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## Kingston and Arthur's Vale Historic Area

### Heritage Management Plan (HMP) Public Consultation

#### Preamble

This submission is made in my capacity as a freshwater ecologist, based in part on a holiday visit to Norfolk Island in October 2024. During my visit, I was able to meet with members of the Norfolk Island Flora and Fauna Society to discuss the ecology of freshwater systems and to canvass interest in writing a scientific paper about freshwater biodiversity, threats and management options to help maintain the environmental and heritage values of these ecosystems. The Flora and Fauna Society endorsed my offer to write such a paper, which is in preparation for publication in 2025.

I appreciate this opportunity to comment on the draft HMP. My comments are based on my experience as a freshwater ecologist with a keen interest in protecting the interconnected environmental, social and heritage values of KAVHA and the island as a whole. My approach is to suggest text, map and figure additions and alternative wordings throughout the document, to promote hydrological and ecological understanding of the processes that influence the condition of the Kingston environment, its interconnected feeder catchments, streams, wetlands and the ecological values of Emily Bay. I hope that this ecological perspective will help to achieve agreement around management processes and recovery programs to protect this living cultural and natural landscape over the next five years.

Suggested textual changes are inserted in bold type.

#### Executive Summary

“The Kingston and Arthur's Vale Historic Area (Kingston or the site) on Norfolk Island is a place of outstanding heritage value to the people of Norfolk Island, Australians, and the global community—a living cultural landscape”.

Preferred text would read as follows:

The Kingston and Arthur's Vale Historic Area (Kingston or the site) on Norfolk Island is a place of outstanding heritage value to the people of Norfolk Island, Australians, and the global community—a living cultural **and natural** landscape.

#### Summary of Key Findings

- Kingston is unique in Australia for the combination of its significance, history, remote location, **environment** and cultural context, and these factors present both opportunities and constraints that shape the site's management.

Sustainable practice is essential to ensuring the conservation and longevity of Kingston. Conservation, development, tourism, climate change, water quality **and natural values** must all be managed sustainably to ensure Kingston and its heritage significance can continue to benefit current and future generations.

## Key Actions for Policy Areas

### 3. Site Management

#### 3.1. Urgent Actions

#### 3.2. High Priority Actions

3.2.1. Develop and implement a land **and water use** management strategy, including: • reviewing the current systems and structures used to manage land **and water use** across the site.3.2.5. Prepare an environmental management strategy, including:

- a comprehensive survey of current **terrestrial, freshwater and beach** biodiversity within and relating to the site

3.2.8. Identify and implement opportunities to work with relevant parties to improve water quality impacts on Kingston associated with upstream activities and its broader **catchment** setting, inside and outside the heritage boundary.

3.2.11. Prepare a vegetation management strategy, including:

- an identification register, condition assessment and management plan of culturally **and naturally** significant trees and/or vegetation
- **riparian and aquatic plant lists for Water Mill and Town Creeks within KAVHA boundaries**

### 6. Site Administration

6.2.8. Undertake a program to identify and categorise natural and human-caused risks to Kingston's heritage fabric and values (including from visitation, use, management systems, **catchment condition, water use**, water quality and climate change), and develop and implement protective measures against these risks.

## 1 Introduction

### 1.1 Background

The Kingston and Arthur's Vale Historic Area (Kingston) is a historic site, cultural **and natural** landscape, administrative centre and place of community recreation and cultural tradition located on Norfolk Island in the Pacific Ocean.

### 1.2 The Site

**Norfolk Island is a small (35.7 km<sup>2</sup>) remnant of a weathered and eroded volcanic complex on the submarine Norfolk Ridge running between New Zealand and New Caledonia, approximately 1400km east of mainland Australia.**

### **1.3.2 Buffer Zone**

“Unlike other Australian Convict Sites, the World Heritage boundary of Kingston does not include a buffer zone (formally or informally). This decision was made at the time of listing due to the site being ‘comprehensively protected by a natural buffer zone within the boundaries of the site’, particularly the 90-metre contour, which is a natural buffer set mostly in steep, inaccessible land, and the Pacific Ocean.<sup>2</sup> The boundaries and natural buffer zone ‘protect all of the significant fabric, views, vistas and landscape elements. They also guard against encroachment by development.”<sup>3</sup>

The environmental values of the KAVHA are to some extent threatened by the characteristics, human use and condition of the entire catchments of Watermill Creek and Town Creek. For example, The CSIRO water quality assessment found that in the Watermill Creek and Town Creek catchment the most significant source of nitrogen and phosphorus is beef cattle manure, followed by onsite waste-water management (i.e. septic tanks) and then fertiliser application and other livestock manure (Vanderzam et al. 2024). Water quality and waste management throughout the upper catchment areas will need to be addressed at source to reduce risks to the lower catchment areas within Kingston.

