PHILLIP ISLAND NATURE PARKS
BUSHFIRE MANAGEMENT PLAN 2023-2028

Phillip Island NATURE PARKS

obliqua pty ltd
sustainable land and bushfire management
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DISCLAIMER

This Fire Management Plan has been made with careful consideration and with the best information available to obliqua pty ltd at the time of writing. Before relying on information in this report, users should evaluate the accuracy, completeness and relevance of the information provided for their purposes. This report does not guarantee the survival of people, or flora or fauna, nor that fire will follow the models used to predict its behaviour. obliqua pty ltd, its directors, employees and contractors accept no liability for loss or damage resulting from use of this report, whether due to unintended inaccuracy, error or omission or any other cause.

IMAGES

Cover image: Ecological burn to reduce the cover of Tall Wheat Grass at Fisheres Wetland. Delivered in partnership with local CFA Brigades.

Contents

Definitions

BUSHFIRE ATTACK LEVEL (BAL) AND CONSTRUCTION STANDARD

The BAL describes the severity of the threat from radiant heat that buildings may be exposed to (in kW/m2) and the construction standard required to improve protection against that threat. There are 6 BAL ratings: low, 12.5, 19, 29, 40 and FZ (flame zone). The BAL is determined using *AS 3959-2018*.

DEFENDABLE SPACE

An area around a building (or other important asset) where vegetation is managed to reduce fuel available to be burnt by a fire and its continuity.

FIRE DANGER RATING SYSTEM

A revised system for predicting and communicating fire danger (Australian Fire Danger Rating System or AFDRS) was introduced on 1 September 2022. Both the previous and the revised system provide a measure of fire danger based upon bushfire behaviour. The previous system used the FFDI and the AFDRS uses the FBI (refer below). The AFDRS is currently used primarily for community messages, although its use is to be extended to other policy and operations in the future. In this interim period, this Plan uses the former rating system and the FFDI/GFDI for references to historical data and to guide design of asset protection zones. The AFDRS is used (where noted) for other preparedness actions.

FIRE BEHAVIOUR INDEX (FBI)

The Australian Fire Danger Rating System uses the Fire Behaviour Index (FBI) to determine fire danger ratings. The FBI provides a scale of potential fire behaviour using up to 8 fire behaviour models instead of the previous two.

FOREST (AND GRASS) FIRE DANGER INDEX (FFDI AND GFDI)

The FFDI was used to determine fire danger ratings prior to the introduction of the Australian Fire Danger Rating System. It describes the chance of a fire starting, its rate of spread, its intensity and the difficulty of its suppression.

Abbreviations

AFAC	Australasian Fire and Emergency Service Authorities Council
AFDRS	Australian Fire Danger Rating System
ALARP	As low as reasonably practicable
APZ	Asset Protection Zone
AS 3959-2018	Australian *Standard Construction of buildings in bushfire-prone areas* (Standards Australia 2018)
BCSCFMP	*Bass Coast Shire Council Fire Management Plan* (Bass Coast Shire Council 2023, in prep)
BCFRWG	Bass Coast Fire Risk Working Group (formerly Municipal Fire Management Committee)
BEP	Bushfire Emergency Plan
BOM	Bureau of Meteorology
CFA	Country Fire Authority
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEECA	Department of Energy, Environment and Climate Action (formerly DELWP)
DELWP	Former Department of Environment, Land, Water and Planning (now DEECA)
DF	Drought Factor
EVC	Ecological Vegetation Class
EVD	Ecological Vegetation Division (groupings of EVCs with similar responses to fire)
FBI	Fire Behaviour Index
FFDI and GFDI	Forest Fire Danger Index and Grass Fire Danger Index
FDP	Fire Danger Period
FDR	Fire Danger Rating
FIRS	Fire Incident Reporting System (CFA)
FOP	*Fire Operations Plan* (Nature Parks)
GFF	General Firefighter
JFMP	Joint Fuel Management Program
MEMP	*Municipal Emergency Management Plan* (Bass Coast Shire Council 2020)
MEMPC	Municipal Emergency Management Planning Committee
OFH	Overall Fuel Hazard (Hines et al. 2010)
Nature Parks	Phillip Island Nature Parks
TFB	Total Fire Ban

Image 1: Removal of dead woody debris in an Asset Protection Zone at Cape Woolamai

Introduction

ABOUT PHILLIP ISLAND NATURE PARKS

Phillip Island (Millowl) is approximately 101 square kilometres in size and lies between Western Port Bay and Bass Strait, to the south-east of Melbourne in Bass Coast Shire. The island is within the traditional lands of the Bunurong. The island has a combination of cleared and vegetated areas.

Phillip Island Nature Parks (the Nature Parks) was created by the State Government of Victoria in 1996. The Nature Parks comprises over 1,980 hectares of Crown Land set aside under the Crown Land (Reserves) Act 1978 'for the conservation of areas of natural interest or beauty or of scientific, historic or archaeological interest'. This equates to approximately 19% of the island's land mass.

Habitat within the Nature Parks' reserves supports significant populations of Little Penguins, hooded plovers, Short-tailed shearwaters and international migratory bird species and mammals such as koalas, possums, wallabies, Eastern barred bandicoots, Australian fur seals and bats.

Nature Parks protects a range of plant communities that includes over 330 native species. Sections of its reserves also fall within or are adjacent to wetlands protected under the inter-governmental Ramsar Convention as wetlands of international importance.

The Nature Parks is divided into seven key areas for management purposes, as shown in Figure 1. Each of these key areas is divided into sub-areas as shown in the *Conservation Plan 2019-2023* (Phillip Island Nature Parks 2019a).

Management of the Nature Parks, and bushfire safety, is complex due to a range of ecosystems, high density of wildlife, (particularly ground nesting sea birds including Little Penguins and shearwaters), multiple sites, popular attractions and a variety of other recreational uses. Over one million visits were made to fee-charging attractions during 2016-2017.

Management of the Nature Parks is guided by the mission and vision set out in Table 1.

Further information about the island, the Nature Parks organisation and the different areas of the Nature Parks can be found in the *Strategic Plan 2018-2023* and the *Conservation Plan 2019-2023* (Phillip Island Nature Parks 2018, 2019a).

Image 2: CFA & Nature Parks blacking-out a fire adjacent to Fishers Wetland. Credit: Jon Fallaw

TABLE 1: THE NATURE PARKS PURPOSE, VISION AND GUIDING PRINCIPLES

Source: Strategic Plan 2018-2023

This is why we are here

Our Purpose

To protect nature for wildlife and inspire people to act.

This is what we want to be

Our Vision

A place where conservation and ecotourism excellence inspire people to actively protect the environment.

These are the choices we make

Guiding Principles

Nature conservation is paramount
Visitor experiences should be authentic and inspire action
Financial sustainability is key to our continued success
Value for our Community

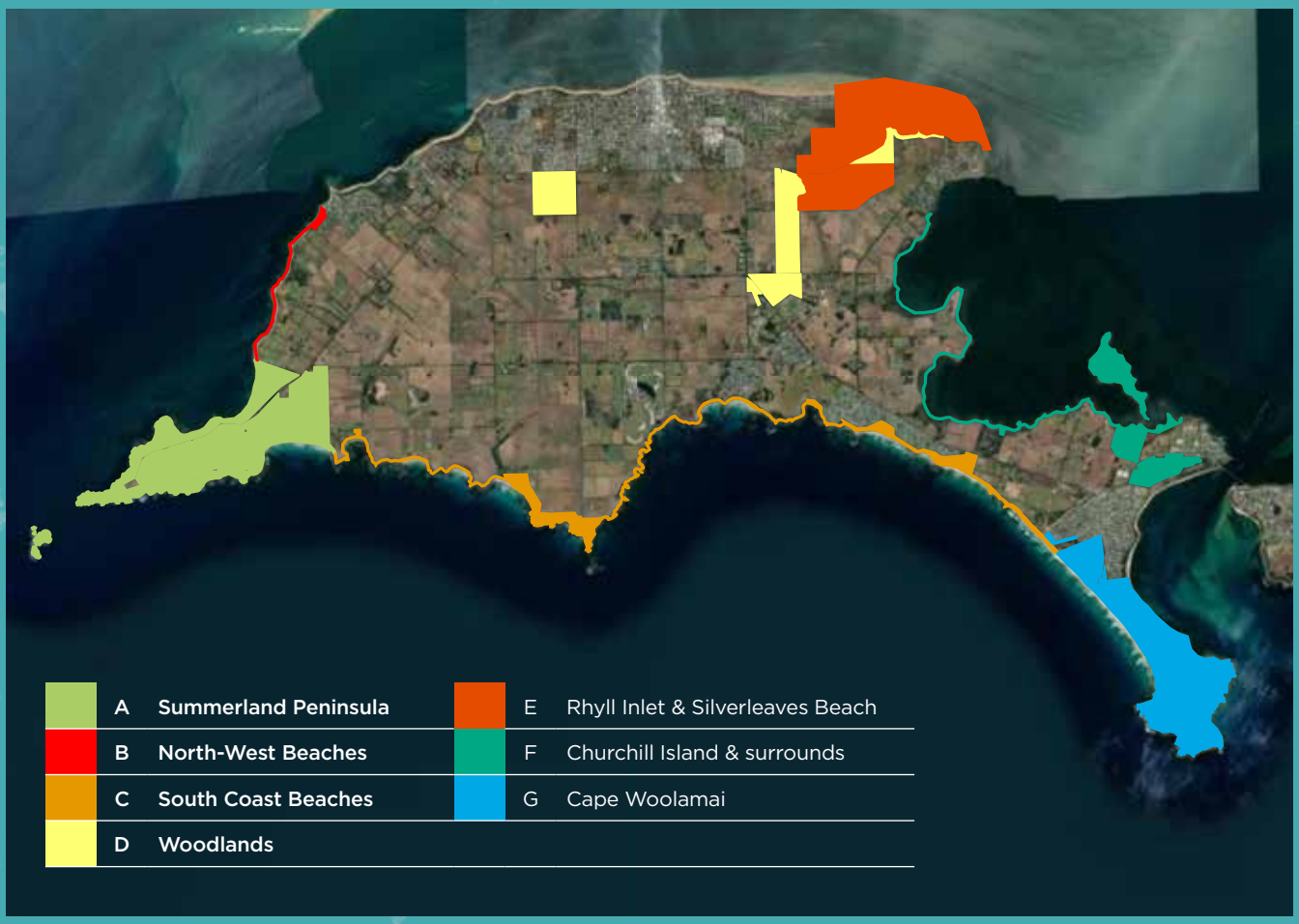


Figure 1: Overview of the Phillip Island Nature Parks and key areas

Our location

PARKS AND RESERVES

Over 1,980 hectares of Crown Land for the conservation of areas of natural interest or beauty or of scientific, historic or archaeological interest.

KOALA CONSERVATION RESERVE

Close koala viewing in natural habitat.

2020-21 - 63,698 visitors
2021-22 - 68,708 visitors

ANTARCTIC JOURNEY

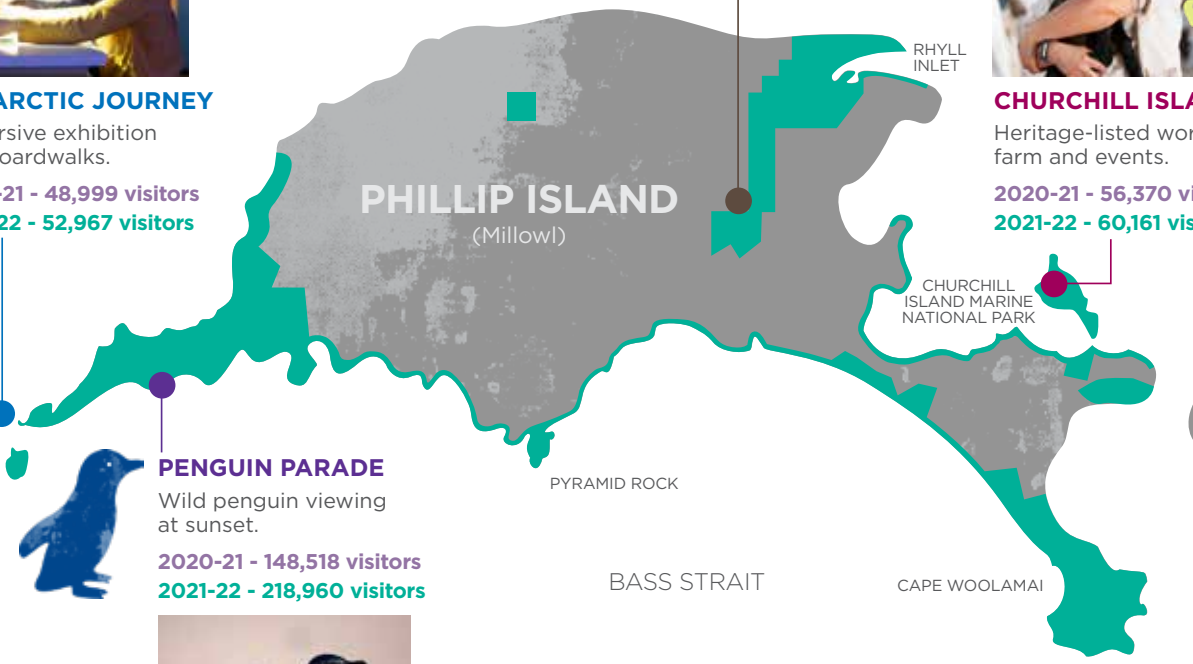
Immersive exhibition and boardwalks.

2020-21 - 48,999 visitors
2021-22 - 52,967 visitors

CHURCHILL ISLAND

Heritage-listed working farm and events.

2020-21 - 56,370 visitors
2021-22 - 60,161 visitors



PENGUIN PARADE

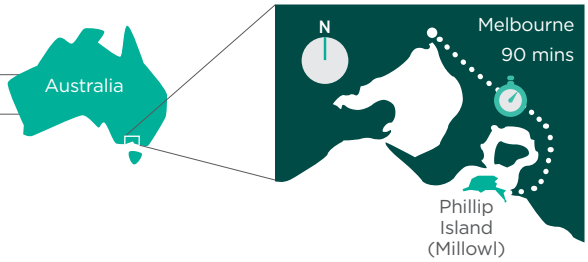
Wild penguin viewing at sunset.

2020-21 - 148,518 visitors
2021-22 - 218,960 visitors

Phillip Island Nature Parks

Route from Melbourne

Maps not to scale



For a more detailed map refer to map LEGL./10-005 via our website penguins.org.au

Figure 2: Key visitor nodes, attractions, and visitation levels

Source: Strategic Plan 2018-2023

ABOUT THIS BUSHFIRE MANAGEMENT PLAN

This Plan describes bushfire risk and proposals for managing bushfire risk in the Phillip Island Nature Parks over the next five years.

