



Wilderness Assessment Report

Addition to Cape Torrens Wilderness Protection Area 2019

De Mole River mouth



TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
1. INTRODUCTION	3
2. WILDERNESS PROTECTION IN SOUTH AUSTRALIA.....	5
2.1 Concept of Wilderness	6
2.2 Benefits of Protecting Wilderness	6
2.3 Wilderness Management	6
3. DESCRIPTION OF THE STUDY AREA	8
3.1 Biological and Geological Values	8
3.2 Cultural Heritage.....	11
3.3 Current Management Framework	11
3.4 Resource Utilisation.....	11
4. WILDERNESS ASSESSMENT.....	12
4.1 <i>Wilderness Protection Act 1992</i> Criteria.....	12
4.2 The Adoption of Convenient Boundaries.....	13
4.3 Buffer Zone.....	13
5. RECOMMENDATIONS	14
5.1 Land that Meets the <i>Wilderness Protection Act 1992</i> Criteria	14
5.2 Benefits of Protection Under the <i>Wilderness Protection Act 1992</i>	14
BIBLIOGRAPHY	15
APPENDIX A: Wilderness Assessment Process.....	16
APPENDIX B: Code of Management for Wilderness Protection Areas and Zones in South Australia	17
APPENDIX C: Minimum Impact Code for Wilderness Use in South Australia	22
APPENDIX D: Species Lists within Assessment Area.....	25
APPENDIX E: Conservation Status Codes.....	27
APPENDIX F: Summary of Management Strategies for Cape Torrens Wilderness Protection Area	30

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Front Cover: Mouth of the De Mole River (Dominion Photography).

EXECUTIVE SUMMARY

The *Wilderness Protection Act 1992* enables the protection of wilderness and provides a role for the Parks and Wilderness Council in the creation of wilderness protection areas. The roles of the Council include assessing all land in the State to identify areas that meet the wilderness criteria to a sufficient extent to justify protection under the Act, reporting to the Minister on these assessments, and making recommendations to the Minister as to what land should be constituted as wilderness protection area. This includes the assessment of specific land parcels when proposed for protection as a Wilderness Protection Area (WPA).

The purpose of this report is to review the wilderness quality of the proposed addition to Cape Torrens Wilderness Protection Area (a 2 hectare portion of H110400 S67 Hundred of Gosse) which is unalienated Crown land owned by the Minister of Environment, Sustainability and Conservation. The area will provide a more convenient boundary for the park whilst also enhancing the wilderness values of the Cape Torrens WPA through the protection of the mouth of the De Mole River, a further step towards protection of the entire catchment. Most of the river is already included in the WPA or in another proposed addition to the WPA endorsed by the Parks and Wilderness Council in 2017.

Section 67 is a coastal strip of 93.7 hectares that links Cape Torrens WPA with Western River WPA. Addition of the western portion at the mouth of De Mole River would significantly improve the boundary of Cape Torrens WPA, buffer the WPA from partially cleared land to the east and add a significant geographical and biological feature to the area. The portion comprises native vegetation, river course, low cliff and beach.

The assessment area has important biodiversity values as it contains freshwater communities associated with the De Mole River and intact high rainfall woodland contiguous with Cape Torrens WPA that provides habitat for nationally threatened flora and fauna species.

The addition of this area to Cape Torrens WPA will provide a more convenient boundary that includes an important component of the De Mole River system as well as providing a buffer zone to the WPA.

The area has no public vehicle access. The vegetation appears to be in good condition and is contiguous with other minimally disturbed areas that have a very low percentage of exotic plant and animal species.

Recommendations

The Parks and Wilderness Council:

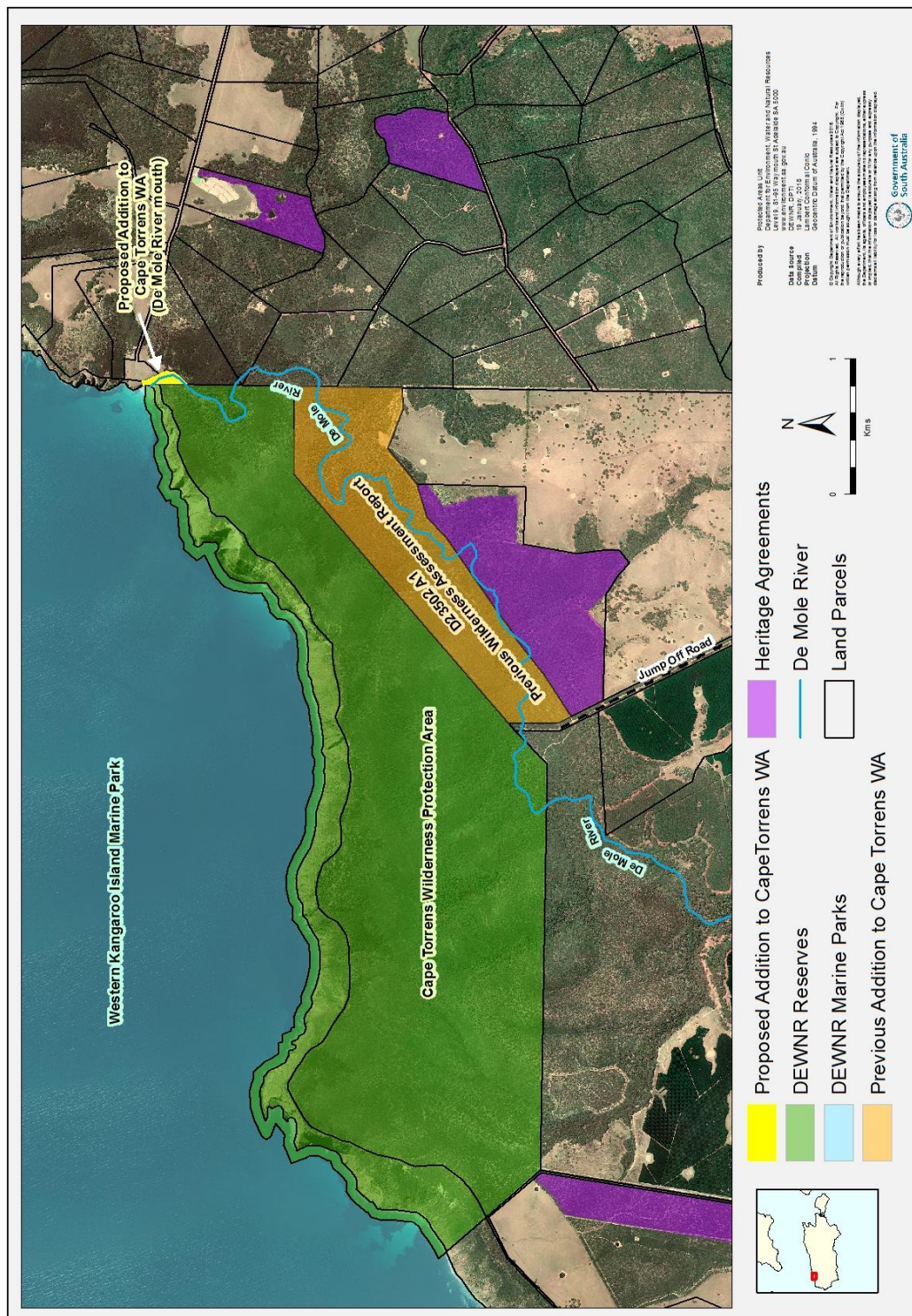
1. Finds that, as this land is largely unaffected by modern technology and not seriously affected by exotic plants or animals, it meets the wilderness criteria of the *Wilderness Protection Act 1992* (the Act) to a sufficient extent to justify protection under the Act. Its addition will also offer a more convenient boundary for Cape Torrens WPA, as well as providing a buffer from the small cleared area on the eastern boundary.

The extent of land which could be recommended to be protected under the Act is shown in Figure 1.

2. Notes that addition of the area will, in particular;
 - a) Increase the extent of protection to a wild river (De Mole River), virtually all of which is protected, a rarity in South Australia; and

- b) protect biologically significant assets, including Sugar Gum and Drooping Sheoak Woodlands that provide feeding and nesting habitat for the Glossy Black Cockatoo (*Calyptorhynchus lathami halmaturinus*).
3. Recommends to the Minister that the boundaries of Cape Torrens Wilderness Protection Area be altered to include the assessment area.

Figure 1: Land recommended for protection under the *Wilderness Protection Act 1992*



1. INTRODUCTION

The *Wilderness Protection Act 1992* requires the Parks and Wilderness Council to assess all land in the State and identify those parts of the State that meet the wilderness criteria to a sufficient extent to justify protection under the Act or that warrant restoration to a condition that justifies such protection.

