

# Kingston and Arthur's Vale Historic Area (KAVHA) Sewerage Scheme (Stage 1)

Application Number: **01405**Commencement Date: **06/09/2022**Status: **Locked**

## 1. About the project

### 1.1 Project details

#### 1.1.1 Project title \*

Kingston and Arthur's Vale Historic Area (KAVHA) Sewerage Scheme (Stage 1)

#### 1.1.2 Project industry type \*

Waste Management (sewerage)

#### 1.1.3 Project industry sub-type

—

#### 1.1.4 Estimated start date \*

16/01/2023

#### 1.1.4 Estimated end date \*

30/06/2023

## 1.2 Proposed Action details

### 1.2.1 Provide an overview of the proposed action, including all proposed activities. \*

#### The Proposed Action

The Commonwealth, represented by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA), is proposing to install a sewerage scheme in the Kingston and Arthur's Vale Heritage Area (KAVHA), Norfolk Island (the Proposed Action).

#### Objectives

The primary objective of the Proposed Action is to reduce human waste (sewage) contamination of KAVHA and of Emily Bay and Slaughter Bay, which are located in the shallow waters of the Commonwealth Norfolk Marine Park (part of the Temperate East Marine Parks Network).

Human waste contamination in KAVHA, Emily Bay and Slaughter Bay has increased over recent years due to deterioration of existing septic treatment systems and sewage holding tanks. This poses an increasing risk to the health of the marine environment. The degradation of marine environment health as a direct result of human waste contamination has been confirmed by a number of recent investigations into water quality on Norfolk Island, including specific investigations into water quality in Emily Bay and Slaughter Bay. Impacts on the marine environment, including damage to sensitive coral reefs, are potentially irreversible (refer to **Attachment A: KAVHA SS EIS Vol. 1, Section 3.4 (subsections 3.4.1 – 3.4.3), pp 11-12**).

The full list of objectives for the Proposed Action is provided at **Attachment A: KAVHA SS EIS Vol. 1, Section 3.3, pp 10**.

## Description

The sewerage scheme would be an enclosed reticulated pressure sewerage system that would collect, transfer and store sewage from occupied buildings on Crown land within the Proposal area.

The Proposal area is the area within which the Proposed Action would be undertaken. It is defined as the area that would be excavated during construction of the Proposed Action (the construction footprint) plus a 25 metre buffer area.

The Proposal area is equivalent to the 'Project Area' and the 'Disturbance Area' mapped at Section 2.1 of this Referral. It has an area of 95,420 square metres (9.54 hectares).

Impacts within the Proposal area would vary in type and degree. For example:

- About 2,150 square metres (0.215 hectares) would be excavated during construction (construction footprint). This area follows the route of the sewerage infrastructure and is located centrally within the Proposal area. This is the area that would be subject to the greatest disturbance.
- The immediate area around the construction footprint would be used for purposes such as short term stockpiling of excavated material and installation of erosion and sedimentation controls.
- Other parts of the Proposal area would be subject to lesser impacts such as:
  - Use of a 400 square metre area in a grassy paddock for a temporary construction compound.
  - Traffic and access impacts on roadways.
  - Noise impacts.
  - Visual impacts.

The concept design for the Proposed Action is shown in **Attachment A: KAVHA SS EIS Vol. 1, Section 3.1, Figure 3-1, p 6**. (Please note that the Construction Compound shown in this Figure 3-1 is about 1,200 square metres in area. This size is incorrect. The Construction Compound would be a maximum of 400 square metres in area and would be located wholly within the Proposal area.

Buildings that would be connected to the sewerage scheme are the: Golf Club, Quality Row houses (No 5 – No 11 inclusive), Government House, Emily Bay Bathing Shed, Old Military Barracks and New Military Barracks. Provision would be made for the eventual connection of the nearby Kingston Cottages (Tourist Accommodation) and the All Saints Church.

Sewage from these buildings would be collected and pumped to two 8,900 litre 'end of line' above ground holding tanks. Sewage would be stored in the 'end of line' holding tanks for collection by effluent tanker and disposal to the sewage treatment plant located at the Norfolk Island Airport.

The Proposed Action would replace 16 of the 23 existing septic treatment systems / sewage holding tanks (pump out) and collect about 75 percent of sewage generated on Crown land in KAVHA.

Construction of the Proposed Action would require:

- Installation of eleven 950 litre sewage pumping stations.
- Installation of two 1,500 litre sewage pumping stations each with an associated 1,100 litre external underground sewage holding tank.
- Installation of about 2,040 metres of rising pressure mains.
- Installation of about 40 metres of gravity mains.
- Installation of two 8,900 litre 'end of line' sewage holding tanks.
- Minor plumbing and electrical installations to connect sewage pumping stations to associated buildings.
- Installation of about 460 metres of underground high voltage electricity infrastructure.
- Decommissioning of 16 existing septic treatment systems / sewage holding tanks and associated pipework.

A detailed construction methodology, including details of excavation and decommissioning of redundant infrastructure, is provided at **Attachment A: KAVHA SS EIS Vol. 1, Section 3.11 (subsections 3.11.1 – 3.11.8), pp 24-32**.

Operation of the sewerage scheme would be automated with the exception of pump out of the 'end of line' holding tanks, repairs and maintenance. A detailed description of the operation of the sewerage scheme is provided at **Attachment A: KAVHA SS EIS Vol. 1, Section 3.10 (subsections 3.10.1 – 3.10.5), pp 21-24**.

## Environmental impacts

An environmental impact assessment was undertaken to support a local development application for the Proposed Action. This assessment was documented in an Environmental Impact Statement (EIS) which is provided at **Attachment A: KAVHA SS EIS Vol. 1** and **Attachment B: KAVHA SS EIS Vol. 2 (Part 1 - Part 5)**.

Beneficial outcomes resulting from the Proposed Action would include a reduction in human waste pollution of the waters of Emily Bay and Slaughter Bay in the Norfolk Marine Park contributing to:

- Reduced risk to marine biodiversity including the coral reefs.
- Reduced risk to public health.

A number of potential adverse environmental impacts of the Proposed Action have been avoided or reduced during the assessment of options and alternatives and the development of the concept design (refer to **Attachment A: KAVHA SS EIS Vol. 1, Section 3.8 (subsections 3.8.1 and 3.8.3 – 6.13), pp 17-19**). The environmental impact assessment concluded that, with measures undertaken to firstly avoid and then mitigate impacts, some residual impacts would be unavoidable. These include:

- Construction:
  - Temporary, short-term impacts: noise; traffic and access; visual amenity; and socio-economic (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6, pp 61-151**).
    - These impacts are considered to be short term and temporary and would be managed using safeguards and management measures identified in the EIS, many of which are standard practice in the construction industry, supplemented by project specific measures where required.
  - Potential permanent impact to built heritage due to a possible requirement for underground installation of rising pressure mains through stone walls with heritage value in a maximum of three locations. Further information about this impact is provided at **Section 4.1.1 and Section 4.1.2 of this Referral**; and
  - Potential permanent impact to archaeology within the construction footprint. Further information about this impact is provided at **Section 4.1.1 and Section 4.1.2 of this Referral**.
    - All work that has the potential to impact archaeology or the fabric of heritage walls would be supervised by the KAVHA Archaeologist who is located on the island and has been assigned to the Proposed Action. Any required modifications to building fabric or disturbance of archaeology would be managed in accordance with safeguards and management measures that would be implemented to avoid, minimise, mitigate and manage impacts on heritage values (refer to **Attachment A: KAVHA SS EIS Vol. 1, Section 6.4.7.1, pp 122-124**).
- Operation:
  - Visual impact of the above ground 'end of line' holding tanks whilst in situ. These tanks would be temporary (short-term) and would eventually be replaced with an underground sewage pumping station (refer to **Section 1.2.5 of this Referral**).

#### **Referral background**

During Pre-referral discussions with the then Department of Agriculture, Water and the Environment (now the Department of Climate Change, Energy, the Environment and Water), referral of the Proposed Action was requested particularly in relation to potential impact on the following Matters of National Environmental Significance (MNES):

- World Heritage (Australian Convict Sites - KAVHA).
- National Heritage (KAVHA and HMAS Sirius Shipwreck).
- Commonwealth Marine Area (Norfolk Marine Park).
- Action by a Commonwealth Agency on Commonwealth land (whole of environment).

An EPBC Act Protected Matters Report generated on 6 September 2022 for the approximate Proposal area (plus a two kilometre buffer area) indicates that the following MNES occur in, or may relate to, the Proposal area:

- World Heritage Properties: Australian Convict Sites (KAVHA).
- National Heritage Places: KAVHA and HMS Sirius Shipwreck.
- Commonwealth Marine Area: Norfolk Marine Park (Part of the Temperate East Marine Parks Network).
- Listed Threatened Species: Various.
- Listed Migratory Species: Various.

Commonwealth actions and actions taken on Commonwealth land are also relevant to the Proposed Action (refer **Attachment C: Protected Matters Report, p 2**).

DITRDCA does not consider that, with appropriate mitigation and management, the Proposed Action would have a significant adverse impact on any MNES, or on Commonwealth land. Rather the outcome of the Proposed Action would be a positive (pollution reduction) impact on the World and National Heritage Areas of KAVHA and the Commonwealth Marine Area (Norfolk Marine Park).

#### **1.2.2 Is the project action part of a staged development or related to other actions or proposals in the region?**

Yes

#### **1.2.3 Is the proposed action the first stage of a staged development (or a larger project)?**

Yes

#### **1.2.5 Provide information about the staged development (or relevant larger project).**

DITRDCA proposes to install a reticulated sewerage scheme to service all sewage producing buildings on Crown land in KAVHA. The sewerage scheme is intended to be delivered in three stages.

The Proposed Action is for Stage 1 only. Stages 2 and 3 are in the planning phase and should they proceed, would be the subject of separate Development Application / EPBC referral processes if required. The design, methodologies and environmental assessment for Stage 2 and Stage 3 would take residual impacts (if any) of Stage 1 into consideration.

Stages 1-3 of the proposed sewerage scheme are:

- **Stage 1 (the Proposed Action)** – Sewerage infrastructure to collect, transfer and store (in holding tanks) sewage from buildings on the KAVHA valley floor including the Golf Club, Emily Bay Bathing Shed, Quality Row houses No 5 - 11, Government House, Old Military Barracks and New Military Barracks. Provision would be made for the eventual connection of Stage 2 infrastructure, Stage 3 infrastructure and, subject to landowner approval, Kingston Cottages (tourist accommodation) and All Saints Church.
- **Stage 2** – Sewerage infrastructure along Country Road and Taylors Road to connect Stage 1 infrastructure to the existing Norfolk Island Regional Council (NIRC) Water Assurance Scheme on Taylors Road. This would enable sewage to be pumped from KAVHA to the sewage treatment plant at the Norfolk Island Airport. Provision would be made for the eventual connection of the residential properties along this route to the sewer. Stage 2 infrastructure would connect to Stage 1 infrastructure at the location of the Stage 1 'end of line' sewage holding tanks. The sewage holding tanks would be removed and replaced with an underground sewage pumping station.
- **Stage 3** – Sewerage infrastructure to collect and transfer sewage from various buildings in the KAVHA pier area, as well as the Lone Pine and Cemetery toilet blocks. Stage 3 infrastructure would connect to the existing NIRC Water Assurance Scheme via Stage 1 and Stage 2 infrastructure.

The three stages of the proposed sewerage scheme are shown at **Attachment A: KAVHA SS EIS Vol. 1, Section 2.1, Figure 2-1, p 2.**

The Proposed Action (Stage 1) is not co-dependent on Stage 2 and / or Stage 3 and is able to operate effectively in the absence of Stage 2 and / or Stage 3.

Completion of Stage 1 as a stand-alone Action would expedite the reduction of adverse environmental impacts from human waste contamination on: World Heritage and National Heritage Areas (KAVHA); Commonwealth land (KAVHA generally); and the Commonwealth Marine Area (Norfolk Marine Park) whilst Stages 2 and 3 are undergoing planning, design and approval phases. It would also enable construction methods and operation of the proposed infrastructure to be tried and tested, and any lessons learned applied to subsequent stages.

#### **Expected timeframes**

**Stage 1:** Construction is proposed to commence in January 2023 or as soon as approvals are in place. It is expected that the construction phase would be completed by June 2023.

**Stage 2:** Currently there is no agreed timeline for Stage 2. Funding has been secured, however construction for this stage of the project is subject to planning, design, approvals and freight logistics. The intention is for construction of this stage to coincide with the completion of Stage 1, pending approval processes.

**Stage 3:** Currently there is no agreed timeline for Stage 3. Funding has been secured, however construction for this stage of the project is subject to planning, design, approvals and freight logistics. It is estimated that construction would commence in the third quarter of FY2023 for completion by March 2024.

#### **Proposed Action background**

At the Pre-referral meeting held for the Proposal on 10 March 2021, the lodgment of a split referral for Stage 1 of the Proposed Action was supported based on:

- Uncertainty that Stages 2 and 3 will proceed – funding and timing. Funding has since been secured but timing is still uncertain.
- Stage 1 needs to proceed quickly to rectify increasing damage to the marine environment as a direct result of human waste contamination.

#### **1.2.6 What Commonwealth or state legislation, planning frameworks or policy documents are relevant to the proposed action, and how are they relevant? \***

##### **Commonwealth legislation**

###### ***Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).***

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects Matters of National Environmental Significance (MNES), such as threatened species and ecological communities, migratory species (protected under international agreements), World Heritage Properties and National Heritage Places (among others). It also applies to actions taken on Commonwealth land and actions taken by Commonwealth agencies.

The Proposed Action is being referred under the EPBC Act to determine whether the Proposed Action is likely to have a significant impact on the following MNES identified as being in, or possibly relating to, the Proposal area:

- World Heritage Properties: Australian Convict Sites (KAVHA).
- National Heritage Places: KAVHA and HMS Sirius Shipwreck.
- Commonwealth Marine Area: Norfolk Marine Park – Part of the Temperate East Marine Parks Network.
- Listed Threatened Species: Various.
- Listed Migratory Species: Various.

Commonwealth actions and actions taken on Commonwealth land are also relevant to the Proposal.

This EPBC Referral has been prepared in accordance with the following EPBC Act related policies / guidelines:

- *Significant Impact Guidelines 1.1: Matters of National Environmental Significance* (Commonwealth of Australia, 2013).
- *Significant Impact Guidelines 1.2: Actions on, or impacting upon, Commonwealth Land and Actions by Commonwealth Agencies* (Commonwealth of Australia, 2013).
- EPBC Act Policy Statement 3.21: Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (Commonwealth of Australia, 2015).
  - *Note: The Draft Referral Guideline for 14 Birds Listed as Migratory Species under the EPBC Act (DEECW, 2015) is not relevant to the Proposed Action as none of the 14 species are included in the EPBC Protected Matters Report to the Proposed Action (refer Attachment C: Protected Matters Report).*

#### **State legislation**

There is no State legislation relevant to the Proposed Action.

#### **Norfolk Island legislation**

##### **Planning Act 2002 (NI)**

The *Planning Act 2002 (NI)* (the Planning Act) and the *Planning Regulations 2004 (NI)* (the Planning Regulations) promote the conservation of Norfolk Island's natural, cultural and built heritage, and provide the overarching regulatory structure for the use, development and management of land on Norfolk Island.

The Planning Act defines development to establish or upgrade infrastructure to support economic growth or community welfare, or both, in Norfolk Island as 'Significant Development'. The Proposed Action was declared as 'Significant Development' by the Commonwealth Minister under Section 28C(5)(a) of the Planning Act on 8 March 2022 (refer to **Attachment B: KAVHA SS EIS Vol. 2, Part 3, Appendix E, pp 21-24**).

Development Approval is required for Significant Development. A Development Application (DA), for Significant Development must be accompanied by a supporting Environmental Impact Statement (EIS).

The Planning Act sets out the planning framework for Norfolk Island. The following Environmental Planning Instruments are applicable to the proposed Action.

The Norfolk Island Planning framework includes the following environmental planning instruments that are relevant to the Proposed Action:

- *Norfolk Island Plan 2002* (refer **Attachment D: Norfolk Island Plan 2002**).
- *Development Control Plan No. 7 – KAVHA* (refer **Attachment E: DCP No. 7 - KAVHA 2020**).

A DA and accompanying EIS was prepared in accordance with the requirements of the Planning Act, the *Norfolk Island Plan 2002* and *Development Control Plan No. 7 – KAVHA*. The DA was lodged with the Norfolk Island Regional Council, accepted for assessment and placed on public display between 16 September 2022 and 13 October 2022 (refer to **Attachment F: Government Gazette No.34, pp. 50-51**). No public submissions were received. The DA has not yet been determined at the time of writing (19 October 2022).

##### **Heritage Act 2002 (NI)**

The Proposal is located within KAVHA. KAVHA is identified as a heritage item in the *Norfolk Island Heritage Register* (Administration of Norfolk Island, 2003) (Refer **Attachment G: NI Heritage Register, pp13-16**). Section 28 of the *Heritage Act 2002 (NI)* (the Heritage Act) requires that a Heritage Impact Statement (HIS) accompany a DA that is in relation to, or likely to affect a heritage item.

The DA for the Proposal was accompanied by a HIS (refer to **Attachment B: KAVHA SS EIS Vol. 2, Part 4, Appendix G**) prepared in accordance with the requirements of the Heritage Act.

##### **Public Reserves Act 2002 (NI)**

Several areas within KAVHA are designated as public reserves and are managed and protected under the *Public Reserves Act 1997 (NI)* (Public Reserves Act).

The Public Reserves Act provides that certain activities prescribed as 'controlled activities' must not be carried out without a permit issued by the Conservator of Public Reserves.

The Norfolk Island Plan 2002 classifies the Proposed Action as 'Public Works – Major'. 'Public Works – Major' are not prescribed as a 'controlled activity' in the Public Reserves Act, and consequently no controlled activity permit is required.

A full description of the statutory and planning context for the Proposed Action is provided at **Attachment A: KAVHA SS EIS Vol. 1, Section 4, pp 32-51**.

#### **1.2.7 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including with Indigenous stakeholders. Attach any completed consultation documentations, if relevant. \***

Consultation with various public and private stakeholders has been undertaken during the development of the Proposed Action to better identify needs, and understand issues, in relation to the Proposed Action. The development of the consultation strategy was guided by the relevant provisions of the *Norfolk Island Community Engagement Framework: A Guide for the Department Working in Partnership with the Community* (DITRDC, 2020).

The following is an overview of the consultation activities that have been, and will continue to be, carried out for the Proposal.

Further detail about consultation activities is provided in **Attachment A: KAVHA SS EIS Vol. 1, Section 5, pp 52-60**.

Consultation to date has been undertaken with the following stakeholders:

- Norfolk Island Regional Council.
- Office of the Administrator of Norfolk Island.
- Department of Agriculture, Water and the Environment (now Department of Climate Change, Energy, the Environment and Water).
- KAVHA Advisory Committee.
- KAVHA Community Advisory Group.
- Commonwealth Heritage Manager.
- KAVHA Archaeologist.
- Occupiers of buildings in the Proposal area including:
  - Norfolk Island Golf Club.
  - Private residences at Nos 5-7 Quality Row.
  - No. 9 Quality Row (Research Centre).
  - No. 10 Quality Row (House Museum).
  - All Saint's Church.
  - Private residence at Government House.
  - Private residence on Middlegate Road.
  - General public.

Details of consultation undertaken, issues raised and actions taken are provide in **Attachment A: KAVHA SS EIS Vol. 1, Section 5.1, Table 5-1, pp 53-59**.

A copy of the letter sent to occupiers of buildings in the Proposal area is provided at **Attachment H: Letter to Occupiers**. No response was received from any of the occupiers.

On 9 September 2022, the Development Application (including an accompanying Environmental Impact Statement) for the Proposal was lodged with the Norfolk Island Regional Council. It was placed on public display for 28 days. The public display period was published in the Norfolk Island Regional Council Government Gazette on 16 September 2022. To further notify the general public about the public display period, DITRDCA published details of the display in the Norfolk Island Administrator's Newsletter on 23 September 2022 and prepared a media release which was read on the local radio on 26 September 2022 and published on the DITRDCA website. The media releases are provided at **Attachment I: Media Release\_Public Display**. The public display period closed on 13 October 2022. No public submissions were received.

Should the Proposed Action proceed, consultation during the construction phase would include:

- Development and implementation of an Enquiries and Complaints Management Plan for the duration of the construction phase of the Proposal. The Enquiries and Complaints Management Plan would include, but would not be limited to, a process for communicating information to the community about how to make an enquiry or a complaint including: telephone number, email address, postal address, and hours within which enquiries or complaints can be made.
- Development and implementation a Community Consultation Plan to provide timely, regular and transparent information about the Proposal, details of future work programs, changes to access and traffic conditions, and general construction progress throughout the construction phase of the Proposal.