## **3 Understanding the Place: Historical Context**

### **3.2.2 British Colonial Settlement (1788–1814)**

“In 1789 channels were cut to drain the swamp”.

This brief description of activities during the first British settlement could provide more information about the earliest engineering works at Kingston and their consequences for the freshwater wetland and landscape / seascape at this site. The existing wetland is a prominent feature of KAVHA with its own history of change and development as a human-modified freshwater ecosystem. Understanding this history has implications for the environmental and heritage management of KAVHA under the EPBC Act.

When Lieutenant Philip Gidley King arrived on Norfolk Island in 1788, he noted “a very fine spring of freshwater” that “may be made to overflow a piece of flat ground” for growing rice (King 1980). Second Captain John Hunter (Hunter 1793) kept a journal of his time on Norfolk Island, describing the wetland and creek as they were in 1788:

“A very fine rivulet runs through this vale, sufficiently large to turn any number of mills. As the bank of the sea-shore is considerably above the level of the rivulet, it sinks into the earth; and, after passing under the bank, it forces a passage for itself through a fissure of the rock, on Stony Beach and Turtle Bay, between high and low water marks, where it boils up with great force, and is excellent water. As the whole of this water is not carried off by the passage just mentioned, sufficient to keep the low ground clear, what does not pass under the bank, overflows the lower part of the valley, for the space of half a mile: this swamp might be drained by cutting a channel for the rivulet to empty itself on the sea-shore; but the operation would require time and a number of hands, and, when finished, it is not clear but that the force of the sea would soon fill the channel up again.”

Philip Gidley King oversaw clearing of the native vegetation and construction of the first drainage channel (dug by convict labor) to lower the water table of the Kingston swamp and create arable and grazing land on the floodplain now known as Kingston Common. This was the beginning of numerous efforts to drain the wetland, significantly changing its ecological character, the surrounding landscape and the receiving waters of Emily Bay. In particular, the loss of natural wetland processes that govern the quality of water flowing into Emily Bay has implications for freshwater wetland biodiversity and for the condition of the bay and its reef ecosystem.

Use of the term 'swamp' is correct when historic writings are cited. However, it would be preferable to switch to the term 'wetland' throughout the HMP, in keeping with Australian and world terminology for wetlands, which include marshes, billabongs, lakes, lagoons, saltmarshes, mudflats, mangroves, coral reefs, bogs, fens and peatlands (Department of the Environment 2016).

#### **4 Understanding the Place: Physical and Cultural Context**

##### **4.4.1 Geology and Landscape Topography (Precincts A–N)**

“The island is drained by both permanent and seasonal streams. Watermill Creek and Town Creek drain into and through Kingston and have alluvial flats in their lower reaches (within Kingston), and there is an area of low-lying sandy soil around the buildings in Kingston. Many of the hills are dissected by gullies, and the slopes have gradients of up to 30 degrees”.

This is a very brief description of the island’s streams. The Norfolk Island Water Resource Assessment (Petheram et al. 2020) differentiates ephemeral streams, intermittent streams and perennial streams (these flow all year round even in the driest months because groundwater maintains their baseflow). This report provides critical information on the hydrology of Watermill Creek and Town Creek of relevance to the management of their catchments and the condition of reaches that lie within the boundaries of KAVHA. Upper Watermill Creek and Town Creek receive discharge from the groundwater mound beneath Burnt Pine and nearby ridgelines with varied land-use, and Watermill also receives overland flow from the impervious surfaces of the airport, runoff from Burnt Pine roads and rainwater tank overflows (Petheram et al. 2020). On the southern side of the island, the Watermill Creek and Town Creek drainage lines extend into the groundwater mound under the southern plateau before draining down to sea level.

##### **4.4.2 Natural Vegetation and Fauna (Precincts A–N)**

“Significant natural species recorded within Kingston include the rare coastal native herb *Euphorbia obliqua* and the endemic daisy *Senecio hooglandii* (*Paratya norfolkensis*), found in the Point Hunter Reserve.” [Italicise generic and species names]

There is something seriously wrong with this part of the sentence: “the endemic daisy *Senecio hooglandii* (*Paratya norfolkensis*)”. It has conflated statements about two different species, viz:

the endemic daisy *Senecio hooglandii*

the endemic shrimp (*Paratya norfolkensis*)

White Oak (*Lagunaria patersonia* subsp. *patersonia*) [lower case on subsp. *patersonia*]

“Water drains from Kingston into this habitat, which is part of the Norfolk Marine Park.”