The Council is required to report to the Minister for Environment and Water (the Minister) making recommendations regarding:

- the land in the State that should be constituted as wilderness protection areas and wilderness protection zones; and
- matters which require special management in relation to wilderness protection areas or zones generally, or in relation to a particular wilderness protection area or zone.

In addition, the Council is obliged to assess land at the request of members of the public.

In 1993 the Wilderness Advisory Committee produced a report on areas of Kangaroo Island recommended for protection under the *Wilderness Protection Act 1992*, which included Cape Torrens Conservation Park. This report, which was released for public consultation and its recommendations approved by the then Minister of Environment and Land Management, recommended that the entire Cape Torrens Conservation Park be constituted as a wilderness protection area.

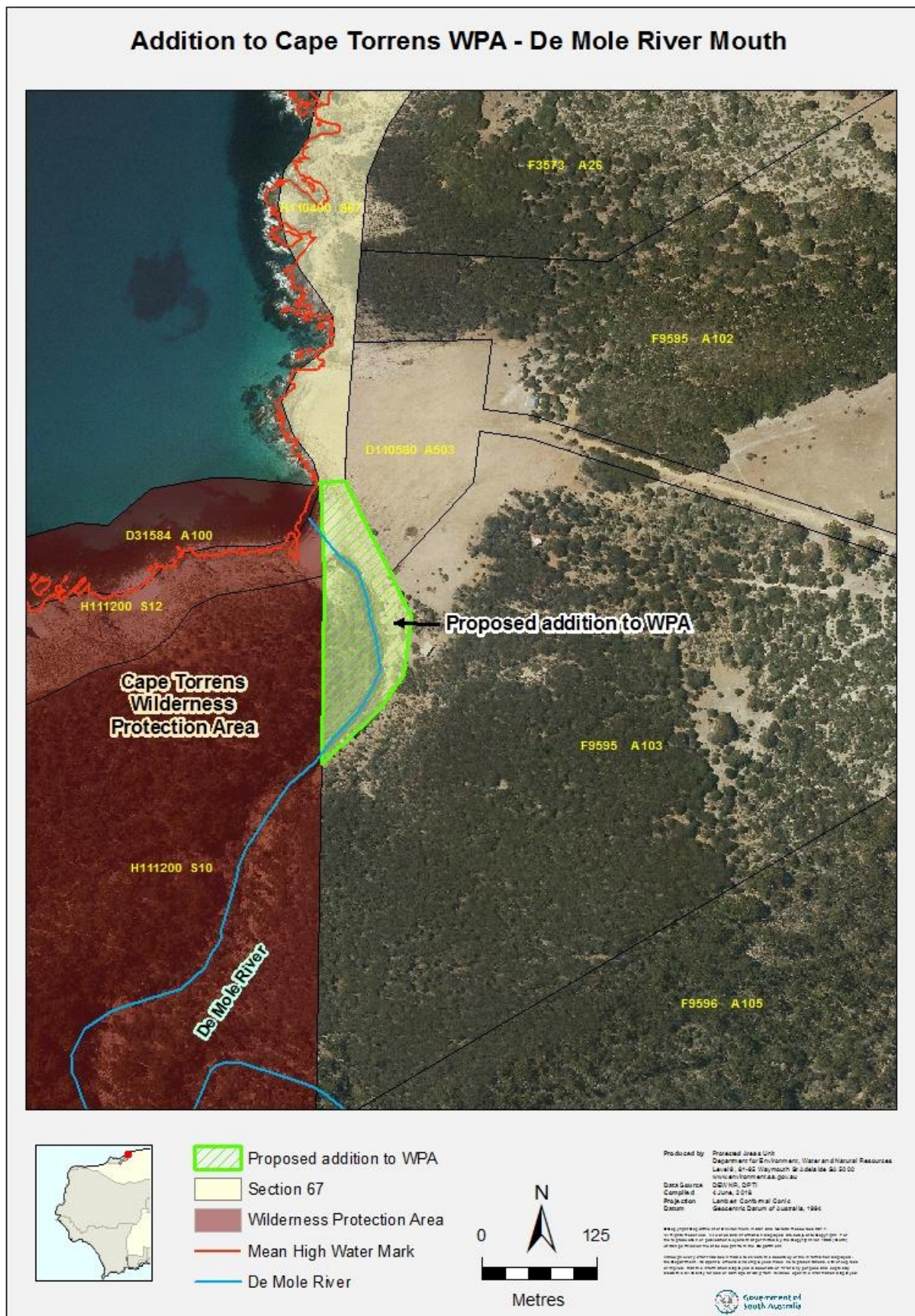
Cape Torrens Wilderness Protection Area (874 hectares) was proclaimed on 15 October 1993 and the land to low water mark parcel (Allotment 100 in DP 31584) was proclaimed as an addition to Cape Torrens Wilderness Protection Area on 5 October 2006. In 2013 the then Department of Environment, Water and Natural Resources (DEWNR) purchased an adjacent land parcel (D23502 A1) on the south-eastern boundary of the existing Cape Torrens Wilderness Protection Area. A Wilderness Assessment Report for this area has previously been endorsed by the Parks and Wilderness Council and has been available for public consultation for three months. Its proclamation will increase the size of this park by 18%.

Much of the De Mole River and its catchment lies within Cape Torrens WPA and the aforementioned proposed park addition. This is a rare occurrence in South Australia, to have the majority of a watercourse (and its catchment) in a high rainfall zone conserved within a protected area.

However, two short sections of the river near the coast lie outside the park boundary (Map 1). One of these, approximately 270m in length, at the mouth of the river is within unalienated Crown land (Section 67 in the Hundred of Gosse) under the control of the Minister for Sustainability, Environment and Conservation. This 93.7 hectare coastal reserve extends approximately 10 km along the northern coast of Kangaroo Island connecting Cape Torrens WPA with Western River WPA. While it would be impractical to add all of this parcel to either of these parks, it is recommended that an area of 2 hectares incorporating the mouth of the De Mole River be subdivided off to add to Cape Torrens WPA (Map 2).

Section 22 of the *Wilderness Protection Act 1992* provides for land to be constituted as wilderness protection areas for the purpose of making consistent boundaries, buffer zones or additions to existing wilderness protection areas. To effect such a proposal, the Parks and Wilderness Council must provide a report setting out its views to the Minister for public consultation.

Figure 2. Location of the assessment area



2. WILDERNESS PROTECTION IN SOUTH AUSTRALIA

The *Wilderness Protection Act 1992* is an Act to provide for the protection of wilderness and the restoration of land to its condition before European colonisation. The Parks and Wilderness Council has a role which includes:

- the assessment of all land in the State to identify those parts of the State that meet the wilderness criteria to a sufficient extent to justify protection under the Act;
- reporting to the Minister on the results of these assessments; and
- making recommendations to the Minister as to what land should be constituted as wilderness protection areas.

The Minister may then recommend to the Governor that an area be proclaimed as a wilderness protection area. At least three months prior to making this recommendation, the Minister must give public notice to the proposed proclamation and invite written submissions in relation to it.

The Act describes the following attributes for land to be considered as wilderness:

- (a) land and its ecosystems that have not been affected, or have been affected to only a minor extent, by modern technology, and
- (b) land and its ecosystems that have not been seriously affected by exotic animals or plants or other exotic organisms.

Wilderness protection areas may be constituted over all or part of a reserve constituted under the *National Parks and Wildlife Act 1972*, Crown land, or over any other land with the owner's consent. Wilderness protection areas will receive the highest protection offered by the Act. Wilderness protection zones are a secondary category, established to provide a wilderness management framework over land in which there is an existing mining tenement.

The *National Parks and Wildlife Act 1972* has no specific provisions for wilderness management. The *Wilderness Protection Act 1992* was specifically drafted for wilderness protection, and the Wilderness Code of Management provides for public use and enjoyment only where compatible with maximising wilderness quality.

Wilderness protection areas or wilderness protection zones can be constituted over land and water bodies:

- (a) which meet the wilderness criteria of the Act;
- (b) to provide a buffer zone;
- (c) to enable restoration; or
- (d) to enable the adoption of convenient boundaries.

All wilderness protection areas and zones are under the control of the Minister administering the *National Parks and Wildlife Act 1972*. Management of proclaimed areas is the responsibility of the Director of National Parks and Wildlife, while day to day management is undertaken by regional staff from the Department for Environment and Water. There are currently fourteen wilderness protection areas in South Australia covering 1,843,454 hectares; five on Kangaroo Island, two in the Murray-Darling Basin, three on Eyre Peninsula, two encompassing islands off the west coast of Eyre Peninsula and two in the far west of the state.

Land that meets the criteria of the *Wilderness Protection Act 1992* and is protected in a wilderness protection area under the Act meets the requirements of the IUCN Category 1b Wilderness Area.

