K’gari Biosecurity Strategy 2026-46

K’gari – A paradise forever

Developed by Butchulla Aboriginal Corporation RNTBC
with the support of the K’gari Biosecurity Advisory Group

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Acknowledgements

The Butchulla Aboriginal Corporation RNTBC (BAC) would like to acknowledge the Australian Government for providing funding for this project through an Australian Heritage Grant and members of the project's working group led by the BAC's Chantel Van Wamelen and Seth Henaway, Dr Geoff Pegg (Department of Primary Industries), and Sue Sargent (FINIA – the Natural Integrity Alliance for K'gari).

The BAC also thanks the members of the K'gari Biosecurity Advisory Group (KBAG) for their contributions to the Blue Sheet Workshop and K'gari Biosecurity Strategy's development. In addition to the Project Working Group, members of the KBAG also included: Dr Suzy Perry and Stacy Harris (Biosecurity Queensland), Auntie Lorraine Woolley and Mellissa Foley (Butchulla Native Title Aboriginal Corporation RNTBC), Corey Williams-Daly (Chief Environmental Biosecurity Office), Peter Shooter (FIDO – Watchdog for K'gari), Andrew Hatch (Fraser Coast Regional Council), Steve Settle (Fraser Island Community Associations), Dr Kim Walker and Dr Gabriel Conroy (University of the Sunshine Coast), Tiarne Saunders and Adam Musial (Office of the Great Barrier Reef and World Heritage), Linda Behrendorff and Samantha Young (Queensland Parks and Wildlife Service), Professor Jennifer Firn and Ella-Jane Raymond (Queensland University of Technology), Craig Taylor (Sealink K'gari), and Simon Wells (Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development).

Executive Summary

Inscribed on the World Heritage list in 1992, K'gari World Heritage Area has recognised Outstanding Universal Value (OUV) for the island's exceptional natural beauty and significant ongoing ecological and biological processes. But K'gari is more than a place of beauty and ecology, it supports many threatened species of plants and animals, and it is sacred to the Butchulla People, who through their creation story are connected to Princess K'gari who was transmogrified into the island. Through this connection and knowledge, the island has significant Butchulla cultural values.

Threats to these values include climate change (including changing rainfall and temperature regimes), biosecurity and visitor impacts, particularly from increasing visitor numbers.

The management of K'gari is complex given multiple tenures and land managers. Overlying this complexity are Australia's responsibilities as a State Party to the World Heritage Convention. State parties hold the primary responsibility for identifying, protecting, conserving, presenting, and transmitting to future generations the cultural and natural heritage situated on their territory. They must ensure proper legal protection, management plans, and periodic reporting for sites, while fostering public awareness and supporting international cooperation.

Environmental biosecurity is the protection of natural ecosystems, biodiversity, and social amenities from the negative impacts of invasive pests, weeds, and diseases. It focuses on preventing the introduction, establishment, and spread of harmful organisms, thereby protecting unique landscapes, native flora and fauna, and environmental health.

Led by the Butchulla Aboriginal Corporation RNTBC (BAC) and funded through an Australian Heritage Grant, the K'gari Biosecurity Strategy (the Strategy)[1] was developed through the collaborative efforts of the island's stakeholders. Together, they formed the K'gari Biosecurity Advisory Group (KBAG). The Strategy followed a stepped approach including:

- Desk-top review - identifying current K'gari biosecurity commitments and best management environmental biosecurity on islands elsewhere.
- Identifying risk - undertaken by the Queensland University of Technology and informed by 15 experts in invasive species and/or K'gari's species and ecosystems.
- KBAG BlueSheet Workshop – identification of values and actions to reduce the risk of invasive weeds, pests and diseases (pathogens) to K'gari. The Strategy is underpinned by risk-based prioritisation and a collaborative governance model to be led by the BAC.

Invasive freshwater fish such as *Tilapia* spp. (including *Oreochromis mossambicus*) and *Gambusia* spp. were ranked as having the highest estimated impacts particularly in the fens and perched lakes. Tilapia was detected on the Island in 2024 (Marie, 2024). These are currently confined to private tenure on the west coast with an active monitoring program in place and a collaborative control program currently under development in consultation with industry experts. Monitoring was also established for *Gambusia holbrooki* in 2018, with anecdotal evidence suggesting *Gambuisa holbrooki* were introduced intentionally to artificial lake systems on the western side of K'gari in the late 1980s (Behrendorff, 2019).

[1] It is noted that the Strategy and associated documents are the outputs of a collaborative stakeholder advisory group and not Queensland or Australian Government-endorsed policy documents.

Non-native ants were considered the next most significant threat by experts as these aggressively outcompete native insects (Zhang et al., 2024), and may swarm and kill ground dwelling birds, amphibians, and small mammals; as well as negatively impact native flora through seed predation, seedling destruction, and soil disturbance. Two of the world's most damaging species of tramp ants *Solenopsis invicta* (red imported fire ant) and *Anoplolepis gracilipes* (yellow crazy ant) (Lowe et al., 2000), are already located in Queensland (Lach et al., 2022; Wylie & Janssen-May 2017).

The K'gari Biosecurity Strategy will depend on funding being secured to support its delivery, although there is already considerable commitment to the Strategy's delivery by land managers and KBAG members – including the community. As a strategy co-benefit, delivering actions to reduce the impacts of invasive species will also increase K'gari's resilience to other threats – including climate change.

Background

Inscribed on the World Heritage list in 1992, K'gari (Fraser Island) World Heritage Area has recognised Outstanding Universal Value (OUV) for the island's exceptional natural beauty and for its significant ongoing ecological and biological processes. But K'gari is more than a natural place of beauty and ecology. The management of K'gari is a formal partnership between State and Commonwealth government agencies and the Butchulla First Nations people who have legally recognised Native Title rights over K'gari (lands and surrounding seas) as sentient Country.

For the Butchulla, the beauty and ecology of K'gari have cosmological and spiritual underpinnings that frame her ongoing use, management, and representation. Specifically, K'gari is a spirit creator being. With Yindingie, K'gari created the Earth. She fell so in love with her creation that she begged the great god Beeral to allow her to stay. Beeral transformed K'gari into a beautiful sand island with deep blue lakes and tall trees, and magnificent birds and animals. For Butchulla Traditional Owners, K'gari is the most beautiful homeland on Earth.

To care for K'gari, Butchulla have three laws, which the K'gari World Heritage Advisory Committee (KWHAC) also use as guiding principles:

1. What's good for Country must come first.
2. Never touch or take what does not belong to you.
3. If you have plenty you must share.

K'gari is the largest sand island in the world spanning 123 kilometres in length and 166,038 hectares in area (Queensland Government, n.d.-b). It was inscribed on the World Heritage List in 1992 and the National Heritage List in 2007 (Department of Climate Change, n.d.-c). It holds a highly significant social, environmental and economic importance to a local and global extent. The Butchulla People are the Traditional Owners and Custodians of K'gari and the surrounding mainland with over 60,000 years of close connection to Country (Queensland Government, n.d.-a).

Whilst the 2021 Census recorded a population of 152 people living on the island (Australian Bureau of Statistics, 2022), a report in May 2024 stated there are about 500,000 annual visitors to K'gari including international tourists (Queensland Government, 2024). Estimates of visitation are based on Queensland Parks and Wildlife Service and Partnerships (QPWS&P) camper nights, although total visitation, which includes Free and Independent Travellers (FITs) is not monitored. Tourism therefore yields great recreational value which generates economic activity.

Australian national parks are estimated to generate $2.6 billion worth of economic activity of which K'gari is an important contributor (Queensland Government, 2021). These estimates do not consider K'gari's several resorts and backpacking businesses that operate on freehold land outside of national park.

K'gari is environmentally valuable, hosting over 15 habitat types, and has evolutionary complexity in vegetation (Wardell-Johnson, 2016). UNESCO internationally acknowledges the island represents exceptional natural beauty across three criteria (vii, viii, ix) (UNESCO World Heritage Centre, n.d.-a). The island is well-known for its high social, economic and environmental value and needs to be protected now and into the future.

Invasive, non-native species have had significant impacts on the attributes of K'gari's World Heritage Outstanding Universal Values, with the high impacts of invasive species being found mostly in human disturbed areas (Harvey, 2011). These include the four townships on the island, popular camping grounds and the most heavily visited tourism spots.

There are many invasive, non-native species currently not present on the island with the potential to cause environmental, economic and social harm to K'gari. This needs to be urgently addressed as new introductions can greatly impact ecosystems and visitors but also impacts on the deep cultural connection that the Butchulla People have with K'gari.

"When K'gari is sick, then her people are sick too," – Auntie Joyce Bonner.