This sentence should refer to the means of drainage. The following would be more informative. ‘Water drains from the Kingston wetland into this reef habitat, which is part of the Norfolk Marine Park, **via the convict-built drainage channel and groundwater seepage.**

Italicise all generic and species names.

#### **4.4.3 Introduced vegetation and Fauna (Precincts A–N)**

“Grazing stock is recognised as a significant feature of the cultural landscape, but contributes to ongoing land management issues such as erosion through overgrazing. Grazing also has significant impacts on archaeological features, natural vegetation and water quality”.

This reference to grazing stock could be more informative.

‘Grazing stock is recognised as a feature of the present-day cultural landscape; **however**, it contributes significantly to ongoing land management issues, such as erosion through overgrazing, **and disturbance of acid sulphate soils in the Kingston wetland by ‘pugging’ them with hoof movements, causing them to oxidise (Vanderzalm et al. 2024). Grazing and the deposition of cattle body wastes also have significant impacts on natural vegetation, wetland habitat condition and water quality’.**

#### **4.5 Settlements and Structures**

##### **4.5.2 British Colonial Settlement 1788–1814 (A, C, E–H, J, M)**

###### **Agricultural and Industrial Activities**

“In Watermill Valley a section of channelled stream remains in its 1790s alignment, while faint field boundaries also remain. These are the same as shown on maps prepared in 1790 by Lt George Raper, an officer on the Sirius from 1786 to 1972, which show the first watermill, dam and millpond, channel, field boundaries, plantations, the government farm and small holdings in the valley”.

The locations and details of the watermill, dam and millpond are of interest in terms of man-made changes to the natural waterways feeding into KAVHA. There is only a brief reference to the watermill on page 20. “During 1795, the convict Nathaniel Lucas constructed a dam and watermill in Arthur’s Vale and a windmill for himself at the end of Point Hunter”.

This reader cannot see any reference to the locations of the watermill, dam and millpond in any of the maps provided in the HMP. Could the “maps prepared in 1790 by Lt George Raper, an officer on the Sirius from 1786 to 1972” be included here, as well as a map of present-day wetland drainage configurations.

###### **Landscape Modifications**

“Earthworks were constructed for agriculture, roads and building. Roads were made up Flagstaff Hill, into Arthur’s Vale, up a ridge near current Middlegate Road, and along Soldiers Gully. The road up Flagstaff Hill eroded but has been stabilised. The road to Longridge is

evident on the ridgeline. In Soldiers Gully there is a dam, a cutting in the hillside and a road route, some of which may date from the British Colonial Settlement”.

This is a very brief description of significant landscape modifications in KAVHA. Soldiers Gully and the “dam” do not appear in the list of Precincts, nor in any figures. These remnants of historic earthworks are significant features of KAVHA, and worthy of further description and identification on a map, so that they may be considered in the plans for protection of cultural heritage, and the management of environmental values embedded in the KAVHA landscape.

#### **4.5.3 British Penal Settlement (1825–1856) and Pitcairn and Modern Settlement (1856–Present)**

##### **F Kingston Common (the Swamp)**

“The channel was cut to drain the swamp, and a road (now Pier Street) was built across it by 1796. By 1839 two more roads and several stone bridges were constructed and are still in use today. In the mid-1830s a public parterre was formed and the watercourse was curved, forming a serpentine channel that was subsequently filled in. The stone and concrete-lined open drain was built in 1938–1942. The road network was formed prior to 1856 and there are many stone retaining walls, kerbs, culverts and drains. In the early twentieth century, roads were topped with coral rock (later bitumen) and sealed with grass verges. Longridge Road was abandoned due to erosion by 1856, as was Mill Road. Foundations remain of lower-ranking officers’ quarters built in the swamp, including a row or terrace and a police hut.”

This history of the draining and modification of the Kingston wetland merit a map showing the precise location of the channel “cut to drain the swamp”, and the roads and bridges still evident today. These details are mentioned here and there in the HMP but none of the figures clearly shows exactly where Windmill and Town Creeks enter the wetland nor the location of bridges, culverts and other engineered waterworks. As commented above, the remnants of historic drainage works are significant features of KAVHA, and worthy of further description and identification on a map, so that they may be considered in the plans for protection of cultural heritage, as well as the management of environmental values embedded in the KAVHA landscape. Photographs of these important drainage works would enhance this document. The author photos inserted below were taken in October 2024; please acknowledge ownership if these photos are used).