Land which is protected as a wilderness protection zone under the Act meets the requirements of the IUCN Category VI Multiple Use Reserve.

The wilderness assessment process is outlined in Appendix A.

2.1 Concept of Wilderness

The concept of wilderness has been part of the modern Australian culture for over a hundred years. The concept has evolved over time but retains the essential themes of perceptions of remoteness, minimal disturbance by modern technological society, and self-reliant recreation.

Initially applied in the context of the forests and ranges of Tasmania and the east coast of Australia, the concept of wilderness in arid and semi-arid regions is now recognised, and such areas are highly valued by the community.

2.2 Benefits of Protecting Wilderness

South Australia is fortunate in having substantial areas of internationally significant wilderness. The protection of this resource benefits the whole community.

Recreational Values

The recreational opportunities within wilderness areas are being increasingly recognised, particularly with regard to eco-tourism. Kangaroo Island is promoted as a prime destination for nature-based tourism due to its extensive remnant forests, unspoiled beaches and opportunities for wildlife viewing. Wilderness areas are an important resource for the development and promotion of recreational and tourism activities.

Biological Values

Wilderness areas provide the best possible circumstances for species to flourish and evolve. Ecosystems in wilderness areas have a greater capacity to cope with large-scale disturbances, such as bushfires and accelerated climate change (Mackey et al. 1998). Accelerated climate change now threatens the survival of many species of plants and animals and makes the protection of wilderness ecosystems increasingly urgent.

Maintaining the ecological integrity of large areas of high quality wilderness through the exclusion of threatening processes should be a key component of the State's response to the threat of climate change. Such areas allow for biological connectivity at landscape scales and protect the evolutionary capacity of species and ecosystems in times of environmental change.

Scientific Values

Wilderness areas are valuable for research into ecological and physical processes, evolutionary development, and long term climatic trends. These areas provide a scientific benchmark with which modified environments can be compared, and from which appropriate management and rehabilitation strategies for modified environments can be derived. Wilderness areas provide a genetic 'library' which can contribute to improvements in medicine and agriculture.

Cultural Values

Wilderness areas can provide indigenous people with the opportunity to maintain traditional cultural practices and linkages with the land. Wilderness areas are of historic interest as they provide examples of South Australian landscape before the introduction of agriculture, industry and urbanisation.

2.3 Wilderness Management

Wilderness areas in South Australia are managed in accordance with the Wilderness Code of Management (Appendix B), which is adopted by the Minister under Section 12 of the *Wilderness Protection Act 1992*.

The Code establishes principles for the protection of:

- wilderness values;
- ecosystems;
- flora and fauna; and
- Aboriginal and non-Aboriginal cultural heritage.

The Code also establishes principles for the management of visitors, scientific research and fires in wilderness protection areas and zones.

The Minimum Impact Code for Wilderness Use in South Australia (Appendix C) encourages a 'tread lightly' ethic.

Management priorities include the maintenance of the wilderness quality and the removal or rationalisation of any existing incompatible uses or structures.

The principles of the Wilderness Code of Management underpin the development and implementation of management plans for wilderness protection areas and zones.



Short section of De Mole River lined with Fishbone Water-fern (*Blechnum nudum*).

3. DESCRIPTION OF THE STUDY AREA

Cape Torrens Wilderness Protection Area is located on the north-west coast of Kangaroo Island, approximately 12 kilometres east of Cape Borda, as shown in Figure 1. The proposed addition, part of Section 67 in Hundred of Gosse, is located adjacent to the north-eastern boundary of the existing park and has an area of 2 hectares (Figure 2). Its addition to Cape Torrens WPA will increase the total area of the park (including Crown land parcel D23502 A1, which is also in the process of being added to the park) by 0.2% to 1,109.5 hectares.

The addition is almost totally surrounded by remnant native vegetation, apart from some cleared land above the steep slope on the eastern boundary. It includes a short section of the De Mole River at its mouth, the accompanying beach and the steep slopes of the river valley in this vicinity. Surrounding land uses are conservation and rural living/holiday/tourist accommodation.

3.1 Biological and Geological Values

The proposed addition and the existing park fall within the Stokes Bay Environmental Association, which covers the dissected northern margin of Kangaroo Island's lateritic plateau. The addition features the mouth of the De Mole River and approximately 270m of the river upstream from this point.

The mouth of the De Mole River is typical of small beaches along this portion of the coast where the steeply dipping metasedimentary coastal rocks are heavily dissected by small watercourses forming narrow V-shaped valleys. The river meets the sea at a 70m wide beach bordered by steep, rocky slopes. Boulders deposited by the De Mole River or derived from the adjacent cliffs form a high tide beach which is fronted by a small sandbar. The river drains out via a narrow channel on the west side of the beach. The general area has shallow to moderately deep acidic soils overlying rock, with the deepest soils occurring in the base of the river valley.

Flora

By South Australian standards the western end of Kangaroo Island is a high rainfall region with the Cape Torrens area receiving around 600 mm on average per year. The moist climate supports *Eucalyptus cladocalyx* ssp. *crassa* (Sugar Gum) Woodland interspersed with patches of *Allocasuarina verticillata* (Drooping Sheoak) Low Woodland, particularly in rocky areas. The Sugar Gum woodland occurs on the hillside to the west of the De Mole River and has an intact, and at times dense, shrubby understorey, with a deep cover of leaf litter. It features *Xanthorrhoea semiplana* ssp. *tateana* (Tate's Grass Tree), *Orthrosanthus multiflorus* (Morning Flag) and *Pteridium esculentum* ssp. *esculentum* (Bracken).

In this area the Drooping Sheoak Low Woodland is limited to a narrow band along the east bank of the river. On the narrow river flat behind the beach is a small area of *Melaleuca* shrubs over sedges.

The principal reason for adding this area to Cape Torrens WPA is to protect a short length of the De Mole River and the river mouth. This will see the majority of the river and its catchment conserved within protected areas, a very rare opportunity for South Australia.

Contained within the De Mole River and its tributaries are examples of two ecological communities considered to be endangered in South Australia - *Leptospermum lanigerum* (Silky Tea-tree) Closed Shrubland in non-saline wetlands and *Triglochin procera* (Water-ribbons) Herbland in freshwater wetlands. Both of these communities have experienced severe decline within their original range due to clearance, physical disturbance by introduced herbivores, weed invasion, salinity and

increased nutrients in run-off from agricultural land. The undisturbed nature of the De Mole River catchment has allowed these communities to survive here in good condition.



Triglochin procera (Water-ribbons) Herbland in a pool within the De Mole River.



Leptospermum lanigerum (Silky Tea-tree) Closed Shrubland in a tributary of the De Mole River.

A high diversity of native plant species are known to occur in the assessment area (or in similar habitats within a 500m radius), with 42 taxa having been recorded. These include two species of conservation significance at the national level: Hindmarsh Correa (*Correa calycina* var. *halmaturorum*) and Splendid Bush-pea (*Pultenaea villifera* ssp. *glabrescens*) are both nationally vulnerable. A further three taxa are rated at State level and another 11 at the regional level (Gillam and Urban 2014). A list of native plant species recorded in or near the assessment area is provided in Appendix D, with an explanation of conservation status codes in Appendix E.

The variety of Hindmarsh Correa found on Kangaroo Island is often referred to as the De Mole River Correa due to its only known occurrence being in close proximity to this watercourse (Taylor 2008). It has been recorded on the banks and cliffs adjacent to (and up to 25m from) the river in Sugar Gum Woodland (Kinnear *et al.* 1999, Adelaide Herbarium records) within Cape Torrens Wilderness Protection Area and adjacent private land. Scattered plants have been observed along the river commencing 200m from the beach and continuing for 1km upstream (Adelaide Herbarium records).

Similarly, the Splendid Bush-pea is known to occur on sea cliffs and the upper slopes of ridge systems in sandy loam soil along the northern coast of Kangaroo Island (Taylor 2008). A population has been recorded growing in rock crevices along the banks and above the flood watermark of the De Mole River, extending 1km inland (Adelaide Herbarium records).



Kangaroo Island River Daisy
(*Achnophora tatei*), rare in SA (D.
Kraehenbuehl).



Splendid Bush-pea (*Pultenaea villifera* ssp. *glabrescens*)
(D. Kraehenbuehl).

Fauna

As the proposed addition is contiguous with the existing park and contains similar vegetation, it provides additional habitat for the fauna species known to occur in the park. The river mouth and low cliffs provide additional variety of habitat. *Haliaeetus leucogaster* (White-bellied Sea Eagle) which is endangered in South Australia has been recorded in the vicinity. Confidentiality as to nesting locations and restricted public access are important to protect this species. The buffer to the WPA provided by the addition of this portion of Crown land will increase the protection of native fauna in the WPA.