This Plan meets the requirements of the *Committees of Management Responsibilities and Good Practice Guidelines* (DELWP, 2015) which states that all Crown Land committees of management should have a bushfire management plan. It has been developed to be broadly consistent with and to support planning at the state, regional and municipal levels, while recognising the unique features of the Nature Parks and the challenges that its staff face.

Development of this Plan has been guided by the standard *AS ISO 31000-2018 Risk management*. This Plan focuses on four process steps contained in this standard:

- Establish the scope, context and criteria.
- Assess the risk.
- Select risk treatment options.
- Monitor and review.

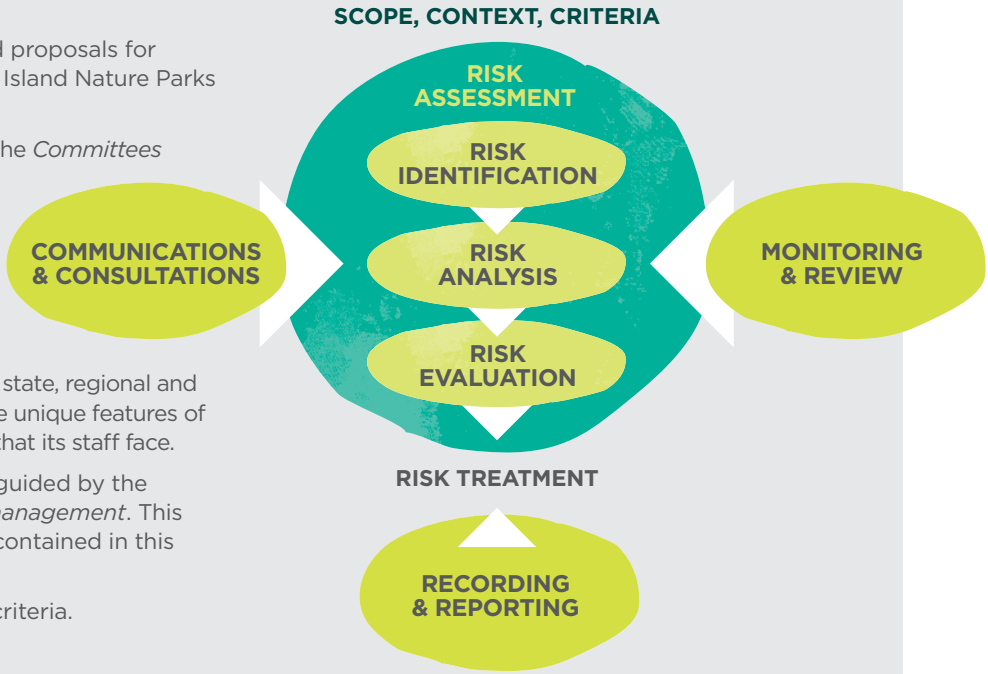


Figure 3: Risk management process (AS ISO 31000:2018)

PLANNING CONTEXT

This Plan has been guided by and complements bushfire planning at state, regional and the municipal level, which is described in Table 2.

This Plan has also been guided by and complements key internal documents as shown in Figure 4, including the *Nature Parks Strategic Plan*, the *Conservation Plan 2019-2023* and the *Emergency Management Plan 2021* (Phillip Island Nature Parks 2021). This Plan also draws upon detailed bushfire management assessments and plans that have been prepared for key areas within the Nature Parks. We will retain these as resources to assist planning at a more detailed level.

This Plan feeds into and complements the *Nature Parks Risk Management System* which describes risks and their likelihood and consequences, allocates responsibilities for implementing treatments and assists monitoring of implementation. *The Risk Management System* describes the risk from bushfire as follows:

- **Risk 45:** Unauthorised fire, lightning strike or planned burn escapes control measures and injures or kills humans or wildlife and damages infrastructure and habitat.

This Plan and relevant key area plans are used to guide operational planning. The three-year *Fire Operations Plan* (FOP) lists mitigation and preparedness activities that will be carried out by the Nature Park staff. The FOP is reviewed and updated annually prior to the commencement of the Fire Danger Period (FDP) and feeds into the statewide all-agency Joint Fuel Management Program (JFMP). Implementation of operations is guided by procedures.

TABLE 2: FIRE MANAGEMENT PLANNING HIERARCHY

LEVEL	DOCUMENT	COMMENT
State	*State Emergency Management Plan (SEMP) Bushfire Sub-Plan* (EMV 2021b)	Outlines the current principles and arrangements for the management of bushfires in Victoria.
State	*Code of Practice for Bushfire Management on Public Land* (DEECA 2022)	The *Code* outlines how the Department of Energy, Environment and Climate Action is to deliver its bushfire management responsibilities on public land managed under the *Forests Act 1958.* Where relevant, the *Code* is used as guidance by other public land managers.
Regional	*Gippsland Bushfire Management Strategy 2020* (DEECA 2020b)	
Municipal	*Bass Coast Shire Council Fire Management Plan* (Bass Coast Shire Council 2023, in prep)	

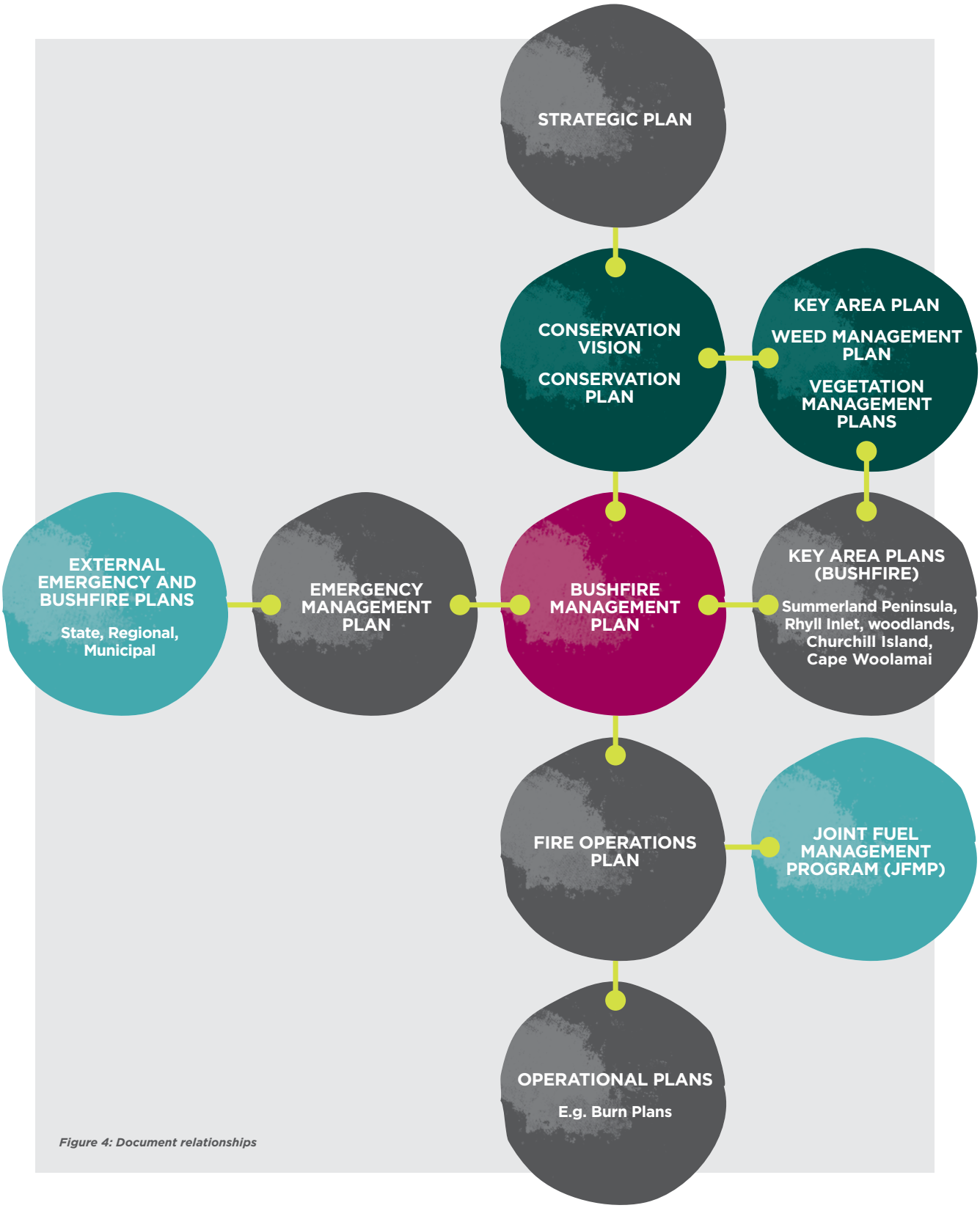


Figure 4: Document relationships

How could bushfire affect this area?

HOW FREQUENTLY DOES FIRE OCCUR?

Bushfire is relatively infrequent on Phillip Island and most fires have been detected early and kept small with 65% being contained to one hectare or less (Bass Coast Shire Council 2018, p. 11). The last significant fire event occurred in the Nature Parks in 1981. This fire burnt in grassland at the Cape Woolamai car park during a surf carnival and destroyed 42 cars. A full fire history is provided in Attachment B.

WHERE COULD BUSHFIRE COME FROM?

Most fires start by deliberate arson (40%), or accidental ignitions (27%) or lightning (33%). A significant proportion starts around places where people congregate including townships and visitor attractions and 98% have occurred in grass or scrub vegetation (Bass Coast Shire Council 2018, p. 11). Based on analysis of 29 years of weather data for the Rhyll automatic weather station, under fire danger conditions of Very High and above (FFDI=25+), fire is most likely to travel with winds from the N to WNW or the NW to SW under a cool change (Bull 2021).

WHEN IS THE THREAT GREATEST?

Fire is most likely to threaten assets once Very High fire danger (Forest Fire Danger Index or FFDI = 25) conditions are reached. This is the fire danger rating at which fire control is most likely to fail (Hines et al. 2010). Based on analysis of 29 years of data these conditions are estimated to occur relatively infrequently: on an average of seven days each year (Bull 2021). However, by 2050 Victoria is likely to have up to 70% more days of elevated fire danger (DELWP 2015, 2020b; Hughes 2014; Lucas et al. 2007).

HOW IS BUSHFIRE EXPECTED TO BEHAVE?

Fires generally start from small ignition points that, unless suppressed early, grow in speed and intensity under the influence of weather, slope and available fuel.

Modelling carried out for the key area plans show that fires can travel quickly under higher fire danger ratings. For example, modelling carried out under a fire danger rating of Very High (FFDI = 25) indicates that in two hours or less, fire could burn from:

- The western to the eastern end of the Summerland Peninsula (2.7km)
- The northern to the southern end of the Oswin Roberts Reserve (1.7km)

CSIRO post-fire research indicates that most buildings are lost from ember attack (Leonard, Blanchi & Bowditch 2004). This highlights the vulnerability of older buildings around the Nature Parks, which have not been built to current bushfire standards and the Heritage Precinct on Churchill Island in particular.

Bushfire affects buildings as follows:

- Embers (burning leaves and bark which are carried ahead of the fire) can enter gaps as small as 1.8mm, igniting timber and other materials in and around buildings.
- Radiant heat can ignite burnable materials and crack window glass and allow embers to enter a building through flame contact if burnable materials are close enough.
- Strong winds can damage buildings (particularly roofing) and allow embers to enter.

Cars that are ignited by bushfire also need to be considered in bushfire risk management. Car to car fire spread can occur in less than 12 minutes. A burning car is also expected to emit the same amount of energy (4MW) as one hectare of vegetation, but for a much longer time period; 60 minutes compared with two minutes for vegetation (Collier 2011; Leonard, Blanchi & Bowditch 2004). This highlights the importance of siting vehicles away from buildings and important egress routes on days of higher fire danger.

How could bushfire affect this area?

Key: Extended first attack...

F	Will almost always fail
F?	Fails most of the time
S?	Succeeds most of the time
S	Almost always succeeds

TABLE 3: FIRE DANGER RATINGS, OCCURRENCE AND PREDICTED FIRE CONTROL OUTCOMES

Adapted by the author from BOM Rhyll AWS: 3pm observations to 10 September 2021 (29 years), Likelihood from AIDR (2020), Forest outcomes for VH fuel hazard (Hines et al. 2010), Grassland outcomes from Cheney and Sullivan (2008)

FIRE DANGER RATING/FFDI	Likelihood of FFDI being exceeded in any one year		Control outcomes (Forest)	Control outcomes (Grassland)	Observations	Days per year	%
Code Red: 100+	1:100,000	Extremely rare	F	F	0	0.0	0.0
Extreme: 75-99	1:800	Rare	F	F	0	0.0	0.0
Severe: 50-74	1:11	Likely	F?	F?	1	0.0	0.0
Very High: 25-49	1:1	Almost certain	F?	F?	212	7.3	7.9
High: 12-24	1:1	Almost certain	S?	S?	2458	85	92
				TOTAL	2671	92	100

TABLE 4: FIRE DANGER RATING AND 3PM WIND DIRECTION

Adapted by the author from BOM Rhyll AWS: number of 3pm observations to 10 September 2021 (29 years)

FIRE DANGER RATING	S	SSW	SW	WSW	W	WNW	NW	NNW	N	NNE	NE	ENE	E	ESE	SE	SSE	Total
Code Red	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Extreme	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Severe	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	100
Very High	1	0	1	1	1	2	2	41	49	1	0	0	0	0	0	0	100
High	1	1	1	1	2	2	5	41	35	3	1	1	2	1	1	1	100
Low - Moderate	10	6	8	6	8	5	5	9	11	4	4	4	5	5	4	5	100

BAL 12.5	BAL 19	BAL 29	BAL 40	BAL-FZ
LOW THREAT TO HOUSES	**MODERATE THREAT TO HOUSES**	**HIGH THREAT TO HOUSES**	**VERY HIGH THREAT TO HOUSES**	**EXTREME THREAT TO HOUSES**
Low ember attack Low radiant heat (up to 12.5kW/m²)	Moderate ember attack Moderate radiant heat (up to 19kW/m²)	High ember attack High radiant heat (up to 29kW/m²)	Very high ember attack Very high radiant heat (up to 40kW/m²) Some flame contact from fire front	Extreme ember attack Extreme radiant heat (over 40kW/m²) Flame contact from fire front
Pain after three seconds (at 10kW/m2 or 2m from burning house) Pain after 10-20 secs (6kW/m2 or 6m from burning house) Critical conditions for firefighters Possible failure: float glass	Ignition of timber after a long time Possible failure: screened float glass Possible ignition: plastics (water tanks + rubbish bins)	Ignition of most timbers after three minutes	Ignition of cotton fabric after five seconds	Ignition of timber after 20 seconds

Figure 5: Bushfire threat and effects

What is most at risk from bushfire?

