments from the moderate swells entering the harbour (which were present at the time of sampling). Turbidity measurements were not obtained from the site Kingston Pier West – Ramp on 19/02/2020 or Kingston Pier End on 20/02/2020 due to a high level of swash/swell at the time making readings inaccurate.

Local turbidity values are important in determining site specific trigger values for construction monitoring of turbidity. Although measurements were only taken over two days, and while ANZG (2018) provides default values of between 0.5-10 NTU, the turbidity site-specific values for this area of Norfolk Island are likely at the lower end of this range for the majority of the time. Further baseline monitoring is required to confirm typical values over a longer time period (see Section 6.2.2).

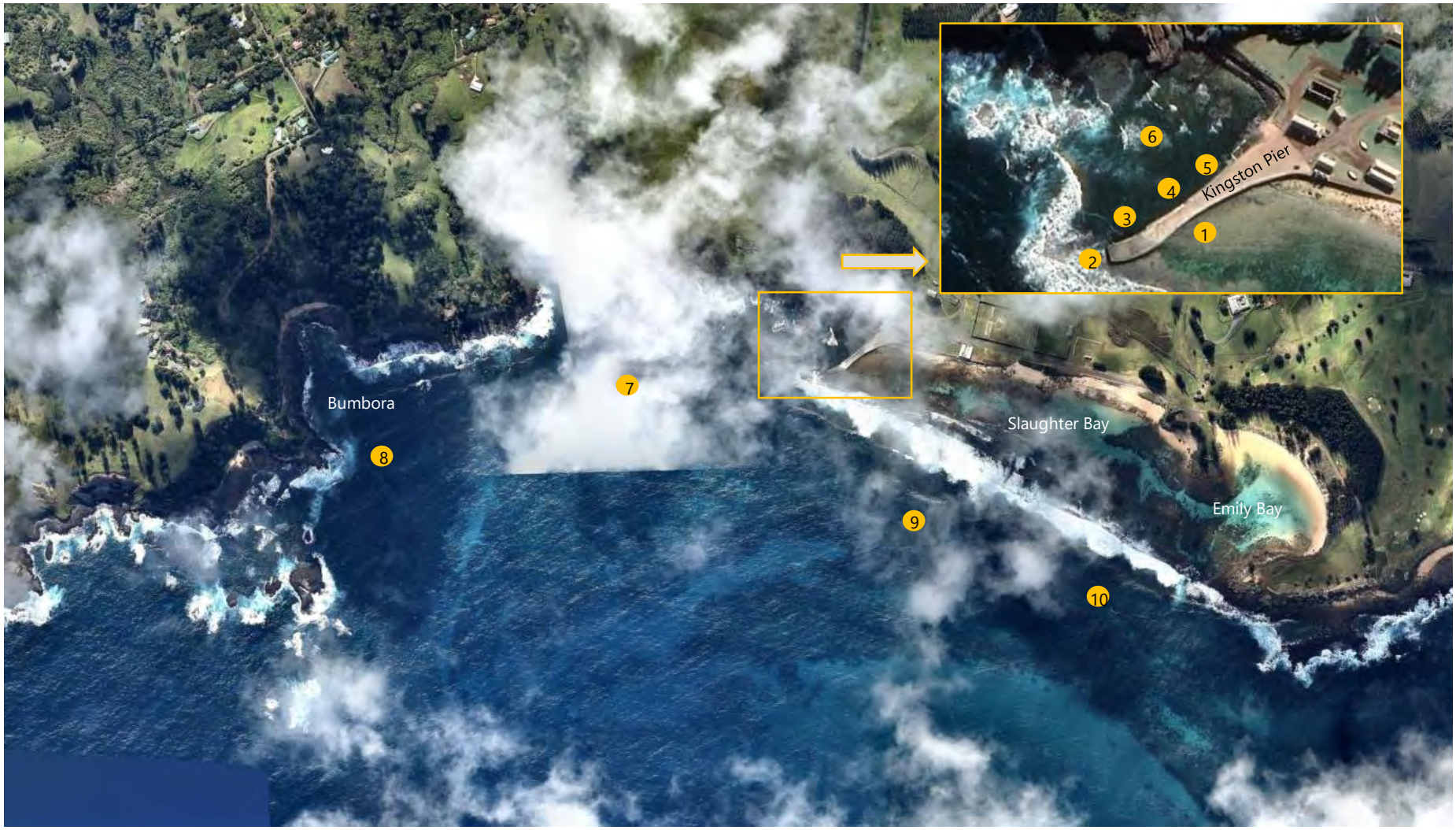


Figure 6-1 Location of initial baseline water quality sampling sites, February 2020.

Table 6-4 Initial baseline water temperature results for February 2020.

Site	Location	Date	Temp (°C)	Temp (°C)	Temp (°C)
			Surface	Midwater	Bottom
1	Kingston Pier East	19/02/2020	24.8	NA	NA
2	Kingston Pier End	19/02/2020	24.8	NA	NA
3	Kingston Pier West - Old Steps	19/02/2020	24.8	24.8	24.8
4	Kingston Pier West - New Steps	19/02/2020	24.9	24.9	24.9
5	Kingston Pier West - Ramp	19/02/2020	24.9	24.9	24.9
6	Kingston Harbour (Middle)	19/02/2020	25.1	25.3	25.3
7	Western Reference - Offshore Flagstaff Hill	19/02/2020	25.1	25	25
8	Western Reference - Bumbora	19/02/2020	25.1	25.2	25.1
9	Eastern Reference - Slaughter Bay	19/02/2020	25.1	25	25
10	Eastern Reference - Emily Bay	20/02/2020	24.93	24.9	24.9
1	Kingston Pier East	20/02/2020	24.7	NA	NA
2	Kingston Pier End	20/02/2020	24.7	NA	NA
3	Kingston Pier West - Old Steps	20/02/2020	24.7	24.7	24.8
4	Kingston Pier West - New Steps	20/02/2020	24.7	24.7	24.7
5	Kingston Pier West - Ramp	20/02/2020	24.7	24.7	24.7
6	Kingston Harbour (Middle)	20/02/2020	24.8	24.9	24.9
7	Western Reference - Offshore Flagstaff Hill	20/02/2020	25	24.9	24.9
8	Western Reference - Bumbora	20/02/2020	25	25	24.9
9	Eastern Reference - Slaughter Bay	20/02/2020	24.9	25	24.9
10	Eastern Reference - Emily Bay	20/02/2020	24.9	24.9	24.9

Table 6-5 Initial baseline conductivity results for February 2020.

Site	Location	Date	Conductivity (ms/cm)	Conductivity (ms/cm)	Conductivity (ms/cm)
			Surface	Midwater	Bottom
1	Kingston Pier East	19/02/2020	52.77	NA	NA
2	Kingston Pier End	19/02/2020	52.79	NA	NA
3	Kingston Pier West - Old Steps	19/02/2020	52.85	52.85	52.86
4	Kingston Pier West - New Steps	19/02/2020	52.89	52.89	52.89
5	Kingston Pier West - Ramp	19/02/2020	52.96	52.98	53
6	Kingston Harbour (Middle)	19/02/2020	53.33	53.35	53.36
7	Western Reference - Offshore Flagstaff Hill	19/02/2020	53.13	53.06	53.03
8	Western Reference - Bumbora	19/02/2020	53.24	53.22	53.2
9	Eastern Reference - Slaughter Bay	19/02/2020	53.19	53.06	53.05
10	Eastern Reference - Emily Bay	20/02/2020	53.01	52.96	52.96
1	Kingston Pier East	20/02/2020	52.61	NA	NA
2	Kingston Pier End	20/02/2020	52.65	NA	NA
3	Kingston Pier West - Old Steps	20/02/2020	52.77	52.79	52.79
4	Kingston Pier West - New Steps	20/02/2020	52.78	52.78	52.8
5	Kingston Pier West - Ramp	20/02/2020	52.8	52.8	52.8
6	Kingston Harbour (Middle)	20/02/2020	52.9	53	53.05
7	Western Reference - Offshore Flagstaff Hill	20/02/2020	53.01	52.94	52.92
8	Western Reference - Bumbora	20/02/2020	53.04	52.96	52.96
9	Eastern Reference - Slaughter Bay	20/02/2020	53.05	52.99	52.96
10	Eastern Reference - Emily Bay	20/02/2020	52.92	52.92	52.93

Table 6-6 Initial baseline dissolved oxygen (DO) results for February 2020.

Site	Location	Date	DO (mg/L)	DO (mg/L)	DO (mg/L)
			Surface	Midwater	Bottom
1	Kingston Pier East	19/02/2020	7.3	NA	NA
2	Kingston Pier End	19/02/2020	7.02	NA	NA
3	Kingston Pier West - Old Steps	19/02/2020	7.22	7.22	7.22
4	Kingston Pier West - New Steps	19/02/2020	7.24	7.27	7.27
5	Kingston Pier West - Ramp	19/02/2020	7.34	7.36	7.41
6	Kingston Harbour (Middle)	20/02/2020	7.13	7.36	7.54
7	Western Reference - Offshore Flagstaff Hill	19/02/2020	7.05	6.9	6.82
8	Western Reference - Bumbora	19/02/2020	7.57	7.58	7.65
9	Eastern Reference - Slaughter Bay	19/02/2020	7.17	7.07	7.09
10	Eastern Reference - Emily Bay	19/02/2020	6.8	6.82	6.8
1	Kingston Pier East	20/02/2020	6.88	NA	NA
2	Kingston Pier End	20/02/2020	6.86	NA	NA
3	Kingston Pier West - Old Steps	20/02/2020	6.64	6.61	6.53
4	Kingston Pier West - New Steps	20/02/2020	6.71	6.7	6.7
5	Kingston Pier West - Ramp	20/02/2020	6.82	6.82	6.81
6	Kingston Harbour (Middle)	20/02/2020	7.25	7.45	7.39
7	Western Reference - Offshore Flagstaff Hill	20/02/2020	7.6	6.59	6.62
8	Western Reference - Bumbora	20/02/2020	6.51	6.45	6.5
9	Eastern Reference - Slaughter Bay	20/02/2020	7.06	7.12	7.01
10	Eastern Reference - Emily Bay	20/02/2020	6.7	6.63	6.68

Table 6-7 Initial baseline pH results for February 2020.

Site	Location	Date	pH	pH	pH
			Surface	Midwater	Bottom
1	Kingston Pier East	19/02/2020	7.96	NA	NA
2	Kingston Pier End	19/02/2020	8	NA	NA
3	Kingston Pier West - Old Steps	19/02/2020	7.96	7.96	7.99
4	Kingston Pier West - New Steps	19/02/2020	7.97	7.97	7.97
5	Kingston Pier West - Ramp	19/02/2020	8	8	8
6	Kingston Harbour (Middle)	20/02/2020	8.1	8.1	8.11
7	Western Reference - Offshore Flagstaff Hill	19/02/2020	8.02	8	7.99
8	Western Reference - Bumbora	19/02/2020	8.06	8.06	8.06
9	Eastern Reference - Slaughter Bay	19/02/2020	8.05	8.03	8.02
10	Eastern Reference - Emily Bay	19/02/2020	8.03	8.03	8.03
1	Kingston Pier East	20/02/2020	8.05	NA	NA
2	Kingston Pier End	20/02/2020	8.04	NA	NA
3	Kingston Pier West - Old Steps	20/02/2020	8	8	7.99
4	Kingston Pier West - New Steps	20/02/2020	8	8	7.99
5	Kingston Pier West - Ramp	20/02/2020	8	8	8
6	Kingston Harbour (Middle)	20/02/2020	8.03	8.03	8.03
7	Western Reference - Offshore Flagstaff Hill	20/02/2020	8.13	8.05	8.02
8	Western Reference - Bumbora	20/02/2020	8.03	8.03	8.03
9	Eastern Reference - Slaughter Bay	20/02/2020	8.09	8.07	8.06
10	Eastern Reference - Emily Bay	20/02/2020	8.06	8.06	8.06

Table 6-8 Initial baseline turbidity results for February 2020.

Site	Location	Date	Turbidity (NTU)	Turbidity (NTU)	Turbidity (NTU)
			Surface	Midwater	Bottom
1	Kingston Pier East	19/02/2020	0.6	NA	NA
2	Kingston Pier End	19/02/2020	1.5	NA	NA
3	Kingston Pier West - Old Steps	19/02/2020	0.87	0.85	0.85
4	Kingston Pier West - New Steps	19/02/2020	0.84	0.85	1.26
5	Kingston Pier West - Ramp	19/02/2020	Swash	Swash	Swash
6	Kingston Harbour (Middle)	20/02/2020	0.25	0.22	0.27
7	Western Reference - Offshore Flagstaff Hill	19/02/2020	0.25	0.37	0.36
8	Western Reference - Bumbora	19/02/2020	0.06	0.2	0.18
9	Eastern Reference - Slaughter Bay	19/02/2020	0.02	0.1	0.07
10	Eastern Reference - Emily Bay	19/02/2020	0.13	0.15	0.27
1	Kingston Pier East	20/02/2020	1.29	NA	NA
2	Kingston Pier End	20/02/2020	Swash	Swash	Swash
3	Kingston Pier West - Old Steps	20/02/2020	1.1	0.64	1.04
4	Kingston Pier West - New Steps	20/02/2020	0.58	0.53	0.84
5	Kingston Pier West - Ramp	20/02/2020	0.8	0.87	0.8
6	Kingston Harbour (Middle)	20/02/2020	0.08	0.13	0.1
7	Western Reference - Offshore Flagstaff Hill	20/02/2020	0.01	0.03	0.03
8	Western Reference - Bumbora	20/02/2020	0.07	0.06	0.2
9	Eastern Reference - Slaughter Bay	20/02/2020	0.01	0	0.06
10	Eastern Reference - Emily Bay	20/02/2020	0.17	0.39	0.51

Note *Swash = high swash or swell prevented accurate turbidity readings being obtained.

6.2.2 Recommended Baseline Data Collection

Turbidity (and associated sedimentation impacts) caused by dredging and other construction activities is the main concern for the Project in regard to potential impacts on sensitive marine habitats (e.g. coral reefs) in the study area. To understand the typical range of turbidity that corals in Slaughter Bay and Emily Bay can tolerate, and to determine appropriate turbidity trigger values for the Project, it is recommended that the following baseline turbidity data is collected (prior to commencement of any dredging/construction activities).

6.2.2.1 Baseline Turbidity Data Collection

At least two months of continuous (i.e. 24 hour) baseline turbidity monitoring using fixed turbidity loggers (see Section 6.2.2.3 for an example of suitable equipment) is recommended at two sites where the potential for impacts on coral reef habitats are of greatest concern, and which will require continuous monitoring during channel augmentation activities – i.e. Slaughter Bay and Emily Bay. While typically a longer baseline data set may be collected, given the relatively short period of dredging expected (7 weeks), the sites remote location, potential for large seas and equipment damage and staffing requirements for deployment/maintenance etc. this time period is considered suitable for purpose.

Turbidity loggers should be deployed using an appropriate mooring system into relatively sheltered areas of Slaughter Bay and Emily Bay which are not subjected to regular or strong wave action (e.g. behind the main reef break). This is in order to prevent damage to equipment and maintain data

integrity. Potential baseline (and construction) monitoring locations are shown in Figure 6-2. On each mooring system two separate turbidity loggers should be deployed (i.e. one extra for redundancy, in case of any equipment issues).

Continuous baseline turbidity monitoring within Kingston Harbour (location of dredging) is not recommended or considered necessary due to the high potential for damage to equipment from often strong wave action and since the area will be within the immediate construction zone (where very localised impacts are unlikely to be able to be avoided). Additional handheld turbidity measurements could be taken from within and just outside Kingston Harbour in the month prior to construction to increase the baseline turbidity dataset for this location (see proposed sites in Figure 6-3).

For the continuous baseline monitoring, turbidity readings should be taken by the loggers at 15 minute intervals over the 24 hour period. The turbidity loggers should be telemetered, with data uploaded regularly to an online web system for offsite monitoring and data downloads. This will also be necessary for active monitoring and trigger value exceedance alerts to be received during the proposed construction activities.

As turbidity monitoring equipment will provide readings in the form of NTU, while tolerance levels and regulatory approvals typically refer to levels of total suspended solids (TSS) (as mg/L), a TSS/NTU relationship will need to de devised during this baseline period using an appropriate number of samples collected onsite.

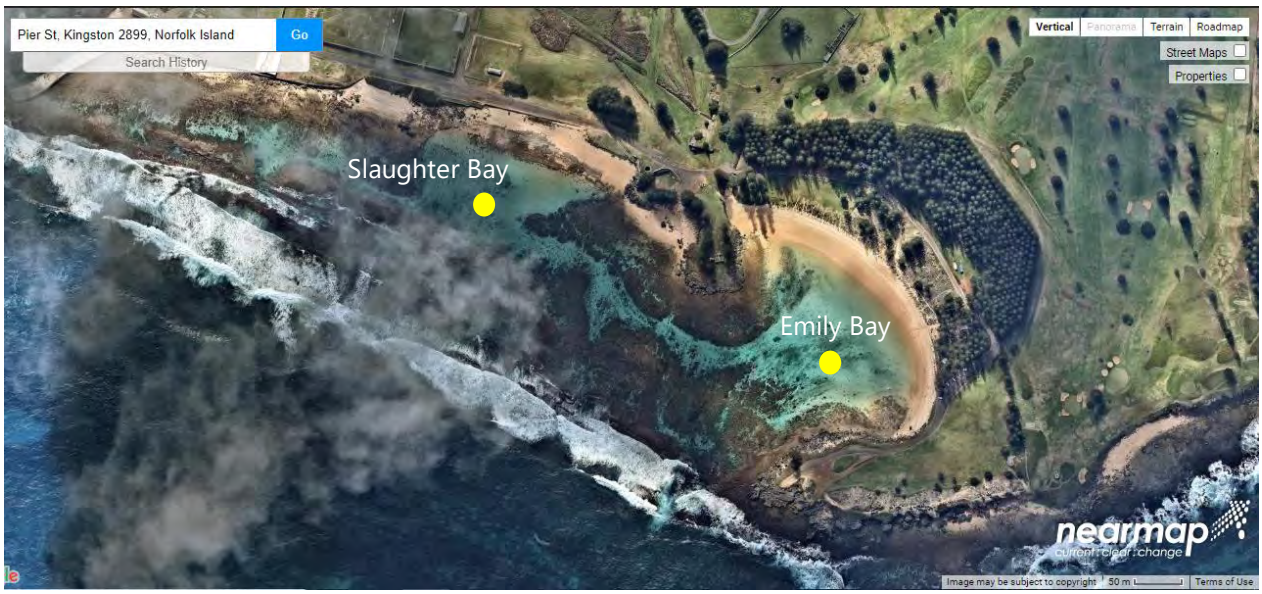


Figure 6-2 Potential turbidity baseline and construction monitoring locations (logger locations) in Slaughter Bay and Emily Bay.

Figure 6-3 Potential turbidity baseline and construction monitoring locations (handheld measurements) inside and outside Kingston Harbour.

6.2.2.2 Baseline Data Analysis

The following analysis should be undertaken on the baseline turbidity data for each site:

- Analysis of turbidity data for the entire baseline period to provide the following summary statistics: Max, Min, Mean, Median, 80th, 90th and 95th percentile values.
- Analysis of turbidity data (with summary statistics as above) with respect to tidal state (ebb/flood), wind (speed and directions) and sea conditions (e.g. swell height and direction) as far as practicable (i.e. this will be dependent on the availability of this local data).
- Recommendations for turbidity trigger values as NTU (for use during active construction) based on this baseline data and taking into consideration the ANZG (2018) Water Quality Guidelines and coral tolerance limits as described in Section 6.1. Trigger values for each site should be determined separately.

Trigger values are derived using the statistical distribution method and are calculated at four different protection levels; 99%, 95%, 90% and 80%. Protection levels signify the percentage of species expected to be protected (i.e. the 99% protection level is that which would be adopted to protect 99% of species). For the Norfolk Island location, trigger values of 95% or 99% are recommended.