The Sugar Gum and Drooping Sheoak Woodlands provide important breeding habitat and food source for the nationally endangered Glossy Black Cockatoo (*Calyptorhynchus lathami halmaturinus*). The cockatoos feed principally on the seed of the Drooping Sheoak and nest in large tree hollows, usually in Sugar Gums. The major threats to Glossy Black-Cockatoo survival on Kangaroo Island are loss or degradation of habitat (including forage and nesting sites), wildfire, predation at nests by Common Brushtail Possums, competition for nesting sites with other cockatoo species and feral bees, and a shortage of trees with suitable nesting hollows (Mooney and Pedler 2005).

Minor disturbance at the site

The eastern margin of the assessment area abuts cleared land where there is a building in close proximity. There may be minor disturbance radiating from this building impacting in a minor way on the wilderness values of the assessment land.

Fire

Fires generally start through lightning strikes. Given the rugged terrain and inaccessibility of most of the assessment area and Cape Torrens Wilderness Protection Area, individual fires may potentially burn large areas. Fortunately, this has not happened in recent years with the area avoiding the major Flinders Chase fire of 2007. The general area has not been burnt in over 60 years, as is evidenced by the mature vegetation throughout.

3.2 Cultural Heritage

Aboriginal Heritage

Kangaroo Island is known to be of importance to the Kurna, Ngarrindjeri, Narungga and Ramindjeri people, as they maintain a spiritual connection to the area. Aboriginal artefacts have been reported in Cape Torrens Wilderness Protection Area, but no specific sites have been identified (DEH 2006). The identification and protection of significant sites are important management objectives for the park. No information is available on the Aboriginal heritage of the assessment area at this time.

3.3 Current Management Framework

Cape Torrens Wilderness Protection Area was proclaimed to protect its wilderness qualities - remoteness and natural attributes – and is managed under the *Wilderness Protection Act 1992*. The Cape Torrens and Western River Wilderness Protection Areas Management Plan (DEH 2006) covers this park. No management plan, as yet, applies to the assessment area. Should this site become part of the Cape Torrens Wilderness Protection Area the existing management plan may require updating, however the provisions of this plan, with its focus on protection of wilderness values, can be applied to the addition.

The existing park management plan for Cape Torrens WPA and Western River WPA can be viewed at <http://www.environment.sa.gov.au/managing-natural-resources/park-management/plans-strategies-and-policies/park-management-plans> and a summary of management strategies for Cape Torrens WPA from this plan is provided in Appendix F.

3.4 Resource Utilisation

Mining

Cape Torrens Wilderness Protection Area is unavailable for exploration, prospecting and mining under State mining legislation. No current or expired mineral exploration licences exist over the assessment area.

Once the area is proclaimed as a WPA, it will no longer be available for mining.

Visitor Use

There are no constructed walking trails within either Cape Torrens Wilderness Protection Area or the assessment area, nor is there any direct access for the general public to the assessment area. Its eastern margin is bordered by two privately owned land parcels, one of which has a building within 20m of the boundary. A second dwelling is situated approximately 220m to its east.

It is intended that access by the public to the assessment area will be consistent with that of the existing Cape Torrens WPA, namely that existing trails can provide walking access consistent with maintaining wilderness quality.

Commercial Tourism

The existing management plan does not provide for commercial tourism within Cape Torrens WPA. There are, however, numerous nature-based tourism opportunities elsewhere on Kangaroo Island, including within other Wilderness Protection Areas such as nearby Western River WPA and Ravine des Casoars WPA. Opportunities within Cape Torrens WPA and the assessment area are limited due to the dearth of tracks. Any future proposals should be sympathetic to the area's wilderness values.

4. WILDERNESS ASSESSMENT

The high wilderness quality of the assessment area appears to be the result of very limited post-settlement land use due to its very limited accessibility. The area is only accessible from the beach, the WPA or adjacent private land in which no formed tracks are evident. The area is bordered by Cape Torrens Wilderness Protection Area to the west, Crown land to the north, partially cleared private land to the north-east and unprotected native vegetation on the south-eastern boundary. The wilderness assessment process is outlined in Appendix A.

4.1 *Wilderness Protection Act 1992* Criteria

There are two wilderness criteria set out in Section 3(2) of the *Wilderness Protection Act 1992*. The **first** criterion states that:

The land and its ecosystems must not have been affected, or must have been affected to only a minor extent, by modern technology.

The National Wilderness Inventory assesses this criteria using three parameters which are remoteness from access, remoteness from settlement and apparent naturalness.

Remoteness from Access

Vehicular access is only possible via the privately owned Investigator Way, an unsealed track branching off from Snug Cove Road. The area adjoins the beach so that access via boat is potentially possible. The area could be accessed on foot from the WPA but there are no formed tracks in the area.

Remoteness from Settlement

There are no permanent settlements within the assessment area. The nearest town is Parndana, 44 km to the east. The assessment area is largely surrounded by remnant native vegetation – Cape Torrens Wilderness Protection Area to the west and privately-owned land to the east. Privately-owned unprotected native bush is adjacent to the south-eastern boundary. A 200 metre section of the eastern boundary adjoins cleared land. A habitat protection zone of the Western Kangaroo Island Marine Park abuts the beach at the mouth of the De Mole River. South of the area is the De Mole River Estate Subdivision, an area of 30-40 hectare allotments featuring houses set amongst undeveloped native vegetation.

Apparent Naturalness

The assessment area features intact remnant native vegetation in good condition and there is no evidence of any structures or clearance. There are, however, two dwellings within 250m of the eastern boundary that are accessed from Investigator Way.

The **second** criterion set out in Section 3(2) of the *Wilderness Protection Act 1992* states that:

The land and its ecosystems must not have been seriously affected by exotic animals or plants or other exotic organisms.

The National Wilderness Inventory assesses this criteria using the parameter of biophysical naturalness.

Biophysical Naturalness

The vegetation of the assessment area appears to be in good condition and includes relatively undisturbed examples of a high rainfall woodland and portion of a wild river (both rarely seen in South Australia). The prospect for long-term maintenance of the high value of these assets is enhanced by the area being contiguous with other minimally disturbed native vegetation,

especially Cape Torrens WPA, a factor that aids its resilience and capacity to absorb large-scale perturbations.

Of the 47 plant species recorded in the assessment area (or within similar habitats within a 500m radius) five are introduced, though none of these are listed as pest plants under the *Natural Resource Management Act 2004* or as Weeds of National Significance (Australian Weeds Committee 2012).

Feral Goats have been observed within 500m of the assessment area and are likely to access fresh water from the De Mole River. Feral Goat grazing can cause soil disturbance, result in a decrease in abundance and distribution of palatable native plant species and be a vector for the introduction and spread of weeds.

Phytophthora is an introduced soil-borne pathogen that kills a wide range of native plant species by attacking their root system and reducing or stopping the movement of water and nutrients within the plant.

While there has been no sampling for Phytophthora within the assessment area, it has been detected in soil at the northern end of Jump Off Road approximately 4km to the south-west. Surveys prior to the release of the park management plan (DEH 2006) indicated that Cape Torrens Wilderness Protection Area was free of the disease at that time. The plan did, however, suggest steps were needed to prevent it entering the reserve. The main threat is from people and vehicles entering the area that have not followed appropriate hygiene protocols.

4.2 The Adoption of Convenient Boundaries

Under Section 22(5)(c) of the *Wilderness Protection Act 1992* land may be added to a wilderness protection area to enable the adoption of convenient boundaries for that WPA. The addition of the proposed portion of Section 467 Hundred of Gosse to Cape Torrens WPA will protect more of the extent of the De Mole River, thus providing a much improved boundary to the park. The protection of the majority of the river's course and catchment is a unique opportunity for South Australia where most watercourses have extensively cleared catchments.

4.3 Buffer Zone

Section 22(5)(b) of the *Wilderness Protection Act 1992* allows for land to be added to a wilderness protection area in order to provide a buffer zone to protect land that meet the Act's wilderness criteria.

The proposed addition will provide a buffer to the existing Cape Torrens WPA from cleared land to the east. While this cleared land is small, there are two dwellings nearby. The beach and river mouth have no direct access to the general public, hence disturbance is minimal, but this small addition will provide a convenient buffer to the park.

5. RECOMMENDATIONS

5.1 Land that Meets the *Wilderness Protection Act 1992* Criteria

The assessment area not only meets the wilderness criteria of the *Wilderness Protection Act 1992* to a sufficient extent to justify protection under the Act, but will also enable the adoption of convenient boundaries of the Cape Torrens Wilderness Protection Area whilst providing a buffer zone to possible minimal disturbance from neighbouring properties.