Much of the effort of the Butchulla People (including rangers from Butchulla Aboriginal Corporation and Butchulla Native Title Aboriginal Corporation), land managers (such as QPWS, Department of Primary Industries and Biosecurity Queensland, Department of Resources, and Fraser Coast Regional Council) and community groups (such as FIDO) is dedicated to controlling the damage of invasive species established on K'gari in the past. These include weeds, pests, and diseases (pathogens) such as myrtle rust (*Austropuccinia psidii*), pandanus leafhopper (*Jamella australiae*), bitou bush (*Chrysanthemoides monilifera*) and crab's eye creeper (*Abrus precatorius subsp. africanus*).

Many more invasive species on K'gari lack sufficient resources for management including feral cats (*Felis catus*), cane toads (*Rhinella marina*), platys (*Xiphophorus maculatus*), mosquito fish (*Gambusia affinis*), and coastal brown ants (*Pheidole megacephala*).

Understanding the threats and potential entry pathways is crucial to the **environmental biosecurity**[2] of K'gari. Threats such as yellow crazy ants have been reported nearby at Booral, Hervey Bay (adjacent to the River Heads barge crossing). Yellow crazy ants (*Anoplolepis gracilipes*) are listed as one of the top 100 worst invasive species by the IUCN and the Global Invasive Species Database. The Australian Government committed $24.8m (2022-26) to eradicate yellow crazy ants including $12m that has been committed to the Wet Tropics Management Authority (the Queensland Government has matched this contribution). On K'gari, this scenario could still be prevented.

Another pest ant causing concern, is the red imported fire ant (*Solenopsis invicta).* Fire ants cause serious social, economic, and environmental impacts. These aggressive ants can cause injury or, in extreme situations, death to both humans and animals. Sand islands like K'gari provide an ideal environment for fire

[2] *Environmental biosecurity is the protection of natural ecosystems, biodiversity, and social amenities from the negative impacts of invasive pests, weeds, and diseases. It focuses on preventing the introduction, establishment, and spread of harmful organisms, thereby protecting unique landscapes, native flora and fauna, and environmental health.*

ants to thrive with more than 100 nests identified on North Stradbroke Island in 2023, raising fears for K'gari's tourism industry and her rich natural and cultural values. A report (22 May 2024) of fire ants at Nirimba (Bells Creek), Sunshine Coast, has demonstrated how easily the ants could be transferred to the World Heritage property.

Establishing effective biosecurity systems and infrastructure takes time and investment. Mechanisms include complementary and simultaneous actions, such as community outreach and education, training to ensure skilled biosecurity staff, dialogue with/assistance for suppliers and transport operators, construction of facilities and systems, and ongoing reviews of the efficacy of approaches in an adaptative management framework. But prevention is a far more cost-effective option than eradication (or ongoing control) once a significant pest has established. The cost of doing nothing could result in catastrophic changes to ecological and cultural values on K'gari, with species driven to extinction and environments degraded.

Currently, a property owner or contractor can bring a ute-load of turf, mulch or other materials onto the island unchecked, potentially importing invasive ants, myrtle rust, phytophthora and a range of other soil-borne invasive pathogens. Whilst this responsibility is a General Biosecurity Obligation under the *Queensland Biosecurity Act 2014*, creating awareness of this responsibility and associated risks are essential to ensuring its effectiveness.

The challenge for K'gari is one of governance - developing a common objective and shared commitment to biosecurity along with resourcing (dedicated staff). At the commencement of this strategy's development, with multiple tenures on K'gari, there were only limited measures in place to prevent (and respond to) introductions of invasive weeds, pests and diseases to the World Heritage property.

The K'gari Biosecurity Strategy aims to address these challenges systematically by ensuring the risks posed to the natural environment and social amenity by invasive pests, weeds, and diseases are identified, prioritised, and managed by preventing them from entering, establishing, and spreading within the World Heritage-listed property. While the Strategy primarily focuses on prevention, the risk-based approach also extends to the management of established pests to prevent or reduce their spread to minimise the threat to K'gari's natural ecosystems and processes. It is acknowledged that while the Strategy aims to achieve the prevention and eradication of invasive species on K'gari, this may not always be possible.

Vision

K'gari – a paradise forever

Purpose

To work collaboratively across tenures to reduce the risk and manage the threats from invasive weeds, pests and diseases arriving or established on K'gari to protect biodiversity, cultural heritage, and human health.

Biosecurity Strategy Objectives

1. **Prevent** the introduction and manage the spread of invasive weeds, pests and diseases.
2. **Protect** ecosystems, cultural heritage, and communities from biosecurity risks.
3. **Respond** rapidly and effectively to biosecurity incidents.

4. **Engage and educate** communities, stakeholders, and visitors in biosecurity awareness and participation.

Guiding Principles

To guide the K'gari Biosecurity Strategy's development the following principles were applied:

1. **What's good for the land comes first.** Uphold Butchulla lore.
2. **Focus on proactive measures to stop threats before they occur.** Prevention is better than cure.
3. **Integrate knowledge** including Western Science, Traditional Knowledge, perspectives and practices and best-practice benchmarking to strengthen management.
4. **Take a risk-based and adaptive approach to all we do**. Allocate resources to areas of greatest vulnerability and potential impact. Ensure that biosecurity practices are both sustainable and flexible, to adapt to new challenges.
5. **Collaboration and Partnerships - where possible, seek to bring others on the journey with us**. Work with governments, communities, industries, and international partners. Leverage lessons already learned on K'gari e.g., through wongari-dingo education and 4WD community litter collection.

What values are we protecting?

Butchulla Cultural Values

Butchulla people have lived on K'gari and the adjacent mainland for many thousands of years. Over this time, they have developed a deep connection and understanding of the local environment. Over many thousands of years, Butchulla management has sustained and shaped Butchulla Country resulting in the cultural landscape that we see today.

Butchulla people followed strict lore, what is good for the land must come first. Custodianship is not only a responsibility it is an obligation, one that includes connections to individual species and places through totems and kinship. Butchulla people's lives depended on maintaining healthy Country, knowing that when K'gari is healthy, her people are healthy too.

Butchulla knowledge is passed down from the ancestors through lore, ceremony, song and dance by Elders when individuals are deemed worthy to hold knowledge. Knowledge holders must use and share their knowledge responsibly, for the well-being of Country and people, and protect this knowledge.

Figure 1: Butchulla tangible and intangible cultural heritage values of K'gari

In the past, Butchulla people were taken by Elders to learn about Country. Lore and knowledge were taught to Butchulla people in the dreamtime, when the world was being created and creator spirits like Yindingie and K'gari shaped Country and Butchulla society. They knew from what was happening on Country, what to expect and what to do.

Species of cultural significance (see Figure 1) include:

- Wongari (dingo) - the domesticated Wongari, called Wadja, lived alongside the Butchulla people protecting them. When the Butchulla people were forcibly removed from K'gari, all the Wadja reverted to Wongari.

- Food sources such as eugaries, oysters and fish as well as cycads, pigface, yams, nuts and berries (e.g., midyim berries).
- Species of medicinal value.
- Species used as tools (e.g., trees used for shelters, canoes or throwing sticks, grass trees used for starting fires and banksia cones used to move fire from one place to another).

Several species of Butchulla cultural value overlap with species of conservation value, e.g., Mur'rindum or Black-breasted buttonquail (*Turnix melanogaster*).

K'gari's Outstanding Universal Value

Designated as a World Heritage property by the UNESCO World Heritage Committee in 1992, K'gari, lies along the eastern coast of Australia. The property covers 181,851 hectares and includes K'gari (extending 500m out to sea) and several small islands off the island's west coast. It is the world's largest sand island, offering an outstanding example of ongoing biological, hydrological and geomorphological processes. The development of rainforest vegetation on coastal dune systems at the scale found on K'gari is unique, plus the island boasts the world's largest unconfined aquifer on a sand island.

The property has exceptional natural beauty with over 250 kilometres of clear sandy beaches with long, uninterrupted sweeps of ocean beach, strikingly coloured sand cliffs, and spectacular blowouts. Inland from the beach are majestic remnants of tall rainforest growing on sandy dunes and half of the world's perched freshwater dune lakes.

The property has been assessed as meeting three criteria of Outstanding Universal Value - the core concept of the UNESCO World Heritage Convention. OUV defines natural or cultural significance so exceptional it transcends national boundaries and is crucial for all humanity, present and future. It signifies that a site is remarkable on a global scale, requiring international protection. While the property was not originally nominated for any cultural criteria, the Butchulla people aspire to renominate the site for its cultural values in the future.