Further details about consultation during the construction phase is provided in **Attachment A: KAVHA SS EIS Vol. 1, Section 5.2.3, p 60**.

### 1.3.1 Identity: Referring party

#### Privacy Notice:

Personal information means information or an opinion about an identified individual, or an individual who is reasonably identifiable.

By completing and submitting this form, you consent to the collection of all personal information contained in this form. If you are providing the personal information of other individuals in this form, please ensure you have their consent before doing so.

The Department of Climate Change, Energy, the Environment and Water (the department) collects your personal information (as defined by the Privacy Act 1988) through this platform for the purposes of enabling the department to consider your submission and contact you in relation to your submission. If you fail to provide some or all of the personal information requested on this platform (name and email address), the department will be unable to contact you to seek further information (if required) and subsequently may impact the consideration given to your submission.

Personal information may be disclosed to other Australian government agencies, persons or organisations where necessary for the above purposes, provided the disclosure is consistent with relevant laws, in particular the Privacy Act 1988 (Privacy Act). Your personal information will be used and stored in accordance with the Australian Privacy Principles.

See our Privacy Policy to learn more about accessing or correcting personal information or making a complaint. Alternatively, email us at [privacy@awe.gov.au](mailto:privacy@awe.gov.au).

**Confirm that you have read and understand this Privacy Notice \***

**1.3.1.1 Is Referring party an organisation or business? \***

Yes

Referring party organisation details	
<b>ABN/ACN</b>	25481546476
<b>Organisation name</b>	Planning Assist
<b>Organisation address</b>	PO Box 795, Norfolk Island, 2899
Referring party details	
<b>Name</b>	Miriam Streulens
<b>Job title</b>	Director - Environment and Planning
<b>Phone</b>	02 8002 1352
<b>Email</b>	<a href="mailto:miriam.streulens@planningassist.com.au">miriam.streulens@planningassist.com.au</a>
<b>Address</b>	PO Box 795, Norfolk Island, 2899

**1.3.2 Identity: Person proposing to take the action**

**1.3.2.1 Are the Person proposing to take the action details the same as the Referring party details? \***

No

**1.3.2.2 Is Person proposing to take the action an organisation or business? \***

Yes

Person proposing to take the action organisation details	
<b>ABN/ACN</b>	86267354017
<b>Organisation name</b>	Cwth represented by Dept Infrastructure Transport Regional Development Communications and the Arts
<b>Organisation address</b>	GPO Box 594, Canberra, ACT, 2061

Person proposing to take the action details

<b>Name</b>	Sarah Vandenbroek
<b>Job title</b>	First Assistant Secretary
<b>Phone</b>	02 6274 8222
<b>Email</b>	sarah.vandenbroek@infrastructure.gov.au
<b>Address</b>	GPO Box 594, Canberra, ACT, 2061

#### 1.3.2.14 Are you proposing the action as part of a Joint Venture? \*

No

#### 1.3.2.15 Are you proposing the action as part of a Trust? \*

No

#### 1.3.2.17 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action. \*

The Person proposing the Action (the Commonwealth, as represented by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts), has a satisfactory record of responsible environment management.

There are no known past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either the person proposing to take the action (the Commonwealth as represented by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts) or the referring party (Planning Assist).

The Person proposing the Action (the Commonwealth, as represented by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts), has previously referred the following actions under the EPBC Act. Actions related to Norfolk Island are bolded:

- EPBC 2021 / 9124 – Kingston Pier Channel Construction Project.
- EPBC 2021 / 9110 – Interim landing at Cascade Bay, Norfolk Island.
- EPBC 2021 / 8962 – 16R Runway Threshold Construction Project at Sydney Airport, NSW.
- EPBC 2021 / 8924 - Flying Fish Cove Christmas Island Boat Ramp Maintenance
- EPBC 2020 / 8616 - Flying Fish Cove Landslide Mitigation Project.
- EPBC 2019 / 8467 - Christmas Island Stormwater Remediation Project.
- EPBC 2018 / 8261 - s160 Major Development Plan.
- EPBC 2017 / 8051 - Melbourne Airport Hotel Development.
- EPBC 2014 / 7130 - Installation of an Instrument Landing System.
- EPBC 2012 / 6675 - Flying Fish Cove Jetty Extension.
- EPBC 2009 / 4887 - Asbestos removal on Cocos (Keeling) Islands.
- EPBC 2009 / 4873 - Asbestos removal on Christmas Island.

The Commonwealth, as represented by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts, is a non-corporate Commonwealth entity.

The Proposed Action would be carried out in accordance with all relevant environmental controlling provisions including those provided under the:

- EPBC Act (if declared a controlled action)
- Planning Act 2002 (NI) including the *Norfolk Island Plan 2002* and *Development Control Plan No. 7 - KAVHA*
- Heritage Act 2002 (NI)
- Public Reserves Act 1997 (NI) including the *Plans of Management for Norfolk Island Public Reserves*.
- Trees Act 1997 (NI).
- Building Act 2002 (NI).
- Heritage Management Plans including:
  - *Kingston and Arthurs Vale Historic Area (KAVHA) Heritage Management Plan* (Jean Rice Architects, et. al., 2016).

- *Kingston and Arthurs Vale Historic Area Archaeological Zoning and Management Plan* (Extent, 2020).
- *Kingston and Arthurs Vale Historic Area Cultural Landscape Management Plan* (GML Heritage + Context, 2019).
- *The Burra Charter* (ICOMOS (Australia) 2013)).

Details of all these controlling documents are provided in **Attachment A: KAVHA SS EIS Vol. 1, Section 4, pp 32-51** and **Attachment A: KAVHA SS EIS Vol. 1, Section 6.4.3, pp 102-108.**

### 1.3.2.18 If the person proposing to take the action is a corporation, provide details of the corporation's environmental policy and planning framework

Not applicable. The Commonwealth, as represented by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts, is a non-corporate entity.

### 1.3.3 Identity: Proposed designated proponent

#### 1.3.3.1 Are the Proposed designated proponent details the same as the Person proposing to take the action? \*

Yes

##### Proposed designated proponent organisation details

**ABN/ACN** 86267354017

**Organisation name** Cwth represented by Dept Infrastructure Transport Regional Development Communications and the Arts

**Organisation address** GPO Box 594, Canberra, ACT, 2061

##### Proposed designated proponent details

**Name** Sarah Vandenbroek

**Job title** First Assistant Secretary

**Phone** 02 6274 8222

**Email** sarah.vandenbroek@infrastructure.gov.au

**Address** GPO Box 594, Canberra, ACT, 2061

### 1.3.4 Identity: Summary of allocation

### Confirmed Referring party's identity

The Referring party is the person preparing the information in this referral.

ABN/ACN	25481546476
Organisation name	Planning Assist
Organisation address	PO Box 795, Norfolk Island, 2899
Representative's name	Miriam Streulens
Representative's job title	Director - Environment and Planning
Phone	02 8002 1352
Email	miriam.streulens@planningassist.com.au
Address	PO Box 795, Norfolk Island, 2899

### Confirmed Person proposing to take the action's identity

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

ABN/ACN	86267354017
Organisation name	Cwth represented by Dept Infrastructure Transport Regional Development Communications and the Arts
Organisation address	GPO Box 594, Canberra, ACT, 2061
Representative's name	Sarah Vandenbroek
Representative's job title	First Assistant Secretary
Phone	02 6274 8222
Email	sarah.vandenbroek@infrastructure.gov.au
Address	GPO Box 594, Canberra, ACT, 2061

### Confirmed Proposed designated proponent's identity

The Person proposing to take the action is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

Same as Person proposing to take the action information.

## 1.4 Payment details: Payment exemption and fee waiver

### 1.4.1 Do you qualify for an exemption from fees under EPBC Regulation 5.23 (1) (a)? \*

No

### 1.4.3 Have you applied for or been granted a waiver for full or partial fees under Regulation 5.21A? \*

No

**1.4.5 Are you going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A?**

No

**1.4.7 Has the department issued you with a credit note? \***

No

**1.4.9 Would you like to add a purchase order number to your invoice? \***

No

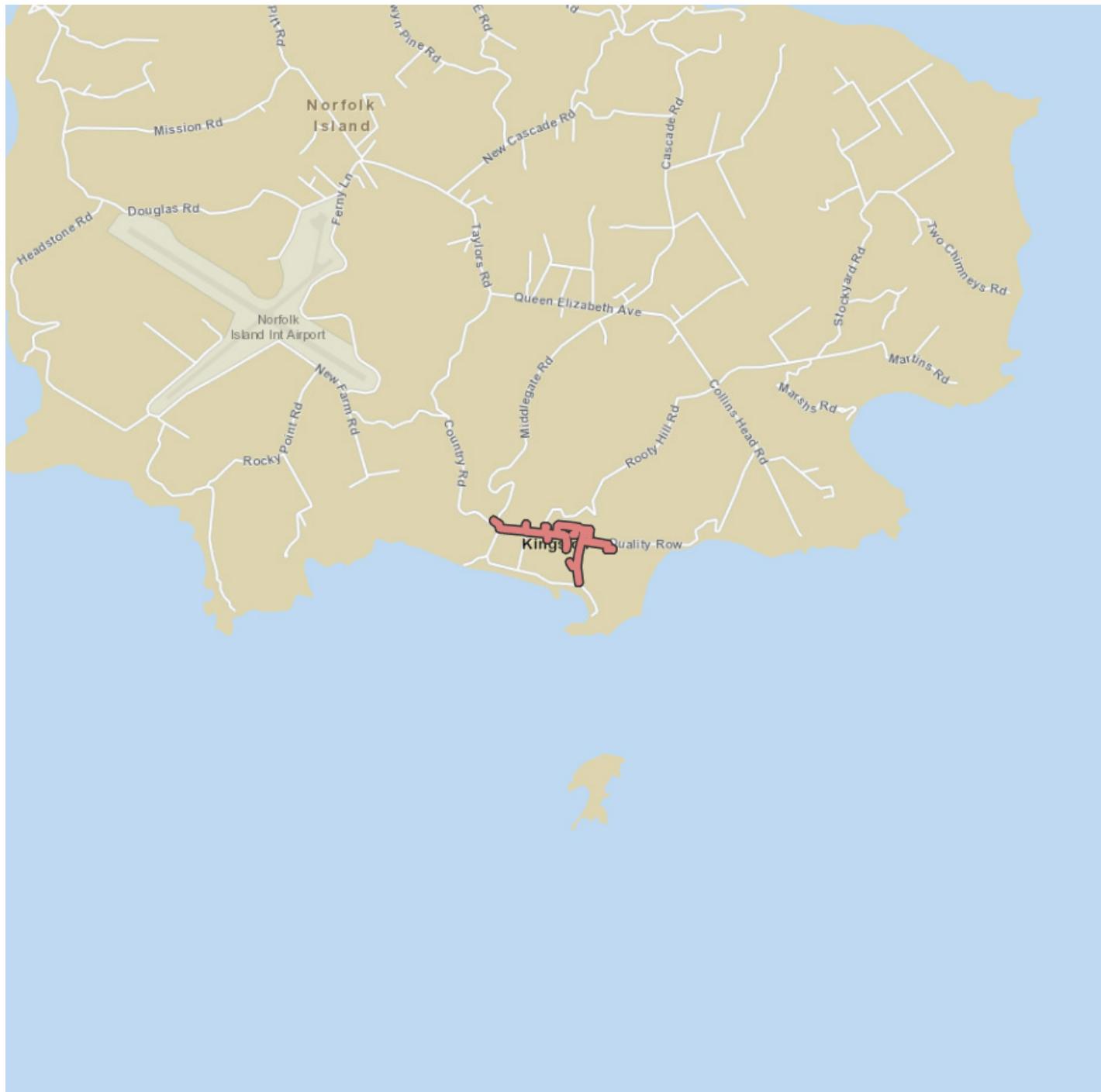
## 1.4 Payment details: Payment allocation

**1.4.11 Who would you like to allocate as the entity responsible for payment? \***

Referring party

## 2. Location

### 2.1 Project footprint



## 2.2 Footprint details

### 2.2.1 What is the address of the proposed action? \*

Quality Row, Kingston

### 2.2.2 Where is the primary jurisdiction of the proposed action? \*

Norfolk Island

### 2.2.3 Is there a secondary jurisdiction for this proposed action? \*

No

### 2.2.5 What is the tenure of the action area relevant to the project area? \*

The area in which the Proposed Action would be undertaken is referred to in this Referral form, and in the supporting documentation, as the Proposal area.

There is no particular street address for the Proposal area. The Proposal area could generally be described as - Quality Row between the intersection of Middlegate Road, Country Road, Quality Row and Pier Street and the Golf Club, which is located on Quality Row about 500 metres east of the intersection of Quality Row and Rooty Hill Road and about 500 metres west of the intersection of Quality Row and Driver Christian Road.

The Proposal area, which would be directly impacted by the Proposed Action, is all Crown land with the exception of:

- Part Portion 67 (Golf Club) which is Crown Lease.
- All roads, which are unalienated Crown land.

Land tenure is shown in **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 3.2.3, Figure 3-3, pp 9.**

There are various Commonwealth and non-Commonwealth occupiers of directly impacted buildings in the Proposal area including the Norfolk Island Regional Council (various capacities), the Golf Club, and residential tenants. The Proposal has been developed in consultation with all these occupiers (refer **Section 1.2.7 of this Referral**).

## 3. Existing environment

### 3.1 Physical description

#### 3.1.1 Describe the current condition of the project area's environment.

Norfolk Island is an external territory of Australia. It is located about 1,600 kilometers east of Sydney in the South Pacific Ocean.

The Proposal area is located about 2.5 kilometers from the central township of Burnt Pine, within the Kingston and Arthur's Vale Heritage Area (KAVHA), Norfolk Island.

KAVHA is located at the southern end of Norfolk Island at about latitude 29°35'S and longitude 167°57'E and has an area of about 250 hectares. (Refer **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 3.2.1, Figure 3-2, p 7**).

Geographically, KAVHA comprises an area of low lying land (about 200 hectares) that adjoins the Norfolk Marine Park (part of the Temperate East Marine Parks Network) to the south, and hills to the north and the west. Oceanside, there are three sandy beaches (Emily Bay, Slaughter Bay and Cemetery Bay).

The majority of the lowland area is developed and either manicured or grazed (cattle). Heading in the direction of the ocean, manicured / grazed land adjoins a wetland that is fed by two freshwater creeks, Watermill Creek and Town Creek. Watermill Creek flows into Emily Bay during periods of high rainfall.

The wetlands are separated from Emily Bay and Slaughter Bay by grassland and a paved road (Bay Street). Further to the east, the Norfolk Island Golf Course and the Norfolk Island Cemetery adjoin Cemetery Bay.

The topography of Norfolk Island results in KAVHA being a downstream receiver of surface water and groundwater from other areas of the island. Surface and groundwater enter the Norfolk Marine Park from KAVHA via various pathways.

The Proposal area is located in the highly disturbed built area of KAVHA, on and around the main street (Quality Row). The Proposal area is characterised by Georgian buildings and associated structures and grounds including the Golf Club, Quality Row houses, Government House, the Officer's Bath, the Old Military Barracks, the New Military Barracks, All Saint's Church, the Cenotaph and the well adjacent to the 'end of line' holding tank site, amongst others.

Current use of the site is detailed at **Section 3.1.2 of this Referral**.

Quality Row is the only through road in KAVHA. It runs across the KAVHA valley floor and extends from Country Road in the west to Driver Christian Road in the east. Traffic currently feeds into Quality Row via (from west to east) Country Road, Middlegate Road, Pier Street, Bounty Street, Rooty Hill Road and Driver Christian Road. Bounty Street is indefinitely closed to traffic pending bridge repair work.

Maximum average traffic movements (one way) on local roads that would be impacted during construction of the Proposal are 1,208, although generally these are lower (refer **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 6.6.1.1, pp 133-134**).

Quality Row and all the roads that feed into it are two way, sealed roads with a speed limit of 50 kilometers per hour.

Norfolk Island has been subject to heavy and persistent rainfall over recent months. Surface water inflow to the area via Town Creek, Watermill Creek and overland surface water flow has increased. As a result, the wetland area downstream of the Proposal area has expanded and Watermill Creek has frequently broken through into Emily Bay causing pollution (nutrient, pathogen and sediment) resulting in increasing degradation of the marine environment.

### 3.1.2 Describe any existing or proposed uses for the project area.

KAVHA is a site with great heritage value to the Norfolk Island people, Australia and the world. It is listed on multiple heritage registers for its local, national and world heritage significance.

Locally, KAVHA is intrinsic to the life, identity and culture of the Norfolk Island people. It is highly utilised by both the Norfolk Island community and visitors to the island.

Land use in KAVHA is varied and primarily relates to heritage protection, Government administrative functions, recreation, cultural / ceremonial events including funerals and commemorative celebrations, agriculture and tourism.

Land uses in the Proposal area are (from east to west):

- Golf Club (clubhouse and golf course).
- Quality Row houses (residences, interpretive centre, house museum and government offices).
- Emily Bay Bathing Shed (toilets and change rooms).
- Government House (residence and tours).
- Old Military Barracks (Court House).
- Pound Paddock (cattle).
- Kingston Oval (recreation).
- New Military Barracks (government offices).
- All Saints Church (church and museum).
- Cenotaph.
- Residence on Middlegate Road.
- Roads.

Whilst they are located in the Proposal area, All Saint's church, the Cenotaph and the residence on Middlegate Road would not be directly impacted during construction of the Proposed Action.

The land in the Proposal area is zoned: Open Space; Special Use (Public Buildings and Education Establishment and Government house and Domain); Conservation; and Road. No rezoning of land is required to enable the Proposed Action to proceed. (refer **Section 1.2.6 of this Referral**).

The Proposed Action would not result a change of use of any building or space within the Proposal area. However, development of a draft Master Plan for KAVHA is underway. The potential changes of use proposed in the draft Master Plan as relevant to the Proposal area include:

- New Military Barracks – Conversion into an interim museum display space (by 2024).
- Old Military Barracks – Introduction of an additional use as a Legislative Assembly interpretive space (by 2024).
- Quality Row houses (Nos 5 – 9) – Conversion to tourist accommodation (post 2028).

### 3.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area.

The Proposal area is developed and highly manicured. Outstanding natural features within the Proposal area are limited to significant (heritage and commemorative) plantings of Norfolk Island Pine trees and a small number of other scattered significant plantings.

Downstream of the Proposal area, there are freshwater creeks and wetlands that are frequented by migratory seabirds, beaches (Emily Bay and Slaughter Bay) and marine waters that support various protected terrestrial and aquatic species and the eastern-most coral reefs in Australian waters. The coral reefs are being progressively damaged, possibly irreversibly, due to pollution loads (pathogens and nutrients) causing coral bleaching and disease and algal growth (refer **Attachment J: Improving Water Quality of Emily Bay, Section 1.1, p 4, Section 1.3, p 8, Section 1.4, p 9, Section 3.1, p 15**).

Emily Bay and Slaughter Bay and are also highly valued by the Norfolk Island community and tourists for recreational purposes.

An EPBC Protected Matters Report prepared for the Proposed Action on 6 September 2022 (refer **Attachment C: Protected Matters Report, p 3**) identified the following Matters of National Environmental Significance with relevance to the Proposed Action:

- Commonwealth Marine Area (EEZ and Territorial Sea).

The Commonwealth Marine Area includes the Norfolk Marine Park which is part of the Australian Marine Parks Temperate East Marine Parks Network. The Norfolk Marine Park commences at the mean high water mark.

The Proposal area is located outside the Commonwealth Marine Area between about 100 meters and 350 metres from the shoreline.

### 3.1.4 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

Estimates of the gradient of the Proposal area (construction footprint plus a 25 metre buffer area) are:

- 0-3 degrees: 23.9 percent of the Proposal area.
- 3-8 degrees: 46.0 percent of the Proposal area.
- 8-16 degrees: 18.1 percent of the Proposal area.
- 16-35 degrees: 8.2 percent of the Proposal area.

The gradient could not be adequately calculated for 3.8 percent of the Proposal area due to interference from buildings, vegetation and walls that were not able to be properly distinguished from the ground surface in the original LiDAR data.

Most of this area is flat land and it is expected that, if the gradient was able to be calculated, it would fall within the 0-8 degree categories.

Refer to **Attachment K: Gradient of the Proposal Area**.

## 3.2 Flora and fauna

### 3.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

An EPBC Protected Matters Report prepared for the Proposed Action on 6 September 2022 (refer **Attachment C: Protected Matters Report, pp 3-26**) identified the following Matters of National Environmental Significance with relevance to the Proposed Action:

- 75 listed threatened species.
- 43 listed migratory species.