6.2.2.3 Example Monitoring Equipment

WETLab Eco Turbidity Loggers

An example of suitable turbidity monitoring equipment which can be attached to a buoy/mooring system is the WETLab Eco NTUSB (turbidity) sensor. The WETLab logger is designed for moored marine applications and has a number of features that make it both highly suitable and also reliable for continuous monitoring in marine environments as listed below:

- Suitable for long term deployments with a battery life of ~3 months (at 15 minute intervals).
- Ability to run in telemetered mode but also retaining internal data storage capacity, which can be downloaded during maintenance visits.
- Robust and reliable with a copper face plate and BioWiper™ which is an effective deterrent to biofouling of the sensor.
- Highly accurate optical sensor (readings to 0.01 NTU) with a broad range of 0 to 250 NTU.

The WETLab unit can be setup to send live telemetered data back through the use of an armoured data cable which transmits the readings to a data logger with an inbuilt 3G GSM modem. The data logger and modem are housed in a weatherproof Pelican case. The data logger also stores all received data, creating a third safety net of data storage. Solar power is also utilised to keep the telemetry systems battery charged. Some images of WETLab loggers are provided in Figure 6-4.

Figure 6-4 WETLab loggers (deployed in the field and unattached).

System Maintenance

To ensure equipment reliability and data integrity, regular maintenance of turbidity monitoring systems is required. Due to the exposed nature of Norfolk Island, 2 weekly maintenance checks are advised, with additional maintenance to be undertaken if the telemetered data values appear non-typical compared to other data received e.g. very high spikes which do not reduce (which may indicate that the sensor is covered by loose macroalgae or the system has become damaged).

Maintenance is generally inclusive of the items below:

- Visual inspection of all components.
- Removal of biofouling or loose macroalgae from the below water components.
- Removal of debris or bird effluent from the above water components.
- Downloading data from the telemetered and autonomous WETLabs.
- Changing batteries in the autonomous WETLabs (this could occur once a month).

Data Acquisition and Website

The WETLab Eco NTUSB is typically set to take readings every 15 minutes. Once the reading is taken, the data is then transmitted immediately back to the data logger where it is stored until the next 15 minute send interval (data only transmits at 0, 15, 30, 45 minutes past the hour). At the send interval, the data logger will boot the 3G GSM modem and transmit the data packet to the designated FTP address. From here, the data goes through an automated QA/QC procedure and is displayed onto the web-portal in a graphical and table format. Access to this website is restricted to the Client and Contractor (or others given a client login and password).

6.3 Water Quality Monitoring Program

The following water quality monitoring to be undertaken during active construction is recommended:

- Real time turbidity monitoring (see Section 6.3.1).
- Handheld turbidity monitoring (see Section 6.3.2).
- Reactive sampling (see Section 6.3.3).
- Visual observations of dredge area and integrity / breaches of sediment control devices.

6.3.1 Real Time Turbidity Monitoring

During construction (when augmentation is being undertaken), continuation of real time continuous turbidity monitoring in Slaughter Bay and Emily Bay should occur (see Figure 6-2). Data should be telemetered with the website set up to provide alerts to key project team members (via text message and email) in the case of any trigger value exceedances. Maintenance during this period should occur as necessary in accordance with Section 6.2.2.3.

6.3.2 Handheld Offshore Turbidity Monitoring

During construction (when augmentation is being undertaken), handheld turbidity monitoring should occur at three sites located just outside of Kingston Harbour (and outside of any sediment control devices) (see Figure 6-3) to provide data on turbidity levels here in relation to any baseline data collected and data collected during that morning (as described in Section 6.2.2.1).

6.3.3 Reactive Grab Sampling

Reactive grab sampling should be undertaken in the event of the following conditions:

1. Exceedance of turbidity trigger values (at either of the continuous monitoring sites) for a period of more than 1 hour.
2. A breach of any sediment control devices on the Kingston Pier or within Kingston Harbour (identified by a visible plume outside of devices).

6.3.3.1 Exceedance of Turbidity Trigger Values or Breach of Sediment Control Devices

Real time monitoring of turbidity allows for exceedances of turbidity trigger values to be detected at each 15 minute interval. In the event that turbidity levels exceeded the trigger values determined for the Project for a period of 1 hour or greater (i.e. for 5 consecutive 15 minute readings), dredging activities should cease immediately and be investigated and attributed to a source by the Contractor prior to recommencing dredging. Reactive sampling at the site of exceedance should also occur. An SMS and email notification system developed for the monitoring program will notify Project Managers and Contractors of turbidity exceedances.

In the event that a breach of a sediment control device occurs or a turbid plume outside of a sediment control device occurs which cannot be readily be attributed to factors not related to the dredging activity, reactive sampling within the turbid plume must occur.

Reactive sampling for turbidity related issues above includes the following:

- Three replicate water samples should be collected using an appropriate grab sampling device from the mid-water column depth, within the visible turbid plume, or at the site of the turbidity trigger value exceedance, when the event occurs and daily until the plume or exceedance no longer occurs. Water quality parameters required to be analysed at a suitable laboratory for these reactive sampling events are listed below:
    - pH
    - TSS (mg/L)
    - Metals (suite of heavy metals/metalloids as ug/L)

Data should be compared to the baseline data and ANZG (2018) Guidelines presented in Table 6-1 and Table 6-2 and reported.

6.3.4 Pollution Event / Presence of a Visible Sheen

In the event that a pollution event occurs / visible sheen develops within the active dredge area or outside of the dredge area, dredging activities are to cease immediately. The cause of the sheen is to be immediately investigated and dredging activities are only to continue after implementation of effective corrective measures (e.g. spill containment and clean up).

6.3.4.1 Quality Assurance / Quality Control

Quality assurance and quality control (QA/QC) procedures to be employed for any reactive water quality sampling events are listed below:

- All field survey staff must be appropriately trained in the water sampling techniques used.
- Field staff must wear disposable nitrile gloves at all times during water sampling to prevent contamination of water samples. Gloves must be changed between sampling sites.
- All samples must be placed on ice in the dark (inside an esky) immediately after sampling and for transport to the laboratory.

- A chain of custody (COC) form must accompanied all samples and denote that samples were delivered and a sample receipt notification (SRN) ensured samples were analysed within their representative holding times.
- All samples must be analysed by a NATA accredited laboratory experienced in marine water analysis (note samples will need to be shipped to the mainland).

6.3.5 Visual Observations

At all times, the Contractor must maintain visual observations of water quality within and immediately outside of the dredge area and any sediment containment devices. This is to ensure that any turbidity issues or pollution events are quickly identified, and appropriate actions are undertaken as outlined above.

7 Water Quality Reporting

7.1 Routine Reporting

Routine reporting will be undertaken in accordance with the CEMP, including:

- Weekly Compliance Audits (by Contractor(s)) to demonstrate compliance with the CEMP (and Sub-plans).
- Weekly Reporting of water quality issues, incidents and near-misses and a summary of any water quality monitoring (turbidity) trigger breaches and reactive sampling undertaken.
- An Environmental Management Monthly Report, including implementation of environmental and incident management.

Note above will need updating in accordance with the CEMP for Project.

7.2 Reportable Incident

Reportable incidents include the following:

- Exceedance of turbidity trigger values for a period of more than 1 hour.
- A breach of sediment control devices on Kingston Pier or within Kingston Harbour.
- A pollution event e.g. spill of fuel/oil or another contaminant into the waterway from construction vessels or other plant.
- Evidence of a slick on the water surface.

8 Review and Improvement

8.1 Continuous Improvement

Continuous improvement of this CWQMP will be achieved by the Principal's and Contractor(s) ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance;
- Determine the cause(s) of non-conformances and deficiencies;
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- Verify the effectiveness of the corrective and preventative actions; and
- Document any changes in procedures resulting from process improvement.

8.2 Plan Update and Amendment

Events which might trigger a review of the adequacy of the Plan may include (but are not limited to):

- The occurrence of a reportable incident (See Section 7.2).
- If the Project seeks a modification to any existing approval, authorisation or permit which results in a change to construction-related water conditions.
- A request from the Department of Agriculture, Water and the Environment (DAWE) and/or Norfolk Island Regional Council (NIRC).

Any future amendments to this CWQMP are to be submitted to the Secretary for approval, other than amendments that can be approved by the Environment Representative (ER) under Infrastructure Approval Condition XXX (if relevant).

9 References

Advisian (2021a). Kingston Pier Channel Construction Project - Environmental Assessment. Prepared for Department of Infrastructure, Transport, Regional Development and Communications. Final. May 2021.

Advisian (2021b). Kingston Pier Channel Construction Project - Preliminary Dredge Plume Modelling Study. Prepared for Department of Infrastructure, Transport, Regional Development and Communications. Final. May 2021.

Advisian (2021c). Kingston Pier Channel Construction Project – Marine and Terrestrial Ecology Assessment. Prepared for Department of Infrastructure, Transport, Regional Development and Communications. Final. May 2021.

DHI (2010). The Wheatstone Project: Dredge Plume Impact Assessment. Report for Chevron Australia by DHI Water and Environment, Singapore.

Erftemeijer et al. (2012). Environmental impacts of dredging and other sediment disturbances on corals: A review. Marine Pollution Bulletin 64(9):1737-65.

EPBC Act Referral (add approved referral details).

Parks Australia (2020). Norfolk Island, Emily Bay and Slaughter Bay, 2020 Benthic Cover and Coral Health Survey. A/P T Ainsworth, A/P S Heron, A/P W Leggat, Dr. S Gardiner, Dr. C Lantz prepared for Marine Parks Management South Marine Protected Areas Branch, Park Australia, 2020.

SIMS (2021). Norfolk Island Emily Bay and Slaughter Bay 2020 Benthic Cover and Coral Health Survey – Draft Report.

IMPORTANT: Do not delete this section break

Appendix A
To be added if required

NORFOLK ISLAND REGIONAL COUNCIL

5 July 2022

Sarah Vandenbroek
Department of Infrastructure, Transport, Regional Development and Communications
GPO Box 594
CANBERRA ACT 2601

Email: sarah.vandenbroek@infrastructure.gov.au

Dear Ms Vandenbroek

DETERMINATION OF DEVELOPMENT APPLICATION DA.BA 48/2021
***PORT & WHARF FACILITIES* – works associated with augmentation of Kingston Pier Channel and repair work to Kingston Pier and rehabilitation of Youngs Road Quarry.**

I am writing to advise you that DA.BA 48/2021 described above, *Port & Wharf Facilities* – works associated with augmentation of Kingston Pier Channel and repair work to Kingston Pier, and rehabilitation works at Youngs Road Quarry, was approved by the Minister's Delegate on 1 July 2022. Please see the Notice of decision attached.

Please contact me if you have any queries.

Yours sincerely

Jodie Brown.

Jodie Brown
Senior Strategic Planner

NORFOLK ISLAND REGIONAL COUNCIL

NOTICE OF DECISION ON DEVELOPMENT APPLICATION

FOR A DECLARED SIGNIFICANT DEVELOPMENT

Pursuant to Section 44D(2) of the *Planning Act 2002* (NI)

I, Eric Hutchinson, Administrator of Norfolk Island and delegate of the Commonwealth Minister under paragraph 1.78 of the *Minister's Norfolk Island Delegation Instrument 2017 (No. 1) (Cth)*, under section 44(D)(2) of *Planning Act 2002 (NI)* determine the Development Application ('the Application') referred to in Schedule 1 by granting development approval subject to the conditions set out in Schedule 2.

The reasons for the imposition of conditions are to achieve, in part, the principle aim of the *Norfolk Island Plan 2002* (as amended), and to minimise any adverse environmental and other impacts associated with the use / development on the property and on adjacent properties.

ADMINISTRATOR NORFOLK ISLAND

Eric Hutchinson

Administrator of Norfolk Island & Commonwealth Minister delegate

Date approved: 1st July 2022

Notes:

1. Pursuant to section 50A of *Planning Act 2002 (NI)*, the date upon which this development approval takes effect is the date on which the approval is given.

2. Pursuant to Section 62 of the *Planning Act 2002 (NI)*, this development approval will lapse if the land the subject of this approval has not been used or developed in accordance with this approval by the prescribed date, which is 60 months after the approval is given.

SCHEDULE 1 - DEVELOPMENT APPLICATION

DEVELOPMENT APPLICATION NO:	DA.BA 48/2021
APPLICATION MADE BY: (THE APPLICANT)	Department of Infrastructure Transport Regional Development and Communications
LAND TO BE USED OR DEVELOPED: (SUBJECT LAND)	Portion No 182 (2,605m^2) and Portion 164 (1.107Ha) and Portion No 5a1 (Youngs Road) (2.848Ha), NORFOLK ISLAND
APPROVED USE OR DEVELOPMENT: (THE DEVELOPMENT)	**Kingston Pier Channel Augmentation Project:** Land based works component: • Establishment and use of a land based contractor's working area and maritime artefacts screening area • Transfer of spoil from Kingston Pier to the onshore disposal facility at the Old Cascade Quarry • Stockpiling, earthworks and filling at the Old Cascade Quarry
DECISION:	Approved
DATE OF DECISION:	1 July 2022
DATE THE DEVELOPMENT APPROVAL TAKES EFFECT:	1 July 2022
DATE THE DEVELOPMENT APPROVAL LAPSES:	1 July 2027

SCHEDULE 2 - CONDITIONS OF DEVELOPMENT APPROVAL

GENERAL CONDITIONS RELATING TO THIS APPROVAL

Scope of this Approval

1. The Applicant shall carry out the Development in accordance with:
    a. DA.BA 48/2021;
    b. The accompanying Environmental Impact Statement (EIS) compiled by Advisian Pty Ltd titled 'Kingston Pier Channel Construction' Environmental Impact Statement – Department of Infrastructure, Transport, Regional Development and Communications dated 19 October 2021; and
    c. Appendices to that EIS –
        i. Appendix A – Heritage Impact Statement
        ii. Appendix B – Marine and Terrestrial Ecology Assessment
        iii. Appendix C – Sediment Quality Assessment and
        iv. Appendix D - Old Cascade Quarry Fill Plans; and
    d. All relevant commitments made in the EIS not generally repeated in this Notice of Decision; and
    e. All relevant requirements in the Norfolk Island Plan 2002; and
    f. All relevant requirements of Development Control Plan No. 7 - Kingston and Arthurs Vale Historic Area; and
    g. The conditions of this Notice of Decision.

2. Where there is any inconsistency between the items listed at (a) – (g) the other conditions of this Notice of Decision will prevail.

Specified part of the development subject to another development approval

2. Where there is any inconsistency between the items listed at (a) – (g) the other conditions of this Notice of Decision will prevail.

Specified part of the development subject to another development approval

3. Section 31 of the *Planning Act 2002 (NI)* provides that a development approval may be given subject to a condition that the use or development of the land, or a specified part of the development, shall be subject to another development approval.

4. Accordingly, this development approval and Notice of Decision does not apply to the proposed remediation of the rock revetment and extension to Flagstaff Hill or to the proposed repairs to Slaughter Bay Seawall, which shall be subject to another development approval.

Limits to this approval

5. This approval is for "the Development" described in this Notice of Decision only and detailed in the accompanying Environmental Impact Statement and Appendices described in Condition 1 above; with the exception of the proposed remediation of the rock revetment and extension to Flagstaff Hill; and the exception of the proposed repairs to Slaughter Bay Seawall, which shall be subject to another development approval as described in Conditions 3 and 4 above.

6. Any further use or development of the subject lands, outside that specified in this approval, will require additional consent via a development approval under the *Planning Act 2002 (NI).* No additional work can be conducted without first obtaining separate development approval.

7. The Development Approval does not lapse if the approved use/work has actually commenced before the consent expiry date, except where a condition specifies a limit to the duration of the consent.

8. The Development Approval has a time limit of five (5) years commencing from the date contained within the Notice of Decision of Development Application.

Compliance

9. The Applicant shall comply with the conditions of this Notice of Decision, and shall ensure that all employees, contractors and subcontractors are aware of, and comply with, the conditions of this Notice of Decision. Compliance with conditions shall be monitored by an authorised officer of the Norfolk Island Regional Council.

Dispute resolution

10. For any unresolved dispute arising out of the implementation of these conditions between the Applicant and a public authority, company or person (but excluding any dispute between the Applicant and its contractors and/or subcontractors engaged in the construction of the Development), in the first instance either party can refer the matter to the General Manager, Norfolk Island Regional Council, and, if not resolved, the Minister. The Minister's determination of the disagreement shall be final and binding on all parties.

Completion of approved use or development

11. At the completion of all works associated with this Notice of Decision for DA.BA 48/2021, all infrastructure is to be removed and the site Kingston Bay is to be reinstated in a manner consistent with what was in place before work commenced.

12. Not later than 30 days following the completion of all works for which development consent has been sought and granted as described in this Notice of Decision for DA.BA 48/2021 and accompanying EIS, the Applicant must notify, in writing, the General Manager of the Norfolk Island Regional Council that the approved use and development has been completed and the conditions of the development approval have been complied with.

CONDITIONS TO BE SATISFIED PRIOR TO THE COMMENCEMENT OF ANY SITE WORKS

13. The following must be in place prior to the commencement of any site works:
    a. **Commonwealth Approvals** - all approvals required in relation to the Environment Protection and Biodiversity Conservation Act 1999.
    b. **License/Permit** – all licenses/permits that may be required from the relevant authorities including Australian Federal Government agencies and Norfolk Island Regional Council to allow the development to proceed.
    c. **Pier Street Bridge Certification** - Pier Street Bridge must be inspected by a suitably qualified engineer and certified that it is capable of withstanding the loadings that are proposed during this development process.

Construction Environmental Management Plan

14. Section 7 of the EIS, 'Compilation of measures to mitigate adverse effects' prescribes actions required to manage the potential environmental impacts of the proposed development through detailed design, construction and / or operation of the development. A Construction Environmental Management Plan shall be prepared and will incorporate the mitigation measures that are relevant to this development approval. For each relevant mitigation measure, the Construction Environmental Management Plan will identify the Impact, Environmental Safeguards, Responsibility and Timing similarly to that shown in Table 7-1 - Compilation of mitigation measures.

15. The Construction Environmental Management Plan shall include a management training and monitoring plan consistent with the environmental controls detailed in the Environmental Impact Statement.

16. The Construction Environmental Management Plan must be prepared and submitted to the General Manager for approval prior to the commencement of site works.

ENVIRONMENTAL PERFORMANCE

Obligation to minimise harm to the environment

17. The Applicant must implement all practicable measures and the relevant mitigation measures identified in the Environmental Impact Statement to prevent or minimise any harm to the environment that may result from the approved activities.

Noise impacts

18. All construction activities at the development sites which are audible at residential premises, hospitals, tourist and aged care accommodation and like sensitive receivers must be restricted to the following times:
    a. 7:00am to 5:00pm Mondays to Fridays;
    b. 7:00am to 1:00pm on Saturdays; and
    c. At no time on Sundays and public holidays

19. If noise complaint(s) are received by the Norfolk Island Regional Council in relation to the Development, the Council shall have the right to monitor noise emissions from the development; and if necessary, Council shall have the right to impose time, noise and/or operational restrictions on the Development, determined in consultation with the Applicant and agreed in writing by the General Manager.

Visual amenity

20. During construction, both sites must be maintained in an orderly manner for both visual aesthetics and occupational health and safety considerations. Disturbed areas must be rehabilitated as soon as practicable at the completion of works.

Traffic, Access and Parking

21. During the operation phases of both sites, access shall be maintained in an orderly manner for occupational health and safety and road safety considerations. Appropriate signage shall be used where necessary to ensure public safety. Vehicular access and parking to and within the sites must be safe and convenient for all users of the site and shall be maintained in a sealed/compacted all weather condition.

Dust Emissions

22. The Applicant shall construct, use and maintain the Development in a manner that will minimise the generation of dust at each development site, and the emission of dust from each development site. Dust minimisation measures shall include, but not be limited to the following:

    a. All vehicles shall be prevented from tracking material to and from the sites.
    b. Stockpiles shall be maintained in a condition which minimises wind-blown dust; i.e. confined to the smallest practicable area and covered or watered.
    c. All vehicles entering or leaving the sites carrying a load that may generate dust shall be covered at all times, except during loading and unloading.