It is therefore recommended that the assessment area (portion of Section 467 in the Hundred of Gosse) be added to Cape Torrens Wilderness Protection Area.

5.2 Benefits of Protection Under the *Wilderness Protection Act 1992*

Protection of the wilderness values identified for this area under the *Wilderness Protection Act 1992* will:

- a) improve the adequacy of South Australia's reserve system by extending a substantial strictly protected reserve in the Kanmantoo Bioregion;
- b) protect a greater extent of the De Mole River and its catchment. The protection of the river and its catchment will help to maintain its biological integrity and enable it to support associated threatened ecological communities. Its addition to the Cape Torrens Wilderness Protection Area presents a unique opportunity in South Australia to protect virtually all of a river and its catchment within a strictly protected reserve; and
- c) protect virtually all of the known range of the De Mole River Correa.



Beach and cliffs at mouth of De Mole River.

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APPENDIX A: Wilderness Assessment Process

1.1 Wilderness Criteria

Section 3(2) of the Act sets out two criteria for determining whether or not land should be regarded as wilderness:

- (a) the land and its ecosystems must not have been affected, or must have been affected to only a minor extent, by modern technology;
- (b) the land and its ecosystems must not have been seriously affected by exotic animals or plants or other exotic organisms.

The criteria are not a definition of wilderness, but rather describe the attributes land should have to qualify for protection under the Act.

The criteria are based on remoteness and naturalness, the indicators of wilderness quality established by the National Wilderness Inventory (1991). The Inventory established the extent and quality of South Australian land with wilderness attributes by measuring variations in naturalness and remoteness across the landscape using four indicators:

- **remoteness from access** - the degree of remoteness from established access routes;
- **remoteness from settlement** - remoteness from points and areas of permanent human occupation;
- **apparent naturalness** - the degree to which the landscape is free from the presence of permanent structures of modern technological society; and
- **biophysical naturalness** - the degree to which the natural environment is free of biophysical disturbance resulting from the influence of modern technological society.

Remoteness and naturalness are relative terms; no land is absolutely remote or absolutely natural. The wilderness quality of land is assessed in terms of the degree to which it is remote and natural, that is the degree to which it is unaffected by the impacts (including pest plants and animals) of modern technological society.

This approach to the assessment of land recognises that there is little, if any, pristine wilderness left, and that land selected is likely to contain some evidence of colonial or modern technological society (such as exotic plants or animals, minor structures from some past land use, or minor tracks).

The approach also recognises the increasing value the community places on land that retains a high degree of remoteness and naturalness. It is in this context that the concepts of wilderness protection areas and zones as land management categories have been developed.

1.2 Establishing Boundaries

The principle objective in delineating the boundary of a wilderness protection area or zone is to ensure the environmental attributes upon which wilderness quality depends may be effectively managed and protected. It is not necessary for all areas within the wilderness protection area or zone to have high levels of wilderness quality. Areas in which wilderness quality is compromised by accessibility or other disturbances may be included in a wilderness protection area or zone provided the management is designed to protect the integrity of key areas of significant wilderness quality.

Boundaries are generally physical boundaries, such as roads and cleared land; forming a tangible and practical divide between areas that will be managed to protect remote and natural qualities, and external areas where development may take place.

APPENDIX B: Code of Management for Wilderness Protection Areas and Zones in South Australia

1. INTRODUCTION

- 1.1 This Code is the Wilderness Code of Management prescribed in the *Wilderness Protection Act 1992*.
- 1.2 Any terms used in this Code have the same meaning as those used in the *Wilderness Protection Act 1992* and the *National Parks and Wildlife Act 1972*.
- 1.3 A wilderness area means land constituted under the *Wilderness Protection Act 1992* as a Wilderness Protection Area or Wilderness Protection Zone.

2. OBJECTIVES OF WILDERNESS MANAGEMENT

- 2.1 To maximise the naturalness and remoteness, i.e. the wilderness quality, of wilderness areas, and in particular:
 - (i) protect and, where practicable, enhance wilderness quality;
 - (ii) protect wildlife and ecological processes;
 - (iii) control and, where practicable, eradicate non-indigenous plants and animals;
 - (iv) protect geographical features;
 - (v) protect sites of scientific significance;
 - (vi) protect sites of historical significance;
 - (vii) protect sites of Aboriginal cultural significance;
 - (viii) provide for public use and enjoyment where compatible with maximising wilderness quality; and
 - (ix) promote public awareness of, and education in, the natural features of and proper use of wilderness protection areas and wilderness protection zones.

3. MANAGEMENT PRINCIPLES

3.1 General Principles

- (i) All management operations will be carried out in a manner consistent with maximisation of wilderness quality except where provided for in this Code (see 3.10).
- (ii) A Plan of Management will be prepared for a designated wilderness area as soon as practicable after the area's constitution. The Plan will provide clear direction for the protection and management of the wilderness area, in particular:
 - (a) proposals to achieve the management objectives (2 above);
 - (b) priorities for actions, including:
 - the removal of existing incompatible uses and/or structures except those permitted under this Code; and
 - appropriate rehabilitation to be undertaken following the removal of structures and incompatible uses;
 - (c) recognition of the need to review management if indicated by results of monitoring and research;
- (iii) No additional incompatible uses and/or structures will be permitted except those provided for in this Code.

- (iv) Nothing in this Code derogates from any rights exercised in mining tenements in wilderness protection zones. In relation to mining operations in wilderness protection zones, environmental protection policies in section 5 of this Code will apply.

3.2 Access and Transport

- (i) The use of vessels, motorised or wheeled transport will be permitted only on prescribed access routes, and for emergency and essential management operations (see 3.10) when alternative measures which do not degrade the wilderness quality of an area are unavailable.
- (ii) Access routes may be prescribed in a plan of management for use by vessels, motorised or wheeled transport in circumstances where this type of transport is essential for effective management.
- (iii) Construction of vehicle or walking tracks will be permitted only where re-direction of existing access requires construction of alternative tracks or for management works to achieve objectives identified in a plan of management. The construction of vehicle tracks for specific operations as provided for under 3.6(vi), 3.10 and 5.0 may be permitted on the basis that they will be rehabilitated as soon as possible.
- (iv) Vehicle and walking tracks that are not essential for management purposes as specified in 3.10, or for mining operations in wilderness protection zones (see 5.0) will be closed and rehabilitated as prescribed in a plan of management.
- (v) Over-flying for recreational purposes under an altitude of 1500m above ground level will be prohibited.
- (vi) The landing of aircraft will be prohibited, except by permission of the Director and for emergency and essential management operations. Helipads and airstrips that are identified as essential for emergencies and management operations will be maintained. All other strips or helipads will be rehabilitated as soon as possible or allowed to regenerate naturally.

3.3 Tourism

- (i) Commercial tours may be accommodated where their size and planned activities are compatible with maintenance of wilderness quality. Those permitted will have obtained a licence and will be conducted in accordance with licence conditions, the Visitor Management Strategy for the wilderness area (see 3.4), and the Minimum Impact Code (see Appendix C). Tour groups will be monitored and regulated where necessary to prevent significant adverse impacts on wilderness quality and opportunities for solitude.

3.4 Recreation

- (i) The level and type of visitor use and visitor conduct will be managed in accordance with the objectives stated in section 2.0 of this Code.
- (ii) A visitor management strategy that specifies an acceptable level and type of visitor use and visitor conduct will be included in the management plan for each wilderness area.
- (iii) Visitor management strategies will include the promotion of the Minimum Impact Code and the distribution of any information about the wilderness values of particular wilderness areas.

The following information should be used as a basis for monitoring the effectiveness of each strategy:

- (a) the long-term limits of acceptable change for environmental (wilderness quality) and social (opportunities for wilderness dependent experiences) conditions within the wilderness area; and
- (b) change in environmental and social conditions within the wilderness area.
- (iv) Constructed walking tracks, signs, track markers and other management devices or structures will be used only for essential management operations (see 3.2(ii) and 3.10).
- (v) Recreation will be in accordance with the Wilderness Regulations and the Minimum Impact Code.

3.5 Cultural Heritage

- (i) Places, sites and objects of significance to Aboriginal people are protected under State and Commonwealth Aboriginal heritage legislation.
- (ii) Access by Aboriginal people to their sites of significance and protection of these sites will, as far as possible, be by methods compatible with the maintenance of wilderness quality.
- (iii) Nothing in this Code prevents Aboriginal people from doing anything in relation to Aboriginal sites, objects or remains in accordance with Aboriginal tradition. Furthermore, this Code does not prevent the taking, by Aboriginal people, of native plants, protected animals, or the eggs of protected animals, in accordance with the relevant provisions in the *National Parks and Wildlife Act 1972*.
- (iv) Sites of historic significance will be conserved, using access and methods compatible with maintenance of wilderness quality in the long-term.
- (v) Non-Aboriginal structures and artefacts that are of no historic significance, as determined by the relevant authority, will be removed or allowed to deteriorate naturally. Removal will not be undertaken if the only method of removal significantly reduces wilderness quality in the long-term.