A desktop assessment of biodiversity in KAVHA was undertaken to inform the biodiversity assessment undertaken for the Proposed Action. This assessment is presented in full at **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.3, pp 90-99**.

Documents reviewed during this assessment include:

- *Plans of Management for Norfolk Island Public Reserves including Kingston Common Reserve; Kingston Recreation Reserve; Government House Grounds Reserve; and Point Hunter Reserve* (Norfolk Island Parks and Forestry Service, 2003) (refer **Attachment L: NI Public Reserves Plan of Management**).
- *Norfolk Island Region Threatened Species Recovery Plan* (Director of National Parks, Commonwealth of Australia, 2010) (refer **Attachment M: NI Region Threatened Species Recovery Plan**).
- *The Native Plant Communities of Norfolk Island* (Invasive Species Council and TierraMar, 2021) (refer **Attachment N: Native Plant Communities of NI**).
- *Australian Marine Parks, Temperate East Marine Parks Network Management Plan 2018* (Director of National Parks, Commonwealth of Australia, 2018) (refer **Attachment O: Temperate East Management Plan**).
- An assessment of impacts on threatened species and threatened ecological communities protected under the EPBC Act which was undertaken by DITRDCA for the Proposal in 2020. This assessment is provided at **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 5, Appendix J, pp 27-34**.

#### **The Proposal area**

The Proposal area is highly modified and developed and the area is predominantly built, paved (roads) or grassed. Photographs taken whilst walking the construction footprint are provided at **Attachment B: KAVHA SS S1 EIS Vol 2 - Part 5, Appendix K, pp 35-40**.

#### **Flora**

Open areas are predominantly grassed with exotic Kikuyu (*Pennisetum clandestinum*). Grassed areas are either regularly mowed for grounds maintenance purposes, or grazed by cattle, and have no significant habitat value.

Plantings within the Proposal area and surrounds are limited to planted domestic gardens and historic plantings of Norfolk Island Pine trees (*Araucaria heterophylla*) and White Oak trees (*Lagunaria patersonia* subsp. *Patersonia*). These plantings are generally located along boundaries and roadsides and around Government House.

Norfolk Island Pine (*Araucaria heterophylla*) and White Oak (*Lagunaria patersonia* subsp. *Patersonia*) are protected under the *Trees Act 1997 (NI)* and the *Trees Regulation 1999 (NI)*.

No threatened plant species are located in the Proposal area (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.3.1.2, Figure 6.3-1, p 92**).

No native or threatened plant communities are located in the Proposal area (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.3.1.2, Figure 6.3-2, p 93**).

#### **Fauna**

Regular mowing of the grassed areas within the Proposal area and surrounds limits the habitat value for any fauna species, including endemic land snails and the land crab which inhabited the area historically but have not been sighted for decades. The occurrence of these species today is unknown, but is considered highly unlikely given the open and highly disturbed nature of the site and regular mowing (refer **Attachment L: NI Public Reserves Plan of Management, Section 16.3.3.2, pp 133-134 and Section 17.3.3.3, p 159**).

The open grasslands are predominantly frequented by introduced bird species including but not limited to: Mallard (*Anas platyrhynchos*); Feral Chicken (*Gallus gallus*), Feral Goose (*Anser domesticus*); Australian Kestrel (*Falco cenchroides*); European Goldfinch (*Carduelis carduelis*), House Sparrow (*Passer domesticus*) and Common Starling (*Sturnus vulgaris*).

The introduced Crimson Rosella (*Platycercus elegans*) and the native: Sacred Kingfisher (*Halcyon sancta*); Grey-breasted Silvereye (*Zosterops lateralis*); and Grey Gerygone (*Gerygone modesta*) have also been sighted in the open area, although less frequently  
**Attachment L: NI Public Reserves Plan of Management, Section 14.3.3.2.2, pp 76-77, Section 15.3.3.2.2, p 106 and Section 16.3.3.4, p 134**.

No threatened bird species inhabit the Proposal area (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.3.1.2, Figure 6.3-3, p 94**).

#### **Downstream of the Proposal area**

A detailed description of the flora and fauna outside and downstream of the Proposal area is provided in **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.3.1.3 – 6.3.1.5, pp 91-96**.

This includes the following environments:

- Creek / wetland environment
- Coastal environment (sand dunes and beaches).
- Marine environment (Norfolk Marine Park including Emily Bay and Slaughter Bay).

Protected flora and fauna in these areas was identified as follows.

#### **Creek / wetland environment**

##### Flora

Nil

##### Fauna

The wetland area (including reed beds, adjacent ponds and surrounding grass areas that are subject to inundation) is frequented by water birds including a number of migratory seabirds.

The following species protected under the EPBC Act have been observed in the wetlands:

- Bar Tailed Godwit (*Limosia lapponica*): Threatened migratory species.
- Sharp-tailed Sandpiper (*Calidris acuminata*): Migratory species.
- Pectoral Sandpiper (*Calidris melanotos*): Migratory species.
- Red Knot (*Calidris canutus*): Threatened migratory species.

#### **Coastal environment**

##### Flora

Small patches of native plant communities have been identified in the sand at Slaughter Bay and Cemetery Bay (Sandy Beach Herland Plant Community).

The following species protected under the EPBC Act have been identified in Sandy Beach Herland Plant Community:

- Coastal Spurge (*Euphorbia obliqua*): Threatened species – Vulnerable.
- Daisy (*Senecio hooglandii*): Threatened species – Vulnerable.

##### Fauna

Small areas of migratory seabird nesting habitat exist at Emily Bay and Cemetery Bay. During the October to May breeding season these areas are utilised by the following migratory seabird species which are protected under the EPBC Act:

- Wedge-tailed Shearwaters (Ghostbirds) (*Ardenna pacifica*): Migratory species.
- Little Shearwater (*Puffinus assimilis*): Marine species.

#### **Marine environment**

The shallow-waters of Emily Bay and Slaughter Bay support diverse tropical and temperate species of fish, corals and other marine organisms.

Species in the marine environment that are protected under the EPBC Act (threatened and / or migratory) include various species of fish, whales, dolphins, turtles and sharks (refer **Attachment C: Protected Matters Report**).

### 3.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area.

#### **Native vegetation**

The original native vegetation in KAVHA was largely cleared during the First Settlement in the 1700s (refer **Attachment L: NI Public Reserves Plan of Management, Section 14.3.2, p 74, Section 15.3.2, p 104, Section 16.3.2, p 132, Section 17.3.2, p 157**). Today, vegetation in, and around, the Proposal area is dominated by mown kikuyu grass.

There are no native plant communities in the Proposal Area.

Native plant communities nearby are limited to small areas of the following (refer **Attachment N: Native Plant Communities of NI, Map 2, p 27**):

- Non Remnant Vegetation.
- Freshwater Swamp.
- Sandy Beach Hermland.
- Coastal Grassland.

There are a number of native plantings in and around the Proposal area including rows of Norfolk Island Pine trees along roadsides, a Norfolk Island Pine tree plantation to the rear of the Emily Bay Bathing Shed and various other garden plantings.

The current landscape, including existing vegetation patterns, is relevant to the heritage values of the area and is unlikely to be modified further.

#### **Geology and soils**

Four soil types have been identified in the Proposal area. These are shown in **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.2.1.2, Figure 6.2-2, p 72** and are described below.

##### ***Rooty Hill Clay***

Rooty Hill Clay originates from basalt and occurs on steep to moderate convex slopes and ridge tops. It is prone to slumping on the steeper slopes and typically has unrestricted drainage.

##### ***Basaltic Colluvium Mixed with Calcareous Sand***

Colluvium is a general name for loose, unconsolidated sediments that have been deposited at the base of hillslopes by either rainwash, sheetwash, slow continuous downslope creep, or a variable combination of these processes (Wikipedia, 2022). In simple terms, it is sediment deposited at the base of a hillslope by surface water runoff or sheet erosion/landslides.

Basaltic colluvium mixed with calcareous sand typically has unrestricted drainage.

##### ***Emily Bay Calcareous Sand***

Calcareous rock is a coarse marine rock (calcareite) which is made up of sand, coral and shell fragments cemented with lime. The calcareous rock in KAVHA was in part deposited by on-shore winds during a period of low sea level, and subsequently lithified and cemented with lime. The soils that have formed on top of the calcareous rock are predominantly sandy in nature (Emily Bay Calcareous Sand) (Parsons Brinkerhoff, 2005).

Emily Bay Calcareous Sand is undulating and has restricted drainage.

##### ***Unnamed Swamp Soil***

Unnamed Swamp Soil is also known as Peaty Swamp Soil. Unnamed Swamp Soil is heavily textured organic soil which has restricted drainage. It is generally found on valley floors and has acid sulfate soil potential.

#### **Acid sulfate soils**

No acid sulfate soils are likely to be present in or near the Proposal area (refer to **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.2.1.2, pp 71-75**).

## 3.3 Heritage

### 3.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area.

An EPBC Protected Matters Report prepared for the Proposed Action on 6 September 2022 (refer **Attachment C: Protected Matters Report, p 3**) identified the following Matters of National Environmental Significance with relevance to the Proposed Action:

#### **World Heritage Property** (Listing 106209, Listing date 2010)

KAVHA is a World Heritage Property, listed as one of the eleven penal sites established on Australian soil in the 18th and 19th centuries that together make up the serial listing for 'Australian Convict Sites'.

The Proposal area is located within KAVHA.

#### **National Heritage Properties (Historic)**

- HMS Sirius Shipwreck (Listing 106167, Listing date 2011):
  - The HMS Sirius Shipwreck is located offshore outside the reef of Slaughter Bay.
  - It is located outside the Proposal area and would not be impacted by the Proposed Action.
- KAVHA (Listing 105962, Listing date 2007):
  - KAVHA is a National Heritage Property significant for being associated with three distinct (European) settlement periods: the convict era referred to as the First and Second Settlements from 1788-1814 and from 1825-1855 respectively; and the Pitcairn period from 1856 to the present, referred to as the Third Settlement. KAVHA is also important for its association with pre-European Polynesian occupation.
  - The Proposal area is located within KAVHA.

#### **Other Heritage Listings for KAVHA**

KAVHA is also listed on the following heritage registers:

- Commonwealth Heritage: Listing 105606, Listing date – 2004.
- Norfolk Island Heritage Register: Listing date – 2003 (refer **Attachment G: NI Heritage Register**).
- Register of the National Estate: Listing 103650 and 13637, Listing date - early 1980s.

#### **Commonwealth Heritage Places Overseas**

There are no Commonwealth Heritage Places overseas relevant to the Proposed Action.

An assessment of heritage impacts in KAVHA was undertaken for the Proposed Action. More information about the places in KAVHA with heritage value is provided in this assessment (refer to **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.4, pp 99-113**). A supporting Heritage Impact Statement is provided at **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 4 APP G**.

### 3.3.2 Describe any Indigenous heritage values that apply to the project area.

Aboriginal and Torres Strait Islander people are not indigenous to Norfolk Island.

KAVHA is integral to the everyday life of Norfolk Islanders who have strong cultural and lifestyle connections to the place. The *KAVHA Heritage Management Plan* (Jean Rice et. Al, 2016) states: "*KAVHA holds significant symbolic, ceremonial, religious, lifestyle and cultural associations to the residents of Norfolk Island who value the place for its continuous and active use as their place of residence, work and recreation since 1856. p 57*"

It is important that the significant cultural, heritage and traditional importance of Kingston for Norfolk Islanders (Pitcairn Settlement) is acknowledged.

## 3.4 Hydrology

### **3.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable. \***

Water bodies in the vicinity of the Proposal area include:

- Town Creek, Watermill Creek, and associated wetlands.
- Groundwater aquifers.
- The marine waters of Emily Bay and Slaughter Bay in the adjoining Norfolk Marine Park.

#### **Surface water**

Surface water bodies in KAVHA are shown in **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.1.1.2, Figure 6.1-2, pp 63.**

Town Creek traverses the Proposal area in an underground culvert and joins Watermill Creek south of the Proposal area.

Watermill Creek is located downstream of the Proposal area to the south. It feeds the KAVHA wetlands and flows into Emily Bay during periods of high rainfall.

#### **Groundwater**

A groundwater aquifer underlies the Norfolk Island and generally flows in a southerly direction. Groundwater upwells naturally into the intertidal zones of Emily Bay and Slaughter Bay (Refer **Attachment J: Improving Water Quality of Emily Bay\_Blight Tanner, Section 1.1, p 4 and Section 1.4, p 9.**)

#### **Marine**

Surface water and groundwater enter Emily Bay and Slaughter Bay via a number of different pathways. Indicative pathways for water entering the bays are shown **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 6.1.1.2, Figure 6.1-4, p 68.**

## **4. Impacts and mitigation**

### **4.1 Impact details**

#### **Potential Matters of National Environmental Significance (MNES) relevant to your proposed action area.**

<b>EPBC Act section</b>	<b>Controlling provision</b>	<b>Impacted</b>	<b>Reviewed</b>
S12	World Heritage	Yes	Yes
S15B	National Heritage	Yes	Yes
S16	Ramsar Wetland	No	Yes
S18	Threatened Species and Ecological Communities	No	Yes
S20	Migratory Species	No	Yes
S21	Nuclear	No	Yes
S23	Commonwealth Marine Area	No	Yes
S24B	Great Barrier Reef	No	Yes
S24D	Water resource in relation to large coal mining development or coal seam gas	No	Yes
S26	Commonwealth Land	Yes	Yes
S27B	Commonwealth heritage places overseas	No	Yes
S28	Commonwealth or Commonwealth Agency	Yes	Yes

## 4.1.1 World Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	World heritage
Yes	No	Australian Convict Sites - Kingston and Authurs Vale Historic Area

### 4.1.1.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? \*

Yes

### 4.1.1.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. \*

KAVHA is a World Heritage Property, listed as one of the eleven penal sites established on Australian soil in the 18th and 19th centuries that together make up the serial listing for 'Australian Convict Sites' (Listing 106209, Listing date 2010).

Of the ten criteria for world heritage listing, the 'Australian Convict Sites', as a whole, meets two of the criterion:

1. 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.
2. 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. (The Committee considers that this criterion should preferably be used in conjunction with other criteria).

The following is an extract from the 2010 UNESCO World Heritage Convention listing for the 'Australian Convict Sites' and explains how the 'Australian Convict Sites' meet these criteria:

*"Criterion (iv): The Australian convict sites constitute an outstanding example of the way in which conventional forced labour and national prison systems were transformed, in major European nations in the 18th and 19th centuries, into a system of deportation and forced labour forming part of the British Empire's vast colonial project. They illustrate the variety of the creation of penal colonies to serve the many material needs created by the development of a new territory. They bear witness to a penitentiary system which had many objectives, ranging from severe punishment used as a deterrent to forced labour for men, women and children, and the rehabilitation of the convicts through labour and discipline."*

*"Criterion (vi): The transportation of criminals, delinquents, and political prisoners to colonial lands by the great nation states between the 18th and 20th centuries is an important aspect of human history, especially with regard to its penal, political and colonial dimensions. The Australian convict settlements provide a particularly complete example of this history and the associated symbolic values derived from discussions in modern and contemporary European society. They illustrate an active phase in the occupation of colonial lands to the detriment of the Aboriginal peoples, and the process of creating a colonial population of European origin through the dialectic of punishment and transportation followed by forced labour and social rehabilitation to the eventual social integration of convicts as settlers."*

An assessment of heritage impacts was undertaken for the Proposed Action and is provided at **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.4, pp 99-124** and **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 4, Appendix G (Heritage Impact Statement)**. These assessments have informed the responses to this section (**Section 4.1.1** of this Referral).

Unmitigated, direct impacts of the Proposed Action would be:

- Various temporary, short-term construction impacts that would impact the amenity of the Proposal area for the duration of construction (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6, pp 61-163**).
- Potential permanent impact to built heritage due to a possible requirement for underground installation of rising pressure mains through stone walls with heritage value in a maximum of three locations.
  - It is intended that wall crossings would pass underneath the respective wall(s). However, if the base of the wall is too deep for under wall installation, a hole (about 80 millimetre diameter) would be drilled through the respective wall below ground level to enable through wall installation.
  - Whilst some modification of the fabric of the wall(s) may be required, there would be no aesthetic impact on the respective wall(s) due to the works being underground.
- Potential permanent impact to archaeology within the construction footprint. Whilst the construction footprint has been designed to utilise previously disturbed infrastructure routes and avoid areas of high archaeological potential as far as where possible, there is still potential for discovery of unknown archaeology during excavation. The archaeological features with the highest potential to be impacted include evidence of colonial layout, former gardens, evidence of animal husbandry and drainage.

Unmitigated, indirect impacts would be:

- Potential vibration impact to heritage buildings and structures during construction.
  - Whilst unlikely, there is a possibility of vibration impacts resulting from the use of a Wacker Neuson BS65-4As stroke vibrator rammer, or similar, to compact soil during the backfilling of the trenches (refer **Attachment A: KAVHA SS S1 EIS Vol 1**).

**Section 6.5.4.1 p 131 and Attachment B: KAVHA SS S1 EIS Vol 2 – Part 5, Appendix L (p 41), Section 4.8.2.1, p 16 and Section 13.3, p 47).**

These impacts would be avoided, mitigated and managed as outlined in **Section 4.1.1.10 of this Referral**.

It is not considered that any of these potential impacts would prevent KAVHA, or the 'Australian Convict Sites' as a whole, continuing to meet the World Heritage Area Criteria iv and vi (refer **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 4, Section 9, pp 62**).

**4.1.1.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? \***

No

**4.1.1.6 Describe why you do not consider this to be a Significant Impact. \***

Design measures to avoid impacts on heritage values

A number of adverse environmental impacts of the Proposed Action have been avoided or reduced during the assessment of options and alternatives and the development of the concept design. Avoidance measures relevant to impacts on heritage include:

- Selection of a pressure sewerage scheme instead of a gravity sewerage scheme. Gravity sewerage schemes require deeper trenches and increase potential impact on archaeology.
- Careful route selection guided by the requirements of relevant heritage management documents (refer to the list below) and iteratively modified during design development to, where possible, traverse highly disturbed areas (such as existing infrastructure corridors and roadways), avoid heritage buildings and structures, minimise impact to known and potential archaeology, and avoid significant trees.
  - Relevant heritage management document include:
    - *KAVHA Heritage Management Plan* (Jean Rice et al, 2016).
    - *KAVHA Archaeological Zoning and Management Plan* (Extent, 2020) (refer **Attachment P: KAVHA AZMP Vol 1 2020**).
    - *Kingston and Arthur's Vale Historic Area Cultural Landscape Management Plan* (GML Heritage + Context, 2019) (refer **Attachment Q: KAVHA Cultural Landscape Management Plan**).
- Above ground installation of the temporary 'end of line' holding tanks to minimise excavation required at this site. The holding tanks would be replaced with an underground sewage pumping station in Stage 2 (subject to approvals), but the excavation for the pumping station would be of significantly smaller scale than the excavation required to underground the holding tanks.

**Potential impacts**

**Impact:** Various temporary, short-term construction impacts that would impact the amenity of the Proposal area for the duration of construction.

**Assessment of significance:**

- Following mitigation of various temporary construction impacts (refer **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 6, pp 61-163**), the following residual impacts relevant to World Heritage would remain: noise, traffic and access, visual amenity and socio-economic.
- Residual impacts would be managed using measures presented in **Section 4.1.1.10 of this Referral**.
- Residual impacts would:
  - Be small scale (limited to progressive construction along a linear route 30 metres at a time).
  - Be short term (maximum seven months (overall) and about one week (in any one 30 linear metre area)).
  - Relate to amenity of the site only.
  - Would not permanently impact any heritage value following completion of construction.

Being short term and temporary, it is not considered that these impacts on World Heritage values would be significant.

**Impact:** Potential permanent impact to built heritage due to a possible requirement for underground installation of rising pressure mains through stone walls with heritage value.

**Assessment of significance:**

- Potential permanent impact would be avoided if possible by installing the rising pressure main underneath the base of heritage stone walls.
- If through wall installation of the rising pressure main is required, it would involve a one-time modification to the fabric of the respective heritage wall(s). This modification would be located underground. The maximum number of through wall installations would be three.
- Unavoidable impacts to stone walls would be managed using measures presented in **Section 4.1.1.10 of this Referral**.

If through wall installation is required, the impact would be permanent. However, it would not be visible to visitors to the site, would not destroy the integrity of the respective wall and would not prevent KAVHA, or the 'Australian Convict Sites' as a whole, continuing to meet the World Heritage Area Criteria iv and vi.