End

DA.BA. 48/2021.

Kingston Pier Channel Construction

Environmental Impact Statement

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

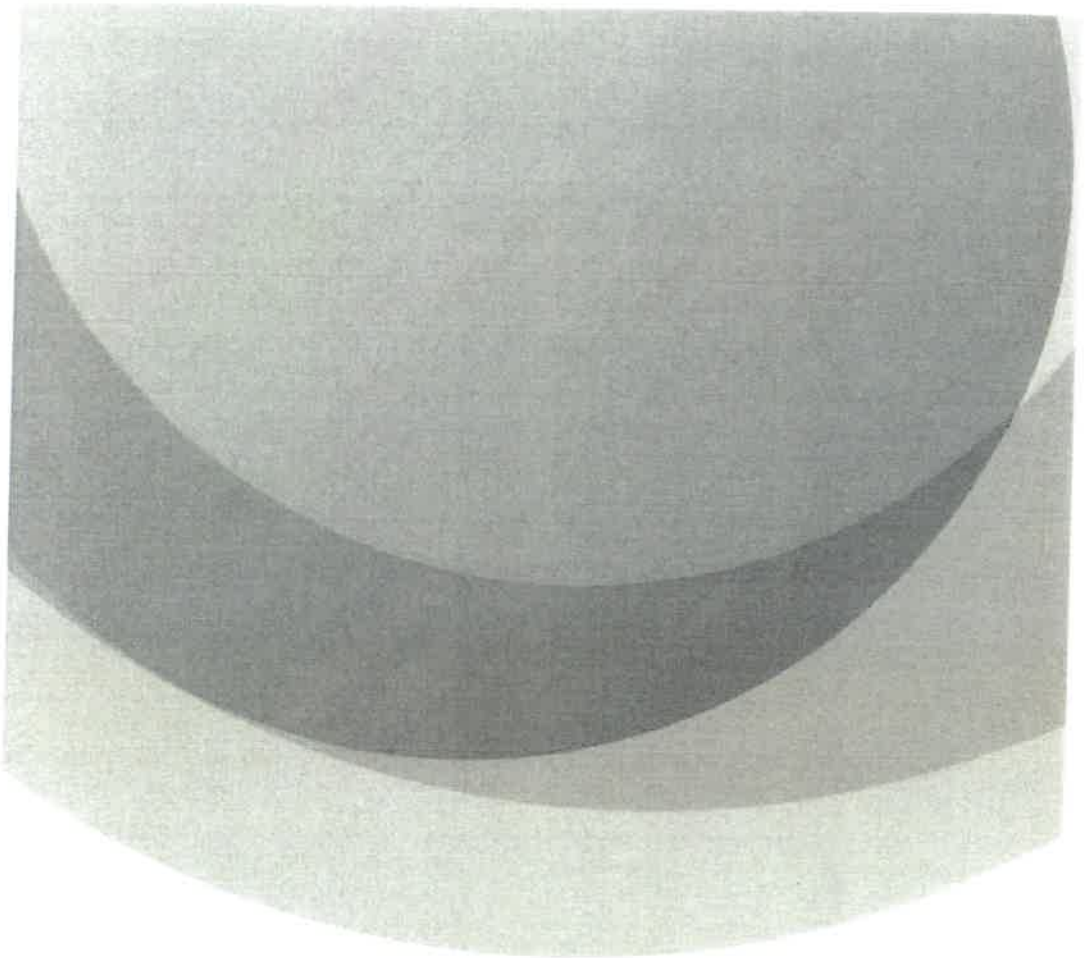
19 October 2021

311015-00061

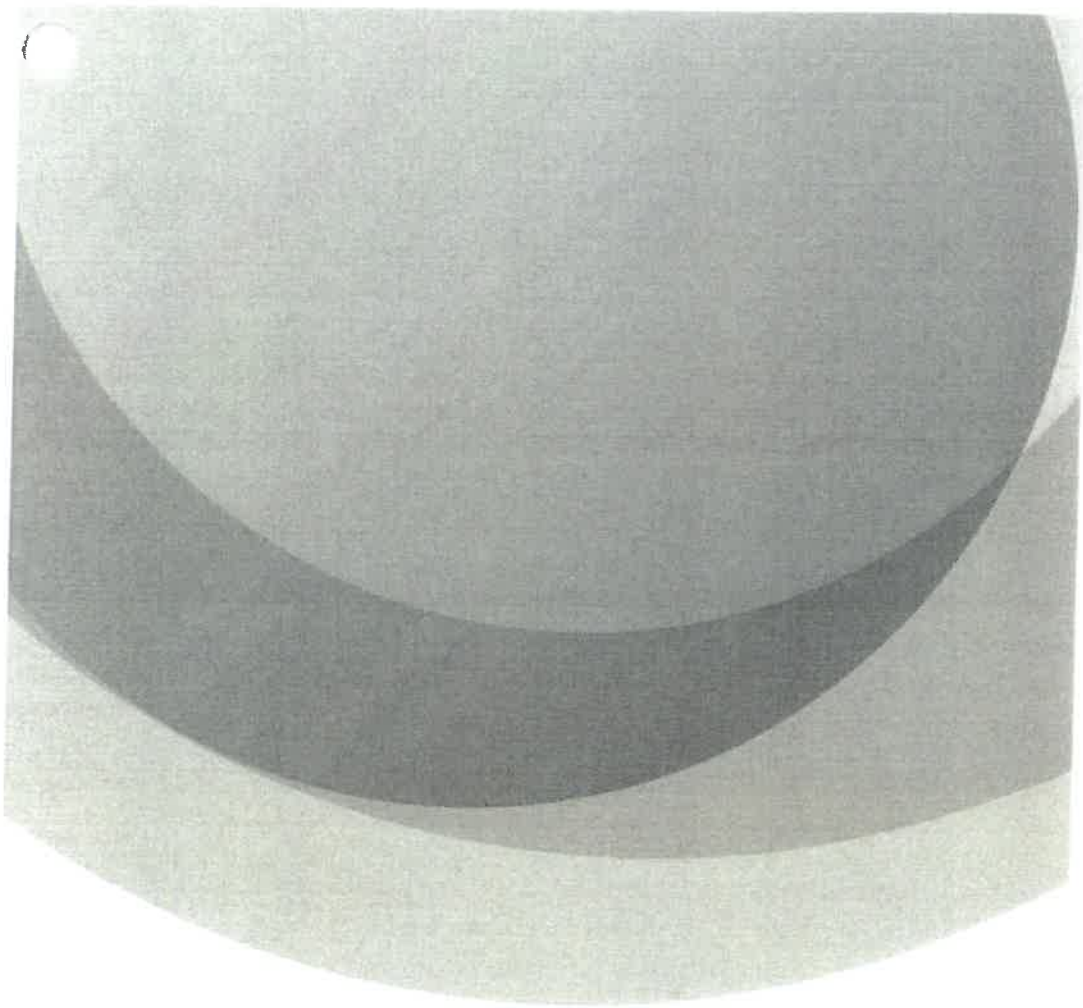
NORFOLK ISLAND REGIONAL COUNCIL
APPROVED PLANS
Development Application No. DA.BA 48/2021
Dated 1/11/21
MINISTERIAL DELEGATE

Advisian
Worley Group

advisian.com

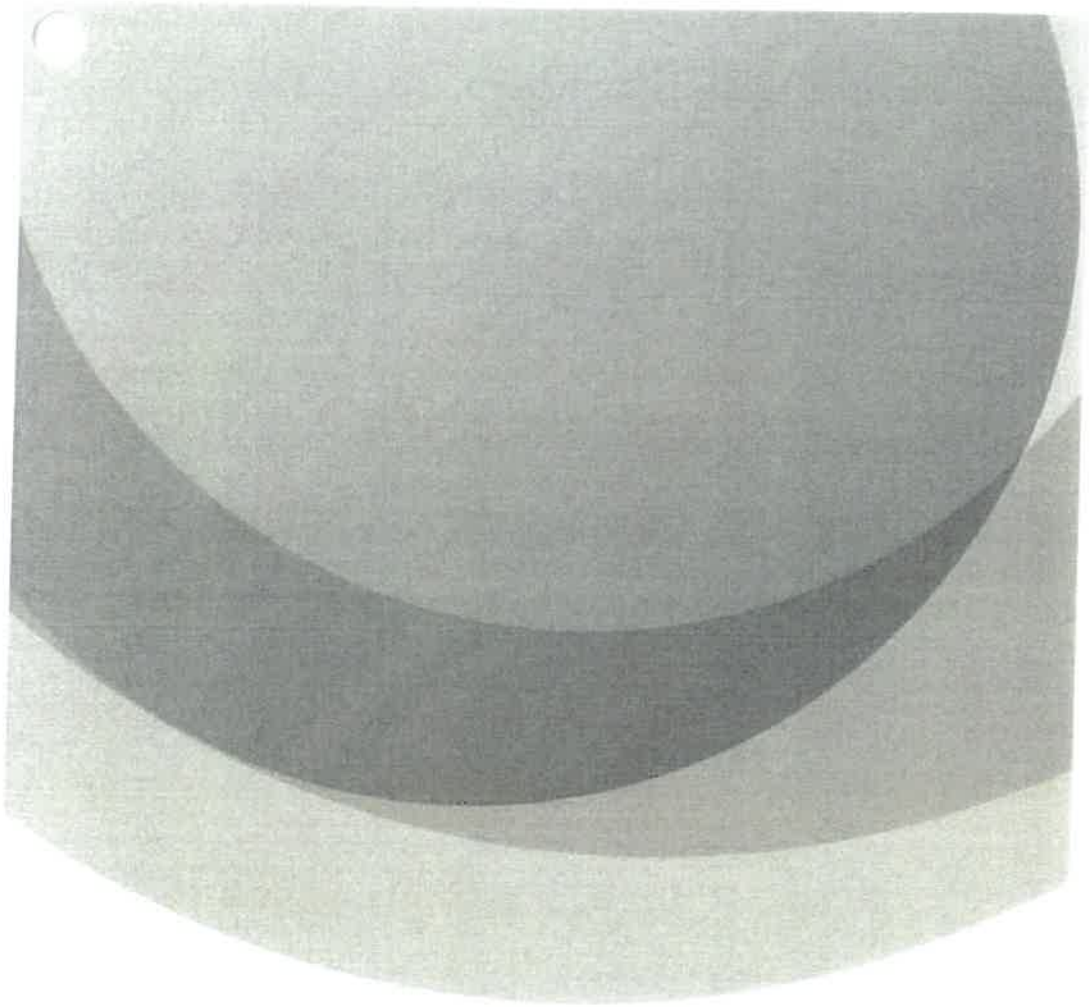


Appendix A
Heritage Impact Statement



NORFOLK ISLAND REGIONAL COUNCIL
APPROVED PLANS
Development Application No. DABA 48/2021
Dated 1/2/22
MINISTERIAL DELEGATE

Appendix B
Marine and Terrestrial Ecology Assessment



Appendix C
Sediment Quality **Assessment**

NORFOLK ISLAND REGIONAL COUNCIL
APPROVED PLANS
Development Application No. DABA 48/2021
Dated 1/7/22
MINISTERIAL DELEGATE

Appendix D
Old Cascade Quarry Fill Plans

Sydney 46 Gale Road
Maroubra, NSW, 2035

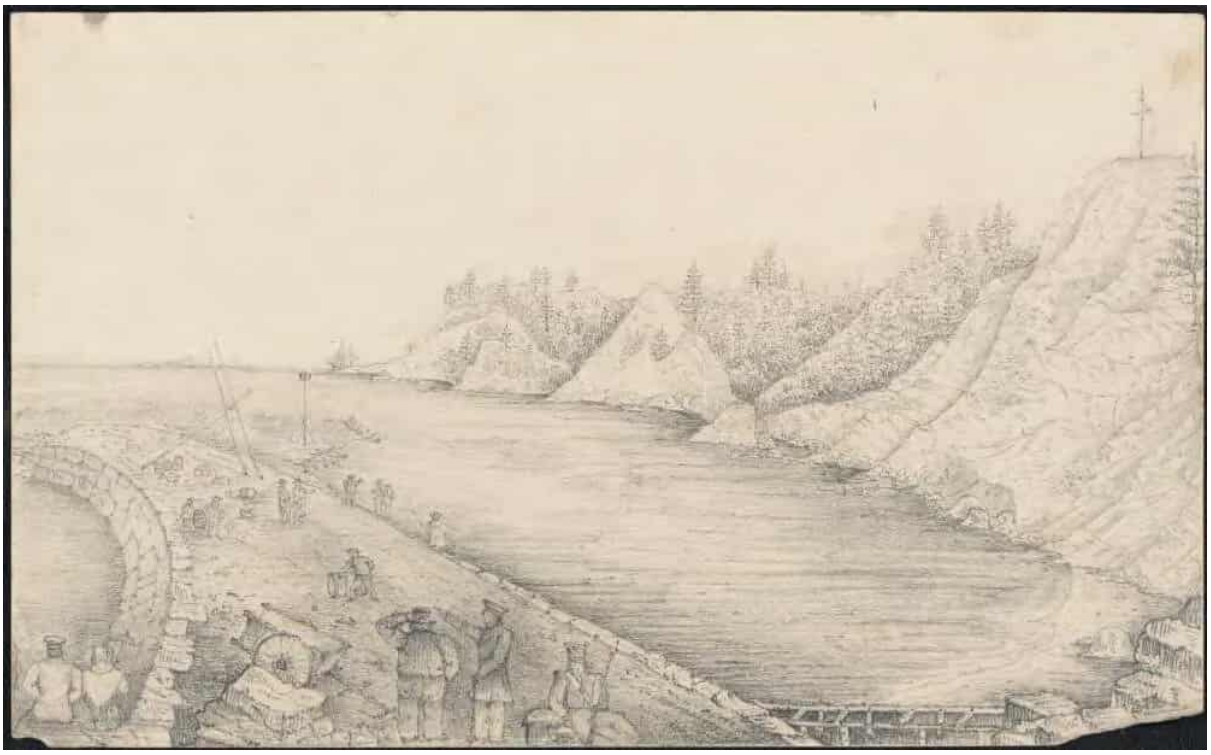
Northern NSW 2 Queen St
Murwillumbah, NSW
P.O. Box 42 Condong, 2484

A.B.N. 83 082 211 498

General Inquiries +61 2 9568 5800
www.cosmosarch.com

Cosmos Archaeology Pty Ltd

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

Prepared for:

Advisian

By:

Cosmos Coroneos

Jane Mitchell

Connor McBrian

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 2nd 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 accidently 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.*

TABLE OF CONTENTS

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 2000m^2 – 6000m^2 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	*Environment Protection and Biodiversity Conservation Act 1999*
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	*Environment Protection and Biodiversity Conservation Regulations 2000*
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 km^2. The main island is 35 km^2; 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.

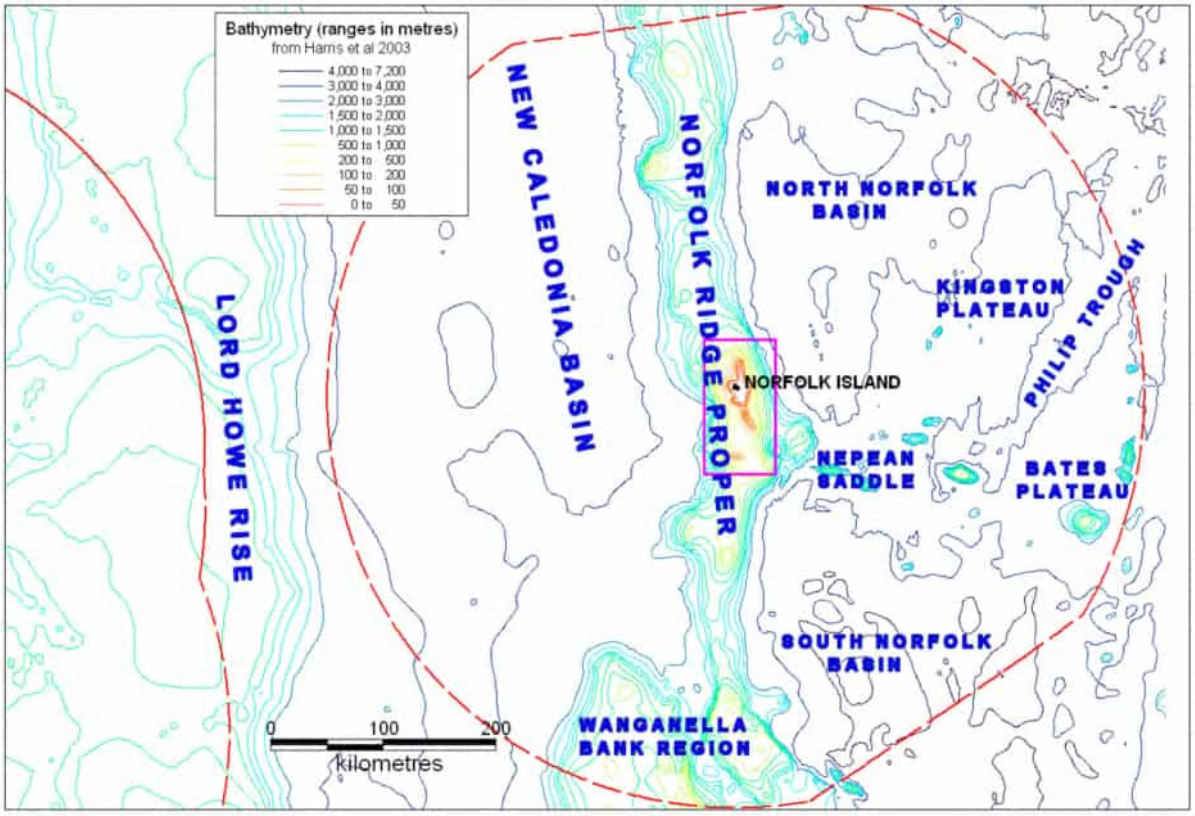


Figure 3: Bathymetry of the Norfolk Ridge running between New Zealand and New Caledonia. *Norfolk Island indicated with pink square.* [2]

[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]