WHAT IS AT RISK FROM BUSHFIRE?

Bushfire potentially poses a threat to people within the Nature Parks and communities located close to the reserves. It also has the potential to impact on the iconic wildlife, the scenery that visitors enjoy, the other environmental and cultural values that the Nature Parks protects and the facilities that assist visitors to experience these values. The way we manage bushfire can also impact significantly on these values.

Damage to, or loss of these assets and values has significant potential to impact on business continuity, revenue, reputation and the contribution that the Nature Parks makes to the economy and therefore the functioning of the Phillip Island community.

The following discussion of risk focuses on risks to people and the environment, as these are the key factors that determine risk to our organisation and the wider community.

WHAT DO WE MEAN BY 'BUSHFIRE RISK'?

Put simply, 'bushfire risk' can be described as the chance (likelihood) of a bushfire igniting, spreading and causing unacceptable damage to people and things (assets and values) that we value (consequences) and want to protect (objectives). Factors that contribute to risk include the hazard or source of the risk, the degree of exposure to the hazard and the vulnerability of the assets and values to bushfire attack.

WHAT IS THE LEVEL OF RISK?

We have reviewed the level of bushfire risk for this Plan in accordance with our *Risk Management Procedure* using the templates shown in Attachment C. At a whole-of-Nature Parks level, the likelihood of fire starting and spreading to the extent where it severely damages environmental values or causes death or injury of people (catastrophic consequences) is relatively low due to the low number of risky days and ignitions. However, the required weather conditions for uncontrollable fire occur, on average, every year and such an event could occur in the future. This corresponds to a likelihood of 'unlikely'. This combination of likelihood and consequences gives a risk rating of High.

We manage this risk through reducing exposures and vulnerability, reducing hazards and accepting risk that cannot be practically managed without unacceptable impacts. Our approach to managing risk is set out in more detail on page 16.

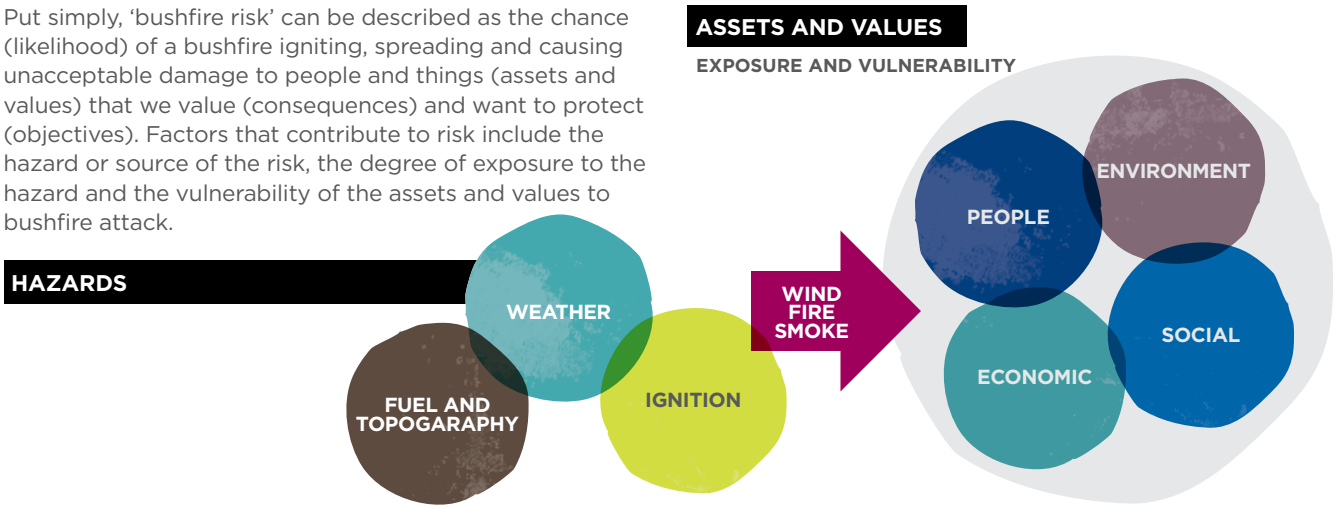


Figure 6: Bushfire risk factors

TABLE 5: ASSETS AND VALUES RELEVANT TO BUSHFIRE RISK MANAGEMENT BY THE NATURE PARKS

Source: Adapted from DEECA (2020b)

PEOPLE	SOCIAL	ENVIRONMENT AND CULTURAL HERITAGE	ECONOMY
■ Visitors ■ Volunteers ■ Contractors ■ Staff ■ Emergency workers ■ Neighbours	■ Homes ■ Farms ■ Industry ■ Visitor facilities ■ Infrastructure	■ Iconic fauna (penguins, shearwaters and koalas) ■ Vegetation and habitat ■ Waterways and beaches ■ Atmosphere ■ Ecosystem services ■ Aboriginal and European cultural heritage ■ Scenery valued by community and visitors	■ Nature Parks business continuity ■ Phillip Island community

RISK TO PEOPLE AND INFRASTRUCTURE

Factors that contribute to bushfire risk at visitor and work sites throughout the Nature Parks are summarised in Table 6. Visitors to the key attractions are considered to be vulnerable as most visitors will have little or no experience with bushfire, other emergencies or the rural environment.

All the key visitor and work sites are exposed to bushfire hazards, including vegetation and large numbers of vehicles, and most are remote from safer areas. Only the more recently constructed Penguin Parade Visitor Centre and the Wildlife Rehabilitation Centre have been required to meet standards for bushfire resistance set out in AS 3959-2018. Compliance with this standard increases the likelihood that buildings will survive the passage of a fire under higher fire danger conditions.

The site that is most exposed to hazards is the Penguin Parade where there is potential for long and relatively broad runs of fire through vegetation to the west. Threat from other directions is reduced by a wet fuel break to the east, and the carpark to the north. The site does not have ready access to safer areas outside the Nature Parks' reserves.

The Nobbies Centre is less likely to be impacted by long runs of fire from the key directions due to its proximity to the coast, but the egress route to safer areas outside the Nature Parks is much longer. The Koala Conservation Reserve is exposed to long runs of fire through woodland and grassland to the west and southwest. This site has access to safer areas via the Phillip Island Road; however, evacuation will need to be carefully managed. A fire starting at Churchill Island has much less time to build in size and intensity, but egress to safer areas outside the Nature Parks' reserves is likely to be slowed by the narrow bridge.

Three settlements are located adjacent to areas of substantial bushland in the Nature Parks' woodlands. These are Silverleaves, Cape Woolamai and Newhaven South. Risk ratings and risk management strategies for these settlements are set out in the *Bass Coast Shire Council Fire Management Plan (Bass Coast Shire Council 2023, in prep)*. We contribute to reducing risk in these locations by maintaining fuel breaks in the Nature Parks' reserves. These breaks include lower threat vegetation such as Bower Spinach near Cape Woolamai.

TABLE 6: FACTORS THAT CONTRIBUTE TO BUSHFIRE RISK FOR BUILDINGS AND OTHER INFRASTRUCTURE AND THEIR OCCUPANTS IN THE NATURE PARKS

LOCATION	STRUCTURE TYPE					HAZARD							EXPOSURE AND VULNERABILITY				
	Residence	Workplace	Tourism/recreational	Cultural	Infrastructure	Woodland	Scrub	Shrubland	Grassland	Lower threat areas	Steep slopes	Long fire runs	Number of occupants	Vulnerability of occupants	Ready access to safer area outside the Nature Parks' reserves	Vulnerability of building structure and AS 3959 construction standard	Separation from hazards is based AS 3959 defendable space
Penguin Parade Visitor Centre		■	■	■			■		■	■		■	H	H	No	L (BAL29 to BAL40)	Compliance with planning permit 180028 required (approved landscape plan)
Wildlife Rehabilitation Centre		■				■	■					■	L	M	No	BAL12.5	Compliance with planning permit required (BAL12.5)
The Nobbies Visitor Centre		■	■					■	■				H	H	No	L	To be reviewed
Koala Conservation Reserve		■	■			■			■			■	M	H	Yes	H	
Churchill Island Visitor Centre		■	■	■		■			■	■			M	H	No	H	
Churchill Island Heritage Precinct		■	■	■		■			■	■			M	H	No	H	
Churchill Island residence	■					■			■				L	M	No	M	
Conservation Hill residence	■					■			■				L	M	Yes	M	
Communications Tower Fiveways					■	■	■		■				L	L	Yes	H	No, small break only
Western Port Water pump station Newhaven					■	■	■						L	L	Yes	H	No, small break only

What is most at risk from bushfire?

RISK TO ICONIC SPECIES AND ENVIRONMENTAL HEALTH

Phillip Island and the Nature Parks support a diversity of flora and fauna, including species that are protected under state and national legislation. Nature Parks also supports waterbird habitat of international significance that is protected by international treaties.

The *30-Year Conservation Vision* (Phillip Island Nature Parks 2019b) lists several species and communities of significance that are likely to be affected by fire or inappropriate fire management.

Fire has the potential to impact on wetland species through removing habitat, and erosion which can cause water pollution. Land-based fauna is particularly vulnerable to fire. Little Penguins have 'surprisingly inappropriate' responses to fire and are particularly vulnerable to fire during their nesting seasons (Chambers et al 2010). Fire can have a devastating short- and long-term effect on colonial nesting species including penguins and Short-tailed shearwaters due to the synchronicity of breeding events. Even low intensity burns in winter can decrease burrow density in the long term due to increased soil instability. Koalas are also noted for their limited ability to escape fire. They are also vulnerable as they are dependent upon food resources that may be depleted by fire.

'Inappropriate fire regimes causing disruption to sustainable ecosystem processes and resultant loss of biodiversity' is listed as a potentially threatening process under the *Flora and Fauna Guarantee Act 1988* (DELWP 2016) and pose a risk to biodiversity in general. Conversely, fire applied at the appropriate frequency, intensity, season and extent can help to maintain or improve plant and habitat diversity. For example, fire can be used to reduce weed biomass and stimulate fresh weed regeneration, which can then be treated economically using herbicide or other methods.

Inappropriate fire management including inappropriate use of fire-fighting foam and machinery can also cause harm to the environment.

WHAT ARE THE PRIORITIES FOR PROTECTION?

In accordance with state emergency management policy, we will continue to prioritise protection of human life. However, it is also critical that we meet our commitments to protect the environmental and social values of the Nature Parks and its contribution to the economy, and therefore the functioning of the Phillip Island community. The challenge is to manage the risk to human safety in a way that does not impact on the values that draw people to this area.

Consideration of our fire management objectives and risk factors confirms our priorities for mitigation activities:

1. Visitor centres where people congregate in large numbers and where visitor safety depends upon timely evacuation.
2. Residential interface and community infrastructure (communications tower and water treatment plant).
3. Habitat of iconic species on which the continued functioning of Nature Parks depends (Little Penguin and koala habitat).
4. Indigenous and post-contact cultural heritage including the Churchill Island heritage buildings and farm infrastructure.
5. Other important habitat especially large vegetation patches and areas with threatened species vulnerable to fire.
6. Other assets not part of the core attractions and business of the Nature Parks.

Our risk management approach

OUR OBLIGATIONS

Phillip Island Nature Parks is included within the Country Area of Victoria (s3 of the *Country Fire Authority Act 1958*) where CFA is the lead agency for fire control. Obligations of public authorities for bushfire safety are set out in the *CFA Act 1958* and Victoria's bushfire safety policy framework (EMV 2018). In short:

- Public authorities must take 'all practicable steps to prevent the occurrence of fire on and minimise the danger of the spread of fires on and from any land vested in it or under its control or management' (s43 *CFA Act 1958*)
- 'The protection of life is paramount' (EMV 2018)
- 'Bushfire safety is a shared responsibility between the government and a range of stakeholders' (EMV 2018).

Nature Parks also has clear responsibilities for protecting environmental assets including species and communities listed under the *Flora and Fauna Guarantee Act 1988* and the E*nvironment Protection and Biodiversity Conservation Act 1999.*

OUR OBJECTIVES AND OUTCOMES WE AIM TO ACHIEVE

In accordance with these obligations, bushfire management by Phillip Island Nature Parks will be guided by the objectives and outcomes set out in Table 7.

TABLE 7: OUR OBJECTIVES, THE OUTCOMES WE AIM TO ACHIEVE AND PROPOSED STRATEGIES

OBJECTIVES FOR BUSHFIRE AND BUSHFIRE MANAGEMENT			
PEOPLE	**SOCIAL**	**ENVIRONMENT, CULTURAL HERITAGE AND VISUAL AMENITY**	**ECONOMY**
No loss of human life	Minimise impacts on community assets	Protect iconic species, the environment, cultural heritage and visual amenity	Maintain business continuity

OUTCOMES SOUGHT IN THIS PLAN						
Risk management principles	**Environment, cultural heritage and visual amenity**	**Mitigation**	**Preparedness**	**Response**	**Recovery**	**Continuous improvement**
Bushfire management is based upon a realistic assessment of risk and what is tolerable and achievable. Any risk that is not practical to treat is understood and accepted by the community, emergency services and Nature Parks managers. People in and around the Nature Parks share responsibility for their own bushfire safety.	Damage to air, water, soil, flora and fauna, cultural heritage and scenic amenity as a result of inappropriate fire and fire management activities is minimised. Where necessary and practical, fire is used to maintain or improve biodiversity. Vegetation removal for fire management complies with legal obligations and best practice.	Reduced incidence of bushfires in the Nature Parks caused by its staff, contractors and visitors. Reduced radiant heat and ember impacts on key buildings and other infrastructure.	Resources, capabilities and readiness are maintained to provide first attack and support to CFA. Resources are maintained in readiness for bushfire recovery. Exposure of visitors to bushfire risk is reduced. Bushfire resistance of key buildings is maintained and improved where practical in order to enable sheltering as an alternative to evacuation. Neighbours prepare for bushfire.	In the event of fire threatening life, health or safety, affected occupants are protected through either evacuation or sheltering-in-place in accordance with the *Nature Parks Emergency Management Plan.* Suppression is safe, fast, determined and thorough, with the aim of controlling fire in the shortest possible time, and with minimum loss or damage to Park and other assets.	Nature Parks personnel, Nature Parks operations and the environment are assisted to achieve a proper level of function as soon as possible.	Compliance with legislation and standards related to bushfire management. Continuous improvement of fire management strategies and actions. Shared commitment to environmentally responsible bushfire management in the Nature Parks.