Criterion (vii): K'gari (Fraser Island) is the largest sand island in the world, containing a diverse range of features that are of exceptional natural beauty. The area has over 250 kilometres of clear sandy beaches with long, uninterrupted sweeps of ocean beach, including more than 40 kilometres of strikingly coloured sand cliffs, as well as spectacular blowouts. Inland from the beach are majestic remnants of tall rainforest growing on tall sand dunes, a phenomenon believed to be unique in the world. Half of the world's perched freshwater dune lakes occur on the island, producing a spectacular and varied landscape. The world's largest unconfined aquifer on a sand island has also been found here.

Criterion (viii): The property represents an outstanding example of significant ongoing geological processes including longshore drift. The immense sand dunes are part of the longest and most complete age sequence of coastal dune systems in the world and are still evolving. The superimposition of active parabolic dunes on remnants of older dunes deposited during periods of low sea level[1], which are stabilised by towering rainforests at elevations of up to 240 metres, is considered unique. K'gari (Fraser Island) also has a variety of freshwater dune lakes which are exceptional in terms of number, diversity and age. The dynamic interrelationship between the coastal dune sand mass, aquifer hydrology and the freshwater dune lakes provides a sequence of lake formation both spatially and temporally.

The process of soil formation on the island is also unique[2], resulting from the successive overlaying of dune systems, a chronosequence of podzol development from the younger dune systems on the east to the oldest systems on the west change from rudimentary profiles less than 0.5 metres thick to giant forms more than 25 metres thick. The latter far exceeds known depths of podzols anywhere else in the world and has a direct influence on plant succession, with the older dune systems causing retrogressive succession when the soil horizon becomes too deep to provide nutrition for tall forest species.

Criterion (ix): The property represents an outstanding example of significant ongoing biological processes. These processes, acting on a sand medium, include biological adaptation (such as unusual rainforest succession), and biological evolution (such as the development of rare and biogeographically significant species of plants and animals).

Vegetation associations and succession represented on K'gari (Fraser Island) display an unusual level of complexity, with major changes in floristic and structural composition occurring over very short distances. Both heathland and closed forest communities provide refugia for relict and disjunct populations, which are important to ongoing speciation and radiation. Evolution and specialised adaptation to low fertility, fire, waterlogging and aridity is continuing in the ancient angiosperm flora of the heathlands and the associated vertebrate and invertebrate fauna. Since listing, patterned fens have been discovered on the property, which along with those at Cooloola, are the only known[3] examples of sub-tropical patterned fens in the world. These fens support an unusual number of rare and threatened invertebrate and vertebrate species.

The dynamic interrelationship between the coastal dune sand mass, hydrology, the ongoing processes of soil formation and the development of plant communities is remarkable in its scale and complexity given the uniform substrate. In particular, the development of rainforest vegetation communities, with trees up to 50 metres tall on coastal dune systems at the scale found on K'gari (Fraser Island), is not known to occur elsewhere in the world. There are clear zonation and succession of plant communities according to salinity, water table, age and nutrient status of dune sands, exposure and fire frequency. The low shrubby heaths ('wallum') are of considerable evolutionary and ecological significance. Fauna including several threatened species of frog, have adapted to the highly specialised acidic environment associated with wet heathlands and sedgelands in this siliceous sand environment.

K'gari's Biodiversity and Natural Values

While most natural values are contained within the OUV of the property, K'gari also has several species listed as threatened under both the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) and *Nature Conservation Act 1992* (Qld). These include migratory and non-migratory, terrestrial, aquatic and marine species and are listed in Tables 1 and 2 (below).

Table 1: K'gari's Threatened Animals (Source Queensland Government: WetlandInfo)

Scientific Name	Common Name	NCA	EPBC	Endemicity	Wetland Status
Sousa sahulensis	Australian humpback dolphin	V		QAI	I
Balaenoptera musculus	blue whale	C	E	QAI	
Arctocephalus tropicalis	Subantarctic fur seal	V	E	QA	
Dugong dugon	dugong	V		QAI	I
Xeromys myoides	water mouse	V	V	QAI	I
Pteropus poliocephalus	grey-headed flying-fox	C	V	QA	
Potorous tridactylus tridactylus	long-nosed potoroo	V	V	QA	
Petaurus australis australis	yellow-bellied glider (southern subspecies)	V	V	QA	
Stagonopleura guttata	diamond firetail	V		QA	
Ninox strenua	powerful owl	V		QA	
Pezoporus wallicus wallicus	ground parrot	V		QA	

Calyptorhynchus lathami	glossy black-cockatoo	V		QA	
Calyptorhynchus lathami lathami	glossy black-cockatoo (eastern)	V	V	QA	
Turnix melanogaster	black-breasted button-quail	V	V	QA	
Calidris canutus	red knot	E	E	QAI	I
Calidris ferruginea	curlew sandpiper	CR	CE	QAI	I
Calidris tenuirostris	great knot	CR	CE	QAI	I
Limosa lapponica baueri	Western Alaskan bar-tailed godwit	V	V	QAI	I
Numenius madagascariensis	eastern curlew	E	CE	QAI	I
Charadrius leschenaultii	greater sand plover	V	V	QAI	I
Charadrius mongolus	lesser sand plover	E	E	QAI	I
Esacus magnirostris	beach stone-curlew	V		QAI	I
Erythrotriorchis radiatus	red goshawk	E	V	QA	
Botaurus poiciloptilus	Australasian bittern	E	E	QAI	I
Ardenna grisea	sooty shearwater	V		QAI	
Ardenna pacifica	wedge-tailed shearwater	V		QAI	
Halobaena caerulea	blue petrel	V	V	VU	
Macronectes giganteus	southern giant-petrel	E	E	QAI	
Macronectes halli	northern giant-petrel	V	V	VU	
Pterodroma leucoptera leucoptera	Gould's petrel (Australian subspecies)	C	E	QAI	
Diomedea antipodensis antipodensis	Antipodean albatross	V	V	QAI	
Diomedea exulans	wandering albatross	V	V	QAI	
Phoebetria fusca	sooty albatross	V	V	VU	
Thalassarche bulleri	Buller's albatross	V	V	VU	
Thalassarche carteri	Indian yellow-nosed albatross	V	V	QAI	
Thalassarche cauta	shy albatross	E	V	QAI	
Thalassarche chrysostoma	grey-headed albatross	E	E	VU	
Thalassarche melanophris	black-browed albatross	SL	V	QAI	
Fregetta grallaria	white-bellied storm-petrel	C	V	QAI	
Hirundapus caudacutus	white-throated needletail	V	V	QAI	
Podargus ocellatus plumiferus	plumed frogmouth	V		QA	
Phaethon rubricauda	red-tailed tropicbird	V		QAI	
Acanthophis antarcticus	common death adder	V		QA	
Anilios silvia	striped blind snake	NT		Q	
Coeranoscincus reticulatus	three-toed snake-tooth skink	C	V	QA	
Dermochelys coriacea	leatherback turtle	E	E	QAI	
Caretta caretta	loggerhead turtle	E	E	QAI	
Chelonia mydas	green turtle	V	V	QAI	
Eretmochelys imbricata	hawksbill turtle	E	V	QAI	
Lepidochelys olivacea	olive ridley turtle	E	E	QAI	

Natator depressus	flatback turtle	V	V	QAI	
Litoria cooloolensis	Cooloola sedgefrog	NT		Q	I
Litoria freycineti	wallum rocketfrog	V		QA	
Litoria olongburensis	wallum sedgefrog	V	V	QA	I
Crinia tinnula	wallum froglet	V		QA	I
Nannoperca oxleyana	Oxleyan pygmy perch	V	E	QA	D
Pseudomugil mellis	honey blue eye	E	V	Q	D
Carcharodon carcharias	white shark		V	QAI	D
Rhincodon typus	whale shark		V	QAI	D
Acrodipsas illidgei	Illidge's ant-blue	V		QA	
Cherax robustus	sand crayfish	V		Q	

Table 2: K'gari's Threatened Plant Species (Source: Queensland Government: WetlandInfo)

Scientific Name	Common Name	NCA	EPBC	Endemicity	Wetland Status
Tecomanthe hillii	Fraser Island creeper	NT		Q	
Blandfordia grandiflora	Christmas bells	E		QA	I
Acacia attenuata		V	V	Q	
Acacia baueri subsp. baueri	tiny wattle	V		QA	I
Archidendron lovelliae	bacon wood	V	V	Q	
Myrsine serpenticola		E		QA	
Eucalyptus hallii	Goodwood gum	V	V	Q	
Rhodamnia dumicola	rib-fruited malletwood	E		Q	
Cryptostylis hunteriana		SL	V	Q	
Diteilis simmondsii		NT		Q	
Phaius australis		E	E	QAI	I
Pterostylis nigricans		NT		QA	
Persoonia prostrata		PE	EX	Q	
Boronia rivularis	Wide Bay boronia	NT		Q	I
Macrozamia pauli-guilielmi		E	E	Q	

Key: EX Extinct, PE or XW Extinct in the Wild, CR or CE Critically Endangered, CD Conservation dependent, E Endangered, V Vulnerable, NT Near Threatened, C Least Concern, SL Special least concern, I Wetland Indicator Species and P Prohibited.