**Impact:** Potential permanent impact to archaeology within the construction footprint.

**Assessment of significance:**

- Excavation of an area of about 2,150 square metres would be required. Whilst the majority of this area is located in previously disturbed areas and areas with low archaeological potential, there is an expectation that archaeology would be encountered and permanently impacted.
- Excavations would be supervised by the KAVHA Archaeologist who is located on the island and has been assigned to the Proposed Action.
- Impacts to archaeology would be further avoided through modifications to the route of the infrastructure during construction or managed using measures presented in **Section 4.1.1.10 of this Referral**. Management measures include the proper recording and conservation of all archaeology encountered.

Permanent impact to archaeology is expected. However, all archaeological finds would be managed, recorded and conserved in accordance with relevant archaeological policies. KAVHA is significant for, amongst other things, archaeological research potential in relation to each settlement period (refer *KAVHA Heritage Management Plan* (Jean Rice et al, 2016). The Proposed Action would be managed such that it would contribute to research opportunities.

Given the extent of mitigation proposed, it is not expected that impact to archaeology during construction of the Proposed Action would prevent KAVHA, or the 'Australian Convict Sites' as a whole, continuing to meet the World Heritage Area Criteria iv and vi.

**Impact:** Potential vibration impact to heritage buildings and structures during construction.

**Assessment of significance:**

- The operator manual for the Wacker Neuson BS65-4As stroke vibrator rammer states that compaction work in the vicinity of buildings can lead to building damage and possible effects should be checked in advance (refer **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 5, Appendix L (p 41), Section 4.8.2.1, p 16**). Whilst this warning is likely precautionary and the rammer has been utilised frequently by many of the construction contractors on the island without known incidence of damage to roads or buildings from vibration (A. Barnett, pers. comm, 7 June 2022 (Note: Written privacy permission has been obtained)), this matter was referred to a Senior Project Manager and qualified Professional Engineer at engineering company GHD who advised that, if used correctly during construction of the Proposed Action, the rammer would be unlikely to cause vibration damage to the heritage buildings and structures.
- Notwithstanding, a precautionary approach has been adopted and management measures put in place to ensure any damage is identified early and use of the rammed ceased. These measures are presented in **Section 4.1.1.10 of this Referral**.

This impact is not considered significant as it would be avoided by stopping use of the rammer for the duration of construction should vibration monitoring indicate potential for damage.

### Significance of impact on World Heritage

An assessment of significant impacts of the Proposed Action undertaken in accordance with:

- *EPBC Significant Impact Guidelines 1.1 Matters of National Environmental Significance* (Commonwealth of Australia, 2013).
- *EPBC Significant Impact Guidelines 1.2 Action on, or impacting upon, Commonwealth Land and Actions by Commonwealth Agencies* (Commonwealth of Australia, 2013).

The EPBC self assessment concluded that the EPBC impacts that would be caused by the Proposed Action are:

- Significant Impact Guidelines 1.1:
  - **World Heritage Property - Historic Heritage Values:** Permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a World Heritage Property.
- Significant Impact Guidelines 1.2:
  - **Impacts on Heritage:** Permanently destroy, remove, or substantially alter the fabric (physical material including structural elements and other components, fixtures, contents, and objects) of a heritage place.

These impacts are provided in the guidelines as impacts that are likely to be significant. However, whether an impact is significant or not is dependent on the values of the place that would be impacted.

An assessment of the impacts of the Proposed Action against the world heritage values of KAVHA and the relevant significant impact criteria in the Significant Impact Guidelines concluded that the Proposed Action would not have a significant impact on the World Heritage Values of KAVHA (refer **Section 4.1.1.6 of this Referral** and **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 4, Section 9, p 62**).

For the reasons presented at each impact above, it is not considered that the Outstanding Universal Values of the site, or the 'Australian Convict Sites' as a whole (communicating the transformation of prison systems (Criterion iv) and the transportation of criminals, delinquents, and political prisoners to colonial lands (Criterion iv)) would be significantly impacted.

Subject to mitigation and management, the Proposed Action would not trigger any of the following significant impact criteria:

- One or more of the World Heritage values to be lost.
- One or more of the World Heritage values to be degraded or damaged.

- One or more of the World Heritage values to be notably altered, modified, obscured or diminished.

#### **4.1.1.7 Do you think your proposed action is a controlled action? \***

No

#### **4.1.1.9 Please elaborate why you do not think your proposed action is a controlled action. \***

The potential impacts on the World Heritage Values of KAVHA as part of the 'Australian Convict Site 'World Heritage Property listing are not considered to be significant as detailed in **Section 4.1.1.6 of this Referral**.

Controlled actions relate to actions that are likely to have a significant impact on a Matter of National Environmental Significance, in this case World Heritage Properties. As the Proposed Action is not likely to have a significant impact on World Heritage Properties, it is not considered to be a controlled action.

#### **4.1.1.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. \***

Proposed mitigation and management measures for identified permanent impacts to World Heritage are detailed below.

**Impact:** Various temporary, short-term construction impacts that would impact the amenity of the Proposal area for the duration of construction.

**Mitigation and management:**

- Various (refer **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6, pp 61-163**).
- Residual impacts relevant to World Heritage:
  - Noise – Refer to **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.5.5, p 132**.
  - Traffic and access – Refer to **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.6.3, p 137**.
  - Visual amenity - Refer to **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.7.3, p 141**.
  - Socio-economic - Refer to **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.11.3, p 151**.

**Impact:** Potential permanent impact to built heritage due to installation of rising pressure mains under stone walls with heritage value.

**Mitigation and management**

Extracted from **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.4.7.1, p 122**:

- Dig all excavations required for underground heritage wall crossings by hand under supervision of the Commonwealth Heritage Manager and/or project archaeologist.
- Should a hole(s) need to be drilled in a wall to enable an underground wall crossing, minimise the size of the hole and use non-vibratory equipment.

**Impact:** Potential permanent impact to archaeology within the construction footprint.

**Mitigation and management**

Extracted from **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.4.7.1, pp 123-124**:

- Provide the Commonwealth Heritage Manager and/or project archaeologist with a minimum of two weeks notice of the commencement of construction.
- Dig all excavations close to foundations or remains of heritage structures by hand under supervision of the Commonwealth Heritage Manager and/or project archaeologist.
- Cease mechanical excavation and commence manual excavation as instructed by the Commonwealth Heritage Manager and/or project archaeologist.
- Stop work immediately if accidental damage occurs to any heritage item, and immediately notify the Commonwealth Heritage Manager and/or project archaeologist. Work would not recommence until the Commonwealth Heritage Manager has provided

approval to do so.

- Stop work immediately if any unexpected heritage item is found and immediately notify the Commonwealth Heritage Manager and/or project archaeologist. Work would not recommence until the Commonwealth Heritage Manager has provided approval to do so.

The Commonwealth Heritage Manager and/or project archaeologist would, in accordance with the requirements of the *KAVHA Heritage Management Plan* (Jean Rice et al, 2016) and the *KAVHA Archaeological Zoning and Management Plan* (Extent, 2020) (refer **Attachment P: KAVHA AZMP Vol 1**), implement the following safeguards and management measures:

- Prepare an archaeological research design and methodology for the Proposed Action prior to the commencement of construction.
- Complete test excavations where ground disturbance is proposed in areas of high archaeological potential prior to the commencement of, and during construction as required.
- Adjust the construction footprint as required if test excavations identify potential archaeological impact that should be avoided prior to the commencement of construction.
- Consult data collected from non-invasive investigations (LiDAR and geophysical surveys) to refine/adjust the construction footprint in areas of high archaeological potential prior to the commencement of construction.
- Designate areas of known heritage values as no-go zones on site maps prior to the commencement of construction and during construction as required.
- Undertake induction training to inform workers and contractors of the importance of safeguarding heritage values including, laydown restrictions (construction compound only), unexpected finds procedure and other moveable cultural heritage requirements prior to the commencement of, and during construction as required.
- Supervise all excavation works in areas zones as high and moderate archaeological potential in order to be able to guarantee appropriate management and mitigation measures are implemented as works progress.
- Where possible, supervise all excavation works in areas zones as low archaeological potential in order to be able to guarantee appropriate management and mitigation measures are implemented as works progress.
- Undertake archaeological sieving if required during construction.
- Maintain photographic records of the works for the duration of construction.
- Accurately map the location of works undertaken.
- Record and conserve to archival standard all archaeological features encountered.
- In the event that potential archaeological material is encountered during construction, implement the Unexpected Finds Procedure documented at Section 6.3.8 of the AZMP (refer **Attachment P: KAVHA AZMP Vol 1 2020, Section 6.3.8, p 49**).
- Should significant fabric and/or findings be uncovered during the course of investigations, undertake additional recording to capture high-quality photogrammetric data regarding the fabric or findings. Capture the data to a degree that will allow it to be used for the generation of high-resolution 3D models.
- Invite staff from the Norfolk Island Museum to attend excavations and assist with the recording of any materials encountered.
- Prepare a post-construction report including comprehensive research archives of all relevant records, responses to research design and recommendations for future archaeological heritage management.

**Impact:** Potential vibration impact to heritage buildings and structures during construction.

#### ***Mitigation and management***

Extracted from **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.5.5.1, p 133:**

- Conduct a pre-dilapidation survey on nearby historic buildings / structures prior to the commencement of construction.
- Monitor historic buildings / structures for signs of damage from vibration during soil compaction work. The final methodology would be determined by the contractor however possible methods include:
  - Crack monitoring.
  - Feel tests (place a hand on the structure or building and feel for vibration).
- Stop compaction work if visible damage to historic buildings or structures is identified and proceed without compaction in this area.
- Stop compaction work if vibration of historic buildings or structures can be felt and proceed without compaction in this area.

*Note: The above vibration safeguards would be completed initially for the well at the 'end of line' holding tank site and the All Saint's Church building. If no damage from vibration is experienced in these locations, it would be assumed that the use of the rammer would not cause damage to structures and buildings and inspections and monitoring would be ceased.*

#### **4.1.1.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. \***

No offsets are proposed.

## 4.1.2 National Heritage

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	National heritage
No	No	HMS Sirius Shipwreck
Yes	No	Kingston and Arthurs Vale Historic Area

### 4.1.2.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? \*

Yes

### 4.1.2.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. \*

An EPBC Protected Matters Report prepared for the Proposed Action on 6 September 2022 identified two National Heritage Places within the Proposal area plus a two kilometer buffer area (refer **Attachment C: Protected Matters Report, p 3**):

- HMS Sirius Shipwreck (Listing 106167, Listing Date 2011).
- Kingston and Arthurs Vale Historic Area (KAVHA) (Listing 105962, Listing Date 2007).

The report also identified the following additional Commonwealth heritage places protected under the EPBC Act area (refer **Attachment C: Protected Matters Report, p 14**):

- Arched Building, Longridge (Listing 105623, Listing Date 2004).
- HMS Sirius Shipwreck (Listing 105179, Listing Date 2011).
- Kingston and Arthurs Vale Commonwealth Tenure Area (Listing 105606, Listing Date 2004).
- Nepean Island Reserve (Listing 105625, Listing Date 2004).

The HMS Sirius shipwreck, the Arched Building and the Nepean Island Reserve are all located in the two kilometre buffer area used for the purposes of the Protected Matters Report. They are well outside the area that could potentially be impacted by the Proposed Action and therefore none of these places have been considered further.

The Commonwealth listing the Kingston and Arthurs Vale Commonwealth Tenure Area is the National Heritage Place 'KAVHA' minus any freehold land. This listing is essentially the same as the National Listing and is addressed in the discussion of the National Listing.

KAVHA is Nationally significant for its association with three distinct (European) settlement periods: the convict era referred to as the First and Second Settlements from 1788-1814 and from 1825-1855 respectively; and the Pitcairn period from 1856 to the present, referred to as the Third Settlement. KAVHA is also important for its association with pre-European Polynesian occupation.

Of the nine criteria for national heritage listing, KAVHA meets seven of the criterion (extract from (Listing 105962, Listing Date 2007 - Link #6):

- *Criterion A - Processes: The place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history.*
- *Criterion B - Rarity: The place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history.*
- *Criterion C - Research: The place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history.*
- *Criterion D - Principle characteristics of a class of places: The place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:*
  - *A class of Australia's natural or cultural places; or*
  - *A class of Australia's natural or cultural environments.*
- *Criterion E – Aesthetic characteristics: The place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group*
- *Criterion G – Social value: The place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons*
- *Criterion H – Significant people: The place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history*

An assessment of heritage impacts was undertaken for the Proposed Action and is provided at **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 6.4, pp 99-124** and **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 4, Appendix G (Heritage Impact Statement)**. These assessments have informed the responses to this section (**Section 4.1.2 of this Referral**).

Unmitigated, direct impacts of the Proposed Action would be:

- Various temporary, short-term construction impacts that would impact the amenity of the Proposal area for the duration of construction (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6, pp 61-163**).
- Potential permanent impact to built heritage due to a possible requirement for underground installation of rising pressure mains through stone walls with heritage value in a maximum of three locations.
  - It is intended that wall crossings would pass underneath the respective wall(s). However, if the base of the wall is too deep for under wall installation, a hole (about 80 millimetre diameter) would be drilled through the respective wall below ground level to enable through wall installation.
  - Whilst some modification of the fabric of the wall(s) may be required, there would be no aesthetic impact on the respective wall(s) due to the works being underground.
- Potential permanent impact to archaeology within the construction footprint. Whilst the construction footprint has been designed to utilise previously disturbed infrastructure routes and avoid areas of high archaeological potential as far as where possible, there is still potential for discovery of unknown archaeology during excavation. The archaeological features with the highest potential to be impacted include evidence of colonial layout, former gardens, evidence of animal husbandry and drainage.

Unmitigated, indirect impacts would be:

- Potential vibration impact to heritage buildings and structures during construction.
  - Whilst unlikely, there is a possibility of vibration impacts resulting from the use of a Wacker Neuson BS65-4As stroke vibrator rammer, or similar, to compact soil during the backfilling of the trenches (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.5.4.1 p 131** and **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 5, Appendix L (p 41), Section 4.8.2.1, p 16** and **Section 13.3, p 47**).

These impacts would be avoided, mitigated and managed as outlined in **Section 4.1.2.10 of this Referral**.

It is not considered that any of these potential impacts would prevent KAVHA from continuing to meet all nine relevant National Heritage Place criteria (refer **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 4, Section 4, pp 14-26** and **Section 9, pp 64-66**).

#### **4.1.2.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? \***

No

#### **4.1.2.6 Describe why you do not consider this to be a Significant Impact. \***

Design measures to avoid impacts on heritage values

A number of adverse environmental impacts of the Proposed Action have been avoided or reduced during the assessment of options and alternatives and the development of the concept design. Avoidance measures relevant to impacts on heritage include:

- Selection of a pressure sewerage scheme instead of a gravity sewerage scheme. Gravity sewerage schemes require deeper trenches and increase potential impact on archaeology.
- Careful route selection guided by the requirements of relevant heritage management documents (refer to list below) and iteratively modified during design development to, where possible, traverse highly disturbed areas (such as existing infrastructure corridors and roadways), avoid heritage buildings and structures, minimise impact to known and potential archaeology, and avoid significant trees. Relevant heritage management document include:
  - *KAVHA Heritage Management Plan* (Jean Rice et al, 2016).
  - *KAVHA Archaeological Zoning and Management Plan* (Extent, 2020) (refer **Attachment P: KAVHA AZMP Vol 1 2020**).
  - *Kingston and Arthur's Vale Historic Area Cultural Landscape Management Plan* (GML Heritage + Context, 2019) (refer **Attachment Q: KAVHA Cultural Landscape Management Plan 2019**).
- Above ground installation of the temporary 'end of line' holding tanks to minimise excavation required at this site. The holding tanks would be replaced with an underground sewage pumping station in Stage 2 (subject to approvals), but the excavation for the pumping station would be of significantly smaller scale than the excavation required to underground the holding tanks.

#### **Potential impacts**

**Impact:** Various temporary, short-term construction impacts that would impact the amenity of the Proposal area for the duration of construction.

#### **Assessment of significance:**

- Following mitigation of various temporary construction impacts (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6, pp 61-163**), the following residual impacts relevant to National Heritage would remain: noise, traffic and access, visual amenity and socio-economic.
- Residual impacts would be managed using measures presented in **Section 4.1.2.10 of this Referral**.

- Residual impacts would:
  - Be small scale (limited to progressive construction along a linear route 30 metres at a time).
  - Be short term (maximum seven months (overall) and about one week (in any one 30 linear metre area)).
  - Relate to amenity of the site only.
  - Would not permanently impact any heritage value following completion of construction.

Being short term and temporary, it is not considered that these impacts on National Heritage values would be significant.

**Impact:** Potential permanent impact to built heritage due to a possible requirement for underground installation of rising pressure mains through stone walls with heritage value.

**Assessment of significance:**

- Potential permanent impact would be avoided if possible by installing the rising pressure main underneath the base of heritage stone walls.
- If through wall installation of the rising pressure main is required, it would involve a one-time modification to the fabric of the respective heritage wall(s). This modification would be located underground. The maximum number of through wall installations would be three.
- Unavoidable impacts to stone walls would be managed using measures presented in **Section 4.1.2.10 of this Referral**.

If through wall installation is required, the impact would be permanent. However, it would not be visible to visitors to the site, would not destroy the integrity of the respective wall and would not prevent KAVHA from continuing to meet all nine relevant National Heritage Place criteria.

**Impact:** Potential permanent impact to archaeology within the construction footprint.

**Assessment of significance:**

- Excavation of an area of about 2,150 square metres would be required. Whilst the majority of this area is located in previously disturbed areas and areas with low archaeological potential, there is an expectation that archaeology would be encountered and permanently impacted.
- Excavations would be supervised by the KAVHA Archaeologist who is located on the island and has been assigned to the Proposed Action.
- Impacts to archaeology would be further avoided through modifications to the route of the infrastructure during construction or managed using measures presented in **Section 4.1.2.10 of this Referral**. Management measures include the proper recording and conservation of all archaeology encountered.

Permanent impact to archaeology is expected. However, all archaeological finds would be managed, recorded and conserved in accordance with relevant archaeological policies. KAVHA is significant for, amongst other things, archaeological research potential in relation to each settlement period (refer *KAVHA Heritage Management Plan* (Jean Rice et al, 2016). The Proposed Action would be managed such that it would contribute to research opportunities.

Given the extent of mitigation proposed, it is not expected that impact to archaeology during construction of the Proposed Action would prevent KAVHA from continuing to meet all nine relevant National Heritage Place criteria.

**Impact:** Potential vibration impact to heritage buildings and structures during construction.

**Assessment of significance:**

- The operator manual for the Wacker Neuson BS65-4As stroke vibrator rammer states that compaction work in the vicinity of buildings can lead to building damage and possible effects should be checked in advance (refer **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 5, Appendix L (p 41), Section 4.8.2.1, p 16**). Whilst this warning is likely precautionary and the rammer has been utilised frequently by many of the construction contractors on the island without known incidence of damage to roads or buildings from vibration (A. Barnett, pers. comm, 7 June 2022 (Note: Written privacy permission has been obtained)), this matter was referred to a Senior Project Manager and qualified Professional Engineer at engineering company GHD who advised that, if used correctly during construction of the Proposed Action, the rammer would be unlikely to cause vibration damage to the heritage buildings and structures.
- Notwithstanding, a precautionary approach has been adopted and management measures put in place to ensure any damage is identified early and use of the rammed ceased. These measures are presented in **Section 4.1.2.10 of this Referral**.

This impact is not considered significant as it would be avoided by stopping use of the rammer for the duration of construction should vibration monitoring indicate potential for damage.

**Significance of impact on National Heritage.**

An assessment of significant impacts of the Proposed Action undertaken in accordance with:

- *EPBC Significant Impact Guidelines 1.1 Matters of National Environmental Significance* (Commonwealth of Australia, 2013).

- EPBC Significant Impact Guidelines 1.2 Action on, or impacting upon, Commonwealth Land and Actions by Commonwealth Agencies (Commonwealth of Australia, 2013).

The EPBC self assessment concluded that the EPBC impacts that would be caused by the Proposed Action are:

- Significant Impact Guidelines 1.1:
  - National Heritage Place - Historic Heritage Values: Permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a National Heritage place.
- Significant Impact Guidelines 1.2:
  - Impacts on Heritage: Permanently destroy, remove, or substantially alter the fabric (physical material including structural elements and other components, fixtures, contents, and objects) of a heritage place.

These impacts are provided in the guidelines as impacts that are likely to be significant. However, whether an impact is significant or not is dependent on the values of the place that would be impacted.