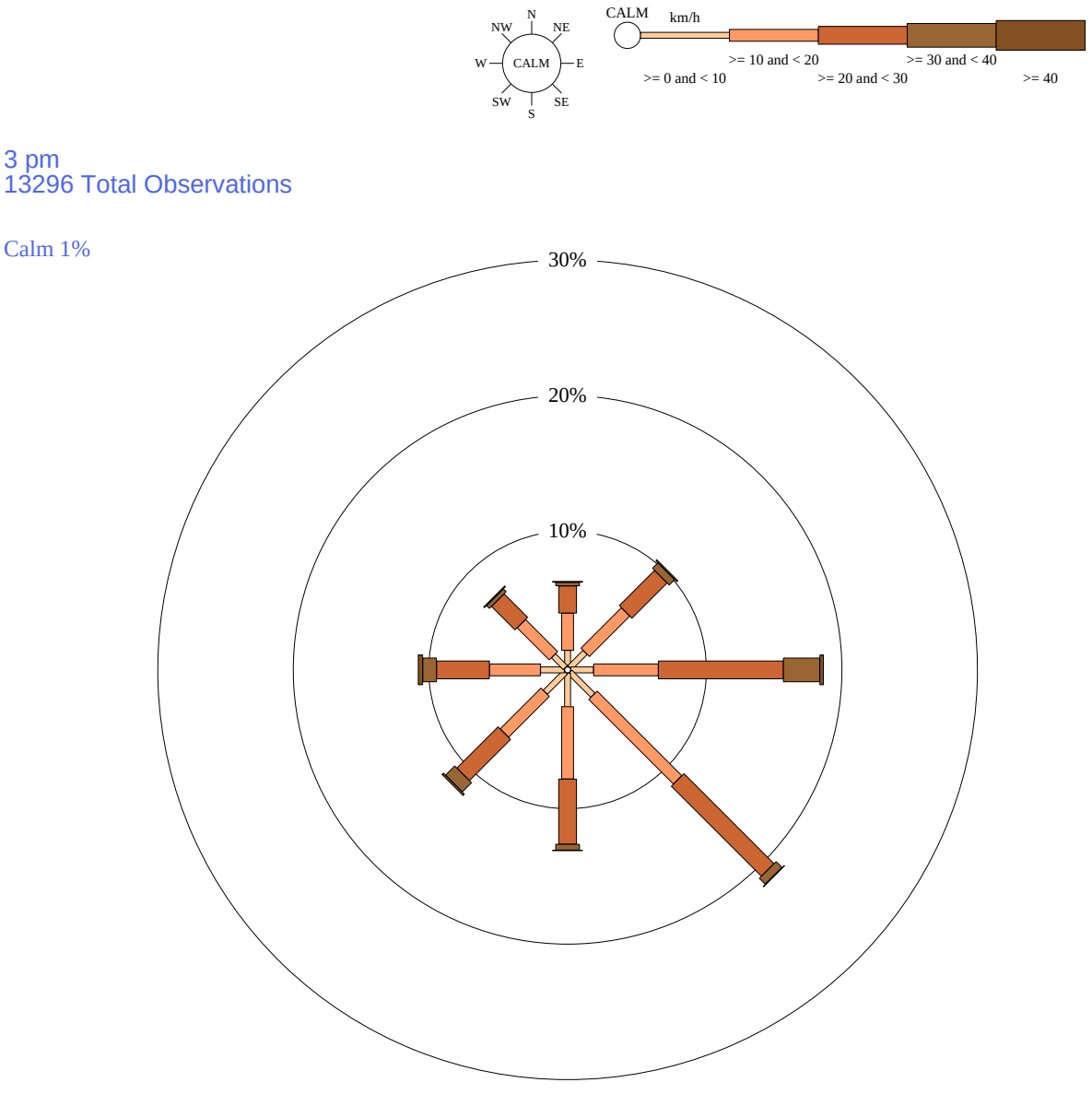


Figure 4 : Rose of annual wind direction versus wind speed as km/h at 3 pm Norfolk Island aerodrome based on daily observations from August 1939 to August 2019.[5]

[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] **Cresswell, 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

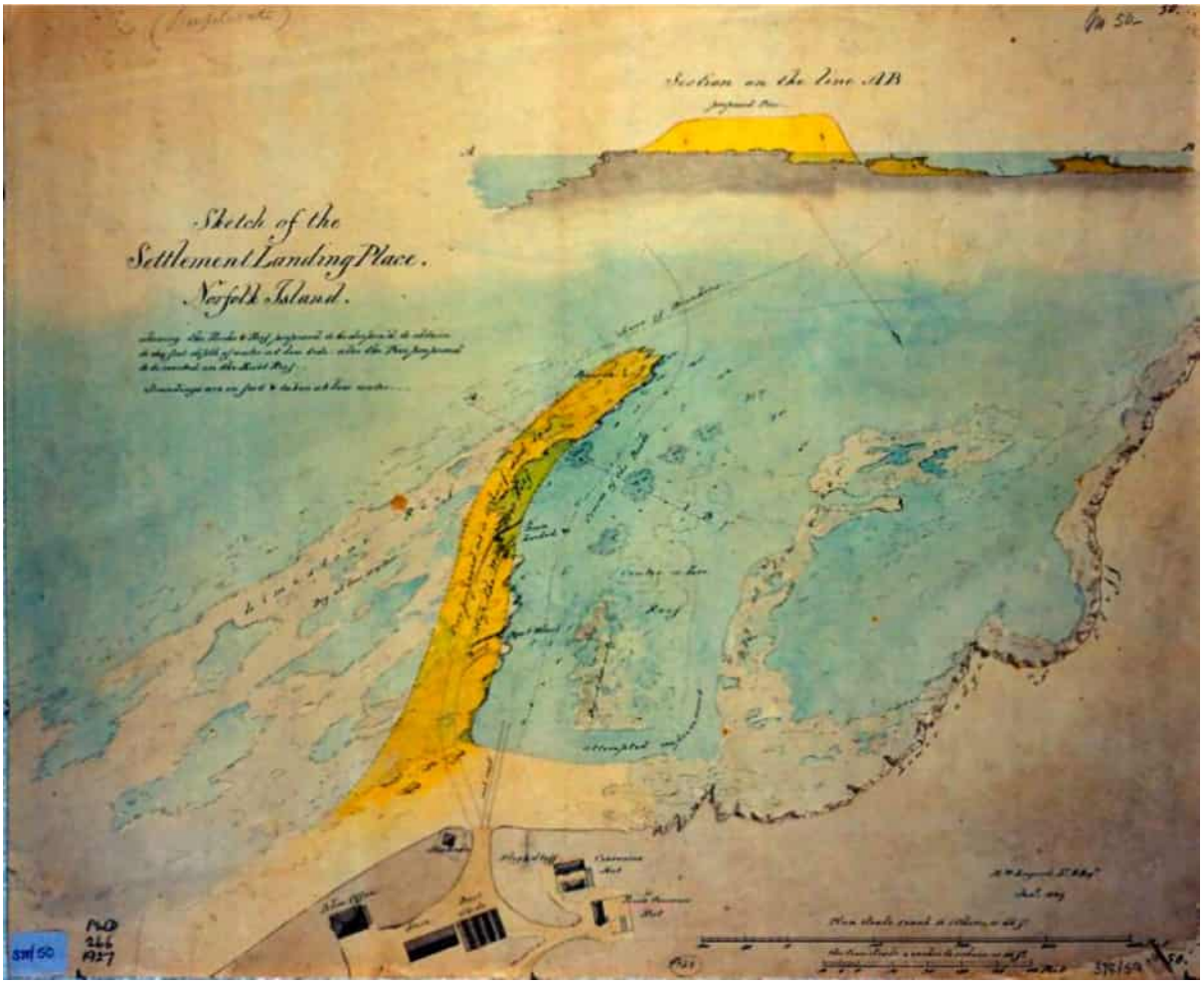


Figure 6 An un-dated sketch of Kingston Pier showing the structure overlaying the western edge of the fringing reef that stretches across Slaughter Bay. (Photo 4 in Hogan, R. November 2011)

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

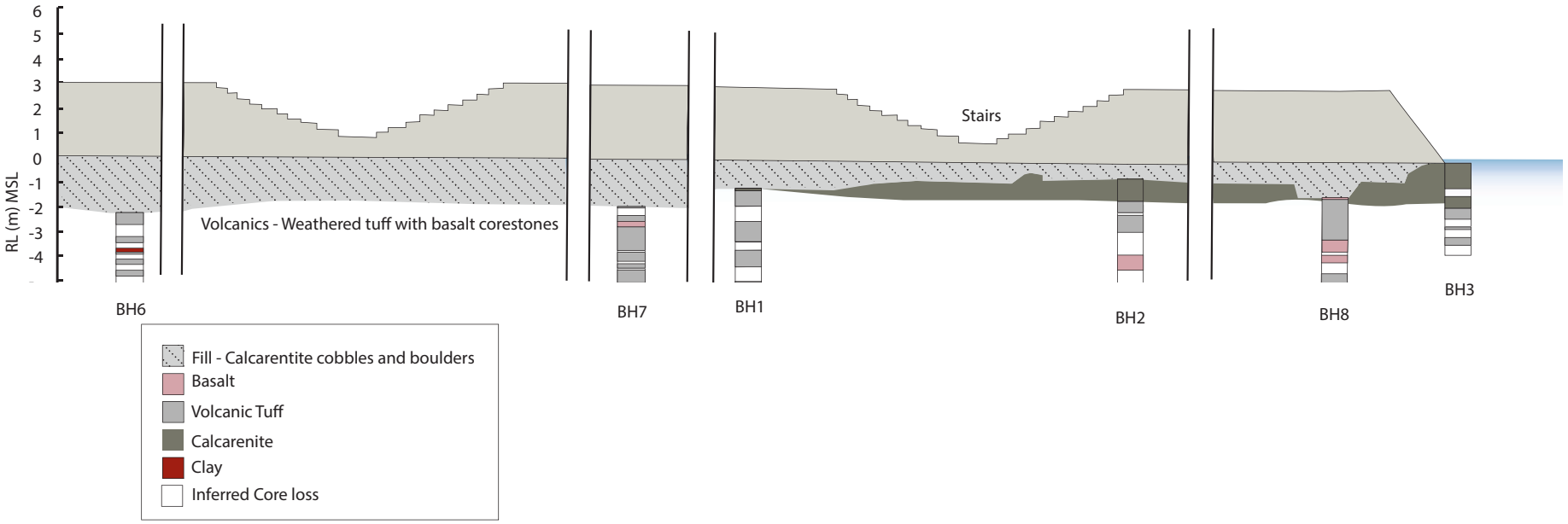


Figure 7: Bore hole samples along the western face of Kingston Pier. *After Jeffery and Katauskas Pty Ltd 2005.*

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.

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[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/lg5tom/SLNSW_ALMA21119968210002626.

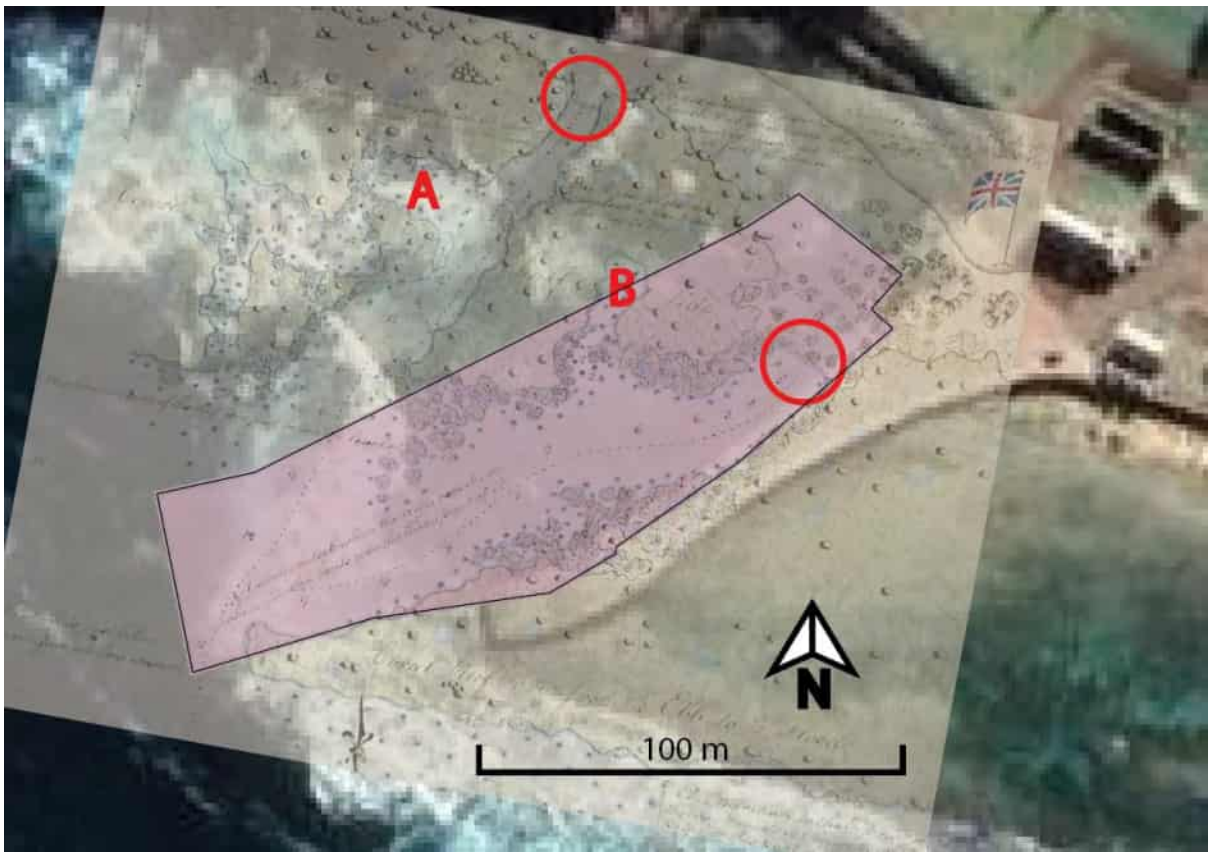

Figure 8: 1791 map of the Landing Place imposed over modern satellite imagery. *The two circles denote the two landing places through the channels in the reef. A: noted by Bradley as a place a boat may wait while another boat is unloaded at the western landing place. B: noted by Bradley as a good spot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

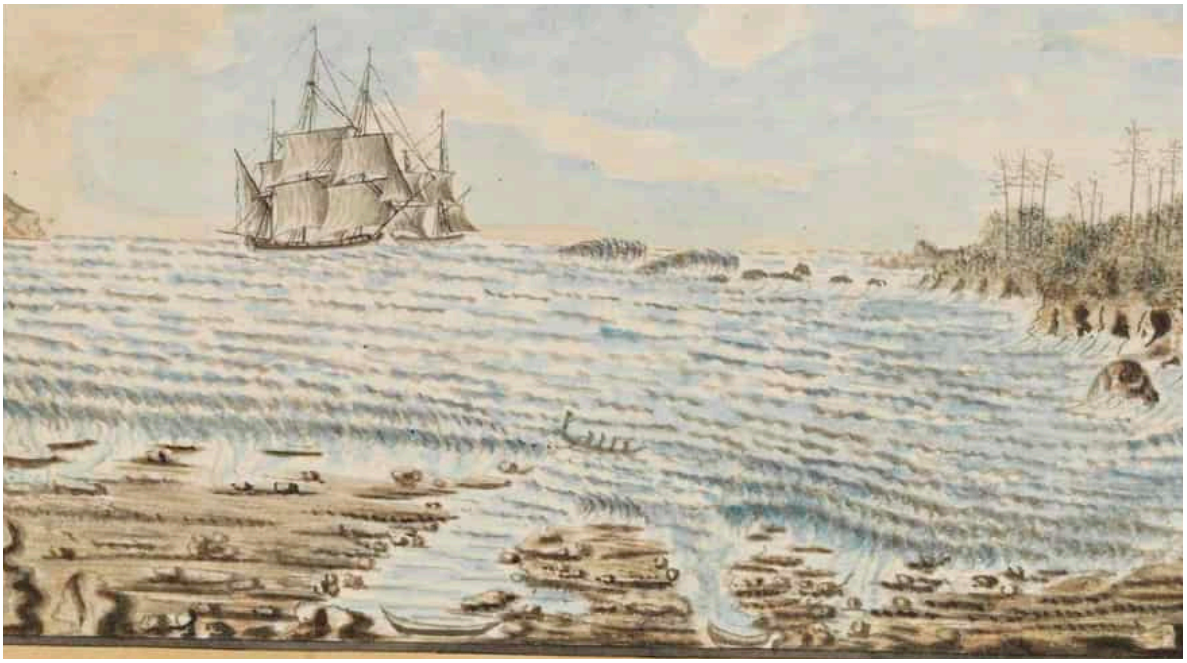

Figure 9: Watercolour of the Landing Place painted by William Bradley, showing the channel through the reef, and boats on shore at the Landing Place. HMS* Sirius *and HMS* Supply *in the background. *Note what appears to be two channels leading to the Landing Place, the largest one being on the left (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 10[23], Figure 11[24])

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*.

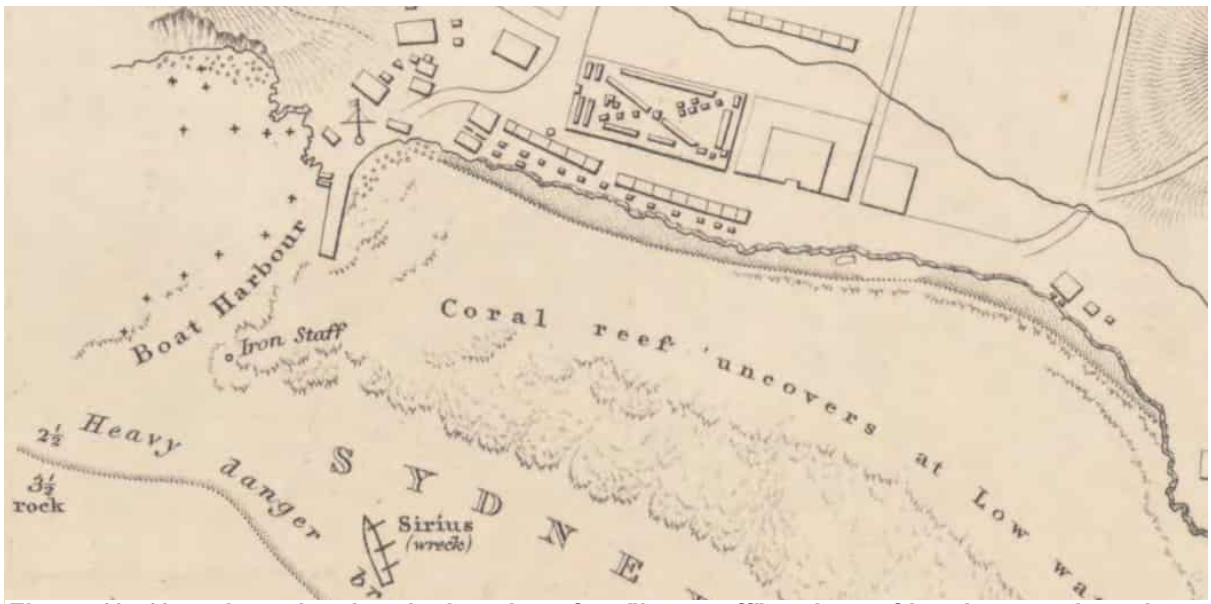

Figure 13: 1855 chart showing the location of an "iron staff" at the reef head, approximately the same location as the beacon in Figure 10.

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].

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[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.

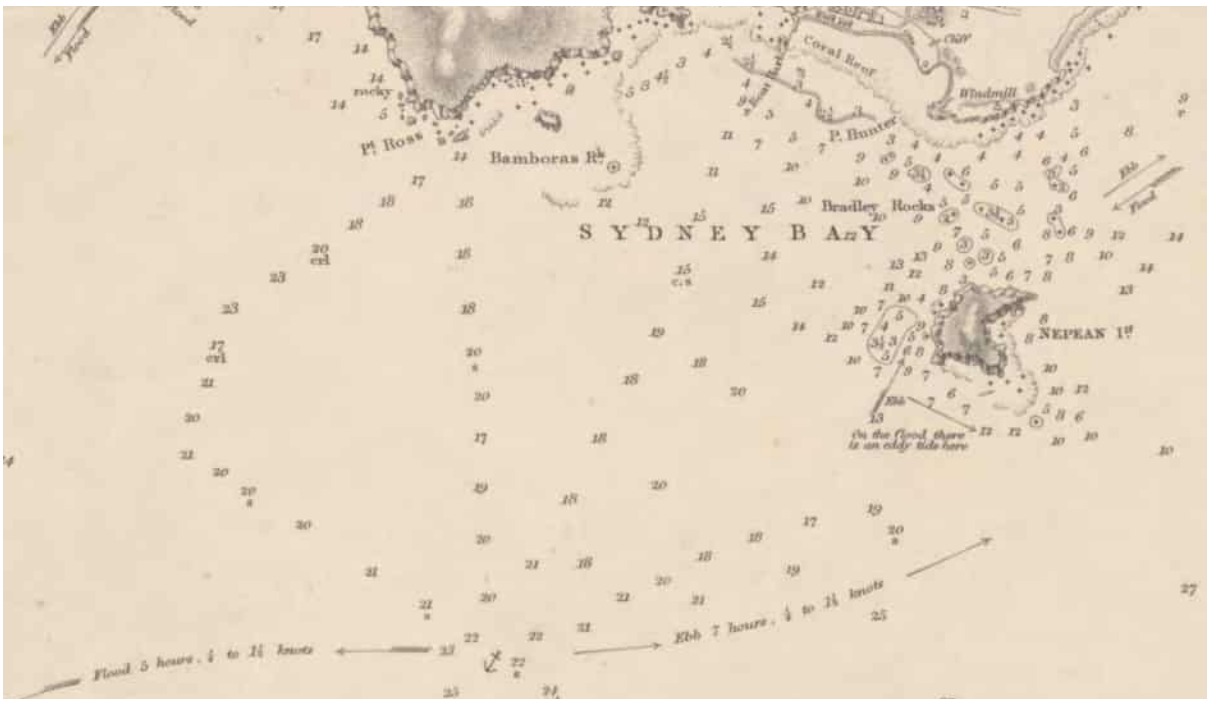

Figure 16: 1855 chart showing ship anchorage (indicated by anchor) approximately 3 km southwest of Kingston.