#### 4.8 Cultural Landscape

“As a designed landscape, the British Colonial and Penal Settlement layouts and spatial relationships are products of intentional design, not for aesthetic reasons but to reinforce notions of power and authority. As an ‘associative cultural landscape’, Kingston is powerfully evocative, for its picturesque landscape setting and the natural beauty of the seascape”.

This section should make reference to streams flowing into KAVHA, the wetland and their associated values. This text could be modified to “for its picturesque landscape setting, **waterways and wetlands**, and the natural beauty of the seascape.”

“More specifically, the cultural landscape context of Kingston is created through the following elements, identified in the Cultural Landscape Management Plan <sup>44</sup>.”

Suggested additions to this list are shown in bold type.

- Topography • Underlying geology • Visual setting of Kingston • Bucolic landscape • Terrestrial watercourses • **Wetland • Drainage Channel** • Remnant natural vegetation • Lagoon and littoral zone • Emily Bay and Cemetery Bay • Norfolk Island Pines—naturally occurring species and formal plantings • Flax plants • Fauna—migratory birds, **native fish, native land and aquatic snails, endemic crustaceans and insects** • Polynesian Settlement—physical evidence and association • Physical evidence of historical evolution • British Colonial Settlement (1788–1814) structures • Ruins—British Colonial Settlement (1788–1814) • Buildings—British Penal Settlement (1825–1856) • The Cenotaph • Infrastructure—British Colonial Settlement (1788–1814), British Penal Settlement (1825–1856) and Pitcairn and Modern Settlement (1856–present) periods • Coastal retaining wall • Buildings, structures and created landscape—Pitcairn and Modern Settlement (1856 to the present) • Archaeological deposits (intact) • Cemetery—layout and headstones • Government House—particularly the intact form, physical and visual presence, and garden setting • Gardens of Quality Row houses • Connections with other Australian convict sites, both those within the Australian Convict Sites World Heritage property and others • Connections with other historic places on Norfolk Island • Cultural connections—association with Anniversary (Bounty) Day • Cultural connections—association with Foundation Day

## 6 Heritage Significance

### 6.5 Local Heritage Values

In 2003, Kingston and Arthur's Vale were included on the Norfolk Island Heritage Register under the Norfolk Island Heritage Act 2002, for numerous heritage values including the "natural significance of its diverse land and water forms, its biodiversity and wetland values, and rare species".

It is encouraging to see specific listing of the Kingston wetland and its biodiversity values in the Norfolk Island Heritage Register (Table 6.4 Kingston listed natural heritage values).

"KAVHA contains important wetland habitat and remnant vegetation. The wetlands are particularly valuable as a resting place for migratory birds and in supporting a population of rare crustaceans found only on Norfolk Island. KAVHA is significant for its topography, the littoral, the watercourse and its connection to the lagoon and marine environment. The Watermill Dam and inshore [within 15 NM seaward from land]<sup>8</sup> marine areas of KAVHA have been listed as an important Commonwealth wetland in the second edition of 'A Directory of Important Wetlands in Australia'."

"Kingston has natural heritage significance for its natural landscape and its immediate setting, including the littoral environment, geological and fossilised formations, topography, the terrestrial watercourses, lagoon and the Watermill Dam. It contains important wetland habitat and remnant vegetation, and the wetlands provide a resting place for migratory birds and support a population of crustaceans found only on Norfolk Island".

These statements are encouraging but have been lifted from the CLMP [Cultural Landscape Management Plan 2019) without updating the facts. This reference to "support a population of crustaceans found only on Norfolk Island" could be updated to this wording: **"support populations of a freshwater shrimp *Paratya norfolkensis* (Atyidae) found only on Norfolk Island"**.

#### 6.9.1 Intrusive Elements

Certain features of Kingston have been identified as 'intrusive', on the basis that they obscure or detract from transmission of the heritage values of the place, or have adverse visual or physical impacts on important attributes of heritage value; this includes some uses of the site.

Table 6.7 (Intrusive elements identified at Kingston) includes "Escalating reeds and weedy vegetation along waterway edges, in particular within and at the edges of the lowland and plain swamps/wetland system" and "Waterways, Creeks, Swamps and Drainage • Black water not draining from lowlands swamp/wetland system. • Reeds and weedy vegetation along waterway edges, in particular in and at the edges of the lowlands and plain swamps/wetland system."