Risk philosophy

RISK ACCEPTABILITY

Bushfire risk management involves reducing risk factors to an acceptable level. The *CFA Act* provides guidance on what is acceptable. Section 43 of the *CFA Act 1958* requires that public authorities take 'all practicable steps to prevent the occurrence of fire on and minimise the danger of the spread of fires on and from any land vested in it or under its control or management' (s43 *CFA Act 1958*). Key issues for the Nature Parks include what is acceptable as 'minimal' danger of fire spread and what steps are 'practicable'.

Victorian research on fire spread and control (Table 3) and modelling carried out for the Nature Parks (McCarthy 2021) confirm that we cannot rely upon fuel breaks and fire control to limit fire spread once the fire danger rating reaches Very High (FFDI=25). Therefore, we need multiple strategies to manage the risk. We undertake risk management across the spectrum of PPRR: prevention (mitigation), preparedness, response and recovery. Key strategies are summarised in Table 8.

Furthermore Nature Parks takes the view that extensive clearing of vegetation for fuel breaks or around the visitor nodes is also not practical, as this will impact on the iconic fauna, its habitat and the immersion in the reserves that is important to the visitor experience.

Instead, we prioritise alternative approaches to treating hazards. For example, we maintain wet breaks in asset protection zones around the penguin and koala precincts. We are also investigating flora species substitution on the Summerland Peninsula to reduce the hazard and assist fire control. Our response planning prioritises early evacuation of visitor nodes if safe to do so, and visitor buildings are maintained in a condition that maximises their ability to provide for last resort sheltering if required.

Treatments that focus on management of people and assets and reduce vulnerability and exposure are more likely to be compatible with conservation and other reserve objectives and provide greater assurance of safety by separating people from the hazard. Moreover they diversify the treatments, reducing reliance upon any one treatment which may fail. We minimise exposures by managing the times the visitor nodes are open, and where visitors can go. We also focus on reducing vulnerability of visitors and neighbours through bushfire education.

Once risk has been lowered as far as reasonably practical (ALARP) we will also seek to share the risk.

TABLE 8: KEY RISK MANAGEMENT STRATEGIES BY FIRE DANGER RATING (AFDRS)

Fire Danger Rating (AFDRS)	FBI	National community bushfire messaging (abbreviated)	Fire control Fuel management	People management	Other management	Shared responsibility
Catastrophic	100+	Leave		Nature Parks closure	Ignition mgt Buildings Infrastructure Defendable space where practical Preparedness Recovery	Visitors and neighbours manage their own risk
Extreme	50-99	Take action		Emergency management plans		
High	24-49	Be ready to act				
Moderate	12-23	Plan + prepare	Control more likely Fuel breaks most effective			
No rating	0-11	No action				

RISK SHARING

In line with the directions in the *State Emergency Management Plan* (EMV 2021a), we will continue to promote risk sharing with our neighbours and visitors.

Nature Parks takes the view that people coming into and living near the Nature Parks' reserves come to this area to experience and benefit from its natural setting and attractions and therefore must share some of the risk associated with being in this environment. Effective emergency management and resilient communities also requires collaboration and sharing of responsibility with other emergency services and the community.

Our approach aims to complement fire management activities at the municipal level which are listed in Table 9. We will continue to collaborate with fire and emergency services and Council in order to ensure a common understanding of key risks and appropriate treatments and to integrate planning for bushfire risk reduction across the island.

TABLE 9: MUNICIPAL LEVEL BUSHFIRE RISK MITIGATION TREATMENTS

Source: (Bass Coast Shire Council 2018, 2023, in prep)

Higher risk assets identified by the BCFRWG (including Nature Parks' assets)	Specific treatments
New development	■ Planning and building controls
Fuel management	■ Fire hazard inspection programs and issue of notices ■ Enforcement of legislation ■ Power line hazard tree identification, management and reporting ■ Roadside vegetation management by road managers
Infrastructure	■ Fire hydrants Inspection and maintenance ■ Routine asset maintenance ■ Emergency management signage ■ Places of last resort
Preparedness	■ Council/Agency patrols and inspections ■ Declared Fire Danger Period and restrictions ■ Total Fire Ban Day declarations
Community	■ Public awareness programs ■ Community information and warnings ■ Event management plans ■ Risk sharing

OUTCOMES AND ACTIONS

OUTCOMES SOUGHT

- We continue to work towards achieving the objectives and outcomes for bushfire management set out in Table 7.
- Bushfire management in the Nature Parks' reserves is based upon a realistic assessment of risk and what is tolerable and achievable.
- Any risk that is not practical to treat is understood and accepted by the community, fire service and Nature Parks managers.
- People in and around the Nature Parks share responsibility for their own bushfire safety.

ACTIONS

- Continue to review and update the Nature Parks risk management system based upon assessment of progress in implementing this Plan.
- Finalise a MOU with DEECA/Forest Fire Management Victoria.
- Continue representation of the Nature Parks on the Bass Coast Fire Risk Working Group (BCFRWG), which is chaired by council.
- Seek alignment of risk ratings for Nature Parks' values and assets (including environmental values) in municipal and Nature Parks' documents.
- Continue to encourage visitors to take responsibility for their own bushfire safety through participating in community messaging programs by the emergency services.
- Continue to encourage neighbours to take responsibility for their own bushfire safety through participating in community development programs supported by the emergency services.

Environment and cultural heritage protection

MINIMISING HARM

Fire management has the potential to significantly impact on ecological values, cultural heritage and visual amenity. Where practical, fire and fuel management will be carried out in accordance with the following hierarchy:

- Avoid harm to ecological values, cultural heritage and visual amenity.
- Minimise harm where impacts cannot be avoided.
- Improve biodiversity through adoption of ecologically-appropriate fire management regimes (CFA 2011; Fire Ecology Working Group 2004).

The following principles will be used to guide planning of fire management activities.

TABLE 10: PROTECTING AND IMPROVING ECOLOGICAL, AMENITY AND CULTURAL VALUES

Asset to be protected	Management principles (where practical)
All	Development of treatment plans will be guided by information on ecological fire management regimes that identify the preferred season, extent, frequency, interval and intensity of activities.
	Where practical, alternatives such as building improvements are prioritised over vegetation management.
Significant species	Survey prior to new treatments and adjust treatments if required.
	Avoid the use of Class A foam in seabird habitat.
Logs and trees	Avoid damage to retained trees.
	Retain logs and hollow trees for habitat.
Disease and weed spread	Apply appropriate controls including vehicle washdowns and quarantine of infected areas.
Soil and water quality	Exclude waterways and a buffer area from burns or other works.
	Minimise track construction or widening.
	Construct control lines with a minimum of disturbance to the soil surface.
	Locate and construct all control lines to minimise downhill flow of water and sediment. Install cut-off drains to divert water away from control lines and waterways.
	Ensure all control lines are closed to traffic and rehabilitated as soon as they are no longer required for safe fire management.
	Manage blackout to minimise soil disturbance and runoff.
	Avoid the use of Class A foam where there is a risk of chemicals reaching waterways.
Air quality	Use wind direction and notifications to minimise impacts on the community from smoke.
Amenity	Avoid straight lines when removing vegetation.
	Retain visual barriers (e.g. small clumps of vegetation).
	Prioritise removal of understorey vegetation.
	Remove or mulch debris resulting from vegetation removal and avoid build-ups of debris that may impede fuel management or control operations or be unsightly.
Cultural heritage sites	Include consideration of cultural heritage in bushfire mitigation, response and recovery procedures.

IMPROVING BIODIVERSITY THROUGH FIRE MANAGEMENT

Where necessary and practical, we will use fire to maintain or improve biodiversity.

This work will be guided by fire ecology advice provided in vegetation management plans for the Rhyll, woodlands and Cape Woolamai key areas, the *Cape Woolamai Fire Management Plan* and the *Fire Ecology Guide* (CFA 2011).

Any use of fire for biodiversity outcomes will be at the appropriate frequency, intensity, season, extent and patchiness needed to meet biodiversity objectives.

Fire can be a useful tool for weed management, provided it is supported by appropriate follow-up work. We will continue to use fire to assist in management of weeds, including the fire-sensitive invasive Coast Wattle, as part of an integrated approach that includes follow-up weed control and revegetation to deter re-establishment.

Advice provided in vegetation management plans prepared for key areas in the Nature Parks reserves indicates that fire may not be needed in several communities for species to persist. For example, Bird Colony Succulent Herbland is thought to receive sufficient disturbance by nesting birds for regeneration (Brown et al. 1993) and wet scrub relies upon moisture for regeneration.

Large areas in the woodland reserves have been recommended for long-term fire exclusion to benefit from hollow formation as the vegetation ages. It has been recommended in these reports that any burning in these areas should be small scale and low intensity. It has also been suggested that priority should be given to natural fuel reduction that occurs as the forest ages. However, the vegetation plans do emphasise creation of patchiness for diversity of age classes and habitat structure which is important for response to disturbance.

Further work is needed on how to balance the different vegetation management goals with short to medium fuel management needs, including our preference to optimise the extent of asset protection zones. Furthermore we will need to program ongoing monitoring to help refine and balance objectives, strategies and treatments.

To assist design and programming of fire operations, monitoring and review we will consolidate and review existing fire ecology advice from the Key Area Vegetation Plans into a single *Fire Ecology Policy and Procedure* for the whole Nature Parks.

OUTCOMES AND ACTIONS

OUTCOMES SOUGHT

- Damage to air, water, soil, flora and fauna and scenic amenity as a result of inappropriate fire and fire management activities is minimised.
- Where necessary and practical, we will use fire to maintain or improve biodiversity.
- Vegetation removal for fire management complies with legal obligations and best practice.

ACTIONS

- Incorporate the checklist of principles for protecting and improving ecological and amenity values (Table 10) in operational procedures.
- Communicate and reinforce environmental protection principles in internal training and pre-season briefings with CFA brigades and other stakeholders.
- Review and consolidate existing fire ecology advice from the *Key Area Vegetation Plans* into a single *Fire Ecology Policy and Procedure* for the whole Nature Parks land.
- Investigate the implications of recent changes to the *Flora and Fauna Guarantee Act 1988*, which points out that public authorities have a duty to consider biodiversity impacts (DELWP 2020a).
- Clarify requirements for obtaining biodiversity permits for fuel management operations and consolidate in operational procedures.

Reducing fire ignition

BACKGROUND

We use a variety of approaches to minimise the risk of fires starting in the Nature Parks. These include education, restricting access, restriction of activities by staff, contractors and volunteers, managing potential ignition sources, and if required, enforcement of Nature Parks' regulations, as follows:

- Lighting of fires by visitors is prohibited in the Nature Parks, except under permit.
- Fire ban signs are placed at all Nature Parks' reserves entry points.
- Smoking is prohibited in the main visitor attractions (Penguin Parade, Koala Conservation Reserve, the Nobbies Centre and Churchill Island).
- Large sections of the Nature Park's land are closed to visitor access through *Set Aside Determinations* made under the *Crown Land (Reserves) (Phillip Island Nature Park) Regulations 2021*. The determinations cover all areas of the Nature Parks' land.
- The Nature Parks may be closed on days of elevated fire danger in accordance with the *Nature Parks Severe Weather and Reserve Closure Procedure*.
- Contractors are briefed on how to minimise bushfire risk and what to do in the event of fire.
- The use of fire as a management tool by staff and contractors must comply with the *Nature Parks Planned Burning Procedure*.
- Hot works including welding, grinding, slashing and chainsaw work are carried out in accordance with the *Nature Parks Permit to Work System*.
- Hot works are prohibited on days forecast to be High fire danger (AFDRS) or above.

TABLE 11: REGULATION OF IGNITION OF FIRES IN THE NATURE PARKS

TIME OF YEAR	FIRE RESTRICTIONS
Outside the Fire Danger Period (cooler months)	Bass Coast Shire guidelines should be followed for burning off activities.
During the Fire Danger Period (as declared by CFA during the warmer months)	CFA Act restrictions apply regarding the use of fire and activities with the potential to start a fire. A permit is required from CFA or Bass Coast Shire Council for certain activities.
Total Fire Ban days (as declared by CFA for the Central Fire District on days of elevated fire danger, generally Severe fire danger (AFDRS) and above)	Stringent CFA Act restrictions apply on the use of fire and for activities with the potential to start a fire. Open air fires prohibited. Total Fire Ban rules and guidelines must be followed.
All year	Permit required from Phillip Island Nature Parks to light, kindle or maintain a fire under Regulation 19 of the *Crown Land (Reserves) (Phillip Island Nature Park) Regulations 2010*. In this regulation 'fire' includes a fire lit, kindled or maintained in a barbecue or other cooking or heating device that uses solid, liquid or gaseous fuel.

TABLE 12: REGULATION OF ENTRY AND MOVEMENT OF PEOPLE IN THE NATURE PARKS

Source: Crown Land (Reserves) (Phillip Island Nature Park) Regulations 2021

REGULATION	RESTRICTIONS
17	Control the days and times that the Nature Parks is open to the public.
19	Specify any area of the Nature Parks as a prohibited access area or a restricted access area.
30	Specify any area of the Nature Parks as an area where the driving or operation of vehicles, or types of vehicles, is prohibited or restricted.
20	Set aside parts of the Nature Parks as pathways and erect signs or notices or markings relating to those pathways.
21	Use an authorised officer to direct people to leave the Nature Parks or remain in the reserves or a part of the reserves for the reasons of safety.