3.6 Fire

- (i) Fire management will be based on continuing research into the fire history of the area, the relationships between fire and the natural communities occurring within the area, and on the maintenance of wilderness quality.
- (ii) Deliberately lit fires will be used only in emergency situations, and in essential management operations as listed in 3.10 and subject to (i) above.
- (iii) Other human caused fires should, where practicable, be extinguished consistent with maintenance of wilderness quality.
- (iv) Naturally caused fires will be extinguished when, in view of the direction, intensity and extent of the fire and the fire suppression techniques available, they pose a threat to human life and property, and to habitats requiring protection.
- (v) Where fire suppression action is required, the methods utilised will be, wherever possible, those which will have the least long-term impact on wilderness quality.
- (vi) The use of heavy machinery for fire suppression within a wilderness area will be prohibited except:

- (a) where it is considered to be the only way of preventing greater long-term loss of wilderness quality;
 - (b) where specific machinery use techniques, that do not result in significant disturbance to the landscape or create a new access network, are considered the only feasible method of preventing long-term loss of wilderness quality; or
 - (c) to mitigate hazard to human life, where alternative measures which do not impact on the wilderness quality of the area are unavailable.
- (vii) Wherever possible, fire management practices designed to protect land adjacent to or within a wilderness area will be conducted outside the wilderness area.

3.7 Research

- (i) Research that will contribute to the implementation of the objectives of wilderness management will be encouraged.
- (ii) Research that will not affect wilderness quality and cannot be carried out elsewhere may be permitted.
- (iii) Research not covered under (i) and (ii) will not be permitted.

3.8 Biological Conservation

- (i) Management of threatened species, communities and habitats will, as far as possible, be consistent with maintenance of wilderness quality.
- (ii) Action will be taken to maintain and, where possible, restore natural processes, communities and habitats.

3.9 Non-indigenous Species

- (i) Non-indigenous species which significantly affect the wilderness quality of a wilderness area will be controlled or eradicated.
- (ii) Action will be taken to prevent the establishment of non-indigenous species.

3.10 Emergency and Essential Management Operations

- (i) All emergency and essential management operations will be carried out with the least possible impact on wilderness quality.
- (ii) Actions that cause short-term degradation of wilderness quality but are necessary for emergency and/or essential management operations will be permitted. The only specific situations acknowledged in this Code as possibly requiring such actions are:
 - control or eradication of non-indigenous species;
 - conservation of threatened species, communities and habitats;
 - protection of fire-sensitive species and communities;
 - management of visitor use;
 - management action or use of devices to mitigate hazard to human life;
 - restoration of natural processes, communities and habitats; and
 - research

Where degradation has occurred as a result of these activities, rehabilitation will be undertaken as soon as practicable.

3.11 Wilderness Protection Zones

- (i) Protection of wilderness quality in wilderness protection zones will be negotiated with tenement holders on the basis of the environmental protection policies in section 5. Management undertakings will be incorporated in a plan of management.

4. EXTERNAL INFLUENCES

- 4.1 Close liaison with adjoining landholders and managers will be established to ensure that adverse impacts on the wilderness quality of an area resulting from activities outside that area are minimised or prevented.
- 4.2 Where a wilderness area does not comprise a whole catchment, close liaison with upstream landholders and relevant authorities will be established to encourage the maintenance of water quality and flow regimes as close as practicable to their natural state.
- 4.3 Wherever possible management activities essential to the maintenance of the wilderness quality of a wilderness area are to be on land outside the wilderness area.

5. EXERCISE OF MINING RIGHTS IN WILDERNESS PROTECTION ZONES

The holder of a mining tenement shall:

- 5.1 have regard to the provisions of the plan of management under section 31 of the *Wilderness Protection Act 1992*; and
- 5.2 in undertaking any operations:
 - (i) protect native flora and fauna;
 - (ii) avoid the pollution of land, water and air;
 - (iii) avoid disturbance to known sites of natural, scientific, Aboriginal and non-Aboriginal cultural significance;
 - (iv) minimise the potential for wind and water erosion;
 - (v) avoid unnecessary track creation;
 - (vi) avoid introduction of non-indigenous species;
 - (vii) establish environmental monitoring and rehabilitation programs; and
 - (viii) upon completion of the operation remove or obliterate all structures and materials used in the carrying out of mining operations.

APPENDIX C: Minimum Impact Code for Wilderness Use in South Australia

Wilderness is a rare and precious natural resource

Wilderness areas are now protected by law under the *Wilderness Protection Act 1992*.

Protecting our wilderness areas:

- helps maintain a natural diversity of plants and animals
- lets species continue to flourish and evolve undisturbed
- provides special recreational opportunities, and
- ensures valuable ecological, evolutionary and climatic reference and research areas for the future.

Planning and getting there

Equipment and permits

You need the right equipment to have minimal impact on a wilderness area.

Apart from normal bushwalking gear, walkers staying overnight will need:

- a fuel stove
- a hand trowel or spade
- a container for collecting water
- strong rubbish bags
- up to date maps and access information
- relevant permits or licences.

Desert travellers should also ensure they have adequate water, food, fuel and vehicle spare parts. The Department's *Desert Parks Pass Handbook* gives helpful advice on trip preparation and travel. Commercial tours, and scientific expeditions require a licence to take groups into wilderness areas. Group leaders must adhere to the conditions of the licence and the Minimum Impact Code. They must also supply each person with a copy of the code.

Timing and numbers

Be constantly aware that your presence will have an effect on the wilderness and other visitors.

- Go with a small number of people. Large groups have more impact, affect the wilderness experience of others and are more socially unwieldy.
- Avoid peak times and more popular areas. You will miss the multitudes and spread the impact, giving the environment a chance to recover.
- Plan travelling times to make use of recognised campsites. This saves creating a new site.

Things to leave behind

- Pets should be cared for at home.
- Firearms, fishing gear, nets and any other trapping devices are prohibited without a permit.

Protecting the wilderness area

Flora, fauna and natural features

All plants, animals and natural features in wilderness areas are protected.

- Wildlife and habitats should not be disturbed. Observe and enjoy them quietly. Take particular care near breeding birds and other wildlife colonies.
- Don't pick flowers or take or disturb other specimens, including rocks and fossils. If you have a permit, take care not to spoil the environment and other people's enjoyment of it.

Cultural heritage

Sites and objects of Aboriginal and non-Aboriginal cultural significance are protected by law.

- Do not remove objects or disturb or deface anything. Access to some sites may require permission from Aboriginal custodians.
- Recognised places are likely to have defined access. Stay on the tracks and do not create new ones.

No trace camping

Modern camping equipment helps, you leave a campsite looking as if you had never been there.

- Look for low impact campsites. Sandy or hard surfaces are better than vegetated areas. Reduce your impact by spending only one or two nights in one place. Aim to leave the area as if no-one had been there.
- Avoid making vehicle tracks around campsites. Parking under trees compacts the soil and reduces the ability of water to penetrate.
- If it looks like rain, pitch your tent on ground that will drain naturally. Don't dig channels around your tent.
- Water supplies are vital for most animals and birds. Make your campsite away from water sources and allow animals undisturbed access.
- A significant part of the wilderness experience is the enjoyment of the sounds of the bush. Do yourself a favour by keeping noise to a minimum.

Camp fires

Trees are precious. Trees and vegetation litter provide homes for many animals, birds and insects.

Collection of dead wood and the cutting of live timber for firewood has had a serious impact on woodlands and individual trees in some popular outback areas.

- Areas which are ecologically fragile or depleted of timber may be designated as *Fuel Stove Only Areas*. Check on campfire restrictions before leaving and always carry the appropriate equipment and fuel. Fuel stoves are faster and cleaner than campfires and do not cause visual scarring and debris.
- Where campfires are permitted, only one small fire should be made. Wood should be obtained from designated sites or supply depots.
- Campfire remains should be as unobtrusive as possible. Constructing campfires in a hole or from piles of stones creates a visual scar. A fire that has burnt to ashes is less obtrusive than one put out with water or dirt. Remove any non-combustible material from the ashes and take it with you.
- Be absolutely sure that the fire is out. A fire is not really out until the soil is cool.
- Do not light a fire if in doubt about the safety of lighting it. Always carry a fuel stove just in case.
- Observe fire bans.