The biodiversity and environmental values of Kingston' creeks and wetlands are prominent features of the KAVHA landscape and part of Norfolk Island's unique biogeographic inheritance. It is inappropriate to record the vegetation along creek lines and at the edges of the Kingston wetland as "intrusive". Emergent and submerged aquatic vegetation play important roles in wetlands (such as biogeochemical filtering of the water, habitat structure supporting aquatic invertebrates, and as resting and nesting habitat for waterbirds). The



CLMP (2019) identifies KAVHA wetland habitat and remnant vegetation as “particularly valuable as a resting place for migratory birds and in supporting a population of rare crustaceans found only on Norfolk Island” (i.e., *Paratya norfolkensis*). Terming them “Intrusive” contradicts other sections of the HMP.

## **7 Developing Policy: Opportunities and Constraints**

### **7.5 Natural Heritage Conservation**

“As part of the listed heritage values of Kingston, the natural environment must be protected as an important part of conserving Kingston’s heritage values. Natural environmental issues in Kingston include wetland and drainage channel management, water quality, erosion, dune and cliff stabilisation, habitat rehabilitation, sand mining, biodiversity management, and pest and weed control”.

“Creating an overarching environmental management strategy presents an opportunity to bring together considerations of natural heritage, ecology and biodiversity, terrestrial and marine environments, and flora and fauna to ensure they are managed at Kingston in a holistic way. This strategy should be shared with all parties who may be making decisions that could affect the natural heritage values of the site”. (page 125).

“In 2019 the CLMP identified that: Issues associated with site drainage and water quality within the KAVHA site are complex and multifaceted, and their resolution needs to ensure conservation and transmission of the heritage values of the cultural landscape and the channels and drains that date from First (Colonial) and Second (Penal) Settlement, which are integral to the fabric and structure of the place. Resolution of site drainage and water quality issues also needs to consider the context of the wider catchment, the natural levels and hydrology of the site, and environmental values.”<sup>3</sup>“The CLMP provides a series of policies and recommendations to address water management within the context of the cultural landscape of Kingston. Management of water quality as it pertains to Kingston must use approaches that ensure the nationally and internationally significant heritage values of Kingston can be conserved and protected. A Water Quality Working Group, including Norfolk Island Regional Council, Parks Australia and Departmental representatives, has been formed to coordinate management actions on issues impacting the Norfolk Island Marine Park, including the coral reef and human health through use of the bay. The Working Group should also consider and act on water quality issues that impact the cultural and natural heritage significance of Kingston”.

These paragraphs are very encouraging of a full appreciation of natural heritage conservation and water quality management at KAVHA. Yet section **6.9.1 Intrusive Elements includes** “Escalating reeds and weedy vegetation along waterway edges, in particular within and at the edges of the lowland and plain swamps/wetland system” and “Reeds and weedy vegetation along waterway edges, in particular in and at the edges of the lowlands and plain swamps/wetland system” as “intrusive”. Terming them “Intrusive” contradicts several sections of the HMP and ecological perspectives of the paragraphs cited above.

## **Theme 2—Life in the Community**

### **7.6 Community Involvement and Accessibility**

### 7.6.1 Community Accessibility and Use

“There may also be opportunities to enable more community traditions to be demonstrated in Kingston; for example, harvesting flax for weaving and using conservation projects to demonstrate traditional skills. The policies provided in this HMP should support and enhance ongoing community connections to the site, and respect for all its heritage values”.

Other opportunities for deeper community and tourist appreciation of the present-day biodiversity and environmental values of Kingston could be considered as part of the HMP. Seating in the commons area already enables views of and across the wetland (see author photo October 2024 below; please acknowledge ownership if this photo is used). Information panels could be installed to describe interesting facts and features about wetland ecology and endemic biodiversity (hence the need for a full biodiversity survey). Birdwatching could be further encouraged. The history of human changes to the wetland would also be of interest to tourists, especially construction of the drainage channel, which is still evident but receives very little attention during the historic commentary delivered during tourist bus tours of the island.



### 7.7.1 Kingston Common

“Parts of the Common are used for cattle grazing, a traditional activity that contributes to the local economy, but this practice also creates significant environmental and water quality impacts and damages sensitive heritage fabric. The importance of the Common in expressing the heritage significance of Kingston, and contributing to its conservation and management, should be taken into account when planning for the site”.