While this list is already extensive, it is highly likely that there are more species to discover. In 2022, the Australian brook lamprey (*Mordacia praecox*), a rare and ancient, jawless fish was recorded in the freshwater streams of K'gari. This discovery, confirmed by Dr. Luke Carpenter-Bundhoo of Griffith University and researcher David Moffatt, was significant because it placed a supposed cold-climate species in a warm, tropical, and sandy habitat 1,400 km north of its previously known range.

K'gari biosecurity risks and cost–benefit analyses

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Natural World Heritage sites are globally recognised for their ecological and cultural significance but face increasing threats from invasive species and K'gari is no exception. Effective biosecurity is essential for

protecting these values, yet decision makers often lack the information needed to assess risks and prioritise interventions. Data limitations in current risk assessments can hinder strategic planning and the efficient allocation of resources.

This **study**[3] used expert elicitation measures to parameterise structured models to evaluate the cost-effectiveness of biosecurity strategies under different nominal budgets for K'gari. The models and the list of threatening species were originally developed through several stakeholder workshops conducted in 2020 and 2021 as part of a study led by the Centre of Excellence for Biosecurity Risk Analysis (CEBRA) at the University of Melbourne (Walshe et al. 2021). In this 2025 study, expert-elicited data was collected specifically for K'gari and then the models set out by Walshe et al. (2021) were run to develop a list of cost-effective biosecurity strategies.

More than 30 experts in the threatening species and/or K'gari's ecosystems were invited with 15 experts agreeing to participate. Experts provided estimates on the probability of entry to K'gari, establishment, spread and impact for 19 invasive pests, pathogens and weeds (Table 3). This list was not developed to be an exhaustive list but to be a list of key threatening species that are representative of all possible pathways on to the Island, including aircrafts, vehicles, barges, boats, construction materials, and animal and wind dispersed. The aggregate biosecurity risks posed by each of the invasive species were evaluated in relation to impacts on the key conservation indicators under K'gari's World Heritage listing representing four distinct ecosystems, i.e., K'gari's rainforest, heath, perched lakes and fens.

Cost estimates for the biosecurity actions, which were grouped broadly into five levels of increasing investment in quarantine (prevention), education, and search and destroy, were obtained through consultation with Traditional Owners (rights-holders), landowners and managers including the Butchulla Aboriginal Corporation and Queensland Parks and Wildlife Services. Quotes were also sought from manufacturers of new infrastructure and equipment for items such as modular wash bays and the Queensland Indigenous Land and Sea Rangers Program Guidelines were used for staff resourcing estimates. For more details on how the prioritised list of biosecurity actions were obtained please see the full study report which is available in Appendix 1.

According to experts, in the absence of a coordinated biosecurity strategy K'gari faces widespread negative ecological impacts across its universally recognised ecosystems over the next 20 years. Aggregated risks for each of the four ecosystems from the list of threatening species were all above 90% including 99% for the perched lakes, 98% for the fens, 93% for the heath, and 92% for rainforests. These estimates reflect the evaluations by experts of both the likelihood of pest establishment and the potential severity of ecological impact if the pest were to establish. These high-risk estimates show the vulnerability of these ecosystems to invasive species threats over a 20-year time horizon if a coordinated biosecurity strategy is not implemented.

The species estimated to pose the highest risk were *Oreochromis* and *Tilapia spp*. (tilapia fish), *Solenopsis invicta* (red imported fire ant), *Anoplolepis gracilipes* (yellow crazy ant), *Gambusia spp*. (mosquitofish), and *Pennisetum purpureum* (high-biomass elephant grass). Other concerning invasive species included *Dolichandra unguis-cati* (cat's claw), the aquatic weed *Cabomba caroliniana* (Cabomba), exotic strains of *Austropuccinia psidii* (myrtle rust), *Phytophthora cinnamomi* (Phytophthora root rot), and the avian pathogen H5N1 avian influenza.

[3] *Raymond, E-J. and Firn, J. (2025) Biosecurity Risk and Cost-Benefit Analysis for K'gari: A Natural World Heritage Island. Published by Queensland University of Technology.*

Table 3: Pests of concern to K'gari, broadly categorised into pathogens, invertebrates, weeds (terrestrial and aquatic), and vertebrates (freshwater fish and domestic dogs).

Species Information			Presence in Region		
Category	**Common Name**	**Scientific Name**	**Australia**	**Queensland**	**K'gari**
Plant Pathogens	Ceratocystis wilt	*Ceratocystis manginecans and C. spp.*	N	N	N
	Myrtle rust (international strains)	*Austropuccinia psidii*	N	N	N
	Polyphagous shot hole borer associated fusarium wilt	*Fusarium euwallaceae*	Y	N	N
	Phytophthora	*Phytophthora ramorum*	N	N	N
	Phytophthora	*Phytophthora cinnamomi*	Y	Y	N
Animal Pathogens	Chytrid fungus	*Batrachochytrium dendrobatidis*	Y	Y	N
	Avian Influenza 'bird flu'	*(HPAI) H5N1*	N	N	N
Invertebrates	Invasive ants	*Solenopsis invicta/Anoplolepis gracilipes*	Y	Y	N
	Brown marmorated stink bug	*Halyomorpha halys*	N	N	N
Weeds (terrestrial)	Bitou bush	*Chrysanthemoides monilifera subsp. rotundata*	Y	Y	Y
	Peruvian primrose	*Ludwigia peruviana*	Y	Y	N
	Cat's claw	*Dolichandra unguis-cati*	Y	Y	N
	High biomass grass (Elephant grass)	*Pennisetum purpureum*	Y	Y	N
Weeds (aquatic)	Salvinia	*Salvinia molesta*	Y	Y	N
	Water hyacinth	*Eichhornia crassipes*	Y	Y	N
	Cabomba	*Cabomba caroliniana*	Y	Y	N
Vertebrates (freshwater fish)	Mosquitofish	*Gambusia spp.*	Y	Y	Y
	Tilapia	*Tilapia spp.*	Y	Y	Y
Vertebrates (domestic dogs)	Domestic dogs	*Canis familiaris*	Y	Y	N

Invasive *Tilapia* spp. and *Gambusia* spp. were ranked as having the highest estimated impacts particularly in the fens and perched lakes. Since the first project by Walshe et al. (2021) when the biosecurity threat list was created, both pests have been found on K'gari. Tilapia (*Oreochromis mossambicus)* were detected on the island in 2024 (Marie, 2024). These are currently confined to private tenure on the west coast with an active monitoring program in place and a collaborative control program under development in consultation with industry experts (QPWS personal communication March 2026). A monitoring program has been in place for *Gambusia holbrooki* since 2018, with anecdotal evidence suggesting *Gambuisa holbrooki* were introduced intentionally to artificial lake systems on the western side of K'gari in the late 1980s (Behrendorff, 2019).

Two of the world's most damaging species of tramp ants *Solenopsis invicta* (red imported fire ant) and *Anoplolepis gracilipes* (yellow crazy ant) (Lowe et al., 2000), are already located in Queensland (Lach et al., 2022; Wylie & Janssen-May 2017). Invasive non-native ants were considered the next most significant threat by experts because if they were to establish, both species aggressively outcompete native insects (Zhang et al., 2024), and swarm and kill ground dwelling birds, amphibians, and small mammals; as well as negatively impact native flora through seed predation, seedling destruction, and soil disturbance.

Although the species on the 'Pests of Concern' list were estimated to pose a significant risk, above 90% to K'gari's universally recognised ecosystems, the experts also estimated that if a tenure blind 'coordinated' biosecurity strategy were implemented these risks could be reduced substantially. Overall biosecurity strategies that focused on prevention such as education and quarantine emerged as the most cost-

effective strategies according to the experts. The estimated percentage reduction in risk to each ecosystem under different management strategies and their associated cost over a twenty-year time horizon (see Table 4), ranging from an estimated risk reduction of 36% to 77% depending on the ecosystem and the level of investment (ranging from AUD $10 million to AUD $48 million over 20 years).