TABLE 13: NATURE PARKS RESPONSE TO THE FORECAST FIRE DANGER RATING (AFDR)

Fire Danger Rating (AFDR) declared for the Central Fire District	National community bushfire messaging (abbreviated)	Fire Behaviour Index (FBI)	Total Fire Ban	Nature Parks response to the forecast Fire Danger rating (AFDR)							
				Nature Parks closures	Patrols (staff + GFF + equipment)	Visitor communications	Staff/volunteer movements	Hot works	Vehicles	Situational awareness	Fire agency contact
Catastrophic	For your survival, leave bushfire risk areas	100+	Yes	Yes	Only if risk to staff deemed acceptable	Publicise restrictions	Avoid vegetated areas particularly in the heat of the day, unless for patrols as outlined in this table	No	Separate from buildings by 10m+	Every half hour, Chief Warden (or delegate) to monitor for incidents in and near the Nature Parks: • Vic Emergency website and/or the Vic Emergency app • Local ABC Emergency broadcaster ABC Melbourne (774 AM)	Chief Warden (or delegate) to participate in ICC briefing
Extreme	Take action now to protect life and property Reconsider travel through bushfire risk areas	50-99	Yes	Discourage visits to vegetated areas Consider closures in consultation with emergency services	Only if risk to staff deemed acceptable	Publicise restrictions and advise caution	Avoid vegetated areas particularly in the heat of the day, unless for patrols as outlined in this table	No	Separate from buildings by 10m+		Chief Warden (or delegate) may participate in ICC briefing
High	Be ready to act The safest option is to avoid bushfire risk areas	24-49	At discretion of CFA	No action	Yes	Publicise restrictions and advise caution	Exercise caution when visiting vegetated areas	Inside buildings only	No action	Every one-two hours, Chief Warden (or delegate) to monitor for incidents in and near the Nature Parks: • Vic Emergency website and/or the Vic Emergency app • Local ABC Emergency broadcaster ABC Melbourne (774 AM)	At discretion of Nature Parks
Moderate	Plan + prepare	12-23	No	No action	No action	No action	No action	Exercise caution in the open air	No action	No action	No contact
No rating	No action	0-11	No	No action	No action	No action	No action	No action	No action	No action	No contact

OUTCOMES AND ACTIONS

OUTCOMES SOUGHT

- Reduced incidence of bushfires in the Nature Parks' reserves caused by Nature Parks staff, volunteers, contractors, visitors and other potential sources.

ACTIONS

- Review, at least annually, programs and tools aimed at maintaining awareness of contractors and visitors of fire bans, smoking restrictions, Nature Parks closures, activity restrictions and what to do in the event of fire.
- Continue to ensure that all use of fire in the Nature Parks complies with regulatory requirements and the *Nature Parks Planned Burning Procedure*.
- Review, at least annually, the *Nature Parks Planned Burning Procedure* and the *Nature Parks Severe Weather and Park Closure Policy* to ensure that they reflect best practice and risk management needs.

Hazard management

HAZARD MANAGEMENT

This section provides further detail on the main hazard reduction strategies.

BACKGROUND

Hazard management is an important part of our approach to reducing the threats posed by bushfire. It is based upon the risk assessment provided in Table 6 and is guided by what is practical and achievable. It will be carried out as part of the broader program of vegetation management that is currently in place within the Nature Parks' land.

Hazard management will be based upon fire management zones which are described on page 24 and mapped in Attachment A. Hazard management works will be designed to meet the targets set out in this Plan. They will be documented in the rolling three-year Fire Operations Plan (FOP) and submitted for inclusion in the state-wide all-agency Joint Fuel Management Program (JFMP).

We will continue to use a range of treatments to manage fuel and prioritise the use of environmentally sensitive approaches wherever practical. Page 25 describes the methods that we use, and their relevant advantages and disadvantages.

Hazard management that involves vegetation removal will be carried out in accordance with approvals that may be required under the Bass Coast Planning Scheme (Clause 52.17 Native Vegetation). In accordance with duties for public authorities under section 4B of the *Flora and Fauna Guarantee Act 1988* we will also consider biodiversity impacts (DELWP 2020a) and apply for biodiversity permits as necessary. Other legislation may also be relevant.


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Image 3-6: non-burn fuel treatments – thinning, mulching and defendable space around buildings (including low flammability vegetation), slashed fuel breaks.
Image 7-9: protection of timber boardwalks through sprinklers and low flammability vegetation, relocation of vehicles on days of elevated fire danger.
Image 10-11: fuel reduction and ecological burning.

FIRE MANAGEMENT ZONES

The following Fire Management Zones will be used to guide fuel management works:

- Asset Protection Zone
- Landscape Management Zone
- Exclusion Zone

Zone locations are based upon assessments of risk to life, property, the environment, and what can be practically achieved through fuel management. Zones are shown in Attachment A. The aim and features of each zone are summarised below.

ASSET PROTECTION ZONE

Asset Protection Zones aim to reduce the impacts of flame and radiant heat and local embers on assets in the event of a bushfire. The design of APZs will be guided by the Australian Standard AS 3959 *Construction of Buildings in Bushfire Prone Areas* or other modelling of bushfire behaviour. Fuel will be reduced as far as practical (generally to moderate overall fuel hazard). While bushfire protection is prioritised in this zone, where practical, impacts on the environment from fuel management works will also be minimised as described in Table 10.

Where appropriate, risk will also be shared as described on page 18. APZs around the Penguin Parade Visitor Centre and the Wildlife Rehabilitation Centre will implement requirements of planning permits for defendable space. In general, APZs around residential areas will be designed to reduce radiant heat to a maximum of BAL12.5, based on most weather observations from the last 3 decades instead of the FFDI of 100 applied to new development in the Victorian Planning System. This target will also be applied to other buildings where practical.

LANDSCAPE MANAGEMENT ZONE

Landscape Management Zones include all areas of the Nature Parks that are not included in either Asset Protection Zones or Exclusion Zones. Where practical, in this zone, fire management aims to achieve both bushfire safety and ecological outcomes. Bushfire safety outcomes could include reduced ember density and slowing of potentially long runs of fire. Ecological outcomes could include improved vegetation and habitat diversity through introduction of appropriate fire regimes and reduction of damaging bushfire intensities.

EXCLUSION ZONE

Fuel Management Exclusion Zones cover areas that are sensitive to disturbance by machinery or fire, such as Little Penguin nesting areas, wetlands or dunes. Generally, only sensitive manual fuel management will be carried out in this zone and only when supported by ecological risk assessment. Planned fire and mechanical treatment will generally be excluded.

Figure 7: Fire Management Zones and priorities

Adapted from Code of Practice for Bushfire Management on Public Land (DEECA 2022)

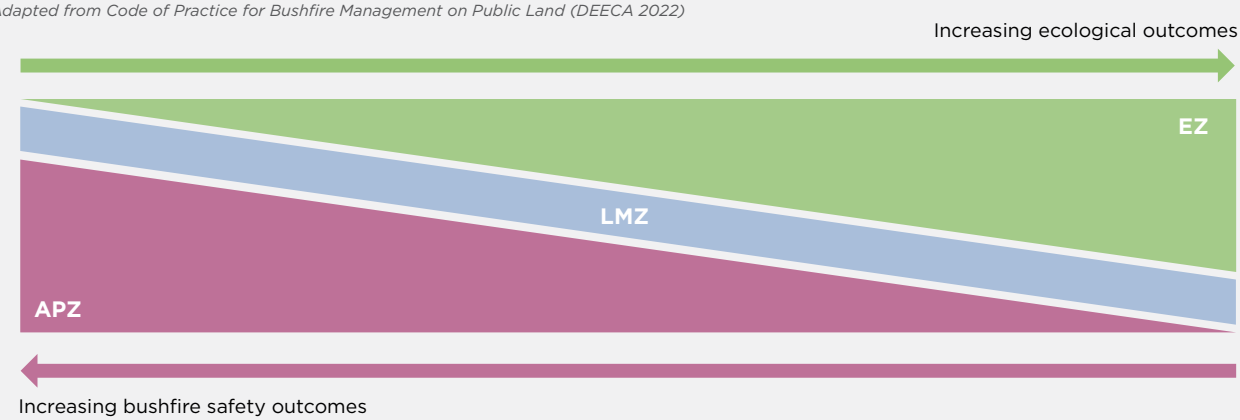

Image 12-13: Asset Protection Zone adjacent to Silverleaves

The Asset Protection Zone maintained adjacent to the residential area at Silverleaves provides a buffer between existing houses and dense vegetation in the Nature Parks, resulting in reduced radiant heat impacts.

TABLE 14: FIRE MANAGEMENT ZONES AND INDICATIVE TARGETS

Adapted from Gippsland Bushfire Management Strategy 2020 (DEECA 2020b), Bass Coast Planning Scheme and AS 3959-2018

	ASSET PROTECTION ZONE (APZ)	LANDSCAPE MANAGEMENT ZONE (LMZ)	EXCLUSION ZONE (EZ)
Aim	■ Provide localised protection to human life.	■ Reduce overall fuel hazard. ■ Support ecological and land management objectives.	■ Exclusion of potentially detrimental activities from sensitive areas.
Typical placement	■ Around key assets	■ Landscape not covered by APZ or EZ	■ Sensitive habitat e.g. Little Penguin and shearwater habitat ■ Dunes, wetlands
Treatment goal	■ Reduce ember attack. ■ Residential areas outside the Nature Parks' land: radiant heat <12.5kW/m2 (under FFDI of 49, which includes >99% of risky days observed to date). ■ Penguin Parade Visitor Centre and Wildlife Rehabilitation Centre: compliance with permit conditions. ■ Other Nature Parks' buildings: where practical, meet radiant heat targets for residential buildings where practical, taking the use of the building into account.	■ Reduce treatable fuel. ■ Assist fire control. ■ Achieve ecologically beneficial fire regimes.	■ Not applicable - ecological values take precedence over fuel treatment.
Primary fuel management methods	■ Non-burn fuel treatments (slashing, mulching, thinning, water). ■ Low flammability vegetation (such as Bower Spinach).	■ Non-burn fuel treatments (slashing, mulching, thinning, water). ■ Fire.	■ No mechanical treatment except for road verges or where supported by thorough ecological risk assessment. ■ Sensitive manual treatment where supported by ecological risk assessment. ■ No planned fire. ■ Modification of habitat structure by introducing or increasing the cover of low flammability vegetation such as Bower Spinach (*Tetragonia implexicoma*).
Typical fuel treatment outcomes	■ Maximum of Low to Moderate overall fuel hazard or as specified in planning and/or building controls. ■ Reduced fuel availability (through water-based systems or low flammability vegetation). ■ Hard surfaces (roads).	■ Varies depending on land management and fire management objectives. ■ Fire (if used) is low intensity and covers less than 50% of the site. ■ Fuel is fragmented including through permanent fuel breaks.	■ Ecological values and dune stability are not compromised by fuel treatment including use of low flammability vegetation. ■ Reduced fuel availability.

HAZARD MANAGEMENT METHODS

We will continue to use fire to manage fuel hazards where practical, primarily where it can improve biodiversity. However, planned burning is challenging due to the narrow window of opportunity for safe burning, which is expected to decrease further with climate change.

Like many other land managers around the world, our fuel management strategy in asset protection zones will rely upon 'non-burn fuel treatments' including thinning, mulching and slashing. We will also continue to explore the use of innovative treatments which protect habitat including weed management, replacement of flammable species, and use of water to create 'wet fuel breaks'. Mechanical methods will be avoided in sensitive areas such as Little Penguin habitat.

Table 15 provides a snapshot of the methods that we will continue to use to manage fuel, and their advantages and disadvantages. We will also continue to manage the threat from burning vehicles which pose a significant threat to buildings and access and egress routes, through management of parking on days of higher fire danger.

TABLE 15: FUEL MANAGEMENT METHODS AND SELECTION CRITERIA

METHOD	EFFECTIVENESS	RELIABILITY	ECOLOGICAL	AMENITY	FIRE SKILLS	COST	ISSUES
Slashing							■ Requires frequent maintenance
Mulching of understory fuel							■ Australian studies confirm community acceptance of visual changes ■ Can be used in broader areas ■ Potential impacts on soil stability ■ Long-term data required to understand long-term effects on ecosystems
Thinning							■ May require selective, manual removal which is costly
Weed management							■ May require selective, manual removal which is costly
Flammable species substitution							■ Reduces flammable species including invasive natives ■ May require selective, manual removal which is costly
Fire							■ Longer-term reduction of fuel ■ Narrow window of opportunity ■ Fire outside the Tolerable Fire Interval (TFI) can impact on species diversity
Wet fuel break							■ Moisture reduces the availability of fuel ■ Effectiveness expected to be limited by high wind speeds on higher fire danger days

Green = potentially best outcome, burgundy = potentially worst outcome

OUTCOMES AND ACTIONS

OUTCOMES SOUGHT

- Reduced impact of a bushfire on human life, property, communities, infrastructure and wildlife.
- Increased ecological health and resilience.
- Compliance with planning controls for vegetation removal.
- Threat from vehicles to buildings and access/egress routes is managed.

ACTIONS

- Work towards provision of sensitive asset protection zones around Nature Parks' buildings based on assessment of hazards within the mapped assessment areas shown in Attachment A and targets set out in Table 14. Where APZ standards cannot be fully achieved consult CFA to ensure the amount of fuel reduction undertaken by the Nature Parks meets firefighter needs, taking into account other treatments and the fire danger ratings under which they can be effective.
- Investigate the feasibility of extending wet fuel breaks around at the Penguin Parade Visitor Centre in order to further improve the ability of the buildings to provide emergency shelter.
- Maintain asset protection zones on the Nature Parks' interface with the following settlements: Silverleaves, Newhaven and Cape Woolamai.
- Provide north-south fuel breaks on the Summerland Peninsula to improve access for control and assist management of head and flank fire at lower FDRs. Trial the replacement of flammable vegetation species to create these breaks.
- Plan fuel management in the Landscape Management Zone to reduce fire spread and intensity in a way that is, as far as possible, consistent with the proposed *Fire Ecology Policy and Procedure* and advice contained in the *Vegetation Management Plans* for the key areas.
- Schedule works required to implement the zones and their targets in the 3-year rolling *Fire Operations Plan* and the Joint Fuel Management Program (JFMP).
- Maintain procedures for managing fuel management activities that implement the commitments set out in this Plan.
- Restrict parking and access/egress routes on days of higher fire risk to limit potential impacts from burning vehicles.

Being prepared for fire

RESOURCES FOR PATROL AND FIRE ATTACK

Resources are maintained in readiness for bushfire attack, as set out in the *Nature Parks Risk Register* and as follows:

- On total fire ban days, one slip-on fire unit is based at Summerland Peninsula, one at Koala Conservation Reserve and one at Churchill Island. A fourth slip-on unit remains mobile. The Ranger in Charge rosters two qualified staff to each unit. These units are available for first attack on fire in or close to the Nature Parks' land, upon request, to support CFA once CFA assumes control of the fire.
- Qualified staff are those trained and accredited to the General Firefighter (GFF) qualification. The Nature Parks aims to have at least ten staff with this qualification throughout the fire danger period each year.
- Regular patrols are conducted based upon the forecast fire danger rating (AFDRS).
- Familiarisation sessions are conducted annually with local CFA brigades located at Cowes and San Remo.
- Pre-season arrangements, including access to aircraft for patrol and first attack are confirmed annually with senior CFA staff.
- Water supplies that are independent of the reticulated supply are maintained in strategic locations across the Nature Parks.
- Access roads and tracks are maintained as shown in the *Fire Operations Plan*. All nominated tracks are maintained in a suitable condition for first attack by slip-on units. Selected access routes are maintained in an all-weather condition suitable for access by CFA tankers to standards shown in Table 16.