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 cargo[44]:

[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

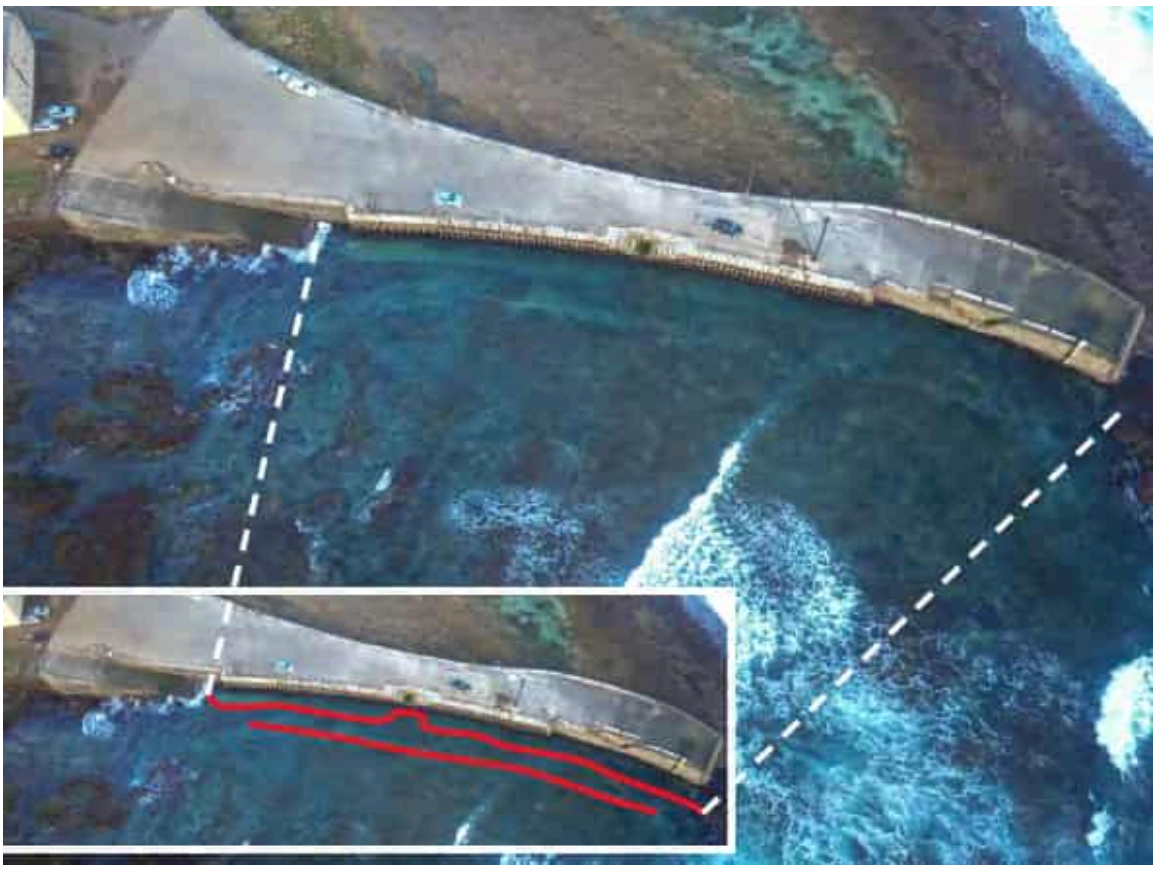

Figure 18: The remains of the 1980s dredging campaign can be seen as two parallel lines which form two ledges adjacent to the Pier. *(Worley Parsons 1st September 2016: Photo 6.1)*

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.

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[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.

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[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 5[77]

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 m^2. 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.

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[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 (S10), 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 *Sirius.*	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
Bittern	1868	Wood	40.6	Kingston	Also possibly wrecked at Beefsteak according to *Auckland Star* 14 Aug 1893
Friendship	1835	Wood	88	Kingston	Wrecked where Pier now ends
Isis	1962	Wood	UNK	Beefsteak Point	Pleasure yacht wrecked near Beefsteak Point to the west of Kingston Pier.
Jan	1948	Steel	UNK	Emily Bay	Diesel powered launch, capsized while trying to enter Emily Bay
Mary Hamilton	1873	Wood	312	Kingston	Wrecked near Landing Place, remains possibly found at *Sirius* Site 5
Ronaki IX-94	1943	Wood	255	Kingston	Ran aground on reef immediately east of Kingston Pier. Remains mostly salvaged and removed.
HMS *Sirius*	1790	Wood	540	Kingston	Wreck material found at several places in Slaughter Bay. Anchors and ballast pile remain on site.
Wanderlust	1914	Wood	UNK	Emily Bay	Wrecked near entrance to Emily Bay while being towed by a whaleboat.
Warrigal	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 *Sirius,* wreck noted by Wm. Bradley in journal, 17 August 1790.
Whaleboat	1826	Wood	UNK	Offshore	Wrecked in a collision with the schooner *Isabella,* 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 2020', 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 period [84].

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:

a) 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;

b) 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).

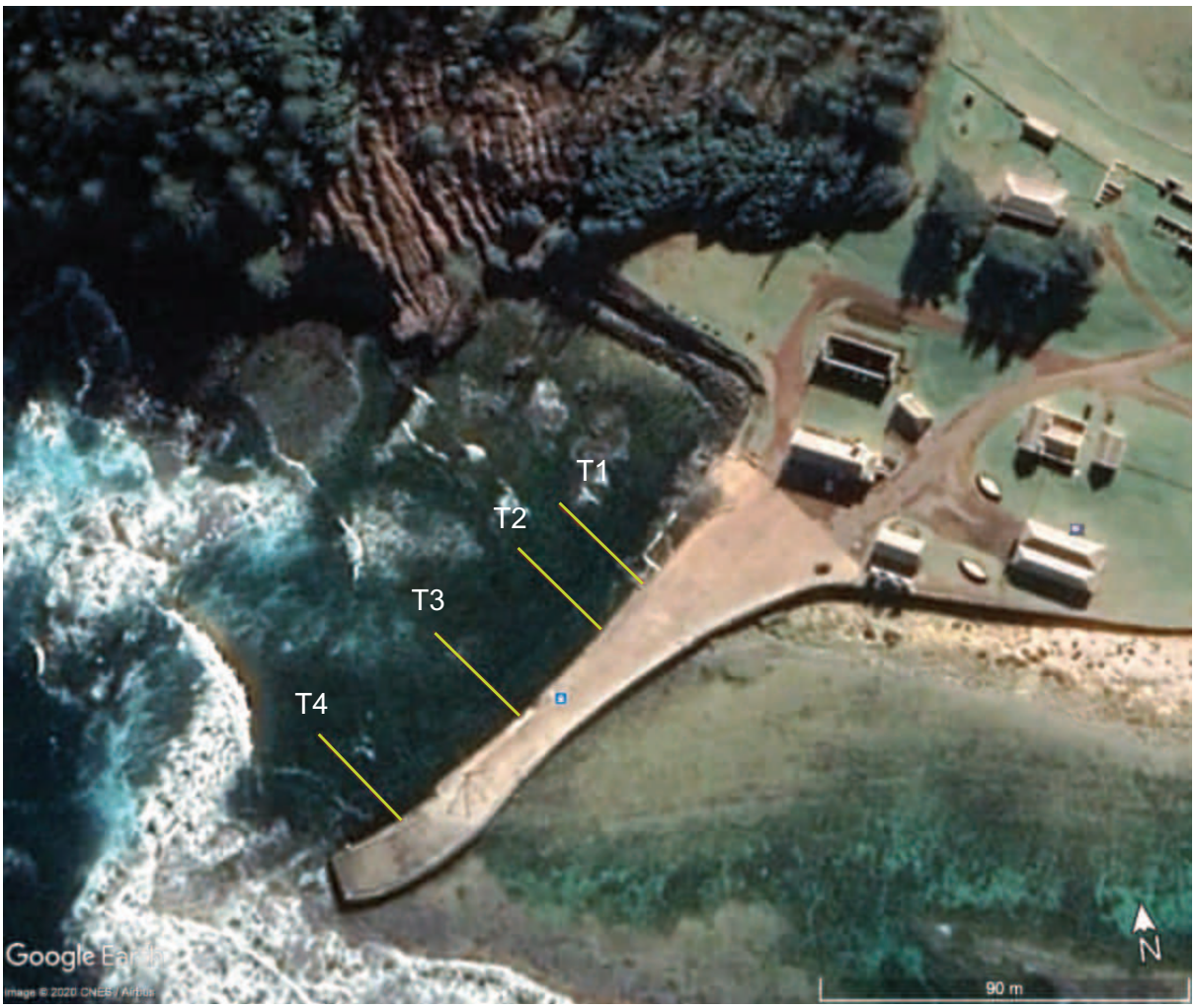

Figure 22: Location of transects west side of Kingston Pier. *(Base image Google Earth).*

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).

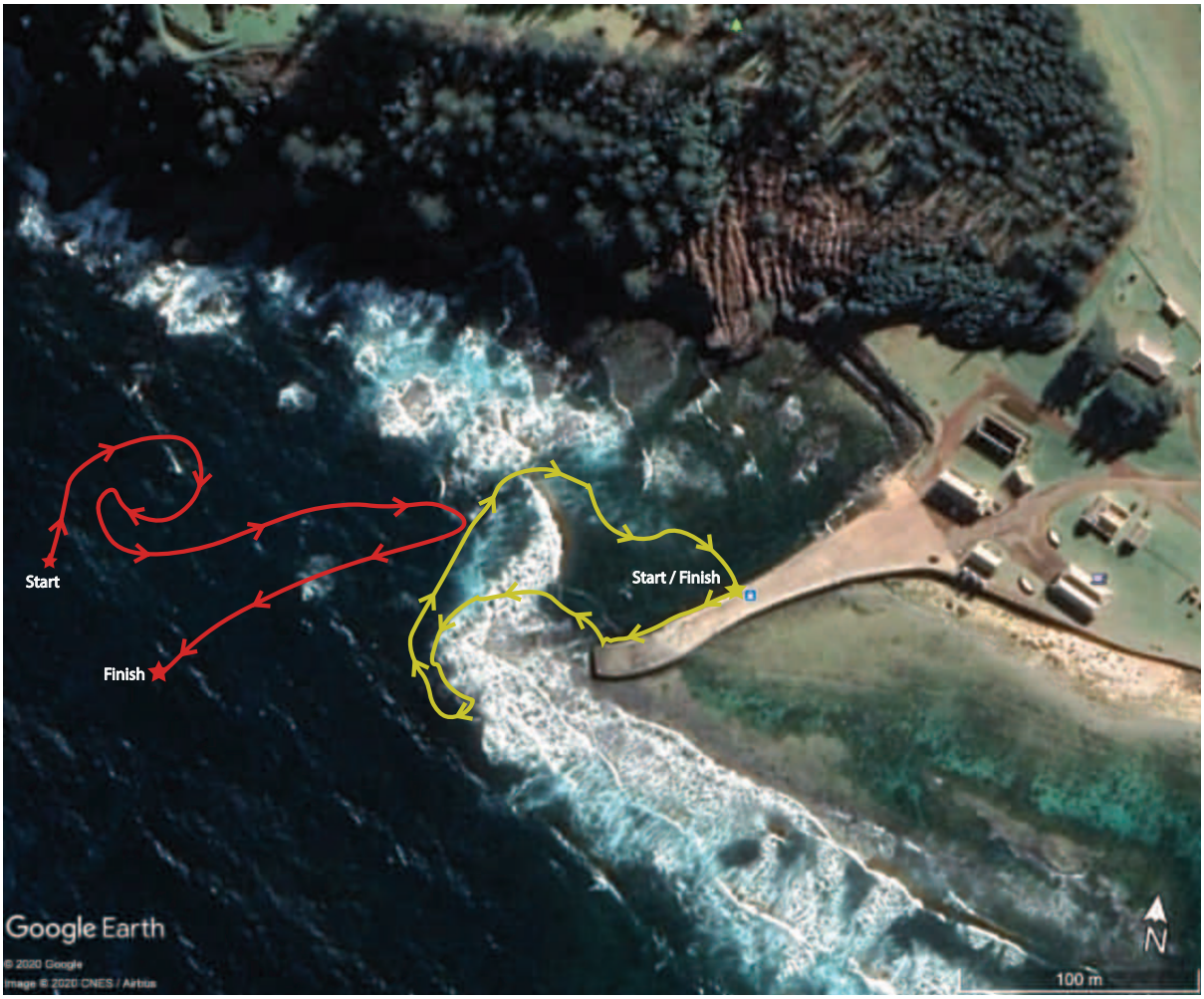

Figure 23: Approximate location of swim searches. *Swim search 1 in yellow, Site 5 swim search in red. (Base image: Google Earth).*

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 (calcarenite) 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 (calcarenite) 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): 1405*	*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 (calcarenite) 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)*

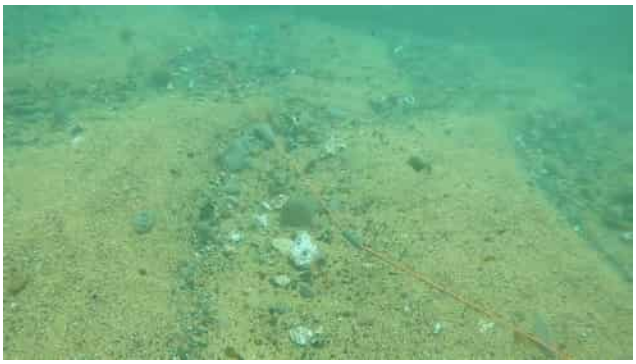

Figure 34: Dredge line showing sandy seafloor with rock scatters and animal bones. *(NI_T1_0 to 30 m_200226 00:10)*

Figure 35: Example of reef (calcarenite) 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 (calcarenite) seabed continuing past the end of the transect at 28 m mark. *(NI_T1_0 to 30m_200226 3:46)*

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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***

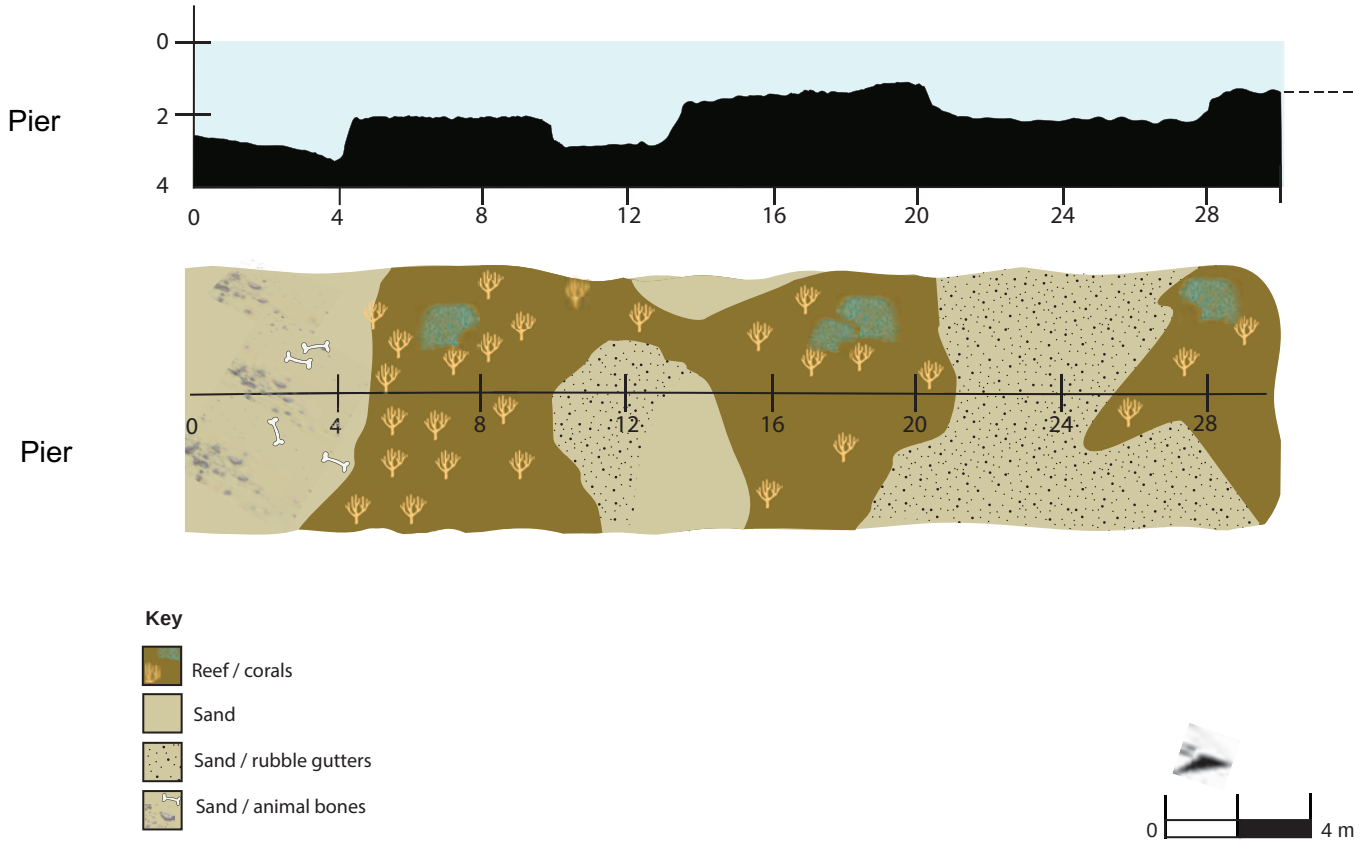

Figure 38: Digital representation of NI Transect 1, including profile of relative depths

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).*

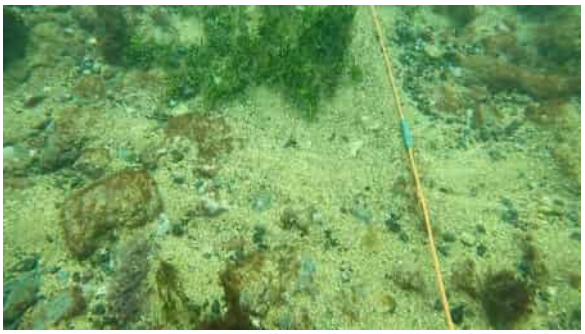

Figure 40: Previously dredged area at 2 m, note the gravel infill is scattered thinly throughout area. *(NI_T2_0 to 30 m_200226 00:06).*

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).*

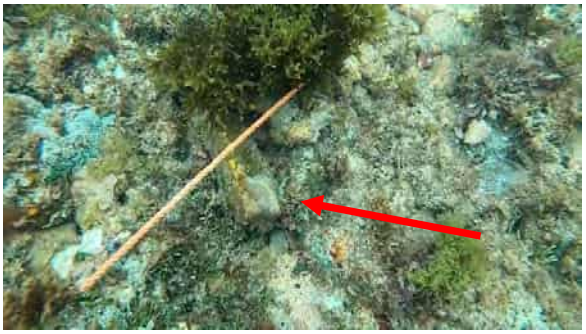

Figure 42: Potential brick at 10 m indicated with red arrow. *(NI_T2_0 to 30m_200226 00:48).*