Please note the following extract from comments on section **4.4.3 Introduced vegetation and Fauna (Precincts A–N)** above.

‘Grazing stock is recognised as a feature of the present-day cultural landscape; however, it contributes significantly to ongoing land management issues, such as erosion through overgrazing, and disturbance of acid sulphate soils in the Kingston wetland by ‘pugging’ them with hoof movements, causing them to oxidise (Vanderzalm et al. 2024). Grazing and the deposition of cattle body wastes also have significant impacts on natural vegetation, wetland habitat condition and water quality’.

Norfolk Island offers many opportunities for cattle grazing and has a policy of keeping cattle out of sensitive areas, such as Burnt Pine and the Botanic Gardens. The water quality and ecological values of KAVHA and Emily Bay’s reefs could be enhanced by reducing the presence and impacts of free-ranging cattle within the boundaries of the entire catchments of Watermill and Town Creeks.

“Managing Kingston, a complex place with many layers of cultural and natural significance, requires decisions to be made about how to balance diverse elements, including community needs, heritage fabric, the cultural and natural landscape and the marine environment” (pg. 133).

This powerful statement offers encouragement to balance protecting KAVHA’s heritage fabric as well as the cultural and natural landscape, waterways and the connected marine and reef environment. Surely the charming and important custom of cattle grazing the Kingston landscape could be viewed and appreciated in other less sensitive parts of the island.

### **7.11 Framework of Heritage Legislation and Regulations**

“Kingston is protected under the EPBC Act and Norfolk Island legislation”.

“Without an equivalent to state/territory-level heritage protection, statutory heritage regulation on Norfolk Island relies on the federal-level EPBC Act and the local Norfolk Island Heritage Act 2002. The EPBC Act is poorly adapted to protect heritage below National and World Heritage significance and to provide oversight for low to moderate intensity activities, which may not warrant referral under the EPBC Act, but would benefit from heritage advice and guidance. The trigger for referral under the EPBC Act is ‘significant’ impact, but actions may detrimentally impact Kingston’s heritage without reaching a significant impact threshold, leaving these impacts uncontrolled. The Department is also required to avoid all adverse impact on Kingston’s heritage values, but this EPBC Act requirement does not apply to non-Commonwealth entities. In addition, multiple lower-impact activities may combine to create a cumulative impact on the heritage significance of Norfolk Island, an effect that needs to be identified and accounted for”.

These references to the power of the EPBC Act make the important point that “The trigger for referral under the EPBC Act is ‘significant’ impact, but actions may detrimentally impact Kingston’s heritage without reaching a significant impact threshold, leaving these impacts uncontrolled”. However, significant impacts on ecological systems and threatened endemic biodiversity can be addressed via the EPBC Act. Furthermore, Australia’s recent commitments to biodiversity conservation are relevant to the future of species and ecosystems of value within KAVHA.

In 2022, Australia made a commitment to the goals of the [Kunming Montreal Global Biodiversity Framework](#) (known as the GBF, CBD 2022), agreeing “to protect and conserve at least 30% of Australia’s terrestrial and inland water areas, and marine and coastal areas by 2030”. Australia’s ‘2022-2032 Threatened Species Action Plan: Towards Zero Extinctions’ has identified Norfolk Island as one of 20 “priority places”, on a par with Bruny, Christmas, French, Kangaroo and Raine islands and 14 mainland landscapes and seascapes

(Commonwealth of Australia 2022). The Action Plan’s objective is to improve the condition of priority places by 2032 by supporting recovery of individual threatened species, and protecting / restoring terrestrial, marine and freshwater ecosystems through landscape-scale conservation planning. In time, the 2022-2032 Threatened Species Action Plan will produce a ‘Place Profile’ for Norfolk Island, with goals and specific actions to improve its ecological condition, identify endemic species and conserve those that are at risk. At present, the Action Plan refers to a few notable freshwater species (the endemic freshwater shrimp - *Paratya norfolkensis* and a freshwater crab - *Amarinus lacustris*) but lacks a full species list. Hence, the final recommendations of the Threatened Species Action Plan include an emphatic call for further surveys and research on the island’s freshwater systems, invertebrates in general, and the vulnerability of all island biota to climate change.

The declaration of Norfolk Island as a ‘priority place’ and these recommendations for further surveys and research on the island’s freshwater systems such as those within KAVHA should be mentioned in this section.