An assessment of the impacts of the Proposed Action against the National heritage values of KAVHA and the relevant significant impact criteria in the Significant Impact Guidelines concluded that the Proposed Action would not have a significant impact on the National Heritage Values of KAVHA (refer **Section 4.1.2.6 of this Referral** and **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 4, Section 4, pp 14-26 and Section 9, pp 64-66**).

For the reasons presented at each impact above, it is not considered that any of the outstanding heritage values of KAVHA to Australia would be significantly impacted.

Subject to mitigation and management, the Proposed Action would not trigger any of the following significant impact criteria:

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

#### **4.1.2.7 Do you think your proposed action is a controlled action? \***

No

#### **4.1.2.9 Please elaborate why you do not think your proposed action is a controlled action. \***

There would be no impact on the HMAS Sirius shipwreck.

The potential impacts on the National Heritage Values of KAVHA are not considered to be significant as detailed in **Section 4.1.2.6 of this Referral**.

Controlled actions relate to actions that are likely to have a significant impact on a Matter of National Environmental Significance, in this case National Heritage Properties. As the Proposed Action is not likely to have a significant impact on National Heritage Places, it is not considered to be a controlled action.

#### **4.1.2.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. \***

Proposed mitigation and management measures for identified permanent impacts to National Heritage Places are detailed below.

**Impact:** Various temporary, short-term construction impacts that would impact the amenity of the Proposal area for the duration of construction.

**Mitigation and management:**

- Various (refer **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6, pp 61-163**).
- Residual impacts relevant to National Heritage:
  - Noise – Refer to **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.5.5, p 132**.
  - Traffic and access – Refer to **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.6.3, p 137**.
  - Visual amenity - Refer to **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.7.3, p 141**.
  - Socio-economic - Refer to **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.11.3, p 151**.

**Impact:** Potential permanent impact to built heritage due to installation of rising pressure mains under stone walls with heritage value.

#### **Mitigation and management**

Extracted from **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.4.7.1, p 122:**

- Dig all excavations required for underground heritage wall crossings by hand under supervision of the Commonwealth Heritage Manager and/or project archaeologist.
- Should a hole(s) need to be drilled in a wall to enable an underground wall crossing, minimise the size of the hole and use non-vibratory equipment.

**Impact:** Potential permanent impact to archaeology within the construction footprint.

#### **Mitigation and management**

Extracted from **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.4.7.1, pp 123-124:**

- Provide the Commonwealth Heritage Manager and/or project archaeologist with a minimum of two weeks notice of the commencement of construction.
- Dig all excavations close to foundations or remains of heritage structures by hand under supervision of the Commonwealth Heritage Manager and/or project archaeologist.
- Cease mechanical excavation and commence manual excavation as instructed by the Commonwealth Heritage Manager and/or project archaeologist.
- Stop work immediately if accidental damage occurs to any heritage item, and immediately notify the Commonwealth Heritage Manager and/or project archaeologist. Work would not recommence until the Commonwealth Heritage Manager has provided approval to do so.
- Stop work immediately if any unexpected heritage item is found and immediately notify the Commonwealth Heritage Manager and/or project archaeologist. Work would not recommence until the Commonwealth Heritage Manager has provided approval to do so.

The Commonwealth Heritage Manager and/or project archaeologist would, in accordance with the requirements of the *KAVHA Heritage Management Plan* (Jean Rice et al, 2016) and the KAVHA Archaeological Zoning and Management Plan (Extent, 2020) (refer **Attachment P: KAVHA AZMP Vol 1**), implement the following safeguards and management measures:

- Prepare an archaeological research design and methodology for the Proposed Action prior to the commencement of construction.
- Complete test excavations where ground disturbance is proposed in areas of high archaeological potential prior to the commencement of, and during construction as required.
- Adjust the construction footprint as required if test excavations identify potential archaeological impact that should be avoided prior to the commencement of construction.
- Consult data collected from non-invasive investigations (LiDAR and geophysical surveys) to refine/adjust the construction footprint in areas of high archaeological potential prior to the commencement of construction.
- Designate areas of known heritage values as no-go zones on site maps prior to the commencement of construction and during construction as required.
- Undertake induction training to inform workers and contractors of the importance of safeguarding heritage values including, laydown restrictions (construction compound only), unexpected finds procedure and other moveable cultural heritage requirements prior to the commencement of, and during construction as required.
- Supervise all excavation works in areas zones as high and moderate archaeological potential in order to be able to guarantee appropriate management and mitigation measures are implemented as works progress.
- Where possible, supervise all excavation works in areas zones as low archaeological potential in order to be able to guarantee appropriate management and mitigation measures are implemented as works progress.
- Undertake archaeological sieving if required during construction.
- Maintain photographic records of the works for the duration of construction.
- Accurately map the location of works undertaken.
- Record and conserve to archival standard all archaeological features encountered.
- In the event that potential archaeological material is encountered during construction, implement the Unexpected Finds Procedure documented at Section 6.3.8 of the AZMP (refer **Attachment P: KAVHA AZMP Vol 1, Section 6.3.8, p 49**).
- Should significant fabric and/or findings be uncovered during the course of investigations, undertake additional recording to capture high-quality photogrammetric data regarding the fabric or findings. Capture the data to a degree that will allow it to be used for the generation of high-resolution 3D models.
- Invite staff from the Norfolk Island Museum to attend excavations and assist with the recording of any materials encountered.
- Prepare a post-construction report including comprehensive research archives of all relevant records, responses to research design and recommendations for future archaeological heritage management.

**Impact:** Potential vibration impact to heritage buildings and structures during construction.

#### **Mitigation and management**

Extracted from **Attachment A: KAVHA SS S1 EIS: Vol 1, Section 6.5.5.1, p 133:**

- Conduct a pre-dilapidation survey on nearby historic buildings / structures prior to the commencement of construction.

- Monitor historic buildings / structures for signs of damage from vibration during soil compaction work. The final methodology would be determined by the contractor however possible methods include:
  - Crack monitoring.
  - Feel tests (place a hand on the structure or building and feel for vibration).
- Stop compaction work if visible damage to historic buildings or structures is identified and proceed without compaction in this area.
- Stop compaction work if vibration of historic buildings or structures can be felt and proceed without compaction in this area.

*Note: The above vibration safeguards would be completed initially for the well at the 'end of line' holding tank site and the All Saint's Church building. If no damage from vibration is experienced in these locations, it would be assumed that the use of the rammer would not cause damage to structures and buildings and inspections and monitoring would be ceased.*

#### **4.1.2.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. \***

No offsets are proposed.

#### **4.1.3 Ramsar Wetland**

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

—

#### **4.1.3.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? \***

No

#### **4.1.3.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. \***

There are no Ramsar Wetlands on Norfolk Island.

#### **4.1.4 Threatened Species and Ecological Communities**

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

### Threatened species

Direct impact	Indirect impact	Species
No	No	<i>Abutilon julianae</i>
No	No	<i>Achyranthes arborescens</i>
No	No	<i>Advena campbellii</i>
No	No	<i>Balaenoptera borealis</i>
No	No	<i>Balaenoptera musculus</i>
No	No	<i>Balaenoptera physalus</i>
No	No	<i>Blechnum norfolkianum</i>
No	No	<i>Calidris canutus</i>
No	No	<i>Calystegia affinis</i>
No	No	<i>Carcharodon carcharias</i>
No	No	<i>Caretta caretta</i>
No	No	<i>Chelonia mydas</i>
No	No	<i>Clematis dubia</i>
No	No	<i>Coprosma baueri</i>
No	No	<i>Cyanoramphus cookii</i>
No	No	<i>Dermochelys coriacea</i>
No	No	<i>Diomedea antipodensis</i>
No	No	<i>Diomedea antipodensis gibsoni</i>
No	No	<i>Diomedea epomophora</i>
No	No	<i>Diomedea exulans</i>
No	No	<i>Epinephelus daemelii</i>
No	No	<i>Eretmochelys imbricata</i>
No	No	<i>Eubalaena australis</i>
No	No	<i>Euphorbia norfolkiana</i>
No	No	<i>Euphorbia obliqua</i>
No	No	<i>Fregetta grallaria grallaria</i>
No	No	<i>Galeorhinus galeus</i>
No	No	<i>Hoplostethus atlanticus</i>
No	No	<i>Hypolepis dicksonioides</i>
No	No	<i>Limosa lapponica baueri</i>
No	No	<i>Macronectes giganteus</i>
No	No	<i>Macronectes halli</i>
No	No	<i>Mathewsoconcha grayi ms</i>

Direct impact	Indirect impact	Species
No	No	<i>Mathewsoconcha suteri</i>
No	No	<i>Melicope littoralis</i>
No	No	<i>Melicytus latifolius</i>
No	No	<i>Meryta angustifolia</i>
No	No	<i>Meryta latifolia</i>
No	No	<i>Muehlenbeckia australis</i>
No	No	<i>Myoporum obscurum</i>
No	No	<i>Myrsine ralstoniae</i>
No	No	<i>Natator depressus</i>
No	No	<i>Ninox novaeseelandiae undulata</i>
No	No	<i>Numenius madagascariensis</i>
No	No	<i>Pachycephala pectoralis xanthoprocta</i>
No	No	<i>Pennantia endlicheri</i>
No	No	<i>Petroica multicolor</i>
No	No	<i>Pittosporum bracteolatum</i>
No	No	<i>Plexaure limenophylax</i>
No	No	<i>Pteris kingiana</i>
No	No	<i>Pteris zahlbruckneriana</i>
No	No	<i>Pterodroma heraldica</i>
No	No	<i>Pterodroma leucoptera leucoptera</i>
No	No	<i>Pterodroma neglecta neglecta</i>
No	No	<i>Senecio australis</i>
No	No	<i>Senecio evansianus</i>
No	No	<i>Senecio hooglandii</i>
No	No	<i>Sphyrna lewini</i>
No	No	<i>Streblus pendulinus</i>
No	No	<i>Taeniophyllum norfolkianum</i>
No	No	<i>Thalassarche carteri</i>
No	No	<i>Thalassarche impavida</i>
No	No	<i>Thalassarche melanophris</i>
No	No	<i>Thalassarche salvini</i>
No	No	<i>Thalassarche steadi</i>
No	No	<i>Thunnus maccoyii</i>
No	No	<i>Tmesipteris norfolkensis</i>
No	No	<i>Ungeria floribunda</i>

Direct impact	Indirect impact	Species
No	No	Wikstroemia australis
No	No	Zehneria baueriana

## Ecological communities

---

### 4.1.4.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? \*

No

### 4.1.4.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. \*

An EPBC Protected Matters Report prepared for the Proposed Action on 6 September 2022 identified 75 listed threatened species within the Proposal area plus a two kilometer buffer area (refer **Attachment C: Protected Matters Report, pp 3-26**). No listed ecological communities are present.

The 75 threatened species include: 23 bird; 32 plant; 4 snail; 6 reptile; 3 fish; 4 mammal (whale); and 3 shark species

The following species would not be impacted by the Proposal as they are located outside any area of impact:

- 20 bird species:
  - 10 species of Albatross and six species of Petrel:
    - Albatross and petrel are seabirds that feed in marine areas and nest on vegetated coastal slopes or rocky islets. There is no suitable nesting habitat in or near the Proposal area. These birds are more likely to be found on offshore Nepean Island or Phillip Island.
  - 4 species of forest birds (Norfolk Island Green Parrot (*Cyanoramphus cookii*), Norfolk Island Boobook (*Ninox novaeseelandiae undulata*), Golden Whistler (*Pachycephala pectoralis xanthoprocta*), Norfolk Island Robin (*Petroica multicolor*)):
    - There is no forest habitat in or near the Proposal area.
- 4 snail species:
  - Gray's Helicarionid Land Snail (*Mathewsoconcha grayi ms*):
    - This snail is likely to be extinct on Norfolk Island (refer DCCEEW Species Profile and Threats Database, 2022 – Link #5).
  - Phillip Island Helicarionid Land Snail (*Mathewsoconcha phillipi*):
    - This Snail is only known from subfossils on Norfolk Island (refer DCCEEW Species Profile and Threats Database, 2022 – Link #6).
  - Campbell's Keeled Glass-snail (*Advena campbellii*):
    - This snail has only been recorded in Norfolk Island National Park and Botanic Gardens. Its preferred habitat is under rotting logs. There is no suitable habitat in the Proposal area (refer DCCEEW Species Profile and Threats Database, 2022 – Link #7).
  - Suter's Striped Glass-snail (*Mathewsoconcha suteri*):
    - This snail occurs in a few localities on Norfolk Island, including Norfolk Island National Park and Hundred Acres Reserve. Its preferred habitat is inside hollowed out tree branches on the ground. There is no suitable habitat in the Proposal area (refer DCCEEW Species Profile and Threats Database, 2022 – Link #8).
- 1 reptile species (Lord Howe Island Gecko (*Christinus guentheri*)):
  - The Lord Howe Island Gecko is extinct on Norfolk Island (refer DCCEEW Species Profile and Threats Database, 2022 – Link #9).
- 2 fish species (Orange Roughy (*Hoplostethus atlanticus*) and Southern Blue Fin Tuna (*Thunnus maccoyii*)): These are deep ocean species (refer DCCEEW Species Profile and Threats Database, 2022 – Link #10 and #11).
- 4 whale and 3 shark species: These are deep ocean species.

Of the 75 threatened species identified in the Protected Matters Report, the following 41 are considered further:

- 3 bird species.
- 32 plant species.
- 5 reptile species.
- 1 fish species.

An assessment of biodiversity impacts was undertaken for the Proposed Action (refer **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 6.3, pp 90-99** and **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 5, Appendix J, pp 27-34**). This assessment informed the responses to this section (**Section 4.1.4**) of this Referral.

## Proposal area

The Proposal area would be directly impacted by the Proposed Action with the greatest impacts caused by excavation of about 2,150 square metres of the 95,420 square metre Proposal area.

The Proposal area is highly modified and predominantly built, paved (roads) or grassed. Photographs of the sewer route are provided at **Attachment B: KAVHA SS S1 EIS - Vol 2 - Part 5, Appendix K, pp 35-40**.

Open areas are predominantly grassed with exotic Kikuyu and are either regularly mowed for grounds maintenance purposes, or grazed by cattle.

Vegetation within the Proposal area is limited to planted gardens and historic plantings of Norfolk Island Pine trees (*Araucaria heterophylla*) and White Oak trees (*Lagunaria patersonia* subsp. *Patersonia*).

No threatened species are known to occur in the Proposal area (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.3.1.2, pp 91-94**).

#### **Downstream of the Proposal area**

There are three environments downstream of the Proposal Area:

- Creek / wetland environment.
- Coastal environment (sand dunes and beaches).
- Marine Environment (Norfolk Marine Park including Emily and Slaughter Bay).

These areas would not be directly impacted by the Proposed Action.

#### **Creek / wetland environment**

Migratory wetlands / shorebird species do occur in the freshwater creek / wetland area. The three threatened bird species still under consideration are all migratory wetlands / shorebirds and it is assumed that all three species occur here:

- Eastern Curlew (*Numenius madagascariensis*) – Critically Endangered.
- Nunivak Bar-tailed Godwit (*Limosa lapponica baueri*) – Vulnerable.
- Red Knot (*Calidris canutus*) – Endangered.

Impacts on migratory wetlands / shorebirds are discussed at **Section 4.1.5 of this Referral**. There would be no impact on migratory wetlands / shorebirds as a result of the Proposed Action.

No other threatened species are known to occur in the creek / wetland environment area (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.3.1.3, pp 91-95**).

#### **Coastal environment**

Threatened plant species identified in the coastal environment are:

- Coastal Spurge (*Euphorbia obliqua*): Vulnerable.
- Daisy (*Senecio hooglandii*): Vulnerable.

Recent mapping of the native plant communities of Norfolk Island identifies a small patch of vegetation growing in the sand at Slaughter Bay as the Sandy Beach Hermland Plant Community which is made up of typical sandy beach species (low growing non-woody plants). This community includes the Coastal Spurge (*Euphorbia obliqua*) (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Figure 6.3-2, p 93**).

Coastal Spurge (*Euphorbia obliqua*) and Daisy (*Senecio hooglandii*) have also been identified in the coastal dune vegetation near the foreshore in Point Hunter Reserve (refer **Attachment L: NI Public Reserves Plan of Management, Section 17.3.2.1, p 158**).

No other threatened species are known to occur in the coastal environment (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.3.1.4, pp 95-96**).

#### **Marine Environment**

Green turtles are known to inhabit the shallow waters of Emily Bay and Slaughter Bay and are often sighted by swimmers.

For the purposes of this Referral, it is assumed that all five species of threatened reptiles (turtles) and the one species of threatened fish also occur in Emily and Slaughter Bays:

- Loggerhead Turtle (*Caretta caretta*) - Endangered.
- Green Turtle (*Chelonia mydas*) - Vulnerable.
- Leatherback Turtle (*Dermochelys coriacea*) – Endangered.
- Hawksbill Turtle (*Eretmochelys imbricata*) – Vulnerable.
- Flatback Turtle (*Natator depressus*) – Vulnerable.
- Blackrock Cod (*Epinephelus daemelii*) – Vulnerable.

## Justification of no impact

### Proposal area

The Proposal area is highly modified and disturbed. It has little or no habitat value and no threatened species are known to occur in this area.

### Downstream of the Proposal area

The creek / wetland, coastal and marine environments are all located outside and downstream of the Proposal area.

### Construction

Without mitigation, a potential impact of construction of the Proposed Action is the mobilisation of soil from the Proposal area into these environments (sedimentation) via surface water flows into drainage lines and creeks, the wetland area and ultimately Emily Bay and Slaughter Bay, especially during heavy rainfall events.

Impacts of sedimentation may include:

- Increase of sediment loads.
- Increase of pollutants that the sediment may contain or transport with it from the Proposal area.

Both these scenarios have the potential to change terrestrial and aquatic habitat conditions and adversely impact the fauna and flora that occur there. However, if sediment is prevented from leaving the Proposal area, the associated risks to sensitive downstream areas would be removed.

A number of measures have been taken to prevent downstream impacts.

- Avoidance / minimisation:
  - Location of the construction footprint at the greatest practicable distance from waterways, subject to balance with other environmental constraints (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.1.1.2, Fig 6.1-2, p 63**).
  - Development of a construction methodology that limits the size and duration of open excavations (refer **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 3.11.2, p 25**).
- Management:
  - Implementation of safeguards and management measures to manage residual risks of erosion and sedimentation from the Proposal area including:
    - Good site management.
    - No work during, or immediately after, wet weather.
    - Installation and maintenance of erosion and sediment controls.
  - The proposed safeguards and management measures are detailed at **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 6.2.3, pp 88-90**.

### Operation

Potential operational impacts of the Proposed Action are sewage spills and consequent downstream contamination in the event of infrastructure failure. The sewerage scheme infrastructure has been designed to minimise this risk, and safeguards and management measures are proposed to mitigate this even further (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.1.2.2 and Section 6.1.3, pp 69-70**).

Assessment against significance impact criteria for threatened species

An assessment of the Proposed Action was undertaken against the significant impact criteria provided in the EPBC *Significant Impact Guidelines 1.1 Matters of National Environmental Significance* (Commonwealth of Australia, 2013).

The assessment concluded that, subject to mitigation and management limiting potential impacts to creeks / wetlands, coastal and marine areas downstream of the Proposal area, the Proposed Action would not trigger any of the significant impact criteria for:

- Critically endangered and endangered species.
- Vulnerable Species.

### Further information:

- Water Quality: **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.1, pp 61-70**.
- Geology and Soil: **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.2, pp 70-90**.