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***

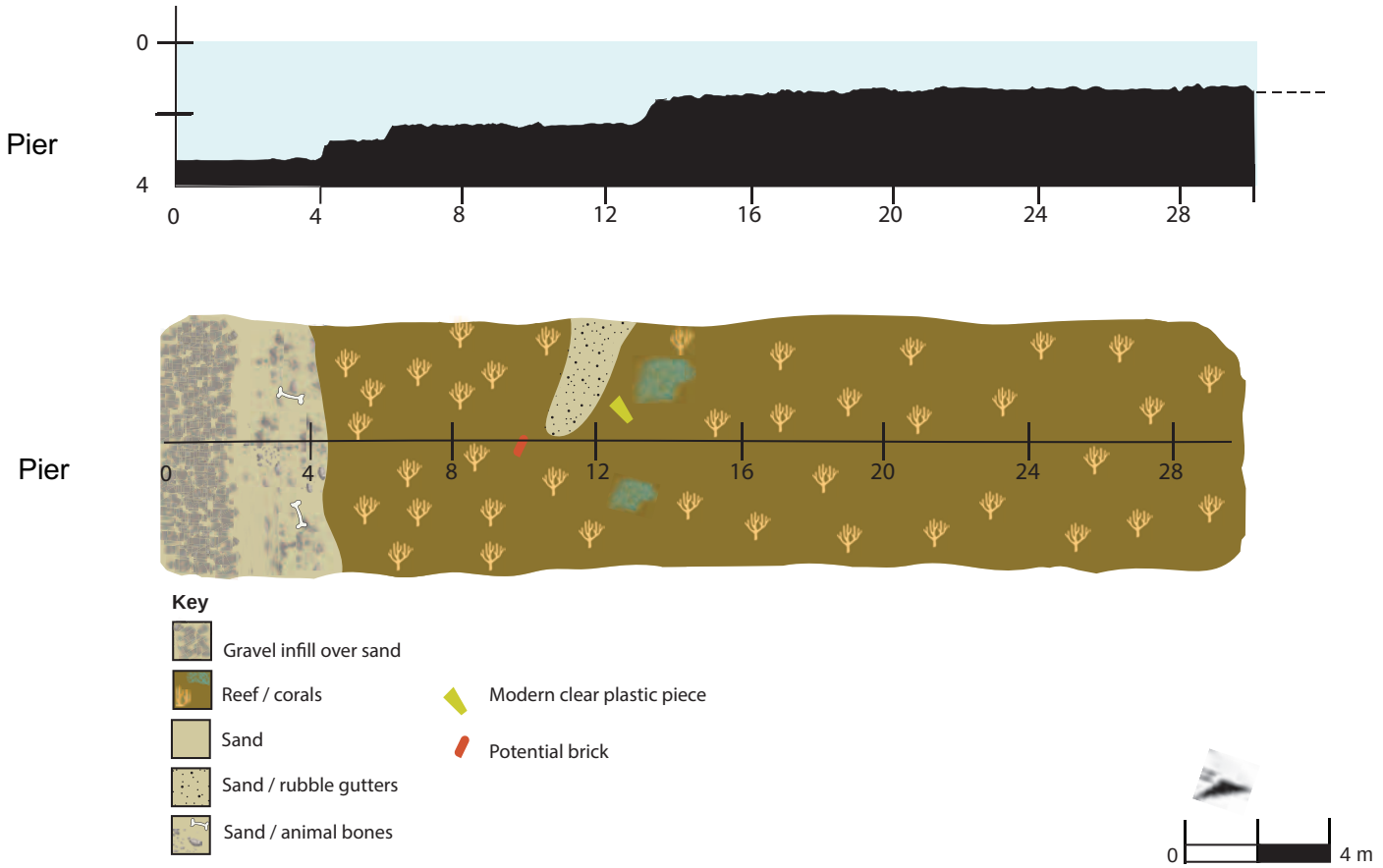

Figure 45: Digital representation of NI Transect 2, including profile of relative depths.

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***

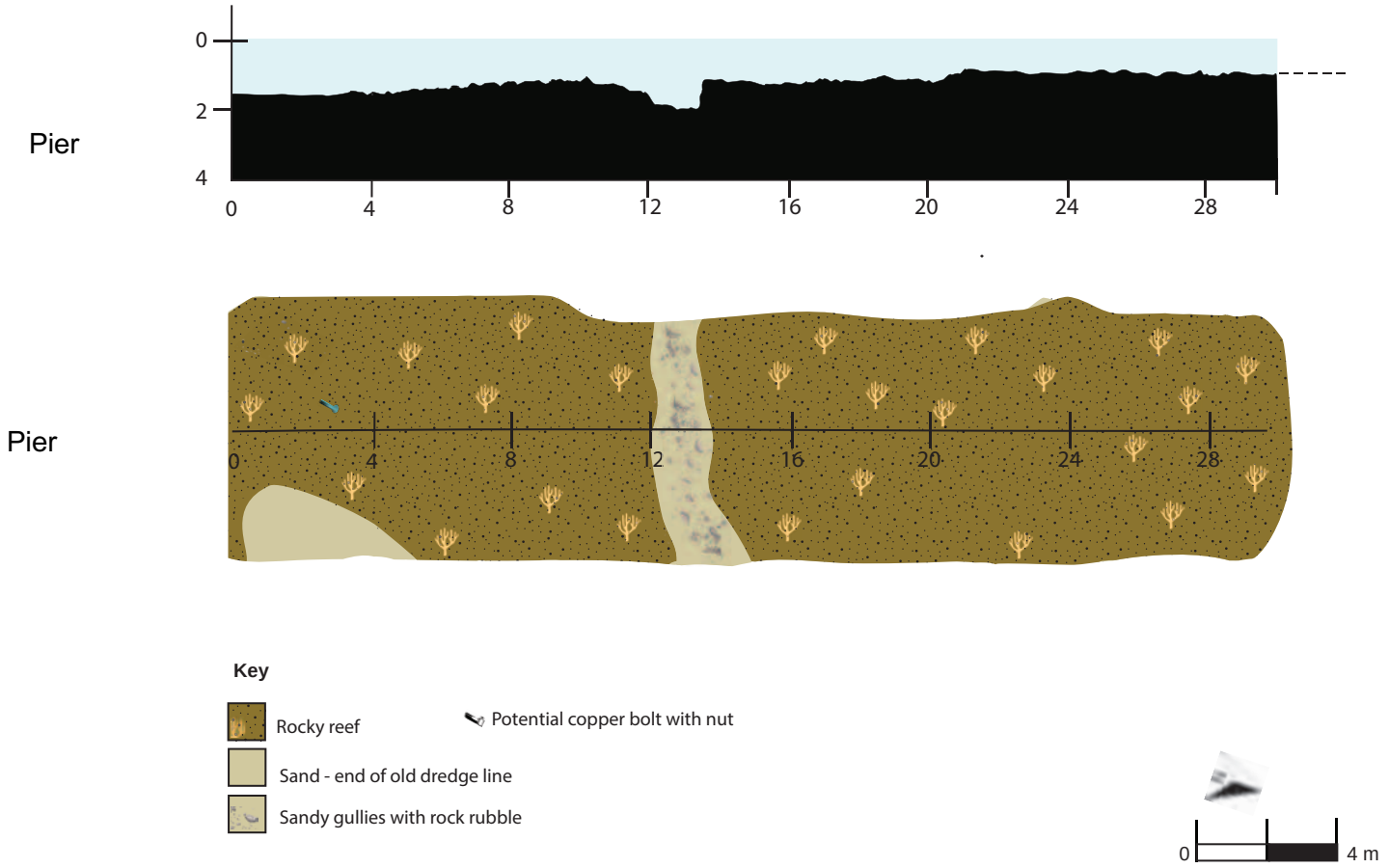

Figure 52: Digital representation of NI Transect 3, including profile of relative depths.

Transect 4		
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 787571 mE 6781944 mS WGS84	*Seaward end – 58J 787553 mE 6781969 mS WGS84*	
Time start (min): 1550	*Time end (min): 1600*	*Total time (min): 10*
Depth: 1.5 – 1.6 m	*Water visibility: 5 – 10 m*	*Seabed visibility: 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***

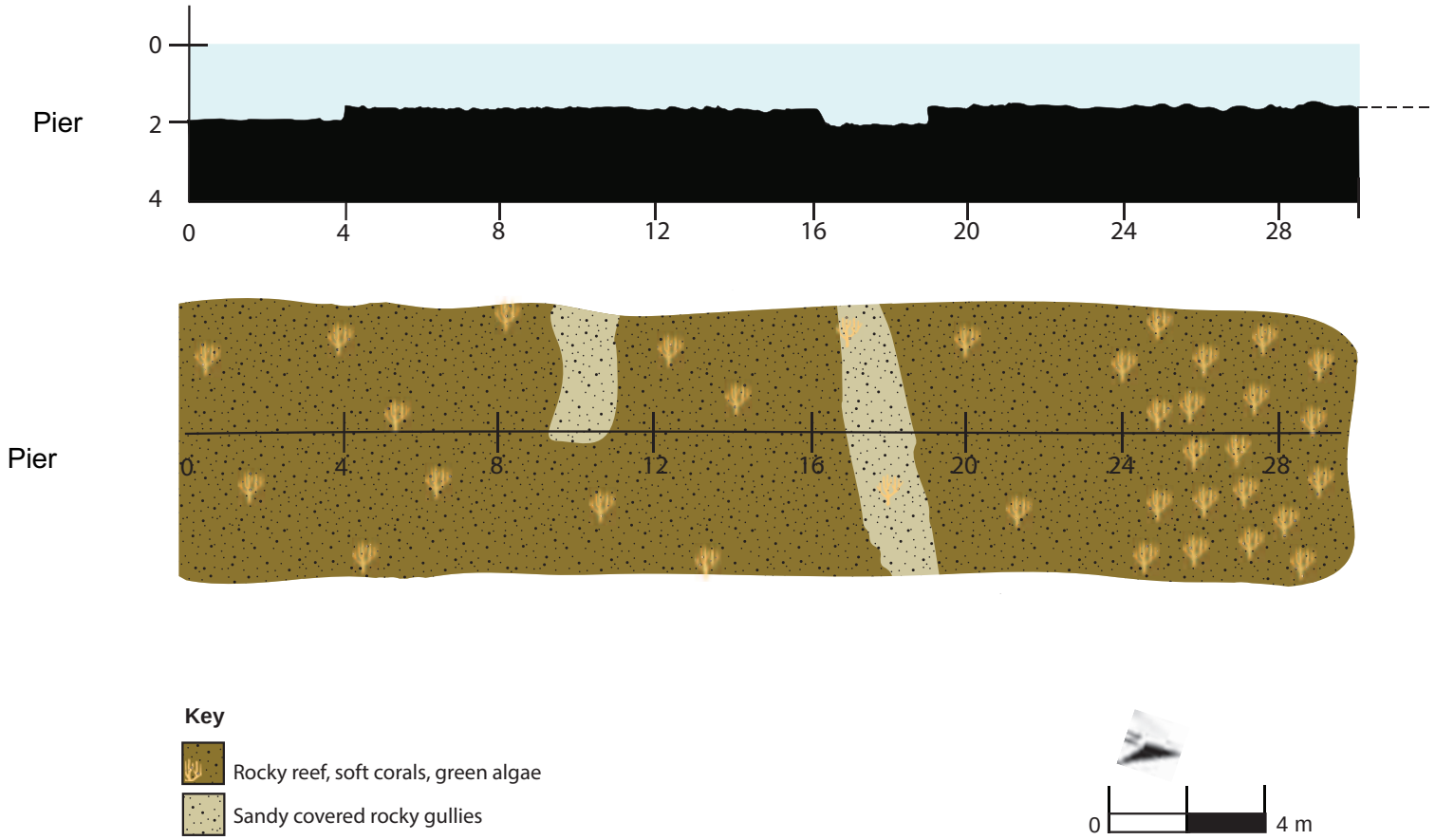

Figure 58: Digital representation of NI Transect 4, including profile of relative depths.

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 29º 3.496'S and 167º 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 be come 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 has 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 Plan[86] 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 criteria[89] 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 2,500m^3 to 8,200 m^3 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 2,500m^3.

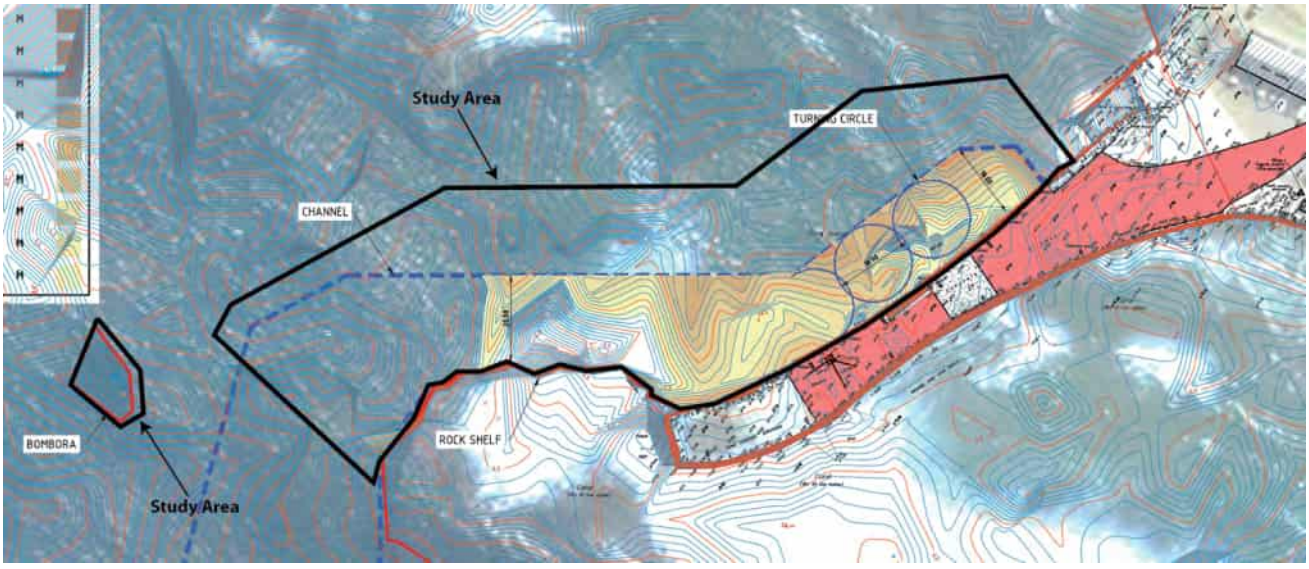

Figure 65 : Seabed removal Option 1 with study area overlaid

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 m^3 of seabed would be removed.

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

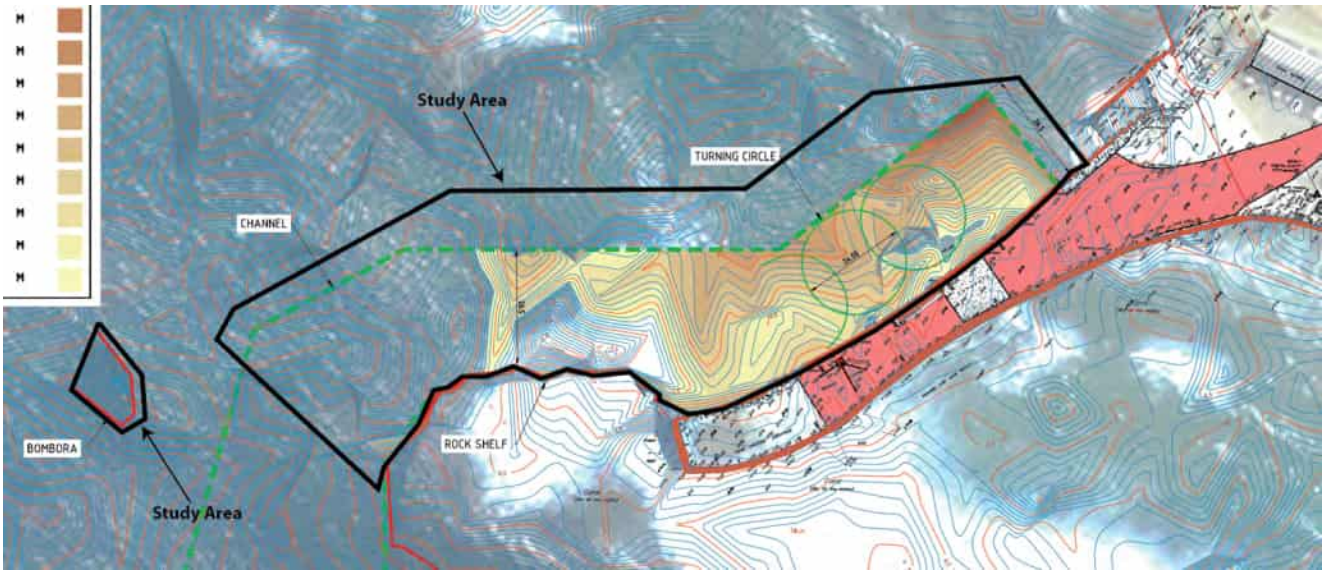

Figure 66 : Seabed removal Option 2 with study area overlaid

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 m^3 of seabed will be removed as the excavation will be deeper along the western edge of the envelope, up to 2.4 m.

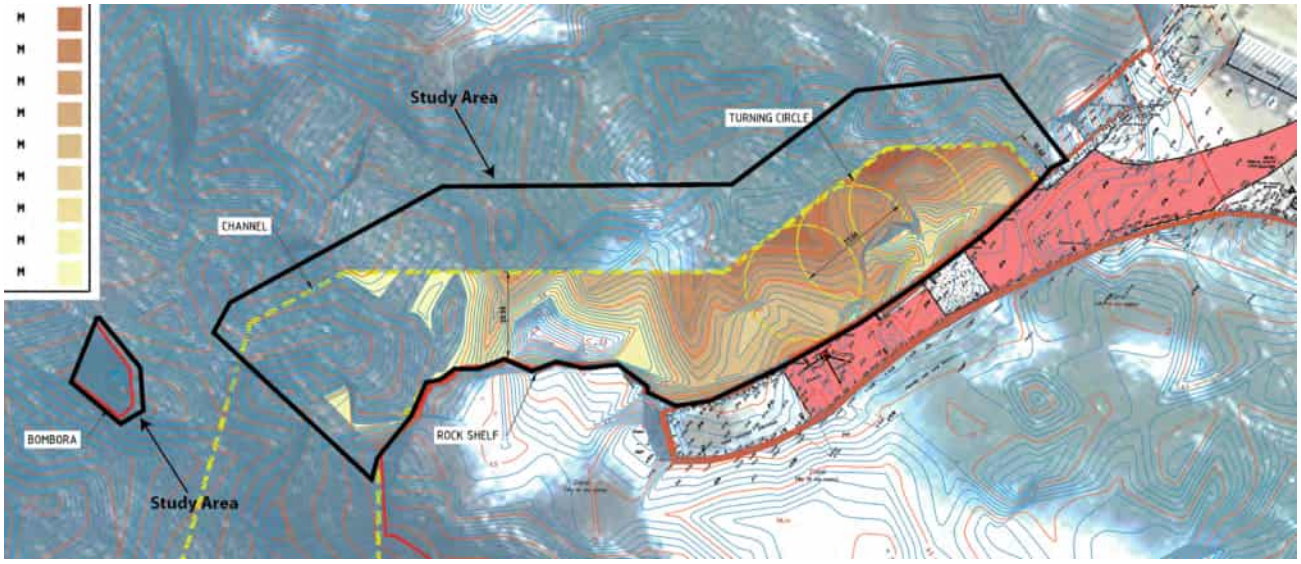

Figure 67 : Seabed removal Option 3 with study area overlaid

Option 4 would see the greatest amount of seabed removed; up to 8,200 m^3. 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.