Experts prioritised education as the highest value investment across all budget scenarios, noting that it is comparatively inexpensive yet capable of delivering substantial reductions in biosecurity risk. The strongest education strategy (E5), which was included in every notional budget, involves long term community engagement, school-based programs, targeted messaging for visitors, improved reporting pathways, and training for staff. These measures aim to build awareness, shift behaviour, and strengthen community capacity to identify and prevent incursions before they occur.

Table 4: Percentage reduction in risk to each ecosystem under different management strategies and their associated costs over a 20-year period. All strategies include level 5 education (E5). Most strategies assume moderate to high investment in quarantine, except for the low-cost Strategy A. Search and destroy is generally less cost-effective, however, higher funding, as in Strategies E and F, would allow greater investment and improved biosecurity outcomes. For further details see the full report in Appendix 1.

Strategy	Rainforest	Heath	Perched lakes	Fens	Cost estimate (million AUD) over 20 years
A Q1 E5 SD2	51%	45%	36%	38%	$9.9
B Q3 E5 SD2	61%	55%	44%	47%	$11.8
C Q4 E5 SD2	68%	62%	53%	55%	$18.3
D Q4 E5 SD3	71%	66%	57%	58%	$32.5
E Q2 E5 SD5	70%	65%	59%	59%	$40.8
F Q4 E5 SD5	77%	73%	67%	68%	$47.8

Quarantine (prevention) was consistently identified by experts as an important preventative measure, with medium to high levels of investment recommended across most strategies. Implementing quarantine at key entry points to K'gari, such as ferry terminals and loading areas, boat access sites, and vehicle entry points, was estimated to reduce the likelihood of invasive species being introduced. Infrastructure such as washdown bays and boot cleaning stations, supported by pre-border inspections and clear visitor guidance, would provide practical means of reducing the risk of biosecurity incursions. While establishment costs are relatively high, quarantine remains more cost effective than managing established invasions, with ongoing maintenance costs comparable to those of education programs.

Search and destroy activities, which involve deploying biosecurity officers and surveillance equipment to detect and remove invasive species after arrival, were found to be less cost effective among the biosecurity strategies assessed by the experts. Unlike quarantine and education, which focus on preventing the entry and establishment of invasive species, search and destroy is reactive and assumes incursions will occur and seeks to manage them post-arrival. Despite this, higher funding would allow greater investment in search and destroy activities and is a highly important investment for monitoring and assessing where new incursions arise as no education or quarantine program can be infallible. The experts estimated that also including search and destroy actions would further reduce risk to ecosystems.

In summary, experts were confident that combinations of investment in quarantine, education and search and destroy actions would reduce the risk to K'gari's four universally recognised ecosystems with the creation and implementation of a coordinated biosecurity strategy. Experts were also notably confident

that without a coordinated biosecurity strategy the threatening species listed would impact detrimentally on the integrity of K'gari's ecosystems in just 20 years.

Legislation, Strategies and Policies

The delivery of biosecurity activities in Australia is complex. K'gari's biosecurity system is implemented by multiple stakeholders depending on land tenure. Significant efforts have been made by the Butchulla People, International World Heritage, Federal, State and Local Governments, and other organisations to protect the island from the threat of invasive weeds, pests and pathogens. There are, however, opportunities for improvement in effective communication and coordination between these stakeholders to ensure a more cohesive and timely response to environmental biosecurity concerns.

Australia's National Biosecurity System

Australia has a robust and multilayered biosecurity system. This includes a range of pre-border, at-border and post-border activities aimed at reducing the risk of pests and diseases arriving, entering and establishing in Australia. These activities include:

Pre-border activities

- risk analysis and import approvals (including import risk analysis & policy, risk management and communication)
- export market access negotiations
- offshore assessment, audit, and verification
- international standards development and fulfilment of international convention obligations
- capacity building in overseas countries
- gathering global pest intelligence.

At border activities

- implementation of risk management system
- policy implementation
- education and awareness
- inspection and monitoring
- enforcement and compliance.

Post-border activities

- emergency preparedness
- enhancing capacity to prepare, detect and respond to pests and diseases
- exercises and simulations
- education and awareness
- monitoring and surveillance
- national coordination and response to pest incursions
- domestic quarantine
- pest management.

These processes are supported by National and State managed legislation (Table 5) and national biosecurity governance arrangements including the National Management Group (NMG) and associated advisory committees. The NMG is the peak, national biosecurity decision-making forum in the event of an incident of a pest or disease. The NMG determines if the pest or disease is nationally significant, and if eradication is technically feasible and cost beneficial. The NMG will also consider the response plan for

eradication and its associated costs. The NMG is comprises representatives from the Commonwealth and each state and territory government. Representatives from non-government entities may also form part of the membership, where agreed by the NMG, provided the entity contributes to the funding of the national response.

Responses

The *Emergency Plant Pest Response Deed* (EPPRD) is a formal legally binding agreement between Plant Health Australia, the Australian Government and all state and territory governments and national plant industry bodies. The EPPRD outlines the national governance arrangements and cost-sharing for responding to, and eradicating, emergency plant pests (EPP). A range of industry groups are signatories to the Deed. In addition to the EPPRD, the *Australian Emergency Plant Pest Response Plan* (PLANTPLAN), provides guidance for managing a response to an EPP at national, state and local levels, describing procedures as well as key roles and responsibilities during responses.

While the EPPRD covers the plant sector, there is an equivalent agreement for the animal (livestock) sector, the Emergency Animal Disease Response Agreement (EADRA). Similarly, the National Environmental Biosecurity Response Agreement (NEBRA) sets out emergency response arrangements, including cost-sharing arrangements, for responses to biosecurity incidents that primarily impact the environment and/or social amenity and where the response is for the public good. The Commonwealth Department of Agriculture, Fisheries and Forestry, as the custodian of the NEBRA, assists emergency response committees by providing guidance and interpretation on the agreement and plays an administration role for cost sharing parties during the life of an emergency response. The Custodian is also responsible for reviewing, maintaining and updating the NEBRA. It must be stated that if an exotic pest, pathogen, or weed of importance to the environment is reported and is noted as having a potential impact on any industry, the process is run under the EPPRD and not under NEBRA.

The National Priority List of Exotic Environmental Pests, Weeds and Diseases

The Australian Chief Environmental Biosecurity Officer (ACEBO) is the custodian of the EEPL and administers its use and manages any ad hoc and planned reviews.

The development of priority pest lists has been completed through a process involving experts in the various fields and is reviewed every 5 years. The National Biosecurity Committee endorsed the final EEPL in October 2020. It was released in November 2020. A review is currently underway (2026). The pest lists go across the following pest groups:

- Aquatic Animal Diseases
- Freshwater Invertebrates
- Marine Pests
- Native Animal Diseases
- Plant Diseases
- Terrestrial Invertebrates
- Vertebrates
- Weeds and Freshwater Algae

While not all organisms that pose an environmental biosecurity risk to Australia are listed, species that are unlisted are likely to fit within one of the biological groups within the current list. Measures aimed to reduce the risk posed by a specific biological grouping is likely to be applicable to broader pest group.

As part of the process, the Environment and Invasives Committee (EIC) has policy oversight of the EEPL. The following groups are consulted when developing, reviewing, and amending the EEPL:

- Plant Health Committee
- Animal Health Committee
- Marine Pest Sectoral Committee
- other relevant stakeholders as appropriate.

Other priority lists that are relevant are:
- National list of notifiable animal diseases
- National list of reportable diseases of aquatic animals
- National priority plant pest list
- Australian priority marine pest list

Other relevant lists developed in Australia include, but are not limited to:
- Live import list
- Weeds of National Significance
- List of exotic vertebrates in Australia
- Northern Australia Quarantine Strategy (NAQS) target list (pests, diseases and weeds)
- State and territory governments also have priority pest lists

National Diagnostic Protocols (NDPs)
National Diagnostic Protocols (NDPs) are documents containing detailed information about a specific plant pest or group of plant pests to allow accurate taxonomic identification. They provide information on the pest(s), host(s), taxonomic status and the methods to detect and identify it based on the best available information. The newer protocols also include diagnostic information to support surveillance activities. In short, NDPs enable consistent identifications and increased confidence in diagnostic outcomes.

NDPs are an integral component of Australia's plant biosecurity system. They are developed for use in Australia and endorsed by the Plant Health Committee. NDPs are used by diagnosticians to identify plant pests:
- during emergency responses to exotic plant pests
- for general surveillance for pest status
- for surveillance as part of an official control or eradication program
- pest diagnostic operations associated with phytosanitary certification
- found in imported consignments
- found in an area where it is not known to occur.