## **7.20 Water Quality**

“In 2019 the CLMP identified that: Issues associated with site drainage and water quality within the KAVHA site are complex and multifaceted, and their resolution needs to ensure conservation and transmission of the heritage values of the cultural landscape and the channels and drains that date from First (Colonial) and Second (Penal) Settlement, which are integral to the fabric and structure of the place. Resolution of site drainage and water quality issues also needs to consider the context of the wider catchment, the natural levels and hydrology of the site, and environmental values”.

To bring the HMP up to date, this section should refer to the CSIRO water quality report delivered in 2024 (Vanderzam et al. 2024). Please cite this report’s particular recommendations to “to restore waterways, particularly within Watermill Valley, with fencing to restrict cattle and creek damage, creek bed and bank rehabilitation, and planting of endemic species”.

## **Theme 5—Interpretation, Research and Education**

### **7.23 Research**

The research section is very limited. A summary of processes by which research is planned and conducted, the individuals and groups involved and the support available for those efforts would be useful here.

## **9.2 Conservation Policies and Actions**

### **Cultural Landscape**

1.62. “Kingston’s cultural landscape will be recognised and managed as a landscape that includes primary production, such as grazing and agricultural activities”.

In spite of many statements earlier in this document, and the evidence of the 2024 CSIRO water quality report (Vanderzam et al. 2024), Item 1.6.2 does not acknowledge that catchment, freshwater and coastal ecosystems are connected by flows of water, sediments,

nutrients and waste materials. Primary production and grazing within Kingston's cultural landscape are not compatible with protecting the water quality and environmental values of Watermill and Town Creeks catchments, the Kingston wetland and the Emily Bay reefs.

At this point in the HMP, Item 1.62 gives inappropriate advice to the Norfolk Island community. It should be rephrased or removed altogether.

1.63. "Any conflicts between natural and cultural values will be resolved through consideration of all values and attributes, as appropriate".

This contradicts Item 1.62 in that it definitely does allow for resolution when cultural and natural values need to be resolved. Such conflicts appear to be central to achievement of a more balance approach to management of the environmental and cultural values of KAVHA.

### **Natural Heritage Conservation**

1.70. "If natural values within Kingston are threatened by impacts that originate outside Kingston, measures to conserve such values will first be negotiated with the outside parties creating the impacts. Measures should address the external source of natural heritage impacts and avoid impacting cultural heritage within Kingston to compensate for impacts generated outside the site".

This item should be revised to include 'natural heritage' as follows:

'Measures should address the external source of natural heritage impacts and avoid impacting **the natural and** cultural heritage within Kingston to compensate for impacts generated outside the site'.

1.71. Kingston staff and other organisations working in Kingston (e.g. Parks Australia, CSIRO) should work with the community in the implementation of environmental improvement programs.

This item should be revised to include many other community groups and organisations working in Kingston and its catchments (e.g. Norfolk Island Flora and Fauna Society, vegetation restoration teams, bird observation groups, the fishing community, etc) and researchers.

### **Traditional and Community Uses**

2.18 "The sustainable agricultural use of the freehold and leasehold within Kingston will be encouraged and supported, especially where such use assists in interpreting the phases of settlement and helps protect the heritage values".

2.19. "Traditional agricultural and grazing uses on the public land areas of Kingston, including the Common, may be continued, but must be managed to prevent adverse impacts on heritage or environmental values".

2.20. "The significant traditional agricultural use of Watermill Valley, including the use of the dam, will be continued".

2.21. “The potential to reintroduce a wider range of agricultural and horticultural uses to interpret the historical landscape will be investigated but would need to be managed so that there are no adverse impacts on heritage or environmental values, particularly the cultural landscape”.

These items set out definitive statements about what can still be allowed to occur in the catchments feeding into KAVHA, almost as though agricultural practices and grazing will have minimal impacts on the heritage and environmental values therein. Available evidence points to worsening land-use impacts exacerbated by climatic shifts, ensuing hydrological changes, water security deficits and water quality decline on Norfolk Island (Petheram et al. 2020; Vanderzam et al. 2024).

### **Water**

3.52. “Water resources will be managed to sustain diverse marine and terrestrial ecosystems and habitats”.

This Item should be revised to the following:

“Water resources will be managed to sustain diverse **marine, freshwater and terrestrial** ecosystems and habitats”.

3.55. “In line with both good heritage management practices and safe water quality practices, aquatic weeds and excessive water-borne nutrient and sediment loads within or from the site will be controlled and reduced”.