RESOURCES FOR RECOVERY

Resources are maintained in readiness for bushfire recovery as follows:

- Pre-season arrangements for recovery are confirmed annually with Bass Coast Shire and the Nature Parks' Wildlife Rehabilitation Centre

VISITOR SAFETY

Key visitor sites in the Nature Parks, with the highest number of visitors are the Penguin Parade, the Koala Conservation Reserve and Churchill Island. Visitors to the Nature Parks are also widely dispersed over multiple locations, including high-use bushland locations such as the Cape Woolamai carpark where bushfire management works are not practical due to the steep and erodible setting.

Visitor safety is managed through a combination of education, risk sharing and Nature Parks closures with the aim of reducing visitor numbers and limiting their locations to places where their safety can be more readily managed. Visitor management is guided by community messaging for the AFDRS as summarised in Table 13, as follows:

- Promotional material for the Nature Parks includes messages that reinforce the need for visitors to be aware of bushfire risk and to take responsibility for their own safety.
- Visitors are discouraged from travelling to the Nature Parks on days of Extreme fire danger (AFDRS).
- Nature Parks closures are considered for forecasts of Extreme fire danger (AFDRS) and TFBs.
- In accordance with the *Nature Parks Severe Weather and Reserve Closure Policy*, the Nature Parks is closed on days of Catastrophic fire danger.

At present emergency management procedures for key visitor centres rely solely upon evacuation, not sheltering. Regardless of the size of a fire, people may be safer remaining in a protected location on-site rather than trying to evacuate as a bushfire approaches. We will investigate improvements needed at the higher risk sites (Penguin Parade and the Nobbies Visitor Centres and the Koala Conservation Reserve) to enhance their ability to provide shelter and to minimise the amount of defendable space required to protect buildings.

OTHER PRE-SEASON ARRANGEMENTS

- Pre-season inspections are carried out to check that asset protection zones and other fuel management in the Nature Parks' reserves is carried out to standards set out in Table 14.
- Pre-season inspections are also carried out to check that the wet fuel breaks at the Penguin Parade and the Koala Conservation Reserve are fully functional.
- Nature Parks staff participate in Property Advice Visits coordinated by CFA to maintain relationships and to support fire preparedness by landholders adjacent to the Nature Parks' land.

TABLE 16: TANKER ACCESS (FOR 8.8M VEHICLE)

Source: Standard planning permit conditions (CFA 2015b)

Curves	Minimum inner radius of 10m
Average grade	1 in 7 (14.4% or 8.1 degrees)
Maximum grade	1 in 5 (20% or 11.3 degrees) for no more than 50m
Trafficable width	3.5m of all-weather construction for 15t load
Clearance	At least 0.5m on each side of the access and 4m above
Maximum dips	1 in 8 (12.5% or 7.1 degrees) entry and exit angle
Turning area	Close to buildings where access is >100m
	8m radius or T or Y head for Austroad design (8.8m vehicle)
Passing bays	At least every 200m
	At least 20m long, minimum trafficable width of 6m

Image 14: Mechanical removal of vegetation at Summerland Peninsula adjacent to the Penguin Parade

OUTCOMES AND ACTIONS

OUTCOMES SOUGHT

- Resources, capabilities, and readiness are maintained to provide first attack on fires that occur on or near the Nature Parks' land and to provide support, if required, once control of a fire has been transferred to CFA.
- Resources are maintained in readiness for bushfire recovery.
- Exposure of visitors to bushfire risk is reduced.
- Bushfire resistance of key buildings is maintained and improved where practical in order to enable sheltering as an alternative to evacuation.
- Neighbours prepare for bushfire.

ACTIONS

- Review, at least annually, the *Nature Parks Risk Register* to ensure that it reflects obligations, best practice and risk management needs related to preparedness.
- Assess building and defendable space options for improving the ability of the Koala Conservation Reserve to survive bushfire attack.
- Assess requirements for maintaining the required Bushfire Attack level rating for BAL-rated buildings (Penguin Parade Visitor Centre and the Wildlife Rehabilitation Centre) as specified in planning and building approvals.
- Include all requirements for maintaining asset protection zones, and BAL-rated buildings in maintenance plans.
- Review the suitability of key buildings including the visitor centres at the Penguin Parade and the Nobbies for sheltering as an alternative to evacuation in the event of fire.
- Continue to monitor preparedness levels.
- Continue to participate in Property Advice Visits with CFA.

Responding to fire - Visitor safety

BACKGROUND

As set out in the objectives of this Plan, the highest priority for bushfire response within the Nature Parks is to protect the lives and health of people (visitors, staff, volunteers and contractors and other community members) in and near the Nature Parks' land.

Arrangements for ensuring visitor safety in the event of a bushfire are documented in the *Nature Parks Emergency Management Plan*. Amongst other things, this plan sets out requirements for staff to:

- Maintain awareness of severe weather conditions, and bushfires.
- Contact and support responsible emergency services.
- Remove people from danger if safe to do so.
- Assess the need to evacuate or shelter-in-place and the risks associated with these options.
- Advise Victoria Police who are responsible for evacuation decisions.
- Implement evacuation or shelter-in-place arrangements by the Chief Warden.

Current emergency response plans focus on protection of people through evacuation. Threats to successful evacuation include the possibility of accidents and the potentially long waits to exit car parks.

OUTCOMES AND ACTIONS

OUTCOMES SOUGHT

RESPONDING TO FIRE– VISITOR SAFETY

In the event of bushfire threatening life, health or safety, affected occupants will be protected through either evacuation or sheltering-in-place in accordance with the *Nature Parks Emergency Plan*.

ACTIONS

- Review, at least annually, the *Nature Parks Emergency Management Plan* to ensure that it reflects obligations, best practice and risk management needs related to visitor safety.
- Ensure Chief Wardens and Area Wardens are aware of and trained in the procedures for responding to fire and evacuations if required.

Responding to fire - Fire control

BACKGROUND

Under s14 of the *CFA Act 1958* the CFA are responsible for the suppression of fires in the Nature Parks. Primary response is provided by CFA brigades located at Cowes and San Remo. Nature Parks works collaboratively with CFA to control unplanned fires within and near its reserves.

Arrangements for fire control in the event of a bushfire are documented in the *Nature Parks Emergency Management Plan* and the *Nature Parks Bushfire Response Procedure*.

Amongst other things, these documents set out requirements for:

- Maintaining awareness of severe weather conditions, and bushfires.
- Contacting 000.
- First attack on the fire.
- Appointing an interim Incident Controller from Nature Parks staff.
- Handing over control of the fire response to the CFA Incident Controller.
- Supporting CFA upon their arrival at the fire with resources if requested.
- Appointment of a Chief Response Advisor who will be the primary liaison person for the Nature Parks throughout the incident, and provide the Incident Management Team with local knowledge, including environmental values that need to be protected.
- Debriefing and learning.

Image 15: Control line construction and blacking out

OUTCOMES AND ACTIONS

OUTCOMES SOUGHT

Upon detection of bushfire in or near the Nature Parks, suppression is safe, fast, determined and thorough, with the aim of controlling the fire in the shortest possible time and with minimum loss or damage to its reserves and other assets.

ACTIONS

- Review, at least annually, the *Nature Parks Emergency Management Plan* and *Nature Parks Bushfire Response Procedure* to ensure that they reflect obligations, risk management needs and best practice related to fire control, including guidance contained in the *Victorian Emergency Operations Handbook* (EMV 2022).
- Carry out a Nature Parks familiarisation exercise with CFA brigades prior to each fire season.

Recovery

BACKGROUND

We recognise that recovery from bushfire incidents needs to run in tandem with bushfire response as soon as conditions permit. Under the *State Emergency Management Plan* (EMV 2021a) (EMV 2021b) the Incident Controller is responsible for initiating recovery activities. As well as assisting bushfire response, the Nature Parks Chief Response Advisor will also liaise with the Incident Controller regarding initiation of recovery activities.

There are several plans in place to guide management of recovery activities:

- The *Bass Coast Municipal Emergency Management Plan* (Bass Coast Shire Council 2020) outlines services provided by Council, which are coordinated by Council's Municipal Recovery Manager including animal welfare and assisting local business function.
- The *Phillip Island Nature Parks Emergency Management Plan* outlines arrangements for business continuity, public relations, service delivery and psychological first aid.
- The *Nature Parks Business Continuity Plan* provides more detail on business recovery.
- Wildlife rehabilitation is carried out in the Nature Parks' Wildlife Rehabilitation Centre in accordance with DEECA requirements, the *Wildlife Shelter and Foster Carer Authorisation Guide* (DELWP 2016), the *Nature Parks Injured Wildlife Procedure and Protocols for the Rescue and Care of Fire-affected Wildlife.*

OUTCOMES AND ACTIONS

OUTCOMES SOUGHT

Nature Parks personnel, Nature Parks operations, and the environment achieve a proper level of function as soon as possible. This includes actions to minimise the harm and suffering of injured wildlife.

ACTIONS

- Review, at least annually, the *Nature Parks Emergency Management Plan, Nature Parks Business Continuity Plan* and the *Nature Parks Injured Wildlife Procedure and Protocols for the Rescue and Care of Fire-affected Wildlife* to ensure that they reflect obligations, best practice and risk management needs.

Continuous improvement

BACKGROUND

As stated in our Strategic Plan, Nature Parks is committed to effective risk management and continuous improvement. This is assisted by a program of monitoring, review and communication.

Monitoring involves looking both inwards and outwards. We will continue to monitor achievement of actions in this Plan, the success of operations and the environmental indicators that guide our planning.

We will also continue to monitor our external environment. Research continues to shape our understanding of bushfire behaviour, management techniques and the best way to address apparently competing objectives. Legislation and other obligations also continue to change over time.

Communication, both internally and externally is also important. We will also continue to develop a shared understanding of the role of environmentally responsible bushfire management within Nature Parks and with our key partners including council, CFA and other emergency service providers, visitors, neighbours and the wider community.

Image 16: Ecological burn at Fishers Wetland

OUTCOMES AND ACTIONS

OUTCOMES SOUGHT

- Compliance with legislation and standards related to bushfire management.
- Continuous improvement of fire management strategies and actions.
- Shared commitment to environmentally responsible bushfire management in the Nature Parks.

ACTIONS

- Report annually to the Nature Parks' Board on the achievement of actions from this plan, opportunities for improvement and any changes in fire management obligations or other matters that may necessitate review of this Plan or significant changes to fire management procedures.
- Complete a full review of this *Fire Management Plan* prior to the 2026-27 Fire danger Period.
- Review the *Nature Parks Risk Management Procedure, Emergency Management Plan, the Reserve Closure Procedure* and other relevant internal documents to ensure they align with this Plan.
- Incorporate relevant features of DEECA and CFA procedures for monitoring the extent and effects of bushfire, bushfire control operations, planned burning and other bushfire management activities in a *Nature Parks Bushfire Monitoring Procedure.*
- Include in this procedure requirements for monitoring indicators required to assist understanding of fuel accumulation and ecological fire needs.
- Continue to develop relationships with researchers and practitioners and follow fire science research, including fire ecology, that may be relevant to the Nature Parks.
- Provide opportunities for learning from bushfire conferences and other sources in development plans for all staff.

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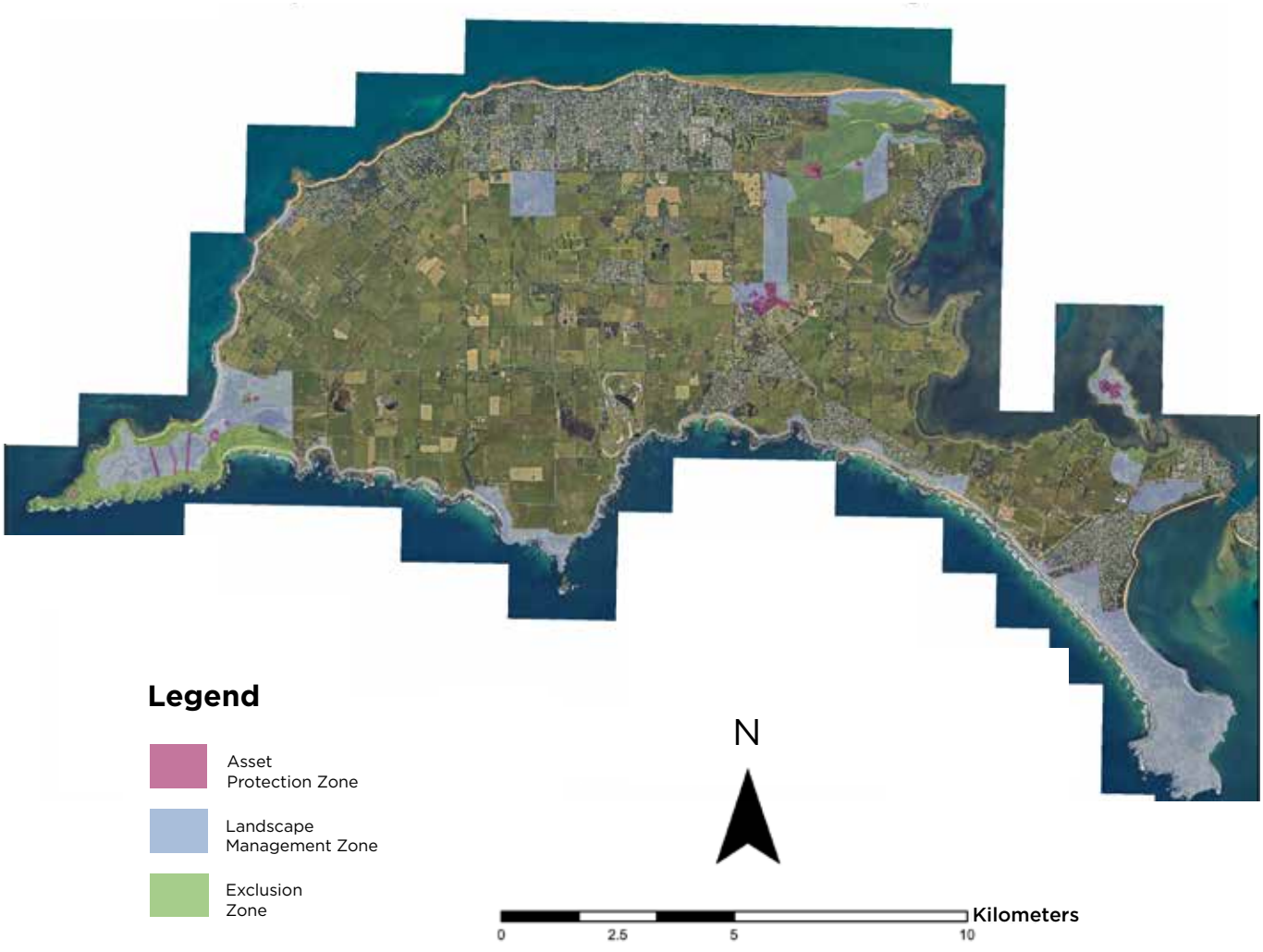
Attachments