Queensland

In Queensland, the *Biosecurity Act 2014 (Qld)* establishes the legislative framework for biosecurity, and supports local government and industry biosecurity plans. From an environmental perspective it importantly reinforces the role all Queenslanders and visitors play in biosecurity by establishing the general biosecurity obligation (GBO).

General Biosecurity Obligation
Under the *Biosecurity Act 2014*, everyone in Queensland has a general biosecurity obligation (GBO) to ensure that they do not spread a pest, disease or a contaminant. All individuals and organisations are responsible for managing biosecurity risks that are under their control.

Under the GBO, individuals and corporations whose activities pose a biosecurity risk must:
- take all reasonable and practical steps to prevent or minimise each biosecurity risk

- minimise the likelihood of causing a biosecurity event, and limit the consequences if an event is caused
- prevent or minimise the harmful effects a risk could have, and not do anything that might make any harmful effects worse.

Even where access to places is permitted under legislation, individuals still have a GBO to minimise biosecurity risks.

Local Government

Fraser Coast Regional Council Local Government Area – Biosecurity Plan 2022
The Fraser Coast Biosecurity Plan is stated as providing "guidance on how to reduce biosecurity risks associated with invasive plants and animals and their impacts on human health, social amenity, the economy and the environment within the Fraser Coast Region".

The focus is on invasive plants and animals, with no mention of plant pests and pathogens, apart from yellow crazy ants (*Anoplolepis gracilipes*), which are currently listed as a high priority pest under the plan.

Unfortunately, there is no mention of introduced plant pathogens, *Phytophthora* spp. or the rust fungus *Austropuccinia psidii*, the causal agent of the disease myrtle rust. This is despite a range of Myrtaceae species in the Fraser Coast region being listed either under the *EPBC Act* and/or Queensland's Threatened Species list. A Queensland Myrtle Rust Plan is under development by DETSI which will link to the National Myrtle Rust Action Plan. Species like *Rhodamnia rubescens* or scrub turpentine (EPBC-Listed Critically Endangered) and *Rhodomyrtus psidioides* or native guava (EPBC-Listed Critically Endangered) occur within the Fraser Coast Local Government region.

For *Phytophthora cinnamomi,* a Threat Abatement Plan (TAP) for the disease in natural ecosystems exists. As a legislative instrument under the EPBC Act, this Plan sits within the context of national legislation, policy and programs directed to the long-term preservation of Australia's biodiversity. The goal of the TAP is to identify and protect environmental assets from the impacts of the *P. cinnamomi*. It does not currently extend to other species of *Phytophthora*.

Biosecurity processes on K'gari are covered under the above-mentioned Acts, strategies and supporting processes. A K'gari Biosecurity Strategy will elevate these and enable effective communication between stakeholders and the relevant governing bodies and link the various strategies that different parties currently utilise to monitor for new and emerging threats. Within an overarching strategy document, the focus should be on effective communication and coordination of activities and actions. A joint approach around awareness and reporting is a priority. Management of impacts from existing issues, including weeds, feral animals, aquatic pests and pathogens may require the development of more specific or individual plans.

Table 5: Legislation, Plans and Policies supporting K'gari Biosecurity

Scale	Jurisdiction	Legislation	Strategies, Plans and Guidelines	Responsibility
International	World Heritage property	World Heritage Convention (to which Australia is a signatory)	Operational Guidelines	WHC
			Guidelines for invasive species planning and management on islands	IUCN
National: Australian Government	Australia	Biosecurity Act 2015 (Cwth)	DAFF Biosecurity 2030 Roadmap	DAFF
			National Biosecurity Strategy (Implementation and Action Plans)	DAFF
	World/National Heritage listed properties	Environment Protection and Biodiversity Conservation Act 1999 (Cwth)		DCCEEW
State: Queensland Government	State	Biosecurity Act 2014 (Qld)	Queensland Biosecurity Strategy 2024-29	DPI (and Biosecurity Queensland)
	State	Nature Conservation Act 1992 (and regulations) (Qld)	Great Sandy Region Management Plan 2005 and K'gari Management Plan (in development)	DETSI (and QPWS)
Local Government: Fraser Coast Regional Council	Local government includes freehold areas on K'gari	Operate under Biosecurity Act 2014 (Qld) with Local Laws to manage locally significant weeds and pests through Local Law No. 3 (Community and Environment Management) 2011 and Subordinate Local Law No. 3 (Community and Environment Management) 2011.	Fraser Coast Regional Council Biosecurity Plan 2022-27	FCRC

Butchulla Aboriginal Corporation Commitment

Aboriginal Australians have protected and managed the landscape for many generations. Country is the centre of Culture for Indigenous people, which is ingrained through connection, story, knowledge, kinship, totemic systems, language, and Lore.

Gregory Andrews a D'harawal man, wrote *Biosecurity: a First Nations Perspective* and captures this perspective well. It describes for First Australians, that protecting country and the Dreamings are critical for the wellbeing of its country and people. He explains that biosecurity means caring for Country holistically by ensuring the health of the land, ecosystems, and people. Traditional practices involve a deep and holistic approach to land management. Traditional ecological knowledge is a sophisticated understanding of the natural world, passed down through many generations through deep observation and active participation. It guides sustainable land management practices. Gregory Andrews does well to capture an Aboriginal Australian perspective on the meaning of biosecurity.

Butchulla people continue to practice culture including lore on K'gari, implementing it through their day-to-day life. Notably, the first lore, *Minyang galangoor gu djaa, kalim baya-m* (What is good for the land comes first) is an overarching lore that includes biosecurity. Butchulla people have implemented holistic land management with biosecurity benefits on the land for thousands of years. Significantly influencing how the island is today.

For K'gari specifically, the Butchulla Aboriginal Corporation RNTBC (BAC) is represented by Butchulla family systems. Members of these family systems as well as Butchulla People from the mainland are recognised under the *Native Title Act 1993*. Native Title is a collection of rights linked to traditional laws and customs, such as the rights to camp, hunt, use water, and protect cultural sites. These rights are inalienable and cannot be sold or transferred, though non-extinguishing leases are possible. The *Native Title Act* has helped empower the Butchulla People to continue land management on K'gari.

In 2022-24, the BAC worked with the Office of the Great Barrier Reef and World Heritage to develop a *K'gari World Heritage Area Vulnerability Assessment and Climate Change Adaptation Plan*. Although this plan has never been published, the BAC through the Butchulla Working Group were able to develop the *Butchulla Climate Change Response Plan for K'gari (2024)*. The Response Plan acknowledged the impacts that climate change will have an increasing biosecurity risk e.g., the spread of invasive weeds and pests through flood waters or outbreaks of pathogens following bushfires but also identified that managing biosecurity risks was one of five areas of action to increase K'gari's resilience to a changing climate. The development of the current K'gari Biosecurity Strategy is a direct result of the Response Plan.

The BAC's biosecurity commitment for the island includes weed management through their Butchulla Land and Sea Rangers (BLSR) milestones and grants, as well as collaborative weeding programs with the Natural Integrity Alliance for K'gari (FINIA) and the K'gari (Fraser Island) Defenders Organisation (FIDO). The BLSR also educate surrounding schools and events around management including biosecurity.

Funded by the Australian Government's NIAA Indigenous Ranger Program, the BAC has recently appointed (January 2026) a team of (3FTE) Butchulla K'gari Djaa Rangers (K'gari Country). The new ranger team will focus their efforts on Aboriginal Freehold Lands, along with fire management, water quality and biosecurity across K'gari.

Through collaboration with BAC and Queensland Government, a forest health and environmental biosecurity training program was initiated. Surveys on K'gari focussed on the impacts of myrtle rust on

K'gari's Myrtaceae species, particularly post wildfire. This project has now extended to incorporate Indigenous ranger teams across NSW and Queensland, creating capacity to detect, report and manage forest pest and disease threats. The project has and continues to collaboratively design and implement culturally appropriate environmental biosecurity training programs, enhancing the ability of Indigenous Rangers and other land managers across Australia (Department of Environment and Science, n.d.). The BAC and other Butchulla people contribute to biosecurity efforts in different ways.

Key Areas of Action – BlueSheet

On 3-4 June 2025, 18 members of the K'gari Biosecurity Advisory Group (KBAG) joined key stakeholders for a two-day collaborative Biosecurity Strategy BlueSheet workshop held on K'gari. The workshop opened with five different perspectives of K'gari's current biosecurity provided by the Butchulla Aboriginal Corporation (BAC), World Heritage, Queensland Parks and Wildlife Service (QPWS), Fraser Coast Regional Council (FCRC) and the Tourism Industry.