## 4.1.5 Migratory Species

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

<b>Direct Impact</b>	<b>Indirect Impact</b>	<b>Species</b>
No	No	<i>Actitis hypoleucus</i>
No	No	<i>Anous stolidus</i>
No	No	<i>Ardenna carneipes</i>
No	No	<i>Ardenna grisea</i>
No	No	<i>Ardenna pacifica</i>
No	No	<i>Balaenoptera bonaerensis</i>
No	No	<i>Balaenoptera borealis</i>
No	No	<i>Balaenoptera edeni</i>
No	No	<i>Balaenoptera musculus</i>
No	No	<i>Balaenoptera physalus</i>
No	No	<i>Calidris acuminata</i>
No	No	<i>Calidris canutus</i>
No	No	<i>Calidris melanotos</i>
No	No	<i>Carcharhinus longimanus</i>
No	No	<i>Carcharodon carcharias</i>
No	No	<i>Caretta caretta</i>
No	No	<i>Chelonia mydas</i>
No	No	<i>Dermochelys coriacea</i>
No	No	<i>Diomedea antipodensis</i>
No	No	<i>Diomedea epomophora</i>
No	No	<i>Diomedea exulans</i>
No	No	<i>Eretmochelys imbricata</i>
No	No	<i>Eubalaena australis</i>
No	No	<i>Fregata ariel</i>
No	No	<i>Fregata minor</i>
No	No	<i>Lamna nasus</i>
No	No	<i>Limosa lapponica</i>
No	No	<i>Macronectes giganteus</i>
No	No	<i>Macronectes halli</i>
No	No	<i>Megaptera novaeangliae</i>
No	No	<i>Natator depressus</i>
No	No	<i>Numenius madagascariensis</i>
No	No	<i>Orcinus orca</i>
No	No	<i>Phaethon lepturus</i>
No	No	<i>Phaethon rubricauda</i>

Direct impact	Indirect impact	Species
No	No	Physeter macrocephalus
No	No	Sousa sahulensis
No	No	Sula dactylatra
No	No	Thalassarche carteri
No	No	Thalassarche impavida
No	No	Thalassarche melanophris
No	No	Thalassarche salvini
No	No	Thalassarche steadi

#### 4.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? \*

No

#### 4.1.5.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. \*

An EPBC Protected Matters Report prepared for the Proposed Action on 6 September 2022 identified 43 listed migratory species within the Proposal area plus a two kilometer buffer area (refer **Attachment C: Protected Matters Report, pp 10-14**).

The 43 species include:

- 20 migratory bird species.
- 6 migratory wetlands bird species.
- 17 migratory marine species including: whales; sharks; turtles; and orca.

An assessment of biodiversity impacts was undertaken for the Proposed Action and is provided at **Attachment A: KAVHA SS S1 EIS-Vol 1, Section 6.3, pp 90-99** and **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 5, Appendix J, pp 27-34**. This assessment has informed the responses to this section (**Section 4.1.5**) of this Referral.

Of the 43 migratory species identified in the EPBC Protected Matters Report, sightings of five species in the wetland and coastal areas downstream of the Proposal area have been documented.

Whilst the remaining species were not identified during the biodiversity assessment, for the purposes of this Referral it has been assumed that they may all be present in either the creek / wetland environment, coastal environment and marine environment.

#### Proposal area

The Proposal area is highly modified and predominantly built, paved (roads) or grassed and does not provide suitable habitat for migratory bird species.

Any use of this area by a migratory bird species would be transient utilisation of trees, although this is not reported as a common occurrence.

#### Justification of no impact

The Proposed Action has been designed to avoid impact to trees (refer **Attachment A: KAVHA SS S1 EIS - Vol 1, Section 6.3.2.1, p 96-97** and **Section 6.3.3.1, p 99**). Consequently, transient utilisation of the Proposal area (if any) is unlikely to be impacted.

#### Downstream of the Proposal area

##### Creek / wetland / coastal environment

Migratory wetlands species documented as having been observed in the wetland area (including reed beds, adjacent ponds and surrounding grass areas that are subject to inundation) downstream of the Proposal area include:

- Bar Tailed Godwit (*Limosa lapponica*): Migratory wetland / shorebird species.
- Sharp-tailed Sandpiper (*Calidris acuminata*): Migratory wetland / shorebird species.
- Pectoral Sandpiper (*Calidris melanotos*): Migratory wetland / shorebird species.
- Red Knot (*Calidris canutus*): Threatened (Endangered) migratory wetland / shorebird species.

Small areas of migratory seabird nesting habitat exist at Emily Bay and Cemetery Bay. During the October to May breeding season these areas are utilised by the following migratory seabird species which are protected under the EPBC Act:

- Wedge-tailed Shearwaters (Ghostbirds) (*Ardenna pacifica*): Migratory bird species.
- Little Shearwater (*Puffinus assimilis*): Marine bird species.

It is assumed that other migratory bird species also utilise the wetlands and coastal areas.

Adequate information is not available to confirm whether the wetland is considered to have national or international importance as migratory shorebird habitat (as defined in the *EPBC Act Policy Statement 3.21: Industry Guidelines for Avoiding, Assessing and Mitigating impacts on EPBC Act listed Migratory Shorebird Species* (Commonwealth of Australia, 2015)).

However, given the small scale of the area and very low number of birds, it is considered highly unlikely. Surveys were not considered necessary as no direct or indirect impact is expected.

### **Marine environment**

It is assumed that the Norfolk Marine Park is inhabited by all 17 migratory marine species: whales; sharks; turtles; and orca.

Turtles inhabit the shallow-waters of Emily Bay and Slaughter Bay. All other migratory marine species would be found in the deeper water outside the bays.

### **Justification of no impact**

The creek / wetland, coastal and marine environments are all located outside and downstream of the Proposal area.

#### *Construction*

Without mitigation, a potential impact of construction of the Proposed Action is the mobilisation of soil from the construction footprint into these environments (sedimentation) via surface water flows into drainage lines and creeks, the wetland area and ultimately Emily Bay and Slaughter Bay, especially during heavy rainfall events.

Impacts of sedimentation may include:

- Increase of sediment loads.
- Increase of pollutants that the sediment may contain or transport with it from the Proposal area.

Both these scenarios have the potential to change terrestrial and aquatic habitat conditions and adversely impact the fauna that utilise it, including the 43 migratory species identified in the EPBC Protected Matters Report for the Proposed Action.

However, if sediment is controlled and prevented from leaving the Proposal area, the associated risks to sensitive downstream areas would be removed.

A number of measures have been taken to prevent downstream impacts.

- Avoidance / minimisation:
  - Location of the construction footprint at the greatest practicable distance from waterways, subject to balance with other environmental constraints. Approximate distances between the construction footprint and creeks / wetland, coastal and marine environments are:
    - Closest drainage line: about 40 metres.
    - Closest open creek line (Watermill Creek): about 100 metres.
    - Closest area of wetland: about 110 metres.
    - Closest area of coastline: about 100 metres.
    - Emily Bay outlet: about 150 metres.
    - These distances reflect the shortest distance between the construction footprint and the nominated waterbody at a particular point. Distances are greater along the remainder of the route (refer to **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.1.1.2, Figure 6.1-2, p 63**).
  - Development of a construction methodology that limits the size and duration of open excavations (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 3.11.2, p 25**).
- Management:
  - Implementation of safeguards and management measures to manage residual risks of erosion and sedimentation from the Proposal area into downstream creeks / wetlands, coastal and marine areas. Measures include:
    - Good site management.
    - No work during, or immediately after, wet weather.
    - Installation and maintenance of erosion and sediment controls for the duration of potential impact.
    - The proposed safeguards and management measures are detailed in full at **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.2.3, p 88-90**.

#### *Operation*

The potential adverse impacts of operation of the Proposed Action would be limited to potential sewage spills and consequent soil and downstream water contamination in the event of system failure. The Proposed Action has been designed to minimise the risk of operational spills:

- The sewerage scheme is sealed and is not at risk of infiltration by water during floods or heavy rainfall events (refer **Attachment B: KAVHA SS S1 EIS Vol 2 – Part 2, Section 6.7, p 20**).

- Sections of the scheme can be isolated for maintenance.
- Sewage pumping stations and holding tanks are alarmed and would issue an SMS alert to the scheme operator in the event of a maintenance issue.
- Sewage pumping stations can be emptied by vacuum into an effluent tanker if required.
- The holding tanks would be installed in a bunded area with capacity to contain the contents of one holding tank in the event of failure.

In addition, the successful contractor would be required to:

- Keep adequate levels of spare parts and spare components for the entire sewerage scheme in stock on island at all times.
- Ensure the sewerage scheme infrastructure, including alarm systems, is properly maintained at all times.
- Ensure timely responses to warning alarms and SMS alerts.
- Release rainwater collected in the bunded area of the 'end of line' holding tanks to the ground as soon as practicable after significant rainfall events.

### **Significance of impact on Migratory Species**

An assessment of the Proposed Action was undertaken against the significant impact criteria provided in the EPBC *Significant Impact Guidelines 1.1 Matters of National Environmental Significance* (Commonwealth of Australia, 2013).

The assessment concluded that, subject to mitigation and management limiting potential impacts to creeks / wetlands, coastal and marine areas downstream of the Proposal area, the Proposed Action would not trigger any of the following significant impact criteria:

- Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species.
- Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species.
- Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

### **Further information**

Further information is available at:

- Water Quality assessment: **Attachment A: KAVHA SS S1 EIS - Vol 1, Section 6.1, pp 61-70.**
- Geology and Soil assessment: **Attachment A: KAVHA SS S1 EIS - Vol 1, Section 6.2, pp 70-90.**

## **4.1.6 Nuclear**

### **4.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? \***

No

### **4.1.6.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. \***

The Proposed Action is not a nuclear action.

## **4.1.7 Commonwealth Marine Area**

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Commonwealth marine area
No	No	EEZ and Territorial Sea

#### 4.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? \*

No

#### 4.1.7.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. \*

The Proposed Action would be undertaken outside the Norfolk Marine Park which is a Commonwealth Marine Area. The Norfolk Marine Park is part of the Temperate East Marine Parks Network.

The Proposal area is located between about 100 meters and 350 metres from the shoreline and the boundary of the Norfolk Marine Park.

Emily Bay and Slaughter Bay are located in the shallow waters of the Marine Park.

As described in **Section 4.1.4 (Threatened Species) and 4.1.5 (Migratory Species) of this Referral**, the Proposed Action would not have a direct or an indirect impact on the environment downstream of the Proposal area, including Emily Bay and Slaughter Bay.

The key operational impact of the Proposed Action on the Norfolk Marine Park would be positive – i.e. removal about 75 percent of sewage generated on Crown land in the Proposal area and a subsequent reduction in human waste contamination of Emily Bay and Slaughter Bay.

At the Pre-referral meeting for the Proposed Action, it was acknowledged that the Proposed Action would contain and remove all future sewage generated in the area serviced by the sewerage scheme and that this would have a positive impact on the Marine Park.

However, given the need to address water quality issues in the Emily Bay and Slaughter Bay as a matter of urgency due to the progressive and potentially irreversible decline in marine ecosystem health (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 3.4, p 11-12**), DITRDCA was asked to also consider options for soil remediation to address legacy human waste contamination in the Proposal area as this may continue to impact water quality in the Marine Park for some time into the future, irrespective of the Proposed Action.

Options for treatment of contaminated soil on Norfolk Island are limited due to the isolated location and associated logistics such as: costs of transport / freight; and limited on-island resources.

Options considered for treatment of contaminated soil (human waste) are:

- Removal (export or sea dumping):
  - There are no facilities on island capable of accepting / treating contaminated soil.
  - Contaminated soil would need to be exported offshore to an approved waste facility or disposed at sea.
  - The cost of export is not viable.
  - Disposal at sea does not resolve the issue of ocean contamination.
  - Clean replacement soil is not readily available on the island.
- Removal (stockpiling in a contained location to bioremediate naturally):
  - There are no facilities on island capable of accepting / treating contaminated soil.
  - A facility would need to be developed in a suitable location, most likely on council or private land. This would most likely require lease agreements and lengthy planning approvals.
  - A fully bunded stockpile area (floor and walls) would be required, increasing both costs and requirements for construction materials which are currently in limited supply.
  - Clean replacement soil is not readily available on island. Excavated areas would need to remain open for the bioremediation period (unknown timeframe), increasing the risk of erosion and sedimentation.
- In situ bioremediation (mechanically aerated - aerobic):
  - Aerated bioremediation would require soil to be excavated and placed in a location where it could be turned regularly by an excavator until bioremediated.
  - Excavated areas would need to remain open for the bioremediation period (unknown timeframe), increasing the risk of erosion and sedimentation.
  - The cost and environmental impacts of the mechanical aeration process outweigh potential unknown time benefits.
- In situ bioremediation (no intervention - anaerobic):
  - In situ bioremediation is a natural biological process which does not require human intervention.
  - Bioremediation is the biological process by which microorganisms and / or plants destroy contaminants in the soil (or other substances) or transform them into less harmful forms. Whilst the bioremediation process can be encouraged with intervention, if left to occur naturally, it is expected that bioremediation would occur in the following indicative timeframes:
    - **Pathogens** – Pathogens from wastewater bioremediate in the environments at varying rates. *E. Coli* and *Enterococci* are used as indicators as they generally die within 3-5 days of leaving the human / animal gut because they require a constant temperature of 36 degrees Celsius (body temperature) to survive.
    - **Nutrients** - The timeframe for environmental removal of nutrients from the soil is difficult to determine and could be weeks or months. Nutrients would either undergo aerobic/anaerobic processes, change form and become inert, or would be taken up by plants which need nutrients to grow.

- In situ bioremediation is the method currently used on island i.e. faulty septic tanks are repaired and converted into pump out holding tanks to prevent future human waste contamination of soil. Legacy soil contamination is not treated and is left in situ to bioremediate (A. Barnett pers. Comm., 20 April 2022 (Note: Written privacy permission has been obtained)).

Given the constraints and limitations of the other options, in situ bioremediation (no intervention - anaerobic) was considered to be the only viable option for treatment of soil contamination.

To minimise ongoing pollution during the planning stages of the Proposed Action, most septic treatment systems and sewage holding tanks in KAVHA were sealed during interim remediation works in early – mid 2021 (refer **Attachment A: KAVHA SS S1 EIS Vol 1, Section 2.2.1, p 3**). The sealed tanks have not been a source of human waste pollution since that time. Given the time that has passed since the tanks were sealed, it is expected that bioremediation of legacy contamination is either underway or complete.

In order to monitor bioremediation progress in the Proposal area, DITRDCA and the Norfolk Island Regional Council commenced a soil and water monitoring program in September 2021 to measure levels of pathogens and nutrients present in soil and waterways in the vicinity of the Proposal area, and to monitor how these levels were changing over time in the absence of ongoing pollution.

The soil and water monitoring programs, results and discussion are detailed at **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.2.1.3 pp 76-84 (soil) and Section 6.1.1.2 pp 62-66 (water)**.

Outcomes of the monitoring program were inconclusive:

- **Soil:** Further rounds of soil testing were aborted due to contamination of the test sites by an ongoing influx of pollution from outside the Proposal area during persistent heavy rainfall events in 2021 and 2022. As well as likely impacts from agricultural practices in the area. Testing of soil was not deemed to be an effective method of measuring bioremediation of legacy human waste.
- **Water:** Further rounds of water testing were aborted due to contamination of the test sites by an ongoing influx of pollution from outside KAVHA during persistent heavy rainfall events in 2021 and 2022. Testing of surface water was not deemed to be an effective method of measuring bioremediation of legacy human waste contamination.

The outside sources of pollution that interfered with the soil and water testing are detailed at **Attachment A: KAVHA SS S1 EIS Vol 1, Section 6.1.1.1 and Figure 6.1-1 pp 61-62**.

The outcomes of the soil and water monitoring demonstrate that human waste contamination is an island wide problem which has downstream impacts on soil and water quality in KAVHA and the Norfolk Marine Park.

Replacement of contaminated soil in the Proposal area with clean soil would be ineffective, as clean soil would likely become contaminated from outside pollution sources following future rainfall events.

Given the impacts of pollution generated in areas outside of KAVHA, it is evident that the Proposed Action would not solve human waste contamination issues in Emily Bay and Slaughter Bay. However, it would remove 75 percent of the closest point sources of sewage and assist in the reduction of human waste contamination in the bays.

### **Significance of impact on the Commonwealth Marine Environment**

An assessment of the Proposed Action was undertaken against the significant impact criteria provided in the EPBC *Significant Impact Guidelines 1.1 Matters of National Environmental Significance (Commonwealth of Australia, 2013)*.

The assessment concluded that, subject to mitigation and management limiting potential impacts to the environments downstream of the Proposal area, the Proposed Action would not trigger any of the significant impact criteria for the Commonwealth Marine Environment.

Rather, the Proposed action would contribute to reducing human waste contamination of Emily Bay and Slaughter Bay which is currently causing the following significant impacts:

- Adverse effect on a population(s) of marine species or cetacean including its lifecycle and spatial distribution.
- Change in water quality which may adversely impact on biodiversity, ecological integrity, social amenity or human health.

## **4.1.8 Great Barrier Reef**

### **4.1.8.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? \***

No

### **4.1.8.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. \***

The Proposed Action would be undertaken in Norfolk Island, over 2,000 kilometers away from the Great Barrier Reef.

#### **4.1.9 Water resource in relation to large coal mining development or coal seam gas**

##### **4.1.9.1 Is the proposed action likely to have any direct and/or indirect impact on this protected matter? \***

No

##### **4.1.9.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. \***

The Proposed Action is not for coal mining or coal seam gas.

#### **4.1.10 Commonwealth Land**

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

Direct impact	Indirect impact	Commonwealth land area
Yes	No	Norfolk Island

##### **4.1.10.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? \***

Yes

##### **4.1.10.2 Briefly describe why your action has a direct and/or indirect impact on these protected matters. \***

The Proposed Action would be undertaken entirely the Commonwealth land described in **Attachment A: KAVHA SS EIS Vol. 1, Section 3.2.3, Table 3-1, pp 9**).

The Proposed Action would be carried out by the Commonwealth, as represented by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts.

An environmental impact assessment has been undertaken to assess the potential environmental impacts of the Proposed Action. The assessment is documented in the Environmental Impact Statement (EIS) which is provided in full at **Attachment A: KAVHA SS EIS Vol. 1** and **Attachment B: KAVHA SS EIS Vol. 2 (Parts 1-5)**.

The EIS was prepared to support a local Development Application for the Proposed Action. Consideration was given in the EIS to the likely impact of the Proposed Action on the natural and built environment in accordance with the matters in Schedule 2 of the *Planning Regulations 2004 (NI)* (refer **Attachment R: EIS Matters**), the CEO EIS Directions issued under Section 45(6) of the *Planning Act 2002 (NI)* and the Significant Development Declaration under Section 28C(5)(a) of the Planning Act (refer **Attachment B: KAVHA SS S1 EIS Vol. 2 - Part 3 Appendix E, pp 21-24 and Appendix F, pp 24-28**).

The environmental impact assessment concluded that:

- A number of adverse environmental impacts of the Proposed Action have been avoided or reduced during the assessment of options and alternatives and the development of the concept design. Avoidance measures include, but are not limited to:

- Selection of a pressure sewerage scheme instead of a gravity sewerage scheme. Gravity sewerage schemes require deeper trenches and increase potential impact on archaeology.
- Careful route selection guided by the requirements of relevant heritage management documents and iteratively modified during design development to, where possible, traverse highly disturbed areas (such as existing infrastructure corridors and roadways), avoid heritage buildings and structures, minimise impact to known and potential archaeology, and avoid significant trees. Relevant heritage management document include:
  - *KAVHA Heritage Management Plan* (Jean Rice et al, 2016).
  - *KAVHA Archaeological Zoning and Management Plan* (Extent, 2020) (refer **Attachment P: KAVHA AZMP Vol 1**).
  - Kingston and Arthur's Vale Historic Area Cultural Landscape Management Plan (GML Heritage + Context, 2019) (refer **Attachment Q: KAVHA Cultural Landscape Management Plan**).
- Above ground installation of the temporary 'end of line' holding tanks to minimise excavation required at this site. The holding tanks would be replaced with an underground sewage pumping station in Stage 2, subject to approvals. However, the excavation for the pumping station would be significantly smaller scale than the excavation required to underground the holding tanks.
- Where potential impacts are unavoidable, they would be mitigated.
- Residual impacts after mitigation would need to be managed. Residual Impacts would be:
  - Temporary, short-term construction impacts (noise, traffic and access, visual amenity and socio-economic) (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6, pp 61-151**).
  - Potential permanent impact to built heritage due to a possible requirement for underground installation of rising pressure mains through stone walls with heritage value in a maximum of three locations. Further information about this impact is provided at **Section 4.1.1 and Section 4.1.2 of this Referral**.
  - Potential permanent impact to archaeology within the construction footprint. Further information about this impact is provided at **Section 4.1.1 and Section 4.1.2 of this Referral**.

#### **4.1.10.4 Do you consider this likely direct and/or indirect impact to be a Significant Impact? \***

No

#### **4.1.10.6 Describe why you do not consider this to be a Significant Impact. \***

The only impacts of the Proposal with potential to be significant are:

- Potential permanent impact to built heritage due to a possible requirement for underground installation of rising pressure mains through stone walls with heritage value in a maximum of three locations. Further information about this impact is provided at **Section 4.1.1 and Section 4.1.2 of this Referral**.
- Potential permanent impact to archaeology within the construction footprint. Further information about this impact is provided at **Section 4.1.1 and Section 4.1.2 of this Referral**.

A self assessment of significant impacts was undertaken in accordance with the:

- *EPBC Significant Impact Guidelines 1.1 Matters of National Environmental Significance* (Commonwealth of Australia, 2013).
- *EPBC Significant Impact Guidelines 1.2: Actions on, or impacting upon, Commonwealth Land and Actions by Commonwealth Agencies* (Commonwealth of Australia, 2013).