Rubbish - carry it in, carry it out

- Plan to reduce rubbish. Avoid packing too many bottles, cans and wrappings.
- Don't bury rubbish. It disturbs the soil and is likely to be dug by animals and scattered by birds and wind.
- If fires are permitted, you may burn your combustible material, but carry out the rest.
- If you come across other people's rubbish, you'll do the wilderness a big favour by carrying that out too.

Washing and hygiene

- Washing should be done in a container of collected water.
- Wash 50 metres away from rivers, creeks, springs, lakes and other waters. Detergents, toothpaste and soap (even the biodegradable types) pollute and harm fish and other water life.
- Only swim where permitted.
- Bury all faecal waste and paper. Choose a spot at least 100 metres from campsites and watercourses. If fires are permitted, use extreme care and burn rather than bury paper.
- Carry out all sanitary items and 'disposable nappies'. They don't burn well because of plastic liners.

Tracks and trails

Vehicles are generally not allowed in wilderness areas. In South Australia some vehicle access may exist where necessary for effective management. Where this access is made available to drivers or walkers, the privilege should not be abused.

- Stay on tracks to confine impacts to a planned route.
- Don't create new tracks by cutting corners or skirting around obstacles such as fallen trees or dead animals. Creating new tracks increases environmental impacts, creates visual scars and causes confusion. Where possible remove the obstacle.
- Avoid vehicle travel on tracks when wet as can extensively damage the track surface.
- Leave gates open or closed as found. Do not force or go around locked gates.

Where there is no walking track or trail:

- Avoid sensitive vegetation as it is easily destroyed by trampling.
- Follow an animal track.
- Spread out walking parties. A plant has more chance of survival if only one walker steps on it.

APPENDIX D: Species Lists within Assessment Area

The following vegetation communities have been recorded within the assessment area.

- *Eucalyptus cladocalyx* ssp. *crassa*, *Allocasuarina verticillata*, *E. cosmophylla*, *E. fasciculosa* +/- *E. leucoxylon* ssp. *leucoxylon* Open Woodland over *Acacia paradoxa*, *Bursaria spinosa* ssp. *spinosa*, *Allocasuarina striata*, *Allocasuarina muelleriana* ssp. *notocolpica*, *Xanthorrhoea semiplana* ssp. *tateana*, *Pteridium esculentum* ssp. *esculentum* (on deeper loam soils of hill slopes, but mainly along the De Mole River and major tributaries)
- *Allocasuarina verticillata*, +/- *Eucalyptus cladocalyx* ssp. *crassa* Low Open Forest over *Acacia paradoxa*, *Prostanthera spinosa*, *Hibbertia* sp. (rocky areas)
- *Melaleuca* sp. Tall Shrubland over *Juncus* sp. (river bank near beach)

Vegetation communities associated with the drainage lines within the WPA, and expected to extend along the lower reaches of the De Mole River:

- *Leptospermum lanigerum* Closed Shrubland (stream channel) SA Endangered
- *Triglochin procera* Aquatic Herbland (stream channel) SA Endangered

Native Flora

A total of 42 native flora species have been recorded either in the assessment area or in similar habitats within a 500m radius, two of which are of conservation significance at National level, a further three at State level and 11 others at regional level. (See Appendix E for explanation of Status Codes.)

Species Name	Common Name	Family	Aus	SA	KI
<i>Correa calycina</i> var. <i>halmaturorum</i>	Hindmarsh (De Mole River) Correa	Rutaceae	VU	E	EN
<i>Pultenaea villifera</i> var. <i>glabrescens</i>	Splendid Bush-pea	Leguminosae	VU	V	VU
<i>Achnophora tatei</i>	Kangaroo Island River Daisy	Compositae		R	VU
<i>Blechnum nudum</i>	Fishbone Water-fern	Blechnaceae		R	RA
<i>Hydrocotyle comocarpa</i>	Fringe-fruit Pennywort	Umbelliferae		R	
<i>Asplenium flabellifolium</i>	Necklace Fern	Aspleniaceae			VU
<i>Centipeda minima</i> ssp. <i>minima</i>	Spreading Sneezeweed	Compositae			VU
<i>Philotheca pungens</i>	Prickly Wax-flower	Rutaceae			VU
<i>Gratiola peruviana</i>	Austral Brooklime	Scrophulariaceae			RA
<i>Leptospermum lanigerum</i>	Silky Tea-tree	Myrtaceae			RA
<i>Nicotiana maritima</i>	Coast Tobacco	Solanaceae			RA
<i>Triglochin striata</i>	Streaked Arrowgrass	Juncaginaceae			RA
<i>Calandrinia calyptata</i>	Pink Purslane	Portulacaceae			NT
<i>Cheilanthes austrotenuifolia</i>	Annual Rock-fern	Adiantaceae			NT
<i>Goodenia amplexans</i>	Clasping Goodenia	Goodeniaceae			NT
<i>Spergularia tasmanica</i>	Coast Sand-spurrey	Caryophyllaceae			NT
<i>Acacia paradoxa</i>	Kangaroo Thorn	Leguminosae			
<i>Allocasuarina verticillata</i>	Drooping Sheoak	Casuarinaceae			
<i>Austrostipa flavescens</i>	Coast Spear-grass	Gramineae			
<i>Baumea juncea</i>	Bare Twig-rush	Cyperaceae			
<i>Bulbine semibarbata</i>	Small Leek-lily	Liliaceae			
<i>Bursaria spinosa</i> ssp. <i>spinosa</i>	Sweet Bursaria	Pittosporaceae			
<i>Caladenia latifolia</i>	Pink Caladenia	Orchidaceae			
<i>Centipeda crateriformis</i> ssp. <i>compacta</i>	Desert Sneezeweed	Compositae			
<i>Corybas</i> sp.	Helmet-orchid	Orchidaceae			

Species Name	Common Name	Family	Aus	SA	KI
<i>Cotula australis</i>	Common Cotula	Compositae			
<i>Cyrtostylis robusta</i>	Robust Gnat-orchid	Orchidaceae			
<i>Drosera macrantha</i> ssp. <i>planchonii</i>	Climbing Sundew	Droseraceae			
<i>Drosera schmutzii</i>	Sundew	Droseraceae			
<i>Eucalyptus cladocalyx</i> ssp. <i>crassa</i>	Sugar Gum	Myrtaceae			
<i>Hydrocotyle callicarpa</i>	Tiny Pennywort	Umbelliferae			
<i>Hydrocotyle foveolata</i>	Yellow Pennywort	Umbelliferae			
<i>Lepidosperma viscidum</i>	Sticky Sword-sedge	Cyperaceae			
<i>Parietaria debilis</i>	Smooth-nettle	Urticaceae			
<i>Pheladenia deformis</i>	Bluebeard Orchid	Orchidaceae			
<i>Poa poiformis</i> var. <i>poiformis</i>	Coast Tussock-grass	Gramineae			
<i>Prostanthera spinosa</i>	Spiny Mintbush	Labiatae			
<i>Pterostylis nana</i>	Dwarf Greenhood	Orchidaceae			
<i>Ranunculus sessiliflorus</i> var. <i>sessiliflorus</i>	Annual Buttercup	Ranunculaceae			
<i>Rumex brownii</i>	Slender Dock	Polygonaceae			
<i>Sporobolus virginicus</i>	Salt Couch	Gramineae			
<i>Wahlenbergia stricta</i> ssp. <i>stricta</i>	Tall Bluebell	Campanulaceae			

Native Fauna

A single native fauna species has been recorded either in the assessment area or in similar habitats within a 500m radius. It is of conservation significance at State level. See Appendix E for explanation of Status Codes.)

Species	Common Name	Class	Aus	SA	KI
<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle	Aves		E	CR

APPENDIX E: Conservation Status Codes

Australian Conservation Status Codes

The following codes are based on the current listing of species under Section 179 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

- EX Extinct:** there is no reasonable doubt that the last member of the species has died.
- EW Extinct in the Wild:** known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
- CE Critically Endangered:** facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
- EN Endangered:** facing a very high risk of extinction in the wild in the near future, as determined in accordance with the prescribed criteria.
- VU Vulnerable:** facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
- CD Conservation Dependent:** the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Note: Prescribed criteria as defined under the IUCN Red List of Threatened Species.

South Australian Conservation Status Codes

The following codes are based on the current listing of species under Schedules of the *National Parks and Wildlife Act 1972*, as amended in 2008. To align with other States, Territories and the Commonwealth (EPBC Act) listing categories and ratings, the IUCN criteria were used as a basis for determining threatened species status under the *National Parks and Wildlife Act 1972*. For IUCN criteria see:

IUCN (2008) IUCN Red List Categories. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland (www.redlist.org).

IUCN (2001) IUCN Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, United Kingdom (www.redlist.org).