The BAC's Biosecurity Officer, Seth Henaway, talked about the project's benchmarking work, before Queensland University of Technology's Honours student Ella-Jane Raymond presented findings of the *Biosecurity Risk and Cost–Benefit Analysis for K'gari*.

Workshop participants then worked through an expertly facilitated agenda with Craig Salt (from Sustainable Consulting) to develop a shared vision, priorities, and targets, to support improved environmental biosecurity on K'gari. Topics included:

- The good and not so good aspects of current biosecurity activities for K'gari.
- A desired future for K'gari; and
- The pathway forward.

Over the two days, participants discussed how to improve biosecurity for K'gari, identifying five strategic program areas:

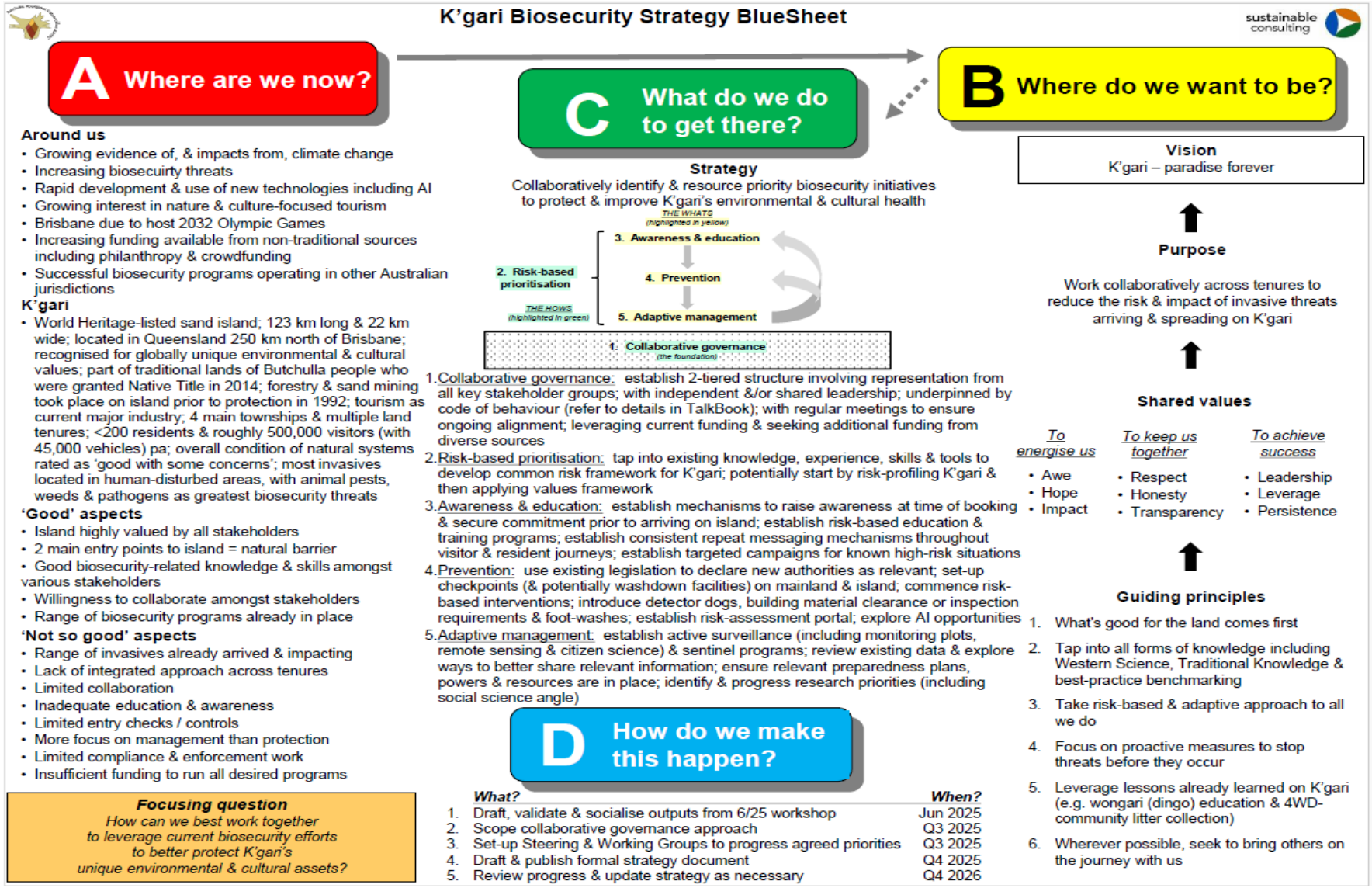
1. Education and Awareness
2. Prevention – pre-entry intervention
3. Adaptive management – on-K'gari surveillance, research, and management. All underpinned by
4. Collaborative Governance, and
5. Risk-based prioritisation

The K'gari Biosecurity Strategy BlueSheet (see Figure 2 below) was designed to be a summary of the workshop's proceedings and a roadmap for the K'gari Biosecurity Strategy's programs and delivery.

Within these program areas, actions and activities were then identified by the workshop's participants and captured in the K'gari Biosecurity Strategy Workshop TalkBook (an extensive 67-page record of the event captured by facilitators). Following the workshop, these were further refined and collectively prioritised by the K'gari Biosecurity Advisory Group (see Appendix 2).

Based on the risk analysis and cost analysis, activities were also broadly costed out to low (less than $100K), medium ($100-500K) and high ($500K+). High priority/low-cost activities were prioritised for implementation during year 1 of the Strategy's delivery or until such time as dedicated funding for implementation can be sourced. Any activity implementation will be an improvement on the current 'do nothing' or minimal approach to the island's biosecurity.

Figure 2: K'gari Biosecurity Strategy BlueSheet - June 2025



Governance and Accountability – collaborative governance arrangements

As previously identified, K'gari's management is complicated by its multiple tenures.

On 24 October 2014, the *Butchulla People #2 (QC2009/004)* Native Title was determined for K'gari (excluding the townships of Eurong and Happy Valley and an area surrounding the Sandy Cape Lighthouse). This area is managed on behalf of the common law holders by the BAC.

A further Native Title claim, *Butchulla People Land & Sea Claim #2*, was also determined in favour of the Butchulla people on 13 December 2019 for the waters of Korrawinga (the Great Sandy Strait) and from K'gari's high water mark to 300 metres out to sea. This is managed on behalf of the common law holders by BNTAC.

DETSI's QPWS is the dominant land manager, with responsibility for the K'gari National Park which covers more than 95% of the island. There are several 'townships' on K'gari at Eurong, Happy Valley and Orchid Beach, which are managed by Fraser Coast Regional Council. In addition, there are Unallocated State Lands and Leasehold Lands managed by DNRMMRRD and a small number of special lease agreements e.g., for mobile tower infrastructure. Significant lease holders include Sealink Kingfisher Bay and the K'gari Research Station (the latter operated by UniSC).

The BlueSheet workshop identified that a collaborative governance model would be essential for the successful implementation of the K'gari Biosecurity Strategy (KBS). Collaborative governance encourages inclusivity for processes, structures, and dynamics of decision-making and coordination, across organisational and sectoral boundaries and including community, bringing diverse participants together to create relevant solutions and lasting impact

Collaborative governance (CFI, 2020) provides a space to engage the strategy partners in decision-making to achieve a shared goal. This space includes community (traditional owners, community leaders, and people with lived experience), service leaders, government leaders (council, Queensland and Australian government agencies), business, philanthropy and others committed to the aims of the Strategy.

Through collaborative governance, partners support a **backbone organisation** (the BAC) who enable collaborative governance to emerge and strengthen over time. This includes building and maintaining energy and momentum around the issue and bringing people together to address it, helping shape people's ideas and perspectives about the issue, community, collaboration, complexity and more.