A summary of the outcomes of both the environmental impact assessment and the EPBC self assessment is provided at **Attachment S: KAVHA SS S1- Summary of Impacts**.

The EPBC self assessment concluded that EPBC impacts that would be triggered by the Proposed Action are:

- Significant Impact Guidelines 1.1:
  - **World Heritage Property - Historic Heritage Values:** Permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a World Heritage Property.
  - **National Heritage Place - Historic Heritage Values:** Permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a National Heritage place.
- Significant Impact Guidelines 1.2:
  - **Impacts on Heritage:** Permanently destroy, remove, or substantially alter the fabric (physical material including structural elements and other components, fixtures, contents, and objects) of a heritage place.

These impacts are provided in the guidelines as impacts that are likely to be significant. However, whether an impact is significant or not is dependent on the values of the place that would be impacted.

An assessment of the impacts of the Proposed Action against the heritage values of KAVHA and the relevant significant impact criteria in the Significant Impact Guidelines concluded that the Proposed Action would not have a significant impact on the World Heritage Values, or on the National Heritage Values, of KAVHA (refer **Section 4.1.1.6 and Section 4.1.2.6 of this Referral**), or on Commonwealth Land.

#### **4.1.10.7 Do you think your proposed action is a controlled action? \***

No

#### 4.1.10.9 Please elaborate why you do not think your proposed action is a controlled action. \*

The potential impacts of the Proposed Action on Commonwealth Land are not considered to be significant as detailed in **Section 4.1.10.6 of this Referral.**

Controlled actions relate to actions that are likely to have a significant impact on a Matter of National Environmental Significance, or on Commonwealth Land. As the Proposed Action is not likely to have a significant impact on any Matter of National Environmental Significance or on Commonwealth Land, it is not considered to be a controlled action.

#### 4.1.10.10 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures. \*

Avoidance measures built into the design of the Proposed Action include, but are not limited to:

- Selection of a pressure sewerage scheme instead of a gravity sewerage scheme. Gravity sewerage schemes require deeper trenches and increase potential impact on archaeology.
- Careful route selection guided by the requirements of relevant heritage management documents (refer to the list below) and iteratively modified during design development to, where possible, traverse highly disturbed areas (such as existing infrastructure corridors and roadways), avoid heritage buildings and structures, minimise impact to known and potential archaeology, and avoid significant trees.
  - Relevant heritage management document include:
    - *KAVHA Heritage Management Plan* (Jean Rice et al, 2016).
    - *KAVHA Archaeological Zoning and Management Plan* (Extent, 2020) (refer **Attachment P: KAVHA AZMP Vol 1**).
    - *Kingston and Arthur's Vale Historic Area Cultural Landscape Management Plan* (GML Heritage + Context, 2019) (refer **Attachment Q: KAVHA Cultural Landscape Management Plan**).
- Above ground installation of the temporary 'end of line' holding tanks to minimise excavation required at this site. The holding tanks would be replaced with an underground sewage pumping station in Stage 2, subject to approvals. However, the excavation for the pumping station would be significantly smaller scale than the excavation required to underground the holding tanks.

Proposed mitigation and management measures are provided in **Attachment A: KAVHA SS EIS Vol. 1, Section 6** and summarised below:

- Water Quality (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.1, p 70**) - Measures are proposed to:
  - Manage wind blown dust.
  - Prevent erosion and sedimentation from the Proposal area to ensure downstream environments are not indirectly impacted.
  - Manage acid sulfate soils (in the unlikely event these are encountered).
  - Manage sewerage scheme maintenance to prevent operational sewage spills.
- Geology and Soils (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.2, pp 88-90**) - Measures are proposed to:
  - Manage wind blown dust.
  - Prevent erosion and sedimentation from the Proposal area to ensure downstream environments are not indirectly impacted.
  - Manage acid sulfate soils (in the unlikely event these are encountered).
  - Manage sewerage scheme maintenance to prevent operational sewage spills.
- Biodiversity (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.3, pp 90-99**) - Measures are proposed to:
  - Avoid or manage damage to protected trees.
  - Prevent erosion and sedimentation from the Proposal area to ensure biodiversity of downstream environments is not indirectly impacted.
- Heritage (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.4, pp 122-124**) - Measures are proposed to:
  - Manage temporary visual impacts of construction.
  - Avoid or manage damage to built heritage structures.
  - Avoid or manage damage to significant plantings.
  - Avoid (where possible) and manage impacts to archaeology in accordance with relevant management plans.
- Noise and Vibration (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.5, pp 132-133**) - Measures are proposed to:
  - Minimise and manage noise impacts to sensitive receivers in and near the Proposal area.
  - Monitor and avoid vibration impacts to built heritage.
- Traffic and Access (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.6, p 137**) - Measures are proposed to:
  - Ensure required approvals for in road are obtained.
  - Manage traffic and changes to traffic conditions.
  - Ensure public safety.

- Visual Amenity (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.7, p 142**) - Measures are proposed to:
  - Minimise and manage visual impacts of construction.
- Air Quality (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.8, p 142**) - Measures are proposed to`:
  - Minimise areas of open excavation and manage disturbed areas to minimise wind blown dust.
  - Minimise vehicle emissions.
  - Minimise potential for odour.
- Waste (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.8, p 145**) - Measures are proposed to:
  - Manage waste in accordance with a waste management hierarchy of: avoid; reduce; reuse, recycle and recover; and dispose as a last option.
  - Manage decommissioning of existing sewage holding tanks and associated pipework.
- Hazard and Risk (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.5, pp 147-148**) - Measures are proposed to:
  - Manage transport, storage, and handling of fuels and oils.
  - Prevent accidents including traffic accidents and potential exposure to sewage.
  - Manage sewerage scheme maintenance to prevent operational sewage spills.
- Socio-economic (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.5, p 151**) - Measures are proposed to:
  - Require provision of information to the community about the Proposal, details of future work programs, changes to access and traffic conditions, and general construction progress throughout the construction phase of the Proposed Action.
  - Require implementation of a enquiries and complaints management process for the duration of construction.
- Cumulative (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6.5, p 152**) - Measures are proposed to:
  - Manage cumulative traffic impacts of concurrent developments in KAVHA.

A full compilation of mitigation and management measures is provided at **Attachment A: KAVHA SS EIS Vol. 1, 7.1, p 153-163**.

#### **4.1.10.11 Please describe any proposed offsets and attach any supporting documentation relevant to these measures. \***

No offsets are proposed.

#### **4.1.11 Commonwealth heritage places overseas**

You have identified your proposed action will likely directly and/or indirectly impact the following protected matters.

A direct impact is a direct consequence of an action taken – for example, clearing of habitat for a threatened species or permanent shading on an ecological community as the result of installing solar panels.

An indirect impact is an 'indirect consequence' such as a downstream impact or a facilitated third-party action.

<b>Direct impact</b>	<b>Indirect impact</b>	<b>Commonwealth heritage places overseas</b>
No	No	HMS Sirius Shipwreck
Yes	No	Kingston and Arthurs Vale Commonwealth Tenure Area

#### **4.1.11.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters? \***

No

#### **4.1.11.3 Briefly describe why your action is unlikely to have a direct and/or indirect impact. \***

Commonwealth Heritage Places Overseas listed on the Australian Heritage Database as at 15 September 2022 are:

- Australia House, The Strand, United Kingdom.
- Residence of the Australian Ambassador, Washington DC, United States.

The Proposal Area is in Norfolk Island in the South Pacific and would have no impact on these places.

The following places have automatically appeared in the pre-populated 'Commonwealth Heritage Places Overseas' field. However, they are not located overseas and are identified in the Commonwealth Heritage list as being in Australia (External Territory):

1. HMS Sirius Shipwreck.
2. Kingston and Arthur's Vale Commonwealth Tenure Area.

These pre-populated places cannot be removed but are not relevant to this section and have not been considered further in this Section (refer to Section 4.1.2 (National Heritage) of this Referral for discussion on these places).

## 4.1.12 Commonwealth or Commonwealth Agency

### 4.1.12.1 Is the proposed action to be taken by the Commonwealth or a Commonwealth Agency? \*

Yes

### 4.1.12.2 Briefly describe the nature and extent of the likely impact on the whole of the environment. \*

The Proposed Action would be carried out by the Commonwealth, as represented by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts.

An environmental impact assessment has been undertaken to assess the potential environmental impacts of the Proposed Action. The assessment is documented in the Environmental Impact Statement (EIS) which is provided in full at **Attachment A: KAVHA SS EIS Vol. 1** and **Attachment B: KAVHA SS EIS Vol. 2 (Parts 1-5)**.

The EIS was prepared to support a local development application for the Proposed Action. Consideration was given in the EIS to the likely impact of the Proposed Action on the natural and built environment in accordance with the matters in Schedule 2 of the *Planning Regulations 2004 (NI)* (refer **Attachment R: EIS Matters**), the CEO EIS Directions issued under Section 45(6) of the *Planning Act 2002 (NI)* and the Significant Development Declaration under Section 28C(5)(a) of the Planning Act (refer **Attachment B: KAVHA SS S1 EIS Vol. 2 - Part 3 Appendix E, pp 21-24 and Appendix F, pp 24-28**).

The environmental impact assessment concluded that:

- A number of adverse environmental impacts of the Proposed Action have been avoided or reduced during the assessment of options and alternatives and the development of the concept design. Avoidance measures include, but are not limited to:
  - Selection of a pressure sewerage scheme instead of a gravity sewerage scheme. Gravity sewerage schemes require deeper trenches and increase potential impact on archaeology.
  - Careful route selection guided by the requirements of relevant heritage management documents<sup>1</sup> and iteratively modified during design development to, where possible, traverse highly disturbed areas (such as existing infrastructure corridors and roadways), avoid heritage buildings and structures, minimise impact to known and potential archaeology, and avoid significant trees. Relevant heritage management document include:
    - *KAVHA Heritage Management Plan* (Jean Rice et al, 2016).
    - *KAVHA Archaeological Zoning and Management Plan* (Extent, 2020) (refer **Attachment P: KAVHA AZMP Vol 1**).
    - *Kingston and Arthur's Vale Historic Area Cultural Landscape Management Plan* (GML Heritage + Context, 2019) (refer **Attachment Q: KAVHA Cultural Landscape Management Plan**).
  - Above ground installation of the temporary 'end of line' holding tanks to minimise excavation required at this site. The holding tanks would be replaced with an underground sewage pumping station in Stage 2, subject to approvals. However, the excavation for the pumping station would be significantly smaller scale than the excavation required to underground the holding tanks.
- Where potential impacts are unavoidable, they would be mitigated.
- Residual impacts after mitigation would need to be managed. Residual Impacts would be:
  - Temporary, short-term construction impacts (noise, traffic and access, visual amenity and socio-economic) (refer **Attachment A: KAVHA SS EIS Vol. 1, Section 6, pp 61-151**).
  - Potential permanent impact to built heritage due to a possible requirement for underground installation of rising pressure mains through stone walls with heritage value in a maximum of three locations. Further information about this impact is provided at **Section 4.1.1 and Section 4.1.2 of this Referral**.
  - Potential permanent impact to archaeology within the construction footprint. Further information about this impact is provided at **Section 4.1.1 and Section 4.1.2 of this Referral**.

The EIS presents a 'whole of environment' assessment. As such, it has been used as the basis for a self assessment of significant impacts undertaken in accordance with the:

- *EPBC Significant Impact Guidelines 1.1 Matters of National Environmental Significance* (Commonwealth of Australia, 2013).
- *EPBC Significant Impact Guidelines 1.2: Actions on, or impacting upon, Commonwealth Land and Actions by Commonwealth Agencies* (Commonwealth of Australia, 2013).

A summary of the outcomes of both the environmental impact assessment and the EPBC self assessment is provided at **Attachment S: KAVHA SS S1- Summary of Impacts**.

The EIS concluded that:

- Impacts of the Proposed Action (excluding heritage impacts) have been avoided or would be mitigated. Residual impacts would be temporary and short term and would be adequately managed.
- Some heritage impacts are unavoidable and would be permanent. Best practice mitigation and management of these impacts would be required.
  - Measures to mitigate and manage impacts to heritage are provided at **Attachment A: KAVHA SS EIS Vol. 1, Section 6.4.7, pp 122-124**. The measures related to archaeology are reproduced from the Heritage Impact Statement for the Proposed Action (refer **Attachment B: KAVHA SS EIS Vol. 2 - Part 4, Section 8, pp 59-61**).

The EPBC self assessment concluded that EPBC impacts that would be triggered by the Proposed Action are:

- Significant Impact Guidelines 1.1:
  - **World Heritage Property - Historic Heritage Values:** Permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a World Heritage Property.
  - **National Heritage Place - Historic Heritage Values:** Permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a National Heritage place.
- Significant Impact Guidelines 1.2:
  - **Impacts on Heritage:** Permanently destroy, remove, or substantially alter the fabric (physical material including structural elements and other components, fixtures, contents, and objects) of a heritage place.

These impacts are provided in the guidelines as impacts that are likely to be significant. However, whether an impact is significant or not is dependent on the values of the place that would be impacted.

An assessment of the impacts of the Proposed Action by Commonwealth Agency against the heritage values of KAVHA and the relevant significant impact criteria in the Significant Impact Guidelines concluded that the Proposed Action would not have a significant impact on the World Heritage Values, or on the National Heritage Values, of KAVHA (refer **Section 4.1.1.6 and Section 4.1.2.6 of this Referral**), or on Commonwealth Land.

## 4.2 Impact summary

### Conclusion on the likelihood of significant impacts

You have indicated that the proposed action will likely have a significant impact on the following Matters of National Environmental Significance:

*None*

### Conclusion on the likelihood of unlikely significant impacts

You have indicated that the proposed action will unlikely have a significant impact on the following Matters of National Environmental Significance:

- World Heritage (S12)
- National Heritage (S15B)
- Ramsar Wetland (S16)
- Threatened Species and Ecological Communities (S18)
- Migratory Species (S20)
- Nuclear (S21)
- Commonwealth Marine Area (S23)
- Great Barrier Reef (S24B)
- Water resource in relation to large coal mining development or coal seam gas (S24D)
- Commonwealth Land (S26)
- Commonwealth heritage places overseas (S27B)
- Commonwealth or Commonwealth Agency (S28)

## 4.3 Alternatives

#### 4.3.1 Do you have any possible alternatives for your proposed action to be considered as part of your referral? \*

No

#### 4.3.8 Describe why alternatives for your proposed action were not possible. \*

##### OPTIONS

###### Option evaluation

During development of the Proposed Action, a number of options for the management of human waste contamination were considered. The options considered included recommendations made during a number of water quality investigations undertaken over previous years including:

- *Emily Bay and Upper Cascade Creek Catchments: Norfolk Island Water Quality Study* (AECOM, 2017) (refer **Attachment T: Water Quality Study\_AECOM**).
  - AECOM was commissioned by the Norfolk Island Regional Council to undertake a water quality study of the Watermill Creek and Upper Cascade Creek catchments of Norfolk Island to assess water quality issues (including recreational use of Emily Bay and ecosystem health) to determine potential risks to human health and the environment, and to provide practical recommendations for improving water quality.
- *Norfolk Island Water Resource Assessment: Options for improving the resilience of Norfolk Island to extended dry spells* (CSIRO, 2020) (refer **Attachment U: Water Resource Assessment\_CSIRO**).
  - The CSIRO was commissioned by DITRDCA to quantify key components of the water balance of Norfolk Island, understand the drivers of change of hydrological behaviours and to investigate options to improve the resilience of Norfolk to extended dry spells. Whilst this scope is not directly relevant to water quality in Emily Bay and Slaughter Bay, the report does confirm island wide sewage pollution of surface water and groundwater.
- *Improving the Water Quality of Emily Bay, Norfolk Island* (Bligh Tanner, 2020) (refer **Attachment J: Improving Water Quality of Emily Bay\_Blight Tanner**).
  - Bligh Tanner was commissioned by Parks Australia to investigate options into the management of polluted water to protect the health of the lagoon at Emily Bay and Slaughter Bay.

The options considered are detailed in full in **Attachment A: KAVHA SS EIS Vol. 1, Section 3.5, pp 12-15**. They include (in summary):

- Environmental investigations.
- Interception (biological and structural).
- On-site treatment (biological and mechanical).
- Alternate disposal locations and methods.
- Prevention.
- Flushing Emily Bay.

###### Preferred option

The preferred option was developed from the measure that was identified in *Improving the Water Quality of Emily Bay, Norfolk Island* (Bligh Tanner, 2020) as the ultimate solution to prevent future contamination of surface water and groundwater and consequently the human waste contamination issue in KAVHA, Emily Bay and Slaughter Bay.

The recommended ultimate measure is:

*"It is recommended for Norfolk Island Regional Council to expand the Water Assurance Scheme to service all properties on the island. Connecting the remaining properties to the sewage treatment plant prevents future contamination of groundwater and allows the denitrification trenches to address the legacy pollution impacts. Should attainment of funding to sewer the entire island be an issue, it is recommended that the high-risk houses in the KAVHA catchment are connected first."* (refer **Attachment J: Improving Water Quality of Emily Bay\_Blight Tanner, Section 3.3, p 19**).

The high-risk properties in the KAVHA catchment are shown at **Attachment A: KAVHA SS EIS Vol. 1, Section 3.5.3.1, Figure 3-4, p 15**. This includes the properties in the Proposal area.

The recommended ultimate measure of seweraging the KAVHA catchment has been proposed to the

extent that it is applicable Crown land. The Proposed Action would result in the containment and removal of all sewage generated at buildings on Crown land in the Proposal area (about 75 percent of all sewage generated on Crown land in KAVHA). Whilst this would not solve the island wide water quality problems, or the consequent downstream pollution issues in Emily Bay and Slaughter Bay, it would remove many of the closest point sources of sewage and assist in the reduction of levels of human waste contamination in Emily Bay and Slaughter Bay.

Provision has been included in the design of the Proposed Action for the future connection of nearby private properties at such time that appropriate legislative provisions are put into place by the Norfolk Island Regional Council.

The preferred option is further detailed in **Attachment A: KAVHA SS EIS Vol. 1, Section 3.1, pp 5-6 and Section 3.6, p 16**.

Once the preferred option was confirmed and the Proposal area identified, the concept design was developed taking the following matters into consideration:

- The remote location and environmental sensitivity of Norfolk Island.
- Area and buildings to be serviced.
- Required design capacity.
- Ease and cost of construction.
- Avoidance of existing underground services.
- Avoidance of known heritage items and potential archaeological deposits.
- Avoidance of other environmental impacts such as potential acid sulfate soils and damage to protected and significant trees.

The type of sewerage scheme that was selected is a standard pressure sewerage system that uses simple technology, requires minimal maintenance and requires shallower trenches than a gravity system which would need to achieve a fall along the length of the main.

The route of the sewerage scheme was selected to utilise previously disturbed areas, and to avoid impacts to existing underground services, potential archaeological deposits, heritage buildings, and the natural environment where possible.

The design process is detailed in **Attachment A: KAVHA SS EIS Vol. 1, Section 3.8 and Section 3.9, pp 17-20.**

The preferred option is the ultimate option for management of human waste contamination. Any lesser option would result in a substandard environmental outcome.

## **ALTERNATIVES TO THE PREFERRED OPTION**

Once the preferred option was identified, alternatives to the preferred option were considered including:

- Base case ('do nothing').
- Pump out sewage holding tanks.

These alternatives, and the reasons for why they are unacceptable long term solutions, are detailed in **Attachment A: KAVHA SS EIS Vol. 1, Section 3.7, pp 16-17.**

Alternatives to the Proposed Action were not pursued because the preferred option is the ultimate option and any alternative would result in a substandard environmental outcome.

## **ALTERNATIVE TIMELINE**

No alternative timeline is proposed due to the urgency of the Proposed Action.

Contaminated surface water and groundwater is adversely impacting downstream areas including KAVHA, Emily Bay and Slaughter Bay, causing potentially irreversible damage to marine ecosystems and posing public health risks.

The impacts of the pollution are being exacerbated by high rainfall generated by the current La Niña weather system (increased mobilisation of pollutants into the bays during frequent heavy rainfall events) and increasing sea temperatures (better conditions for algal growth). This is evidenced by increased incidence of coral bleaching and algal growth and increased frequency of public health alerts in relation to swimming in Emily Bay and Slaughter Bay (P Wilson; 2022) (refer **Attachment V: Media Release\_Upgrading Septic Tanks**).