The control of “aquatic weeds” can be a huge task. For a start, which plants warrant the status of weeds? Their ecosystem functions need to be understood before any removal is contemplated. Removal of weeds may lead to erosion and increased water-borne nutrient and sediment loads, as well as habitat damage and aquatic biodiversity impacts. Ripping weeds out of the Kingston wetland will undoubtedly reduce their uptake of nutrients delivered from upstream. Furthermore, research on acid sulphate landforms warns that soils and vegetation should be left as undisturbed as possible (Vanderzam et al. 2024).

### **Biodiversity**

3.60. “Biodiversity within Kingston will be identified, managed and conserved in conjunction with the recognised cultural heritage values of the site”.

3.61. “A comprehensive understanding of the species and ecological attributes present on the site, the associated natural heritage values, and the current state of conservation will inform the conservation of biodiversity in Kingston”.

3.62. “Measures should be implemented to reduce impacts on and loss of biodiversity, including significant species or ecosystems”.

3.63. “Kingston staff should collaborate and share knowledge with other parties (e.g. CSIRO, Parks Australia, NIRC, Norfolk Island Flora and Fauna Society), working in partnership to manage environmental values”.

These are admirable aims but they need revision in several places (bold text), as follows:

3.60. “Biodiversity within Kingston will be identified, managed and conserved in conjunction with the recognised cultural **and natural** heritage values of the site”.

3.61. “A comprehensive understanding of the **species, ecological attributes and ecosystem processes within catchments**, the associated natural heritage values, and the current state of conservation will inform the **conservation of biodiversity** in Kingston”.

3.62. “Measures should be implemented to reduce impacts on and loss of biodiversity, including significant species, **communities** and ecosystems”.

3.63. “Kingston staff should collaborate and share knowledge with other parties (e.g. CSIRO, Parks Australia, NIRC, Norfolk Island Flora and Fauna Society, **researchers**), working in partnership to manage **biodiversity, ecosystem processes** and environmental values”.

### **Weed Control and Introduced Species Management**

3.64 “A strategic approach to weed management and control should be undertaken across the whole Kingston site, including waterways”.

What is the definition of a weed in the Kingston wetland area? Reeds and aquatic vegetation help to filter and purify the water entering from disturbed upland catchments. These ecosystem processes help to protect Emily Bay and its reef ecosystems from water pollution. Historic writings indicate that the watercourse at Kingston was a vegetated ‘swamp’, not an open-water lake. The reeds of today were arguably present around the perimeter of the swamp and within in before colonial settlement. Certainly, there are members of the community who intensely dislike the Kingston wetlands being allowed to persist. However, the provision of scientific information about the wetland and its biodiversity and ecosystem functions would help to educate island and visitor communities about the environmental values of this wetland.

3.68. “Cattle and wild domestic species represent significant aspects of Pitcairner descendant history and the wider agricultural history of the site, and will be retained in places within Kingston but their numbers will be managed and their access to the site may be limited to protect other natural and cultural values, including archaeological values, and to facilitate unimpeded and comfortable visitor access to the area”.

3.69. “Management of cattle will be informed by industry and scientific best practice approaches to support significant cultural practices while avoiding heritage impacts”.

These Items present an equivocal perspective, with lots of hedging around the cultural versus environmental significance of cattle grazing at Kingston. This HMP could make a stronger statement about the merits of removing cattle from access to Kingston and from the lower reaches of Watermill and Town Creeks where their activities contribute to water pollution, habitat disturbance and probably also, biodiversity losses. CSIRO’s water quality report delivered in 2024 (Vanderzam et al. 2024) offers recommendations “to restore waterways, particularly within Watermill Valley, with fencing to restrict cattle and creek damage, creek bed and bank rehabilitation, and planting of endemic species”.

## Conclusion

My aim has been to promote hydrological and ecological understanding of the processes that influence the condition of the Kingston environment, its interconnected feeder catchments, streams, wetlands and the ecological values of Emily Bay. These matters have been neglected in most of the HMP. Australia's '2022-2032 Threatened Species Action Plan: Towards Zero Extinctions' has identified Norfolk Island as one of 20 "priority places", on a par with Bruny, Christmas, French, Kangaroo and Raine islands and 14 mainland landscapes and seascapes (Commonwealth of Australia 2022). This 2022-2032 Action Plan calls for renewed efforts to conserve Norfolk Island's freshwater biodiversity. I hope this ecological perspective on KAVHA will help to achieve agreement around management processes and recovery programs to protect this living cultural and natural landscape over the next five years.

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