ATTACHMENT A: FIRE MANAGEMENT ZONES



SUMMERLAND PENINSULA

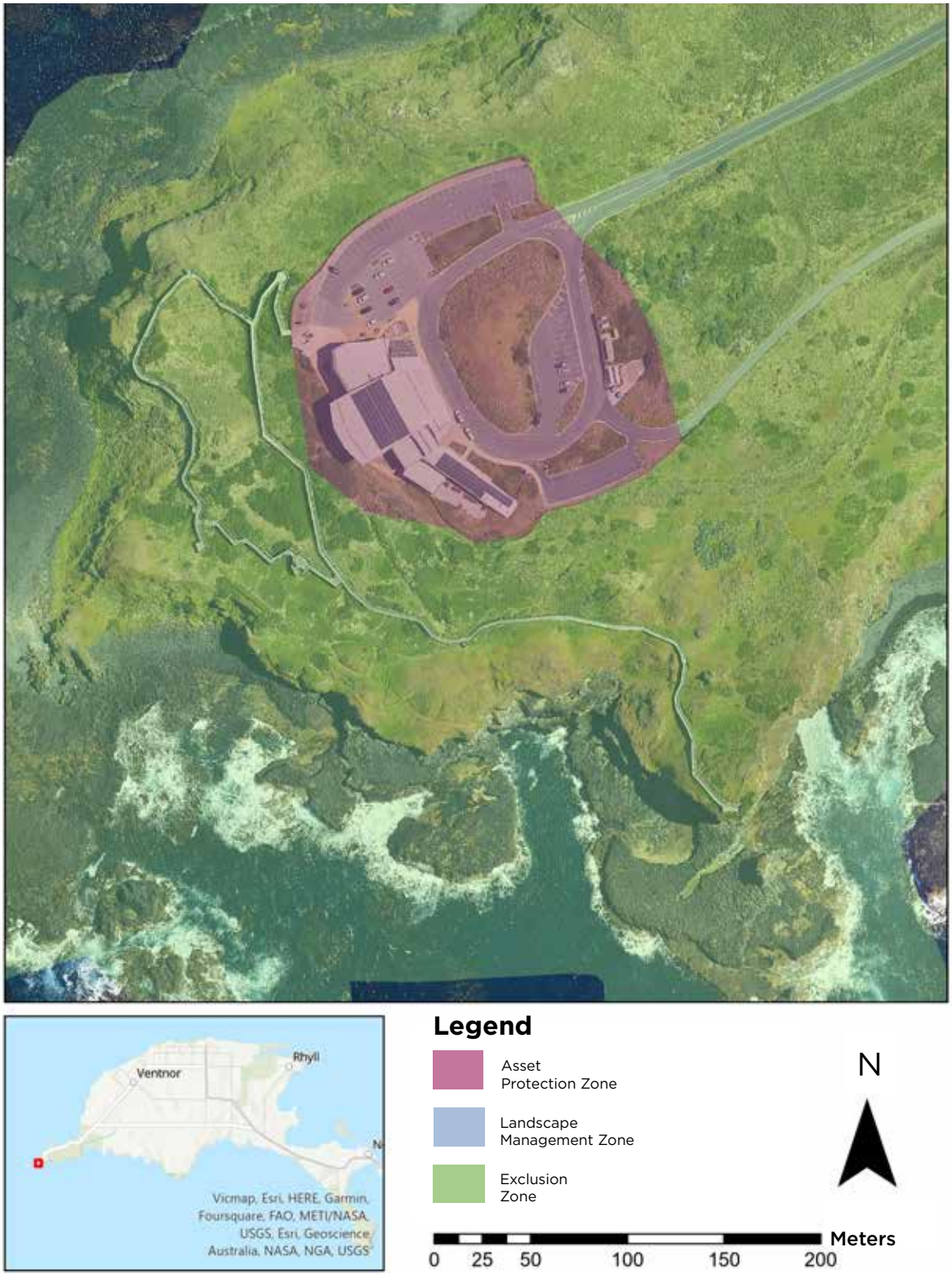
Legend

- Asset Protection Zone
- Landscape Management Zone
- Exclusion Zone

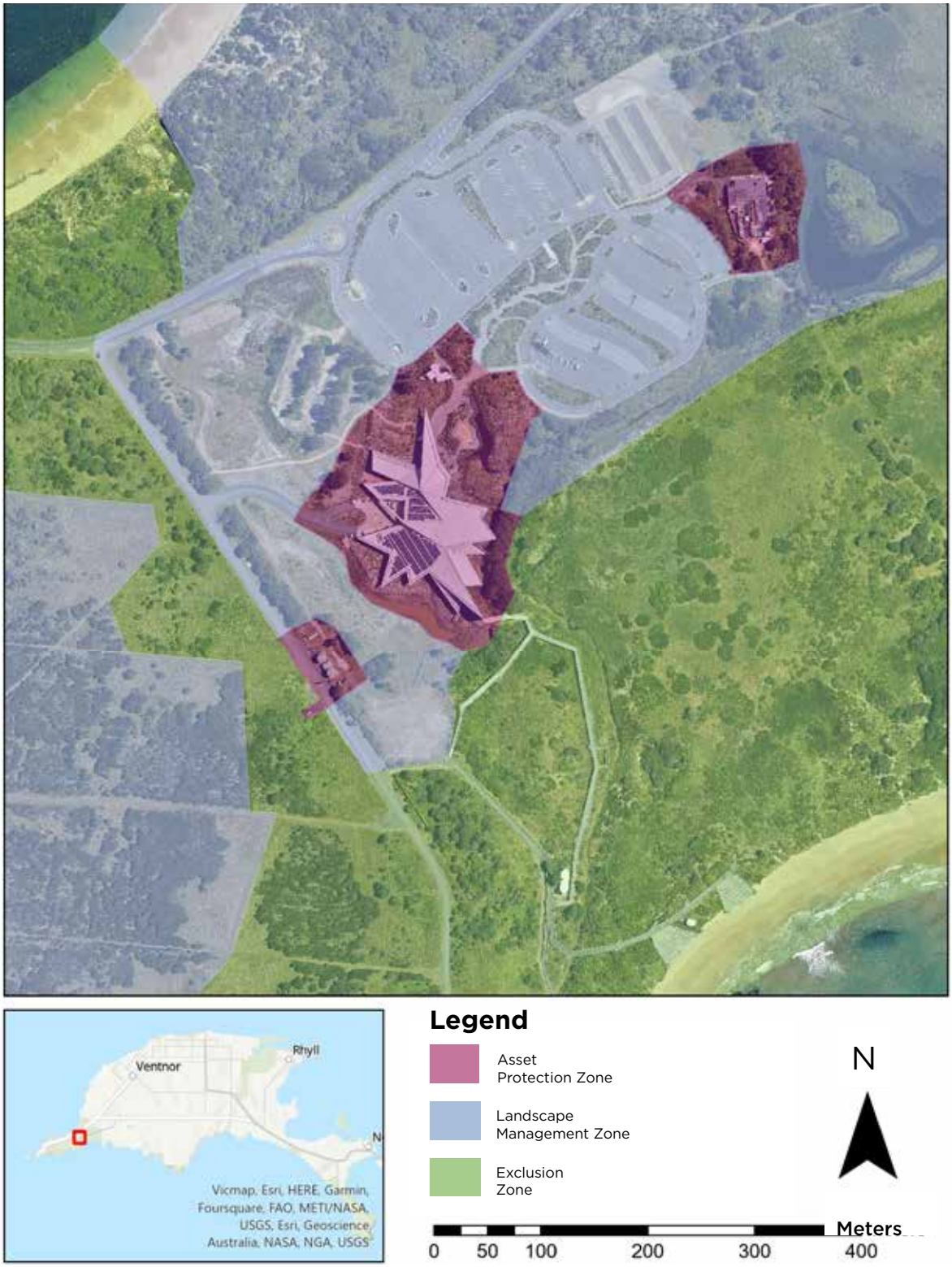
N

0 420 840 1,680 2,520 3,360 Meters

THE NOBBIES CENTRE



PENGUIN PARADE VISITOR CENTRE AND WILDLIFE REHABILITATION CENTRE



SUMMERLAND FARM, SWAN LAKE AND FLYNNS BEACH

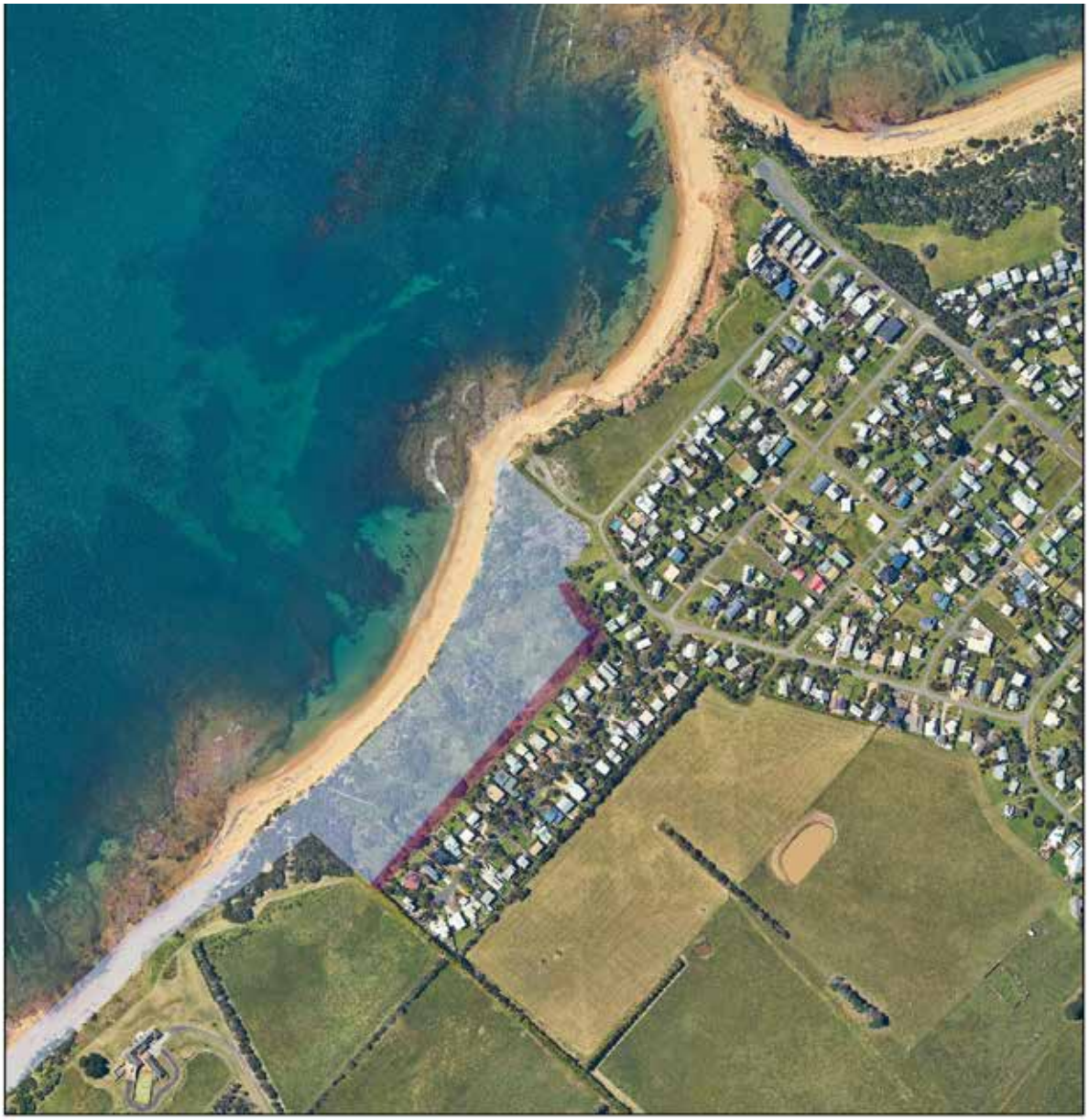
Legend

- Asset Protection Zone
- Landscape Management Zone
- Exclusion Zone

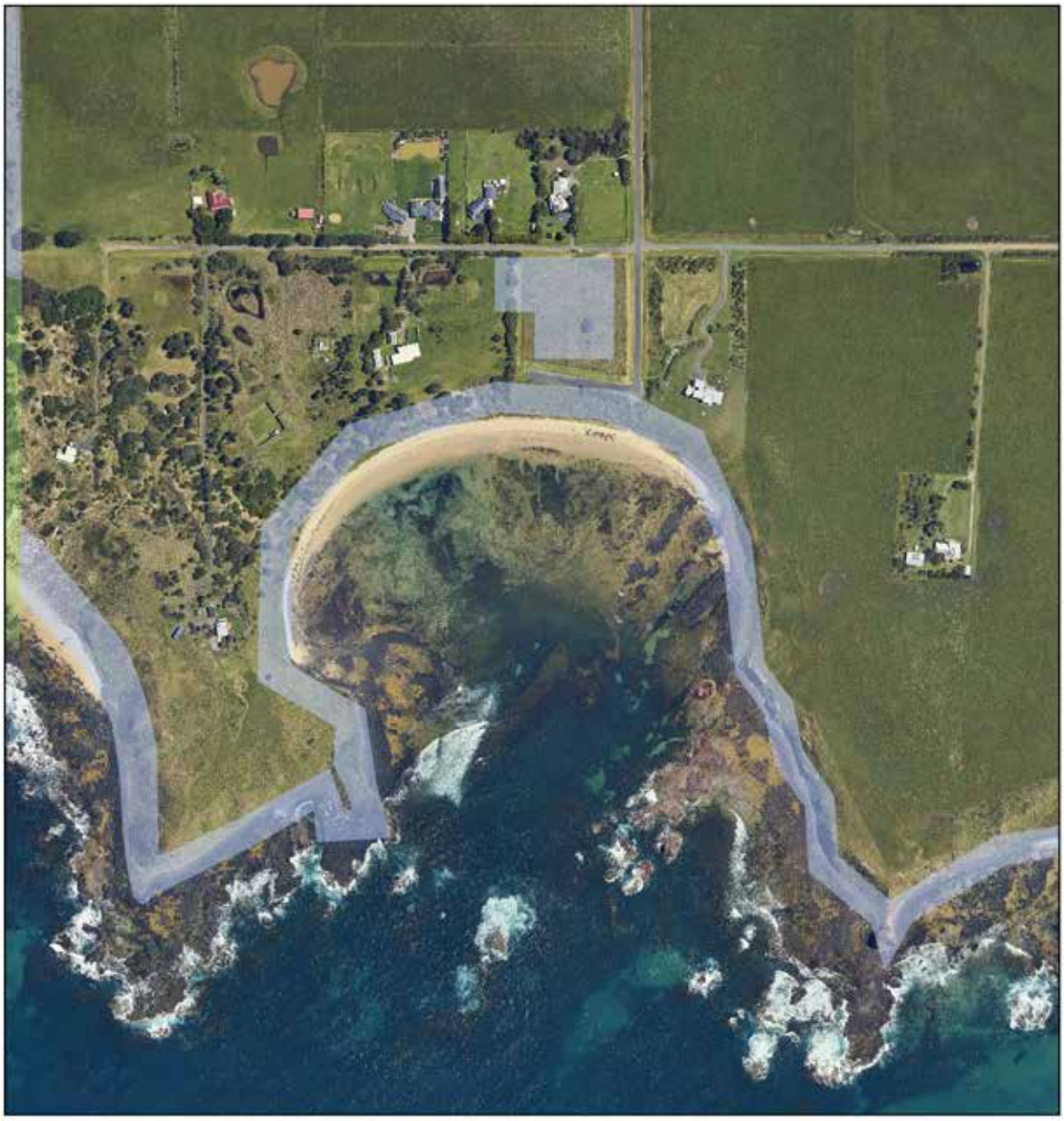
N

0 125 250 500 750 1,000 Meters

VENTNOR (CADOGAN AVE)