The Proposed Action is time sensitive and needs to be implemented as soon as possible, subject to planning and approval processes. Notwithstanding, specific commitments have been made in the Environmental Impact Statement for the Proposed Action to halt work when required to minimise impacts on the use of KAVHA, for example: during large community events, funerals, court sittings and unloading of the ship, amongst others. (refer to **Attachment A: KAVHA SS EIS Vol. 1, Section 3.11.1, p 24, Section 6.5.5.1, p 132, Section 6.6.3.1, p 137.**

Further explanation of the need for the Proposed Action is provided at **Attachment A: KAVHA SS EIS Vol. 1, Section 3.4.3, p 12.**

## **ALTERNATIVE LOCATION**

No alternative location is possible.

The Proposal area is dictated by the location of existing buildings on Crown land which generate sewage and would be serviced by the proposed sewerage scheme.

## **ALTERNATIVE ACTIVITIES**

No alternative activities are proposed.

# 5. Lodgement

## 5.1 Attachments

### 1.2.1 Overview of the proposed action

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att B-KAVHA SS S1 EIS Vol 2-Part1 APP_AB	Document	Environmental Impact Statement for the Proposed Action - Appendix A and B
#3.	Att B-KAVHA SS S1 EIS Vol 2-Part2 APP_C	Document	Environmental Impact Statement for the Proposed Action - Appendix C
#4.	Att B-KAVHA SS S1 EIS Vol 2-Part3 APP_DEF	Document	Environmental Impact Statement for the Proposed Action - Appendix D, E and F
#5.	Att B-KAVHA SS S1 EIS Vol 2-Part4 APP_G	Document	Environmental Impact Statement for the Proposed Action - Appendix G Heritage Impact Statement
#6.	Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L
#7.	Att C-Protected Matters Report	Document	EPBC Protected Matters Report for the Proposed Action
#8.	Att W-References and Glossary	Document	References and Glossary for this Referral for the Proposed Action

### 1.2.5 Information about the staged development

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
-----	--------------------------------	----------	--

### 1.2.6 Commonwealth or state legislation, planning frameworks or policy documents that are relevant to the proposed action

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att B-KAVHA SS S1 EIS Vol 2-Part3 APP_DEF	Document	Environmental Impact Statement for the Proposed Action - Appendix D, E and F
#3.	Att B-KAVHA SS S1 EIS Vol 2-Part4 APP_G	Document	Environmental Impact Statement for the Proposed Action - Appendix G Heritage Impact Statement
#4.	Att C-Protected Matters Report	Document	EPBC Act Protected Matters Report for the Proposed Action
#5.	Att D-Norfolk Island Plan 2002	Document	Local Environmental Planning Instrument for Norfolk Island
#6.	Att E-DCP No. 7 - KAVHA	Document	Kingston and Arthur's Vale Historic Area Development Control Plan
#7.	Att F-Government Gazette No.34	Document	Government Gazette Notice advertising public display of the EIS for the Proposed Action
#8.	Att G-NI Heritage Register	Document	Norfolk Island Heritage Act 2002: Heritage Register

#9. Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2022C00214">https://www.legislation.gov.au/Details/C2022C00214</a>
#10. Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2019Q00051">https://www.legislation.gov.au/Details/C2019Q00051</a>
#11. Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2019Q00050">https://www.legislation.gov.au/Details/C2019Q00050</a>
#12. Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2018Q00084">https://www.legislation.gov.au/Details/C2018Q00084</a>
#13. Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2019Q00049">https://www.legislation.gov.au/Details/C2019Q00049</a>
#14. Referral guideline for 14 birds listed as migratory species under the EPBC Act	Link (Webpage)	<a href="https://www.dcceew.gov.au/sites/default/files/documents/migratory-birds-draft-referral-guideline.pdf">https://www.dcceew.gov.au/sites/default/files/documents/migratory-birds-draft-referral-guideline.pdf</a>

## 1.2.7 Public consultation regarding the project area

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2. Att H-Letter to occupiers	Document	Public consultation letter about the Proposed Action
#3. Att I-Media Release_Public Display	Document	Media advertising of public display of the EIS for the Proposed Action

## 1.3.2.17 (Person proposing to take the action) Proposer's history of responsible environmental management

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2. Att W-References and Glossary	Document	References and Glossary for this Referral for the Proposed Action

## 2.2.5 Tenure of the action area relevant to the project area

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
---------------------------------	----------	--

## 3.1.1 Current condition of the project area's environment

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
---------------------------------	----------	--

## 3.1.3 Natural features, important or unique values that applies to the project area

#1. Att C-Protected Matters Report	Document	EPBC Act Protected Matters Report for the Proposed Action
#2. Att J-Improving Water Quality of Emily Bay_Bligh Tanner	Document	Improving the Water Quality of Emily Bay, Norfolk Island - Study

## 3.1.4 Gradient relevant to the project area

#1. Att K-Gradient of the Proposal area	Document	Gradient map of the Proposal area - Map
--	----------	---

## 3.2.1 Flora and fauna within the affected area

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2. Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L
#3. Att C-Protected Matters Report	Document	EPBC Act Protected Matters Report for the Proposed Action
#4. Att L-NI Public Reserves Plan of Management	Document	Plans of Management for Norfolk Island Public Reserves
#5. Att M-NI Region Threatened Species Recovery Plan	Document	Norfolk Island Region Threatened Species Recovery Plan
#6. Att N-Native Plant Communities of NI	Document	The Native Plant Communities of Norfolk Island – Study
#7. Att O-Temperate East Management Plan	Document	Temperate East Marine Parks Network Management Plan 2018
#8. Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2019Q00062">https://www.legislation.gov.au/Details/C2019Q00062</a>
#9. Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2019Q00061">https://www.legislation.gov.au/Details/C2019Q00061</a>

## 3.2.2 Vegetation within the project area

#1. Att L-NI Public Reserves Plan of Management	Document	Plans of Management for Norfolk Island Public Reserves
#2. Att N-Native Plant Communities of NI	Document	The Native Plant Communities of Norfolk Island – Study

## 3.3.1 Commonwealth heritage places overseas or other places that apply to the project area

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2. Att B-KAVHA SS S1 EIS Vol 2-Part4 APP_G	Document	Environmental Impact Statement for the Proposed Action - Appendix G Heritage Impact Statement
#3. Att C-Protected Matters Report	Document	EPBC Act Protected Matters Report for the Proposed Action
#4. Att G-NI Heritage Register	Document	Norfolk Island Heritage Act 2002: Heritage Register
#5. Place Details, Australian Convict Sites, Sydney, NSW, Australia	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106209">http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106209</a>

#6.	Place Details, HMS Sirius Shipwreck, Kingston, EXT, Australia	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106167">http://www.environment.gov.au/cgi-bin/ahdb/search.pl? mode=place_detail;place_id=106167</a>
#7.	Place Details, Kingston and Arthurs Vale Commonwealth Tenure Area, Quality Row, Kingston, EXT, Austr	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105606">http://www.environment.gov.au/cgi-bin/ahdb/search.pl? mode=place_detail;place_id=105606</a>
#8.	Place Details, Kingston and Arthurs Vale Historic Area, Quality Row, Kingston, EXT, Australia	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105962">http://www.environment.gov.au/cgi-bin/ahdb/search.pl? mode=place_detail;place_id=105962</a>

## 3.3.2 Indigenous heritage values that apply to the project area

#1.	kavha-heritage-management-plan-april-2016.pdf	Link (Webpage)	<a href="https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a">https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a</a>
-----	---	----------------	---

## 3.4.1 Hydrology characteristics that apply to the project area

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att J-Improving Water Quality of Emily Bay_Blight Tanner	Document	Improving the Water Quality of Emily Bay, Norfolk Island - Study

## 4.1.1.2 (World Heritage) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att B-KAVHA SS S1 EIS Vol 2-Part4 APP_G	Document	Environmental Impact Statement for the Proposed Action - Appendix G Heritage Impact Statement
#3.	Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L
#4.	Australian Convict Sites	Link (Webpage)	<a href="https://whc.unesco.org/en/list/1306">https://whc.unesco.org/en/list/1306</a>
#5.	Place Details, Australian Convict Sites, Sydney, NSW, Australia	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106209">http://www.environment.gov.au/cgi-bin/ahdb/search.pl? mode=place_detail;place_id=106209</a>

## 4.1.1.6 (World Heritage) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att B-KAVHA SS S1 EIS Vol 2-Part4 APP_G	Document	Environmental Impact Statement for the Proposed Action - Appendix G Heritage Impact Statement
#3.	Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L

#4.	Att P-KAVHA AZMP	Document	KAHVA Archaeological Zoning and Management Plan
#5.	Att Q-KAVHA Cultural Landscape Management Plan	Document	KAHVA Cultural Landscape Management Plan
#6.	kavha-heritage-management-plan-april-2016.pdf	Link (Webpage)	<a href="https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a">https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a</a>

## 4.1.1.10 (World Heritage) Avoidance or mitigation measures proposed for this action

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att P-KAVHA AZMP	Document	KAHVA Archaeological Zoning and Management Plan
#3.	kavha-heritage-management-plan-april-2016.pdf	Link (Webpage)	<a href="https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a">https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a</a>

## 4.1.2.2 (National Heritage) Why your action has a direct and/or indirect impact on the identified protected matters

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att B-KAVHA SS S1 EIS Vol 2-Part4 APP_G	Document	Environmental Impact Statement for the Proposed Action - Appendix G Heritage Impact Statement
#3.	Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L
#4.	Att C-Protected Matters Report	Document	EPBC Act Protected Matters Report for the Proposed Action
#5.	Place Details, Arched Building, Longridge, Rocky Point Rd, Longridge, EXT, Australia	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105623">http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105623</a>
#6.	Place Details, HMS Sirius Shipwreck, Kingston, EXT, Australia	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106167">http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106167</a>
#7.	Place Details, HMS Sirius Shipwreck, Norfolk Is Kingston, EXT, Australia	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105179">http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105179</a>
#8.	Place Details, Kingston and Arthurs Vale Commonwealth Tenure Area, Quality Row, Kingston, EXT, Austr	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105606">http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105606</a>
#9.	Place Details, Kingston and Arthurs Vale Historic	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105962">http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105962</a>

Area, Quality Row,  
Kingston, EXT, Australia

#10.	Place Details, Nepean Island Reserve, Kingston, EXT, Australia	Link (Webpage)	<a href="http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105625">http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=105625</a>
------	--	----------------	---

#### 4.1.2.6 (National Heritage) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att B-KAVHA SS S1 EIS Vol 2-Part4 APP_G	Document	Environmental Impact Statement for the Proposed Action - Appendix G Heritage Impact Statement
#3.	Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L
#4.	Att P-KAVHA AZMP	Document	KAVHA Archaeological Zoning and Management Plan
#5.	Att Q-KAVHA Cultural Landscape Management Plan	Document	KAVHA Cultural Landscape Management Plan
#6.	kavha-heritage-management-plan-april-2016.pdf	Link (Webpage)	<a href="https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a">https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a</a>

#### 4.1.2.10 (National Heritage) Avoidance or mitigation measures proposed for this action

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att P-KAVHA AZMP	Document	KAVHA Archaeological Zoning and Management Plan
#3.	kavha-heritage-management-plan-april-2016.pdf	Link (Webpage)	<a href="https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a">https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a</a>

#### 4.1.4.3 (Threatened Species and Ecological Communities) Why your action is unlikely to have a direct and/or indirect impact

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L
#3.	Att C-Protected Matters Report	Document	EPBC Act Protected Matters Report for the Proposed Action
#4.	Att L-NI Public Reserves Plan of Management	Document	Plans of Management for Norfolk Island Public Reserves
#5.	Campbell's Keeled Glass-snail - Species Profile and Threats Database	Link (Webpage)	<a href="https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=81250">https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=81250</a>
#6.			

Gray's Helicarionid Land Snail - Species Profile and Threats Database	Link (Webpage)	<a href="https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=81852">https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=81852</a>
#7. Lord Howe Island Gecko - Species Profile and Threats Database	Link (Webpage)	<a href="https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59250">https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59250</a>
#8. Orange Roughy - Species Profile and Threats Database	Link (Webpage)	<a href="https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=68455">https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=68455</a>
#9. Phillip Island Helicarionid Land Snail - Species Profile and Threats Database	Link (Webpage)	<a href="https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=81252">https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=81252</a>
#10. Southern Bluefin Tuna- Species Profile and Threats Database	Link (Webpage)	<a href="https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=69402">https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=69402</a>
#11. Suter's Striped Glass-snail - Species Profile and Threats Database	Link (Webpage)	<a href="https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=81851">https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=81851</a>

## 4.1.5.3 (Migratory Species) Why your action is unlikely to have a direct and/or indirect impact

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2. Att B-KAVHA SS S1 EIS Vol 2-Part2 APP_C	Document	Environmental Impact Statement for the Proposed Action - Appendix C
#3. Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L
#4. Att C-Protected Matters Report	Document	EPBC Act Protected Matters Report for the Proposed Action
#5. Referral guideline for 14 birds listed as migratory species under the EPBC Act	Link (Webpage)	<a href="https://www.dcceew.gov.au/sites/default/files/documents/migratory_birds-draft-referral-guideline.pdf">https://www.dcceew.gov.au/sites/default/files/documents/migratory_birds-draft-referral-guideline.pdf</a>

## 4.1.7.3 (Commonwealth Marine Area) Why your action is unlikely to have a direct and/or indirect impact

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
---------------------------------	----------	--

## 4.1.10.2 (Commonwealth Land) Why your action has a direct and/or indirect impact on the identified protected matters

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2. Att B-KAVHA SS S1 EIS Vol 2-Part1 APP_AB	Document	Environmental Impact Statement for the Proposed Action - Appendix A and B

#3.	Att B-KAVHA SS S1 EIS Vol 2-Part2 APP_C	Document	Environmental Impact Statement for the Proposed Action - Appendix C
#4.	Att B-KAVHA SS S1 EIS Vol 2-Part3 APP_DEF	Document	Environmental Impact Statement for the Proposed Action - Appendix D, E and F
#5.	Att B-KAVHA SS S1 EIS Vol 2-Part4 APP_G	Document	Environmental Impact Statement for the Proposed Action - Appendix G Heritage Impact Statement
#6.	Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L
#7.	Att P-KAVHA AZMP	Document	KAVHA Archaeological Zoning and Management Plan
#8.	Att Q-KAVHA Cultural Landscape Management Plan	Document	KAVHA Cultural Landscape Management Plan
#9.	Att R-EIS Matters	Document	Planning Regulations 2004 Schedule 2: Matters to be included in an EIS
#10.	kavha-heritage-management-plan-april-2016.pdf	Link (Webpage)	<a href="https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a">https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a</a>
#11.	Planning Act 2002 (NI) - Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2019Q00051">https://www.legislation.gov.au/Details/C2019Q00051</a>
#12.	Planning Regulations 2004 (NI) - Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2019Q00050">https://www.legislation.gov.au/Details/C2019Q00050</a>

## 4.1.10.6 (Commonwealth Land) Why you do not consider the direct and/or indirect impact to be a Significant Impact

#1.	Att S-KAVHA SS S1- Summary of Impacts	Document	Summary of potential impact (EIS) and EPBC self assessment for significance of impact
-----	---------------------------------------	----------	---

## 4.1.10.10 (Commonwealth Land) Avoidance or mitigation measures proposed for this action

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.	Att P-KAVHA AZMP	Document	KAVHA Cultural Landscape Management Plan
#3.	Att Q-KAVHA Cultural Landscape Management Plan	Document	KAVHA Cultural Landscape Management Plan
#4.	kavha-heritage-management-plan-april-2016.pdf	Link (Webpage)	<a href="https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a">https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a</a>

## 4.1.12.2 (Commonwealth or Commonwealth Agency) Nature and extent of the likely impact on the whole of the environment

#1.	Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2.			

Att B-KAVHA SS S1 EIS Vol 2-Part1 APP_AB	Document	Environmental Impact Statement for the Proposed Action - Appendix A and B
#3. Att B-KAVHA SS S1 EIS Vol 2-Part2 APP_C	Document	Environmental Impact Statement for the Proposed Action - Appendix C
#4. Att B-KAVHA SS S1 EIS Vol 2-Part3 APP_DEF	Document	Environmental Impact Statement for the Proposed Action - Appendix D, E and F
#5. Att B-KAVHA SS S1 EIS Vol 2-Part4 APP_G	Document	Environmental Impact Statement for the Proposed Action - Appendix G Heritage Impact Statement
#6. Att B-KAVHA SS S1 EIS Vol 2-Part5 APP_HIJKL	Document	Environmental Impact Statement for the Proposed Action - Appendix H, I, J, K and L
#7. Att P-KAVHA AZMP	Document	KAVHA Archaeological Zoning and Management Plan
#8. Att Q-KAVHA Cultural Landscape Management Plan	Document	KAVHA Cultural Landscape Management Plan
#9. Att R-EIS Matters	Document	Planning Regulations 2004 Schedule 2: Matters to be included in an EIS
#10. Att S-KAVHA SS S1-Summary of Impacts	Document	Summary of potential impact (EIS) and EPBC self assessment for significance of impact
#11. kavha-heritage-management-plan-april-2016.pdf	Link (Webpage)	<a href="https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a">https://kingston.norfolkisland.gov.au/sites/default/files/documents/heritage-management-plan-a</a>
#12. Planning Act 2002 (NI) - Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2019Q00051">https://www.legislation.gov.au/Details/C2019Q00051</a>
#13. Planning Regulations 2004 (NI) - Federal Register of Legislation	Link (Webpage)	<a href="https://www.legislation.gov.au/Details/C2019Q00050">https://www.legislation.gov.au/Details/C2019Q00050</a>

## 4.3.8 Why alternatives for your proposed action were not possible

#1. Att A-KAVHA SS S1 EIS Vol 1	Document	Environmental Impact Statement for the Proposed Action
#2. Att J-Improving Water Quality of Emily Bay_Bligh Tanner	Document	Improving the Water Quality of Emily Bay, Norfolk Island - Study
#3. Att T-Water Quality Study_AECOM	Document	Emily Bay and Upper Cascade Creek Catchments Water quality Study – AECOM
#4. Att U-Water Resource Assessment_CSIRO	Document	Norfolk Island Water Resource Assessment – CSIRO
#5. Att V-Media Release_Upgrading Septic Tanks	Document	Council Media Release: Are You Planning to Upgrade Your Septic Tank?

## 5.2 Declarations

---

### Completed Referring party's declaration

The Referring party is the person preparing the information in this referral.

---

ABN/ACN	25481546476
Organisation name	Planning Assist
Organisation address	PO Box 795, Norfolk Island, 2899
Representative's name	Miriam Streulens
Representative's job title	Director - Environment and Planning
Phone	02 8002 1352
Email	miriam.streulens@planningassist.com.au
Address	PO Box 795, Norfolk Island, 2899

- Check this box to indicate you have read the referral form. \*
  - I would like to receive notifications and track the referral progress through the EPBC portal. \*
  - By checking this box, I, **Miriam Streulens of Planning Assist**, declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. \*
  - I would like to receive notifications and track the referral progress through the EPBC portal. \*
- 

### Completed Person proposing to take the action's declaration

The Person proposing to take the action is the individual, business, government agency or trustee that will be responsible for the proposed action.

---

ABN/ACN	86267354017
Organisation name	Cwth represented by Dept Infrastructure Transport Regional Development Communications and the Arts
Organisation address	GPO Box 594, Canberra, ACT, 2061
Representative's name	Sarah Vandenbroek
Representative's job title	First Assistant Secretary
Phone	02 6274 8222
Email	sarah.vandenbroek@infrastructure.gov.au
Address	GPO Box 594, Canberra, ACT, 2061

- Check this box to indicate you have read the referral form. \*
- I would like to receive notifications and track the referral progress through the EPBC portal. \*
- I, **Sarah Vandenbroek of Cwth represented by Dept Infrastructure Transport Regional Development Communications and the Arts**, declare that to the best of my knowledge the information I have given on, or attached to

the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf or for the benefit of any other person or entity. \*

- I would like to receive notifications and track the referral progress through the EPBC portal. \*

---

### Completed Proposed designated proponent's declaration

The Proposed designated proponent is the individual or organisation proposed to be responsible for meeting the requirements of the EPBC Act during the assessment process, if the Minister decides that this project is a controlled action.

---

Same as Person proposing to take the action information.

- Check this box to indicate you have read the referral form. \*
- I would like to receive notifications and track the referral progress through the EPBC portal. \*

I, **Sarah Vandenbroek of Cwth represented by Dept Infrastructure Transport Regional Development Communications and the Arts**, the Proposed designated proponent, consent to the designation of myself as the Proposed designated proponent for the purposes of the action described in this EPBC Act Referral. \*

- I would like to receive notifications and track the referral progress through the EPBC portal. \*