- E Endangered:** (Schedule 7) in danger of becoming extinct in the wild.
- V Vulnerable:** (Schedule 8) at risk from potential or long term threats which could cause the species to become endangered in the future.
- R Rare:** (Schedule 9) low overall frequency of occurrence (may be locally common with a very restricted distribution or may be scattered sparsely over a wider area). Not currently exposed to significant threats, but warrants monitoring and protective measures to prevent reduction of population sizes.

Regional Status Codes

The following codes are those adopted by Gillam and Urban (2014) in Regional Species Status Assessments conducted throughout South Australia.

- RE Regionally Extinct:** no reasonable doubt that the last individual potentially capable of reproduction within the region has died or disappeared from the region, or, in the case of a former visiting taxon, individuals no longer visit the region.

- CR Critically Endangered:** when the best available evidence indicates that the taxon meets any of the IUCN criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.
- EN Endangered:** when the best available evidence indicates that the taxon meets any of the IUCN criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.
- VU Vulnerable:** when the best available evidence indicates that it meets any of the IUCN criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.
- RA Rare:** if the taxon occurs in small numbers, and the best available evidence indicates that it meets any of the IUCN criteria A to D for Rare, and it is at some risk due to low numbers. Taxa in this category are usually localized within restricted geographical areas or are thinly scattered over a more extensive range. This may include taxa which are perceived to be at risk for which there is insufficient information available to assign them any other category, and taxa that are considered to be dependent on ongoing conservation programs to prevent them moving into the Critically Endangered, Endangered or Vulnerable categories.
- NT Near Threatened:** when a taxon has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, Vulnerable or Rare now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

IUCN Criteria

IUCN criteria referred to in the regional status codes (refer IUCN 2001):

Criteria	*Critically Endangered CR	*Endangered EN	*Vulnerable VU
A. Reduction in population size based on any of the following:			
1. An observed, estimated, inferred or suspected population size reduction over the last 10 years or three generations, whichever is the longer, where the causes of the reduction are clearly reversible AND understood AND ceased, based on (and specifying) any of the following:	≥ 90%	≥ 70%	≥ 50%
(a) direct observation			
(b) an index of abundance appropriate to the taxon			
(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat			
(d) actual or potential levels of exploitation			
(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites.			
2. An observed, estimated, inferred or suspected population size reduction over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased OR may not be understood OR may not be reversible, based on (and specifying) any of (a) to (e) under A1.	≥ 80%	≥ 50%	≥ 30%
3. A population size reduction projected or suspected to be met within the next 10 years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.	≥ 80%	≥ 50%	≥ 30%
4. An observed, estimated, inferred, projected or suspected population size reduction over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years), where the time period includes both the past and the future, and where the	≥ 80%	≥ 50%	≥ 30%

B. Geographic range in the form of either B1 (extent of occurrence) OR B2 (area of occupancy) OR both: 1. Estimated extent of occurrence (km^2) and estimates indicating at least two of a-c: a. Severely fragmented or # locations. b. Continuing decline, observed, inferred or projected, in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) area, extent and/or quality of habitat (iv) number of locations or subpopulations (v) number of mature individuals. c. Extreme fluctuations in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) number of locations or subpopulations (iv) number of mature individuals. 2. Estimated area of occupancy (km^2), and estimates indicating at least two of a-c: a. Severely fragmented or # locations. b. Continuing decline, observed, inferred or projected, in any of the following: (i) extent of occurrence (ii) area of occupancy (iii) area, extent and/or quality of habitat (iv) number of locations or subpopulations (v) number of mature individuals. c. Extreme fluctuations in any of the following: (i) extent of occurrence	<100 km^2 = 1 <10 km^2 = 1	<5000 km^2 ≤ 5 <500 km^2 ≤ 5	<20,000 km^2 ≤ 10 <2000 km^2 ≤ 10
C. Population size estimated (# mature individuals) and either: 1. An estimated continuing decline, whichever is longer, (up to a maximum of 100 years in the future) OR 2. A continuing decline, observed, projected, or inferred, in numbers of mature individuals AND at least one of the following (a-b): (a) Population structure in the form of one of the following: (i) no subpopⁿ ≥50 mature individuals or (ii) 90-100% mature individuals in one subpopⁿ (b) Extreme fluctuations in number of mature individuals.	<250 25% in 3 yr or 1 generation (i) no subpopⁿ ≥50 mature individuals or (ii) 90-100% mature individuals in one subpopⁿ	<2500 20% in 5 yr or 2 generations (i) no subpopⁿ ≥250 mature individuals or (ii) 95-100% mature individuals in one subpopⁿ	<10,000 10% in 10 yr or 3 generations (i) no subpopⁿ ≥1,000 mature individuals or (ii) 100% mature individuals in one subpopⁿ
D. Estimated population size (# mature individuals).	<50	<250	(i) <1000 or (ii) AoO <20 km^2 or # locations ≤5
E. Quantitative analysis showing the probability of extinction in the wild (up to a maximum of 100 years).	≥50% within 10 yr or 3 generations	≥20% within 20 yr or 5 generations	≥10% within 100 yr

APPENDIX F: Summary of Management Strategies for Cape Torrens Wilderness Protection Area

(Refer Cape Torrens and Western River Wilderness Protection Areas Management Plan [DEH 2006].)

1. Managing Natural Heritage

Geology, Soils and Landform

- Control the population of feral goats to reduce disturbance, such as trampling and erosion.

Native Vegetation

- Monitor populations of conservation significance and implement management actions, if required, for their conservation, consistent with the maintenance of wilderness quality.
- Promote awareness amongst DEW staff and park users of the potential for introduction and establishment of phytophthora, the plant species susceptible to it and indicators of its presence.
- Comply with phytophthora hygiene protocols in undertaking management operations within the reserve.
- Monitor for the existence of phytophthora within the reserve, and take appropriate steps to limit its spread, including the restriction of visitors in the reserve.
- Work in liaison with the local council to maintain the phytophthora hygiene station on Jump Off Road, and minimise the spread of phytophthora along Jump Off Road, for example by grading away from the reserve.

Native Fauna

- Manage the habitat of the South Australian Glossy Black-Cockatoo in accordance with the Glossy Black-Cockatoo recovery plan.
- Minimise the disturbance of nests of the White-bellied Sea-eagle and Osprey, for example by restricting all access along the cliff tops during the breeding season (from June until early December).
- Undertake more intensive surveys to confirm the presence or absence of threatened species (for example, the Kangaroo Island Dunnart, the Heath Rat and the Southern Brown Bandicoot) within the wilderness protection area.

Introduced Plants

- Develop a regional weed management plan, including Cape Torrens Wilderness Protection Area.
- Develop strategies with neighbouring landowners to control weeds.
- Implement targeted control programs for priority weed species and infestations.

Introduced Animals

- Continue regional programs for the control of pest animal species, particularly deer and feral goats.

Investigate options for the control and eradication of Marron populations within the reserve.

2. Managing Fire

- Develop, implement and review a fire management plan for Cape Torrens Wilderness Protection Area in association with the CFS and other stakeholders.
- Engage adjacent landowners in a landscape scale fire management planning process.

- Continue to work with the relevant District Bushfire Prevention Committee and the CFS to minimise risk to life and property within and surrounding the reserve.

3. Managing Cultural Heritage

- Identify and protect and Aboriginal sites, objects and remains in cooperation with the traditional owners, Aboriginal Affairs and Reconciliation (Department of State Development), and relevant authorities.
- Consult with Ngarrindjeri, Kaurna, Narungga and Ramindjeri people who have a traditional association with the land, potential Native Title Claimants and relevant State and Federal Aboriginal Heritage authorities, in decisions regarding the management of Aboriginal cultural heritage.
- Promote discussion with Aboriginal people who have a traditional association with the land comprising the reserves to better understand and appreciate their culture, lifestyle and knowledge of the reserves.

4. Managing Tourism and Recreation

Visitor Access

- Restrict vehicle access to the reserve for management and emergency purposes only.
- Maintain low frequency, low impact and self-reliant visitor access to the wilderness protection area.

5. Managing Resource Use

Management Infrastructure

- Where fences are to be maintained negotiation should occur with neighbouring land owners to exclude stock and to reduce the movement of feral animals.
- Maintain signs, barriers and PC hygiene stations while minimising their impact on wilderness values.

Managing External Influences

- Liaise with neighbouring land owners with a view to establish cooperative management arrangements that contribute to the maintenance of wilderness values of the reserve.

Research

- Encourage research that improves wilderness and conservation management while not detracting from wilderness quality.

6. Involving the Community

- Liaise with neighbouring land owners and the local council to encourage their input.
- Encourage the development of partnership arrangements to integrate biodiversity conservation management in the region.