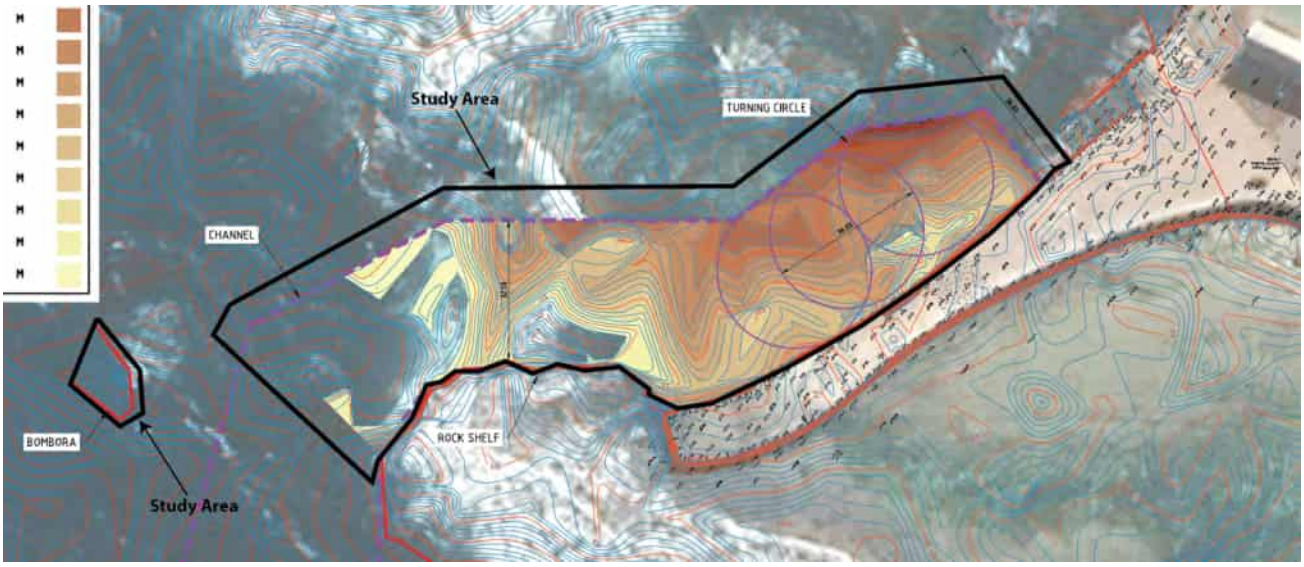

Figure 68 : Seabed removal Option 4 with study area overlaid

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 used 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				
Impact type	***Estimated level of impact***	***Critical value (including Sirius)***	***Secondary value***	***Probability of impact***
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

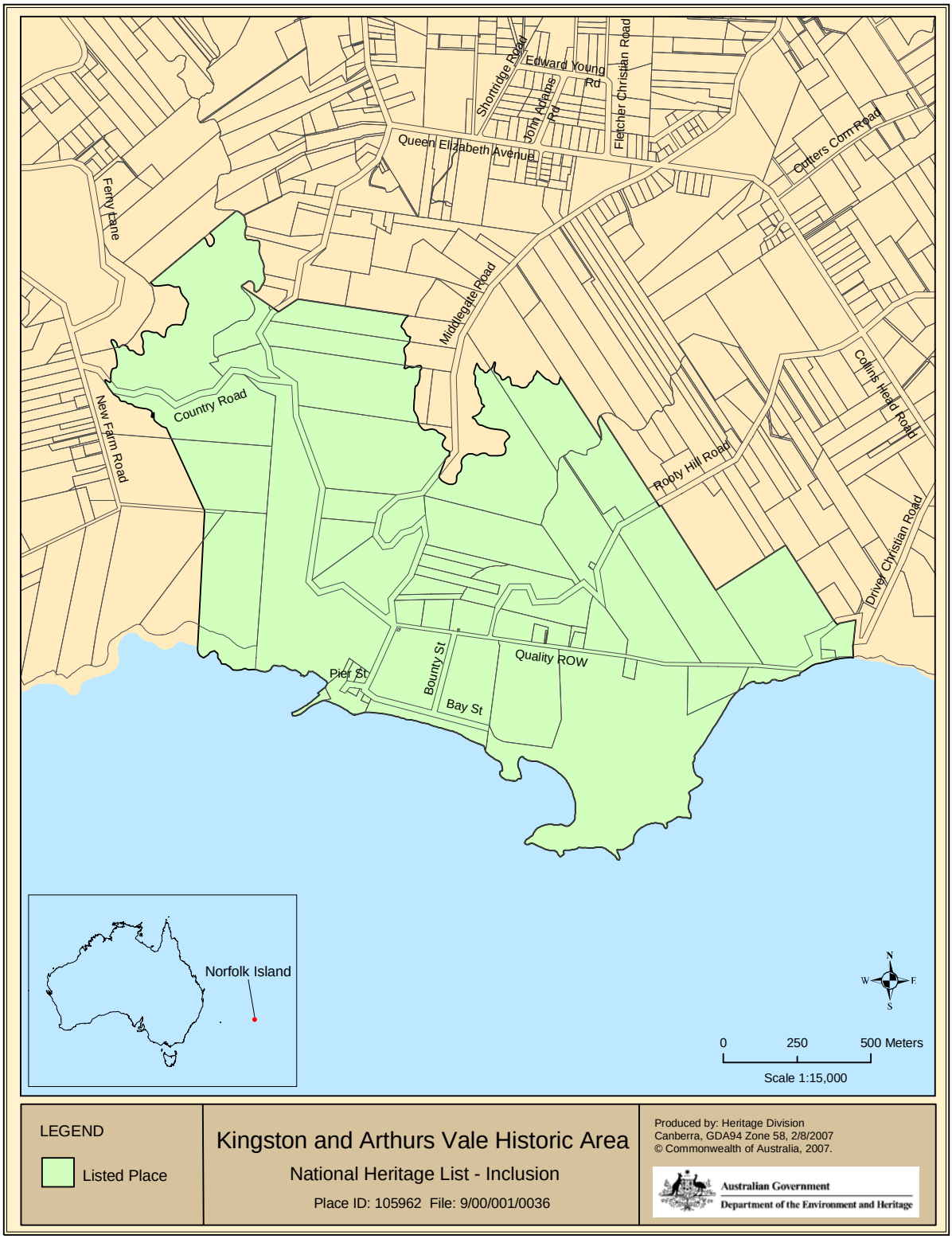

Figure 69: Listed boundary of KAVHA on the National Heritage List. The KAVHA boundary stops at the High Water Mark.[97]

[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]

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[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

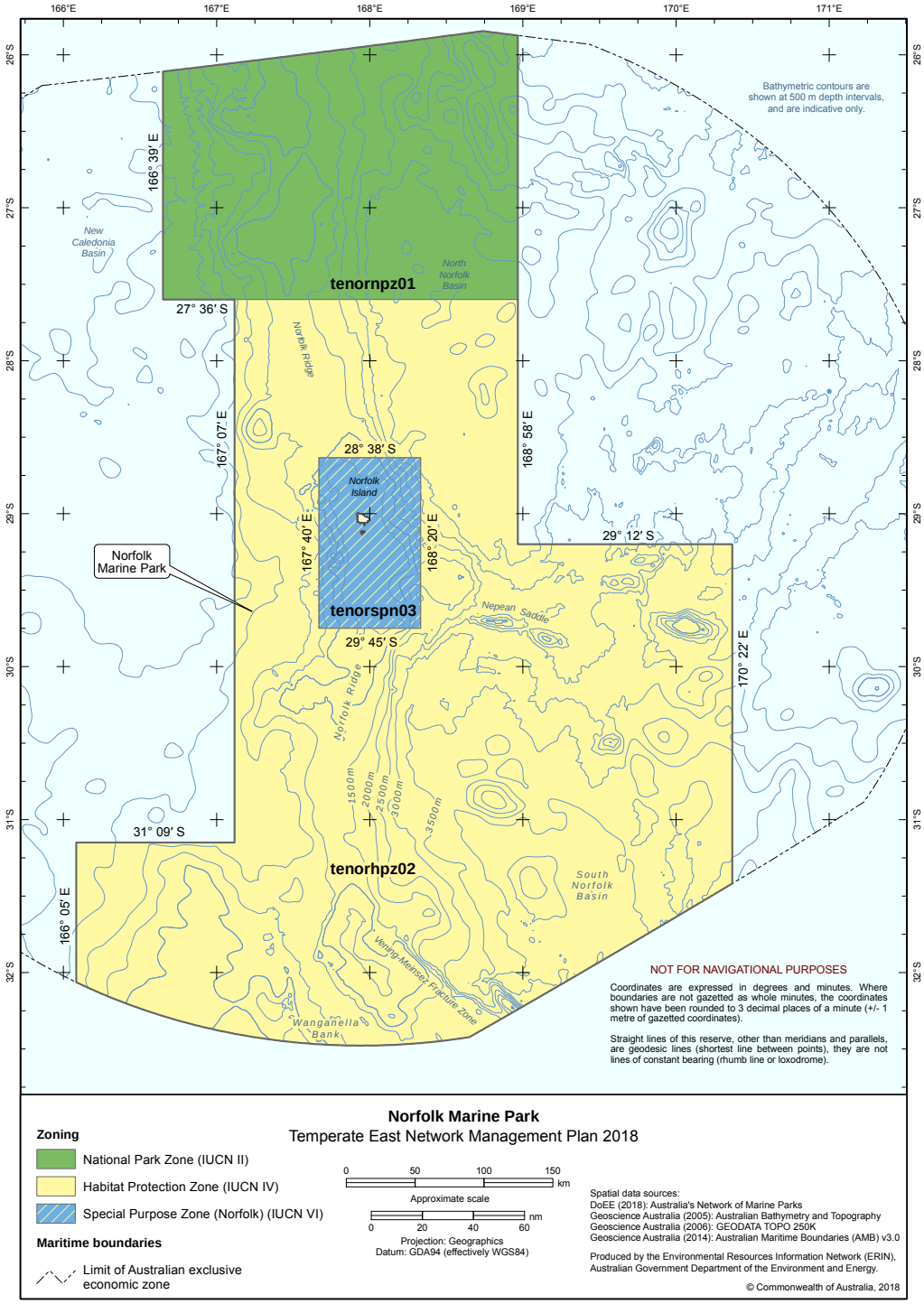

Figure 71: Norfolk Marine Park boundaries. Note blue striped area is classed as special zone.

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.

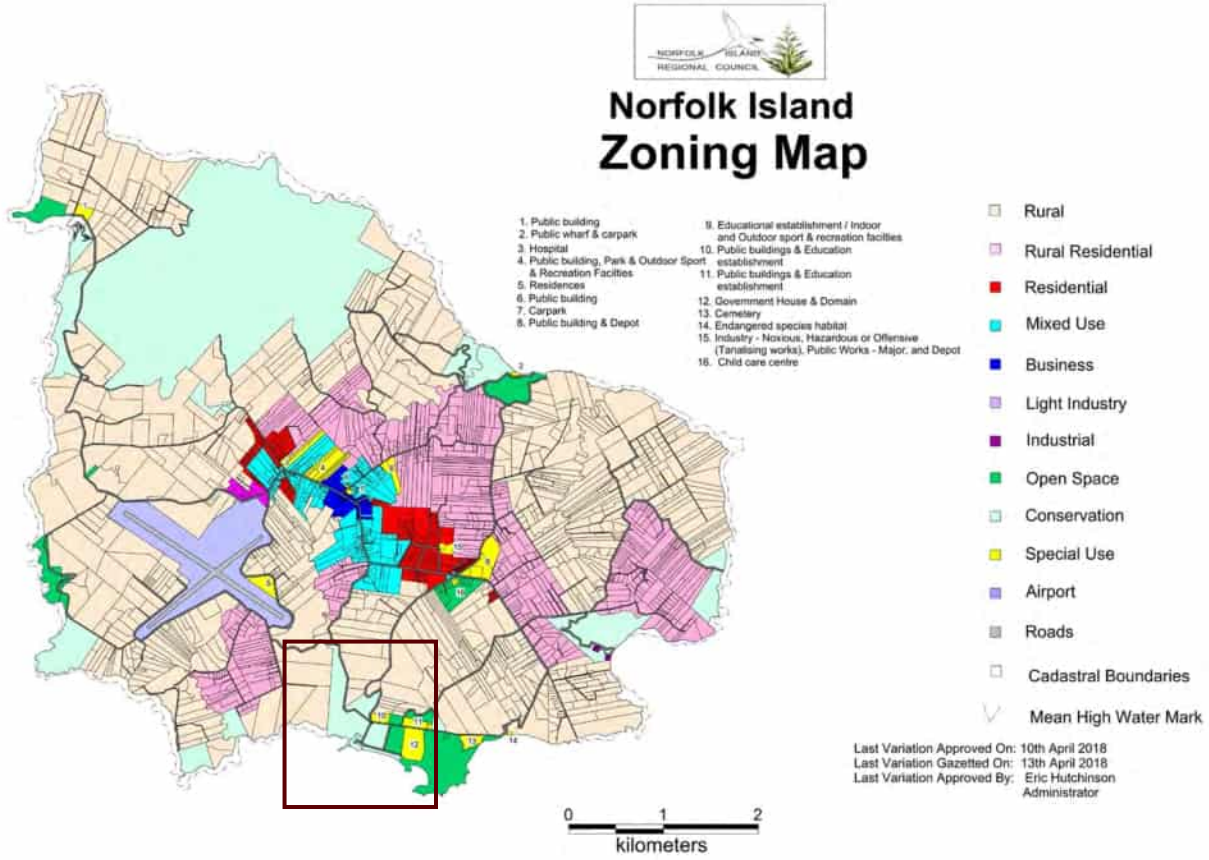

Figure 72: Norfolk Island Zoning Map. Red box indicates Kingston Pier lies within a conservation zone while the study area is outside.

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.

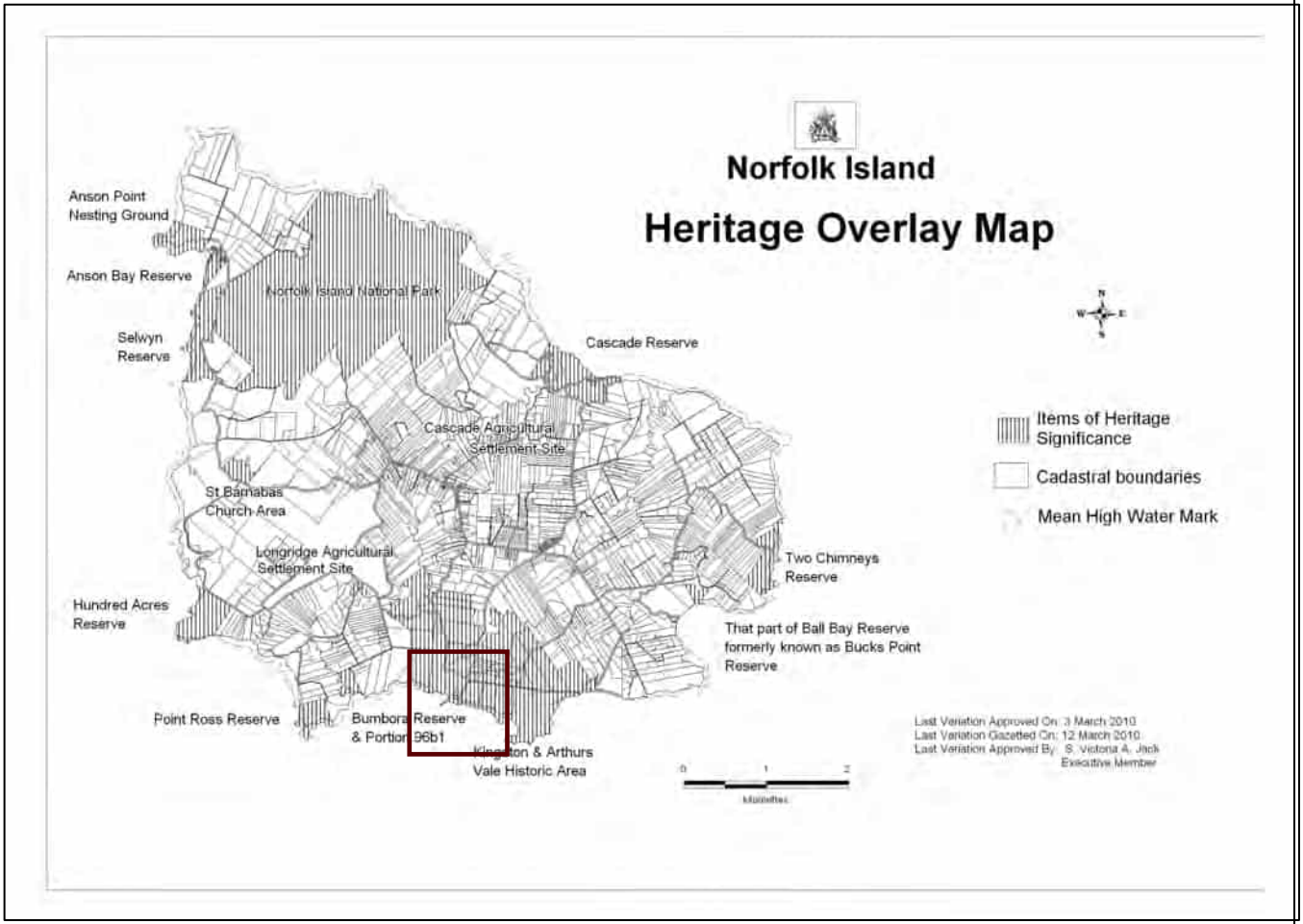

Figure 73: Heritage Overlay for Norfolk Island. Note red square indicates Kingston Pier falls within this overlay but the study area falls outside.

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 *Bounty*	A
2	Objects landed in Norfolk Island on 8th June 1856 and brought from Pitcairn Island on the vessel Morayshire	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 8th June 1856	B
4	Objects recovered from ships wrecked before 1 January 1938 in territorial waters within the meaning of the *Territorial Waters Act 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

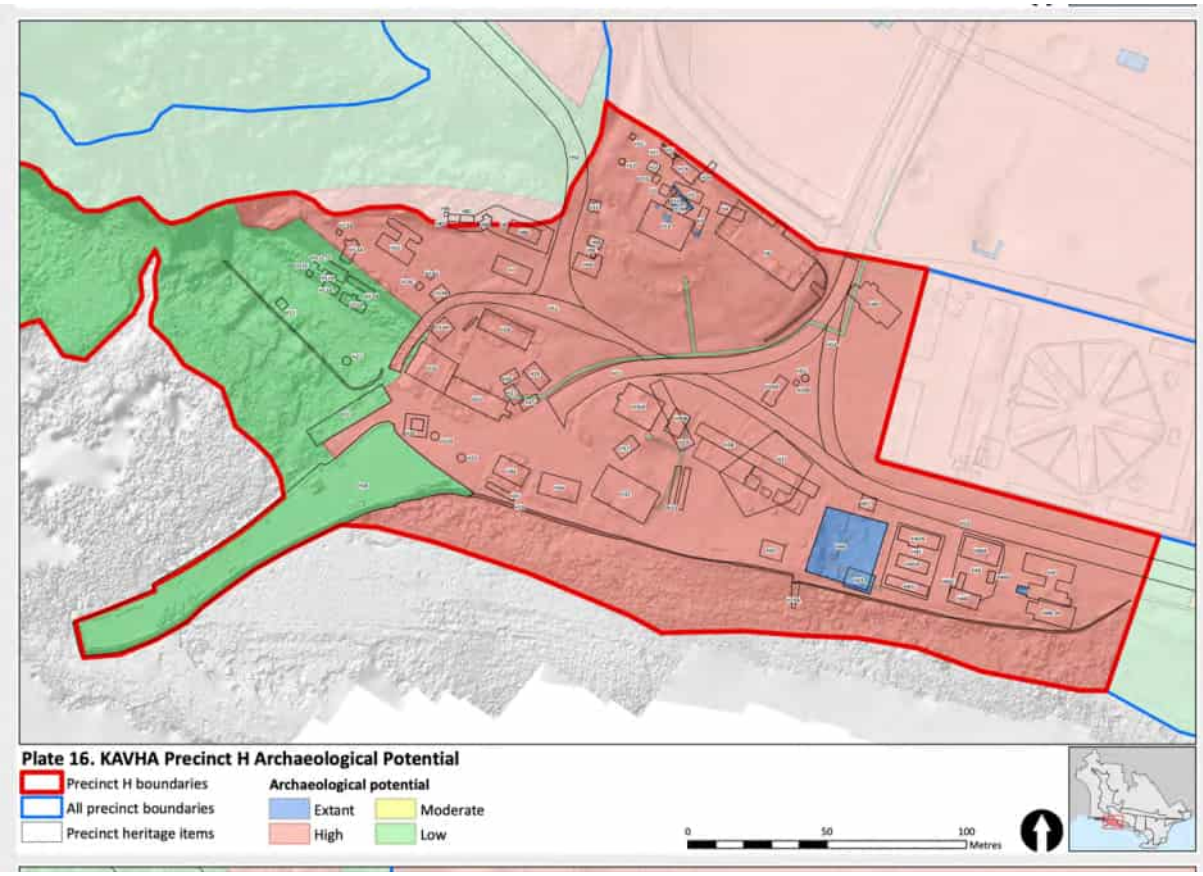

Figure 74: Archaeological potential around Kingston Pier.