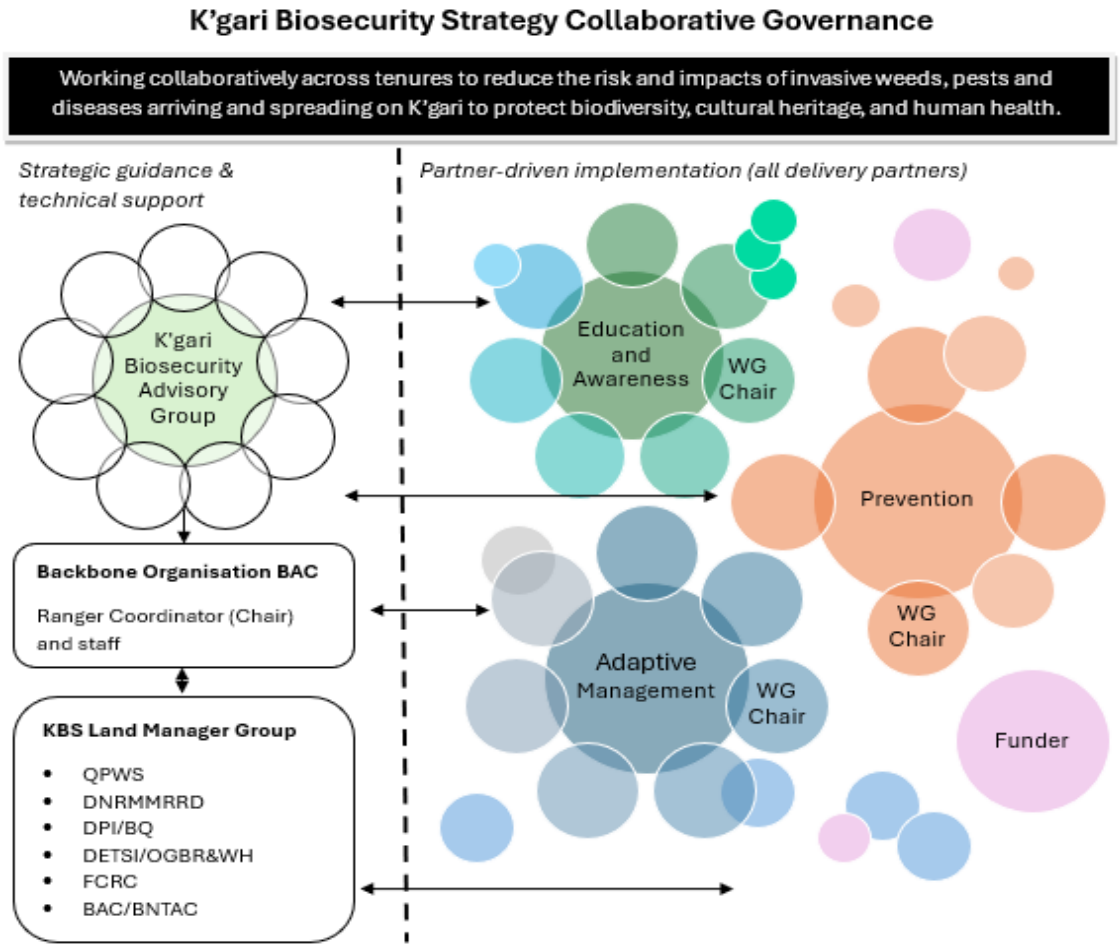
To support K'gari's biosecurity, we propose a secondary layer to the backbone organisation of a **land managers group** – those with a statutory or legislative responsibility for K'gari. These include relevant Queensland Government Departments and the Fraser Coast Regional Council.

The backbone organisation and land managers group receive strategic support and technical guidance from the **K'gari Biosecurity Advisory Group**.

Across the line, in the implementation space, teams of partners will work to deliver activities in program-based themes. For some larger activities, it may be necessary to form an activity team or for temporary working groups to be formed. Partners may be involved in multiple working groups with a nominated Working Group Chair (WG Chair) who reports back to the backbone organisation, land managers group and advisory group. Terms of reference, roles and responsibilities will be developed once the Strategy moves into the implementation phase.

The proposed collaborative governance model for the delivery of the K'gari Biosecurity Strategy is illustrated below (see Figure 3). It is noted that the collaborative governance model's operation is indicative and will be subject to further consultation and agreement.

Figure 3: Collaborative Governance Model proposed for the K'gari Biosecurity Strategy



Adapted from the CFI-Collaborative-Governance-Guide.pdf

Monitoring, Evaluation and Indicators of Success

Figure 4: The Continuous Improvement Cycle of Monitoring, Evaluation and Adaptation

Monitoring and Evaluation (M&E) of the Strategy are part of adaptive management and continuous improvement cycle (see Figure 4). This includes:

- **Monitoring Indicators:** Identification of specific, measurable variables (inputs and outputs) that can be used to assess progress and performance, e.g., amount of funding provided (input indicator), or the number of communication tools produced (output indicator).
- **Monitoring:** Quantitative (numerical data), e.g., the number of vehicles inspected) and qualitative (descriptive information), e.g., case studies data are gathered on selected indicators. Monitoring may be undertaken by a range of Strategy partners including the opportunity for utilising citizen science.

- **Evaluating Success:** Once data are collected, they are analysed and evaluated. This involves identifying trends, conducting statistical tests for quantitative data, or performing thematic analysis for qualitative data.
- **Learnings:** Support the Strategy's programs and activities to continuously evolve and improve, based on what's working or not. Learning occurs through post-implementation reviews following an activity or milestone and includes reflection workshops (where the team discusses questions like "What's working? What's not? Why?"). Learnings are then applied to the program's design (Adapt Program).
- **Reporting:** Sharing findings with stakeholders in a clear, relevant, and timely manner. Messages should be tailored for the audience to highlight both project successes and challenges.

Together, these components are interconnected in a continuous improvement loop (see Figure 4), where data and learning gathered from M&E inform decisions, improve program design and implementation, and lead to more effective outcomes over time.

Subject to funding and resources, M&E should be undertaken on an annual basis. M&E will form part of the role of the Program Working Groups, supported by the KBAG.

Initial monitoring indicators could include:

- Inspection rates – no. of vehicles (commercial and recreational) inspected as a proportion of total visitation rates.
- Percentage of target groups (e.g., 4WD) aware of, and adopting, specific K'gari biosecurity measures.
- No. of invasive weeds/pests/diseases detected pre-border and prevented entry to K'gari.
- No. of (new and existing) invasive weeds/pests/diseases detected and status - monitored and/or managed on K'gari.
- Response Time: Speed of initiating an emergency response to a new detection.
- Evidence of absence, i.e., number of sites checked where there are no incursions of high-risk invasive pests recorded (where there is a high potential for introduction).
- Annual partner satisfaction survey.
- No. of staff days contributed to the delivery of the K'gari Biosecurity Strategy
- Cost of the K'gari Biosecurity Strategy's delivery (funding and in-kind support).

The K'gari Biosecurity Strategy will also encourage research partners to support applied research to increase the efficiency and efficacy of the strategy's implementation.

Glossary of Terms

Abbreviation	Term
ACEBO	Australian Chief Environmental Biosecurity Officer (Cwth)
BAC	Butchulla Aboriginal Corporation RNTBC
Biosecurity	Biosecurity is the strategic and coordinated management of risks to the economy, environment, and community (including human health) posed by pests, diseases, and weeds entering, emerging, establishing, or spreading.
BNTAC	Butchulla Native Title Aboriginal Corporation RNTBC
BQ	Biosecurity Queensland (Qld)
CEBO	Chief Environmental Biosecurity Office (Cwth)
CFI	Collaboration For Impact and Clarion Call
DETSI	Department of Environment, Tourism, Science and Innovation (Qld)
DNRMMRRD	Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (Qld)
DPI	Department of Primary Industries (Qld)
EADRA	Emergency Animal Disease Response Agreement
EEPL	National Priority List of Exotic Environmental Pests, Weeds and Diseases
Environmental Biosecurity	Environmental biosecurity is the protection of natural ecosystems, biodiversity, and social amenities from the negative impacts of invasive pests, weeds, and diseases. It focuses on preventing the introduction, establishment, and spread of harmful organisms, thereby protecting unique landscapes, native flora and fauna, and environmental health.
EPBC	Environment Protection Biodiversity Conservation Act 1999 (Cwth)
EPP	Emergency Plant Pests
EPPRD	Emergency Plant Pest Response Deed
FCRC	Fraser Coast Regional Council
FIDO	FIDO – Watchdog of K'gari
FINIA	FINIA – the Natural Integrity Alliance for K'gari
GBO	General Biosecurity Obligation
KBAG	K'gari Biosecurity Advisory Group
KBS	K'gari Biosecurity Strategy or 'the Strategy'
M&E	Monitoring and Evaluation
NBMCC	National Biosecurity Management Consultative Committee
NCA	Nature Conservation Act 1992 (Qld)
NDP	National Diagnostic Protocols
NEBRA	National Environmental Biosecurity Response Agreement
NMG	National Management Group
PHA	Plant Health Australia
PLANTPLAN	Australian Emergency Plant Pest Response Plan
QPWS	Queensland Parks and Wildlife Service
Quarantine	Quarantine is the confinement of regulated articles for observation and research or for further inspection, testing or treatment, e.g., vehicle inspection points and washdowns.
QUT	Queensland University of Technology
TAP	Threat Abatement Plan
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UniSC	University of the Sunshine Coast
WG Chair	Working Group Chair

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