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 positing 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 girds, 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 aa construction environmental sub-plan documenting procedures to negate impacts on the environment such as the controls placed on reducing turbidity or fuel spills.

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[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 accidently 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
NI_T4_0 to 30 m_200226	200226_15:58	01:39	374	.mp4
NI_T4_30 to 0 m_200226	200226_15:56	02:01	459	.mp4

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

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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	*Environmental Protection and Biodiversity Conservation Act 1999*
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 (MHWM)) 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
- receival 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.

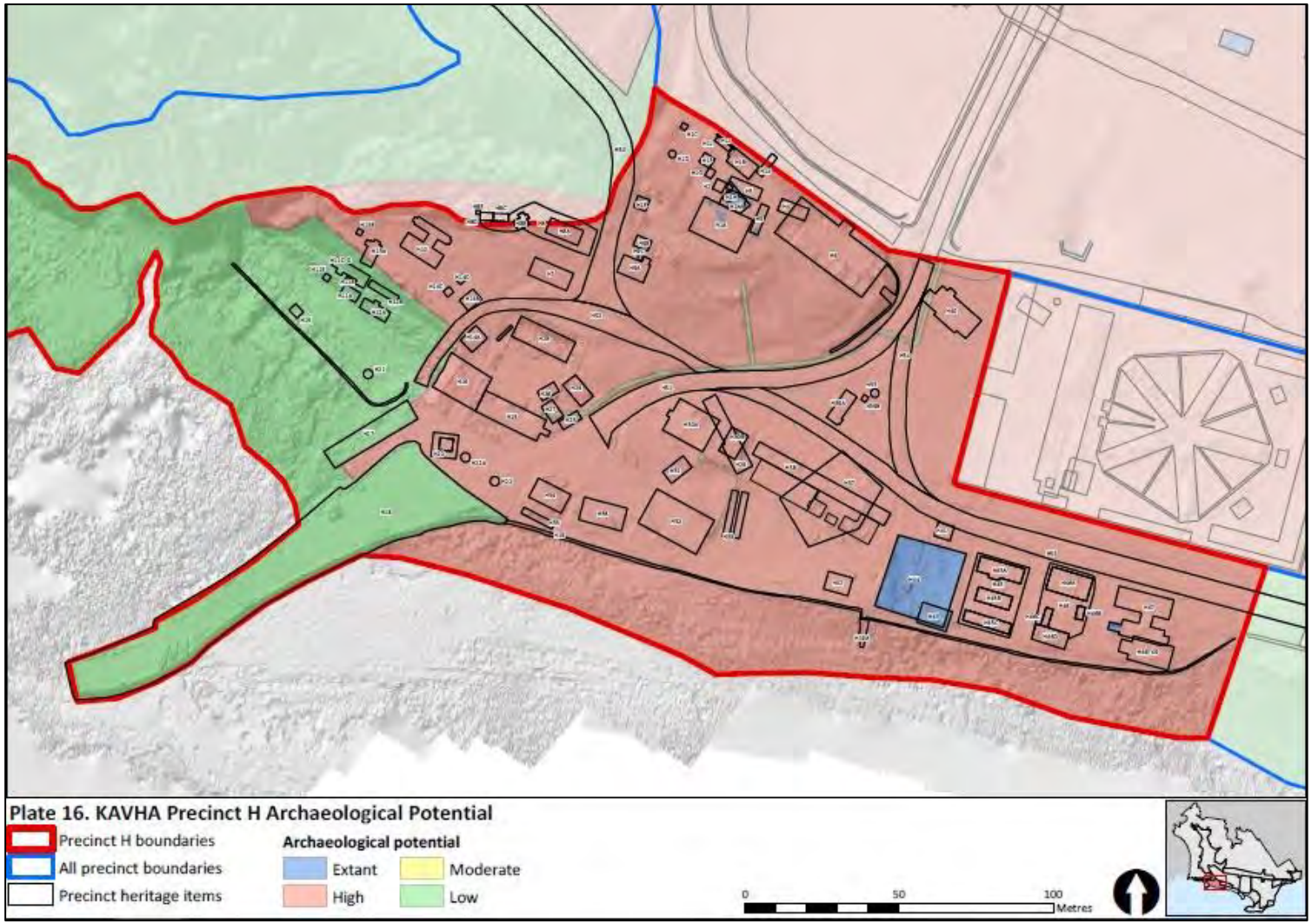

Figure 3-1 Precinct H archaeological potential (Source: Extent Heritage, 2019).

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).

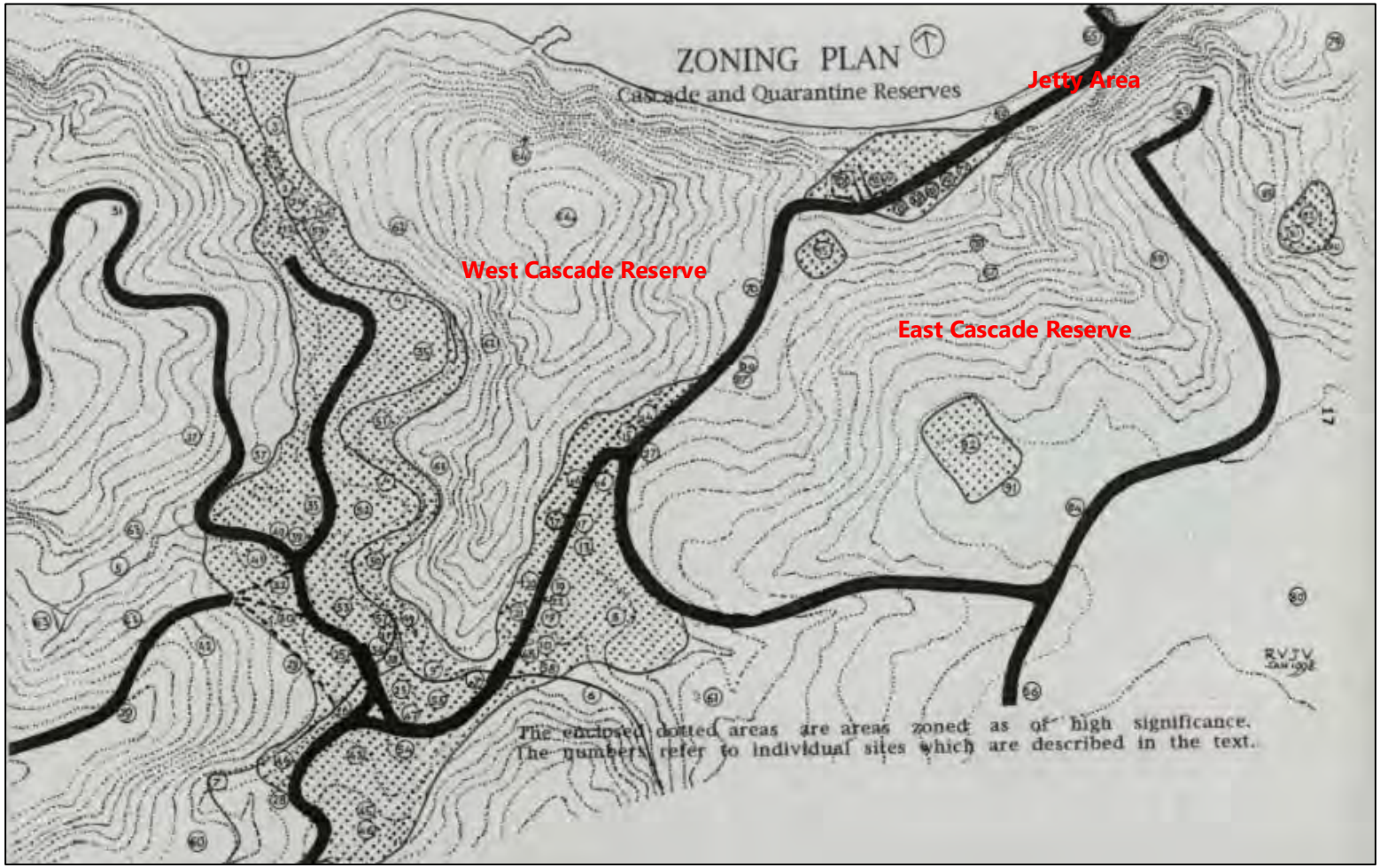

Figure 3-2 Archaeological zoning plan showing significant sites at Cascade Reserve (Source: Varman, 1998).

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.

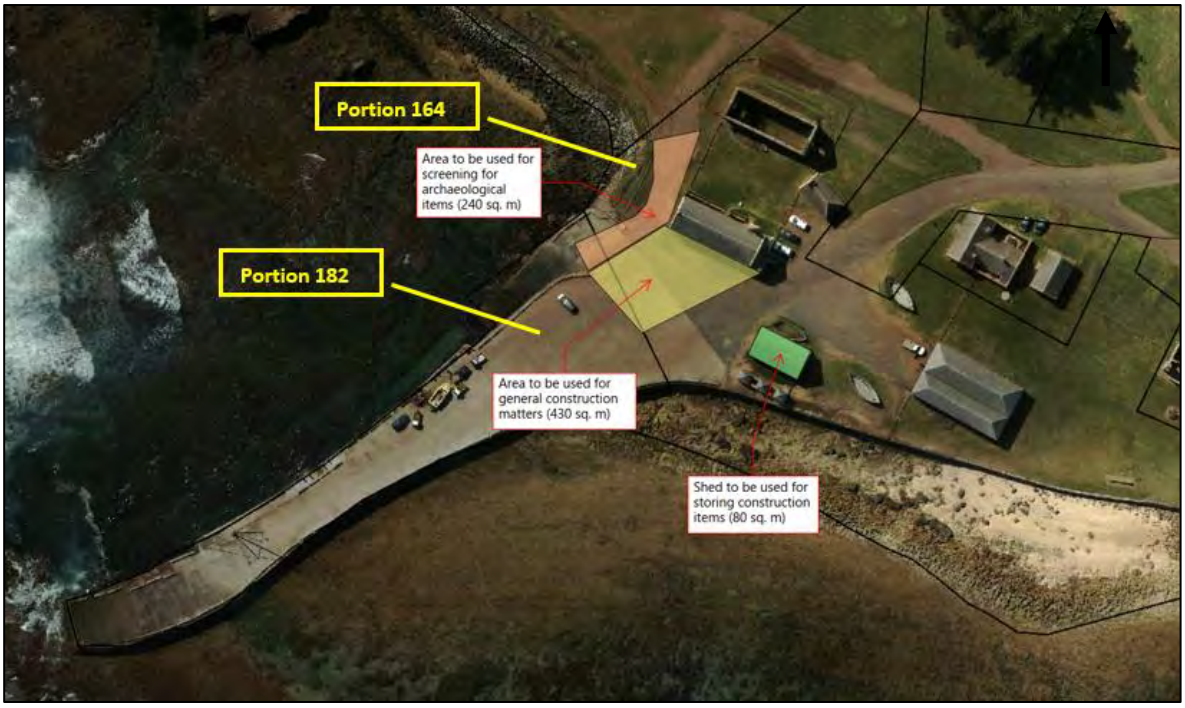

Figure 4-2 Temporary site compound at Kingston Pier.

3. A pre-construction hydrography survey would be undertaken by the Contractor.

4. The augmentation of approximately 5,000 cubic metres (m^3) 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 m^3.

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 that 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 m^3 and 6,160 m^3. 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 m^2 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 m^3 of topsoil to the north-east corner of the site
- relocate the 350 m^3 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.

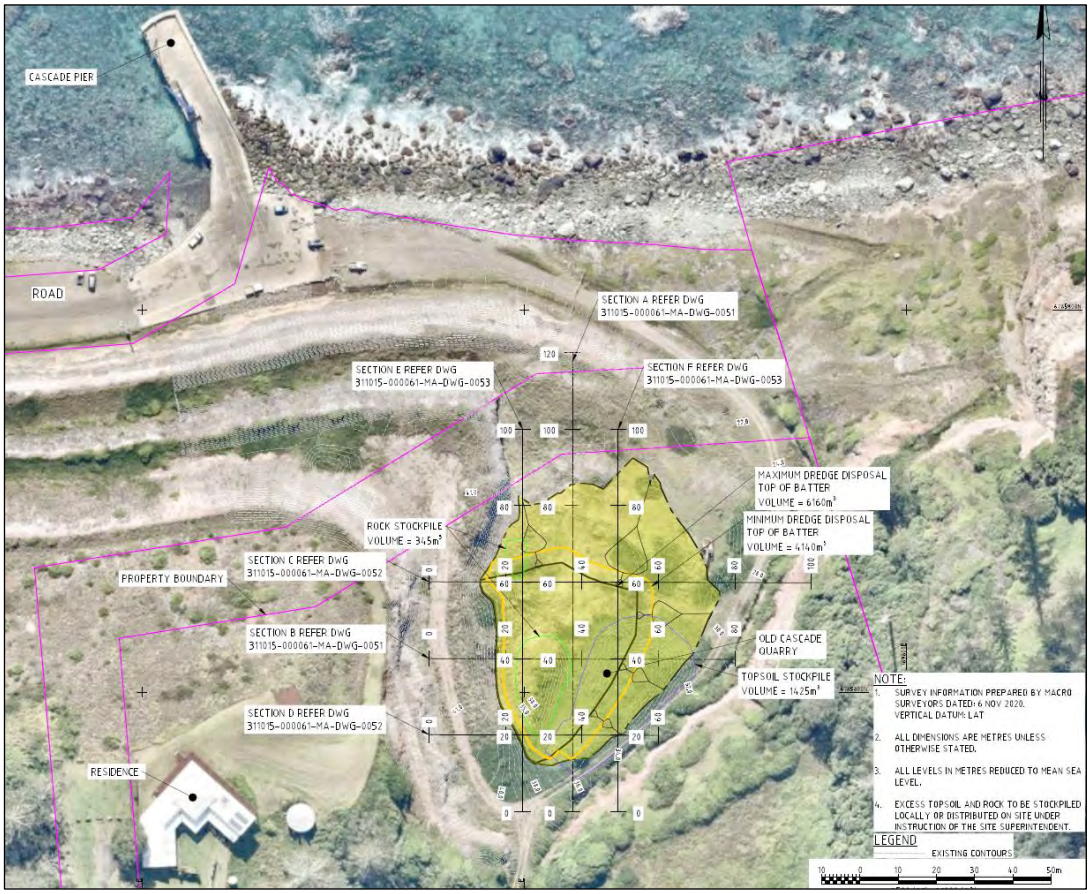

Figure 4-4 Proposed earthworks at Old Cascade Quarry.

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 MHWM. 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.

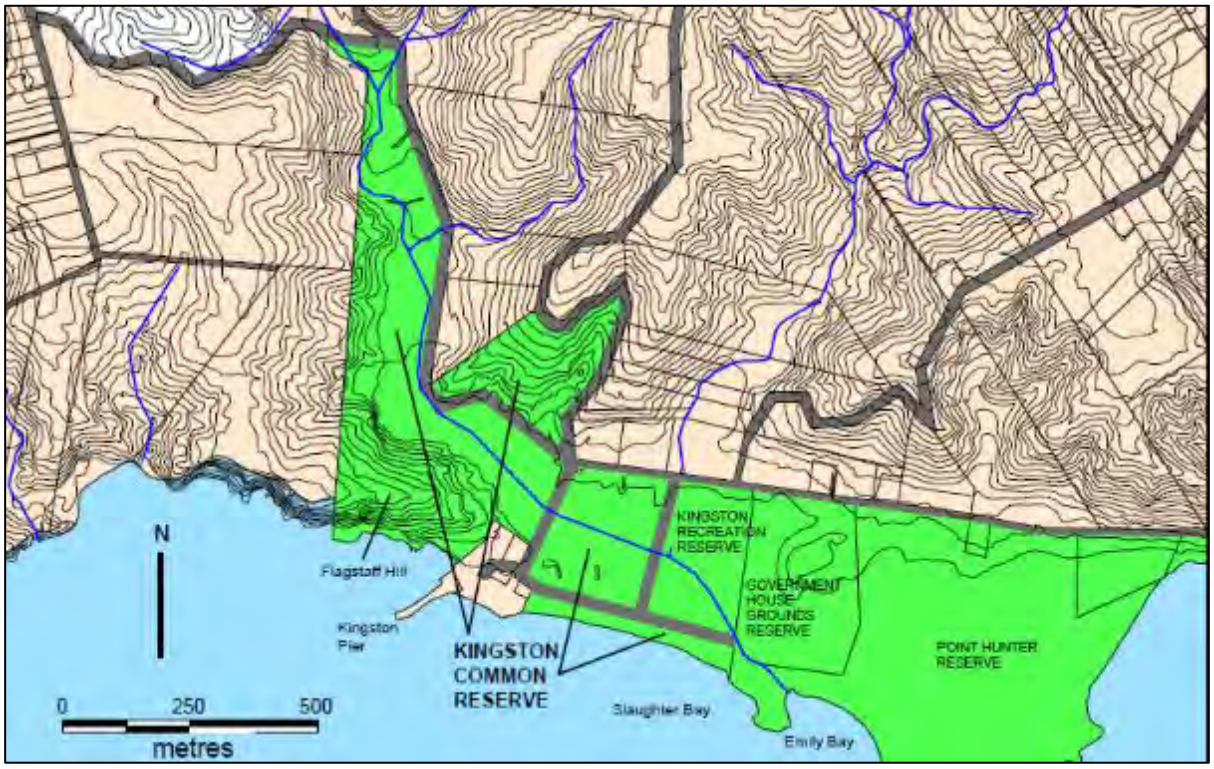

Figure 5-1 Kingston Common Reserve (Source: Norfolk Island Parks and Forestry Service, 2003a).

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 *Planning Act 2002* 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 *use* of a *place* is of *cultural significance* 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 *place* should have a *compatible use*.	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	
Conservation requires the retention of an appropriate *setting*. This includes retention of the visual and sensory setting, as well as the retention of spiritual and other cultural relationships that contribute to the *cultural significance* of the *place*. 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 *cultural significance*, but is undesirable where it reduces cultural significance. The amount of change to a *place* and its *use* should be guided by the *cultural significance* of the place and its appropriate *interpretation*.	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 *cultural significance* 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 *fabric* of a place is generally not acceptable. However, in some cases minor demolition may be appropriate as part of *conservation*. 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 *place* may be acceptable where it respects and does not distort or obscure the *cultural significance* of the place, or detract from its *interpretation* 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 *cultural significance* of the *place*.	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 *fabric* which has been removed from a *place* including contents, fixtures and objects, should be catalogued, and protected in accordance with its *cultural significance*. 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 List[1].

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) *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*	**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) *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*	**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 *HMS Sirius*. 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 *HMS Sirius*.	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

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