KITTY MILLER BAY



Legend

- Asset Protection Zone
- Landscape Management Zone
- Exclusion Zone

N

0 80 160 320 480 **Meters** 640

THORNY AND HUTCHISON BEACHES

Legend

- Asset Protection Zone
- Landscape Management Zone
- Exclusion Zone

N

0 125 250 500 750 **Meters** 1,000

BERRYS BEACH AND PYRAMID ROCK

Legend

Asset Protection Zone

Landscape Management Zone

Exclusion Zone

N

0 165 330 660 990 Meters 1,320

YCW AND SMITHS BEACH

Legend

- Asset Protection Zone
- Landscape Management Zone
- Exclusion Zone

N

0 125 250 500 750 Meters 1,000

SUNDERLAND BAY - SURF BEACH

Legend

- Asset Protection Zone
- Landscape Management Zone
- Exclusion Zone

N

0 270 540 1,080 1,620 2,160 Meters

CAPE WOOLAMAI

CAPE WOOLAMAI PLATEAU

NEWHAVEN AND FISHERS WETLANDS

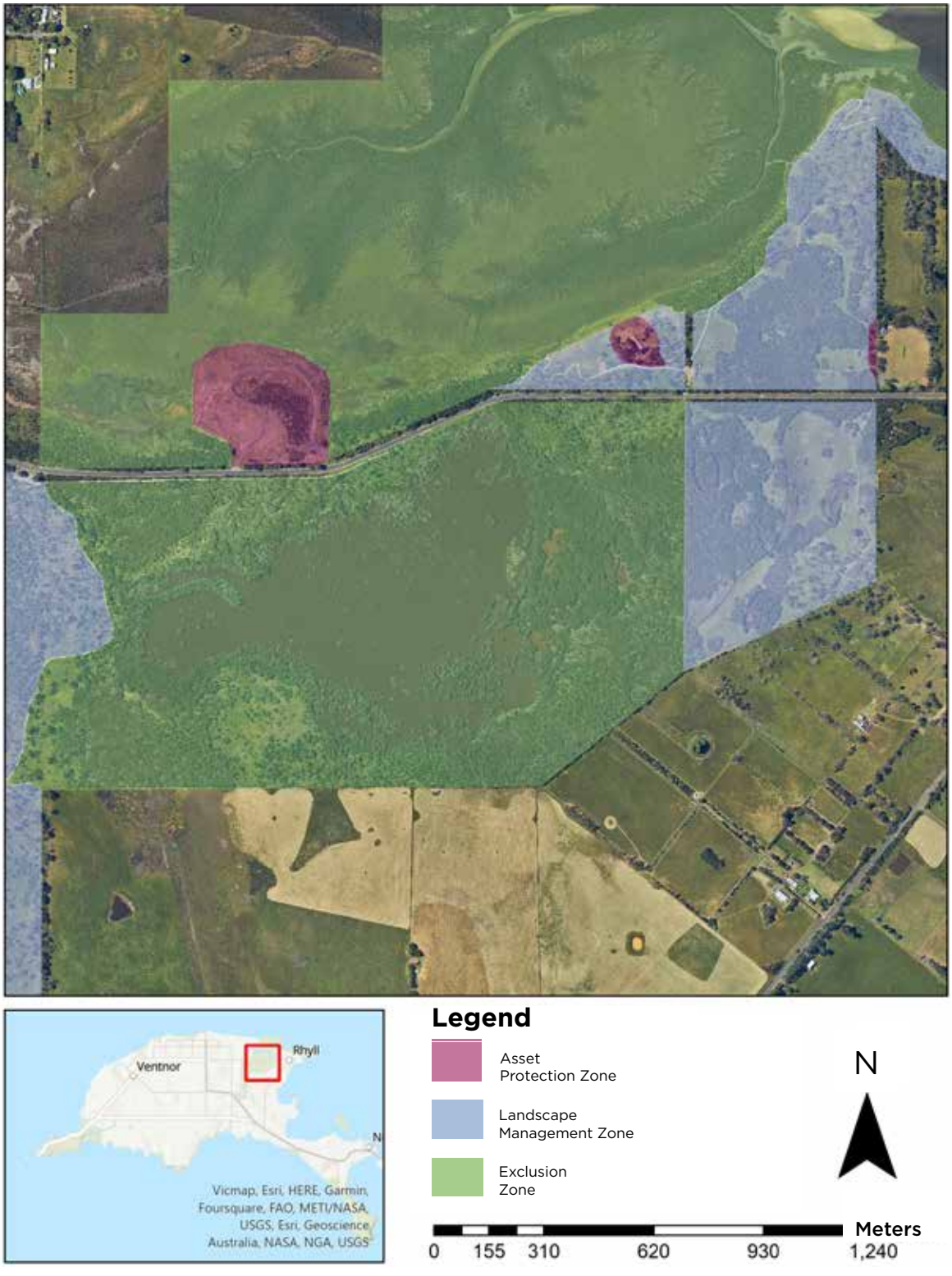
CHURCHILL ISLAND

RHYLL INLET

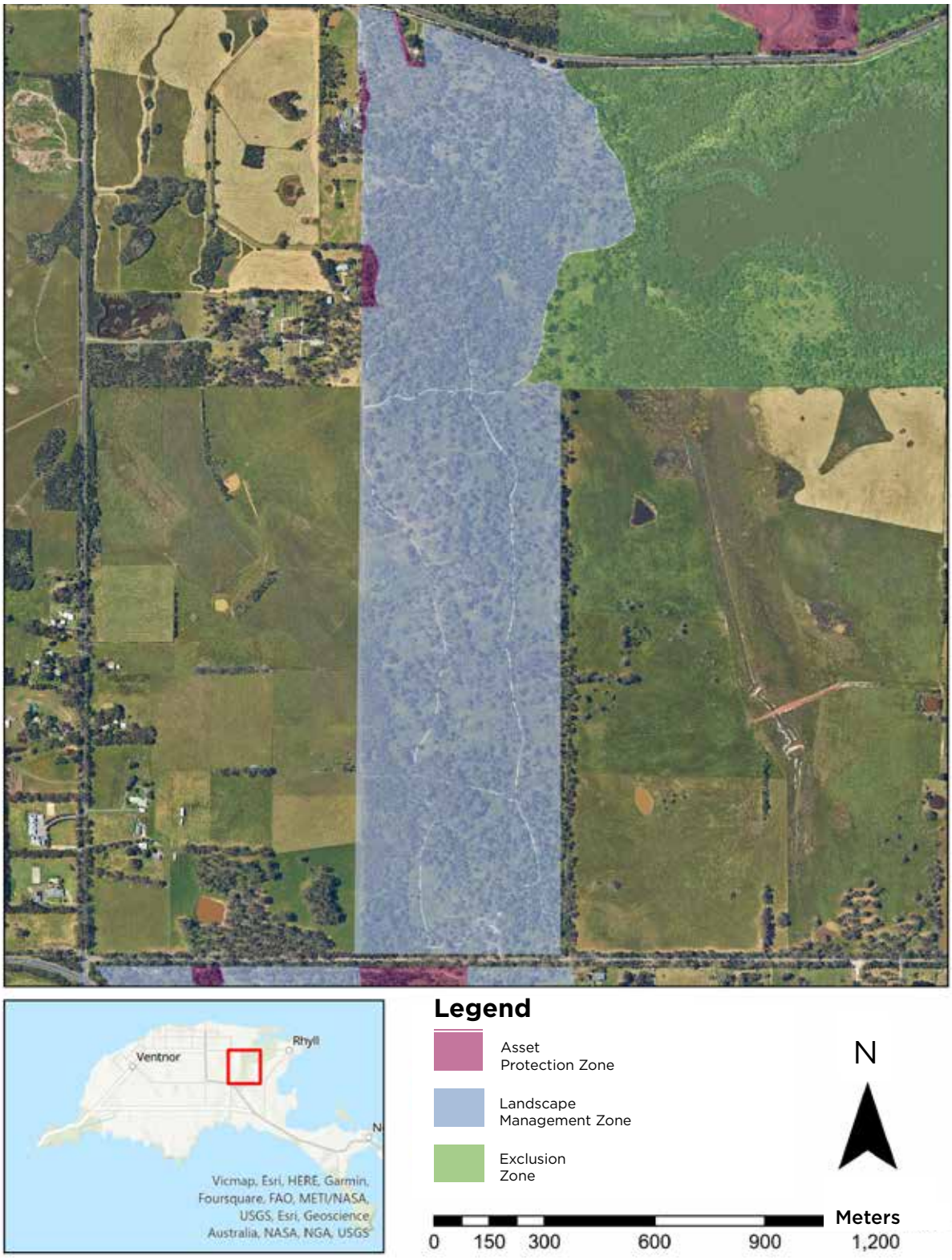

Ventnor
Rhyll
Vicmap, Esri, HERE, Garmin, Foursquare, FAO, METI/NASA, USGS, Esri, Geoscience Australia, NASA, NGA, USGS
Legend
Asset Protection Zone
Landscape Management Zone
Exclusion Zone
N
0 237.5 475 950 1,425 1,900
Meters

SILVERLEAVES

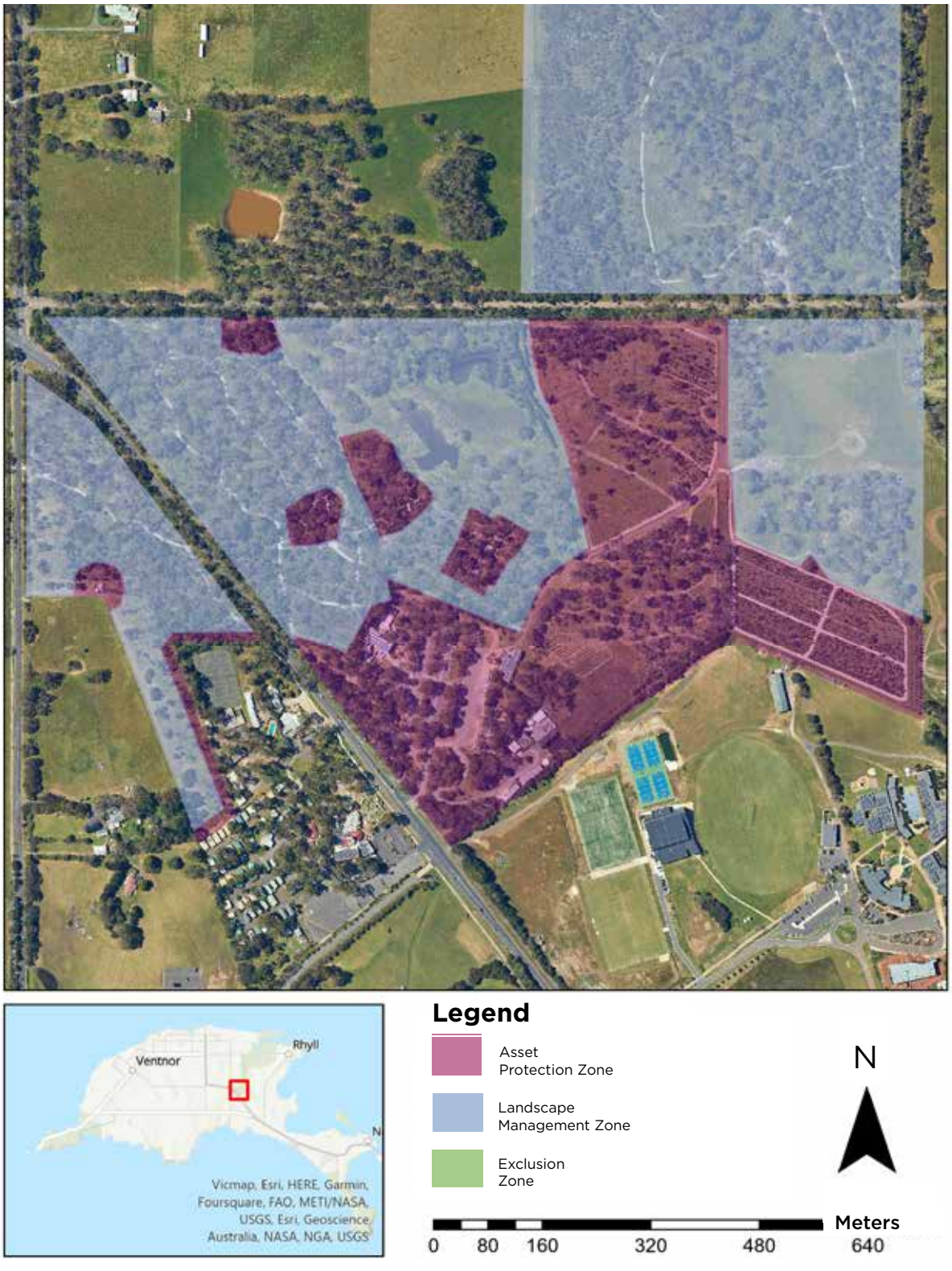
FORMER RHYLL LANDFILL, CONSERVATION HILL, RHYLL AND ROWELL WETLANDS



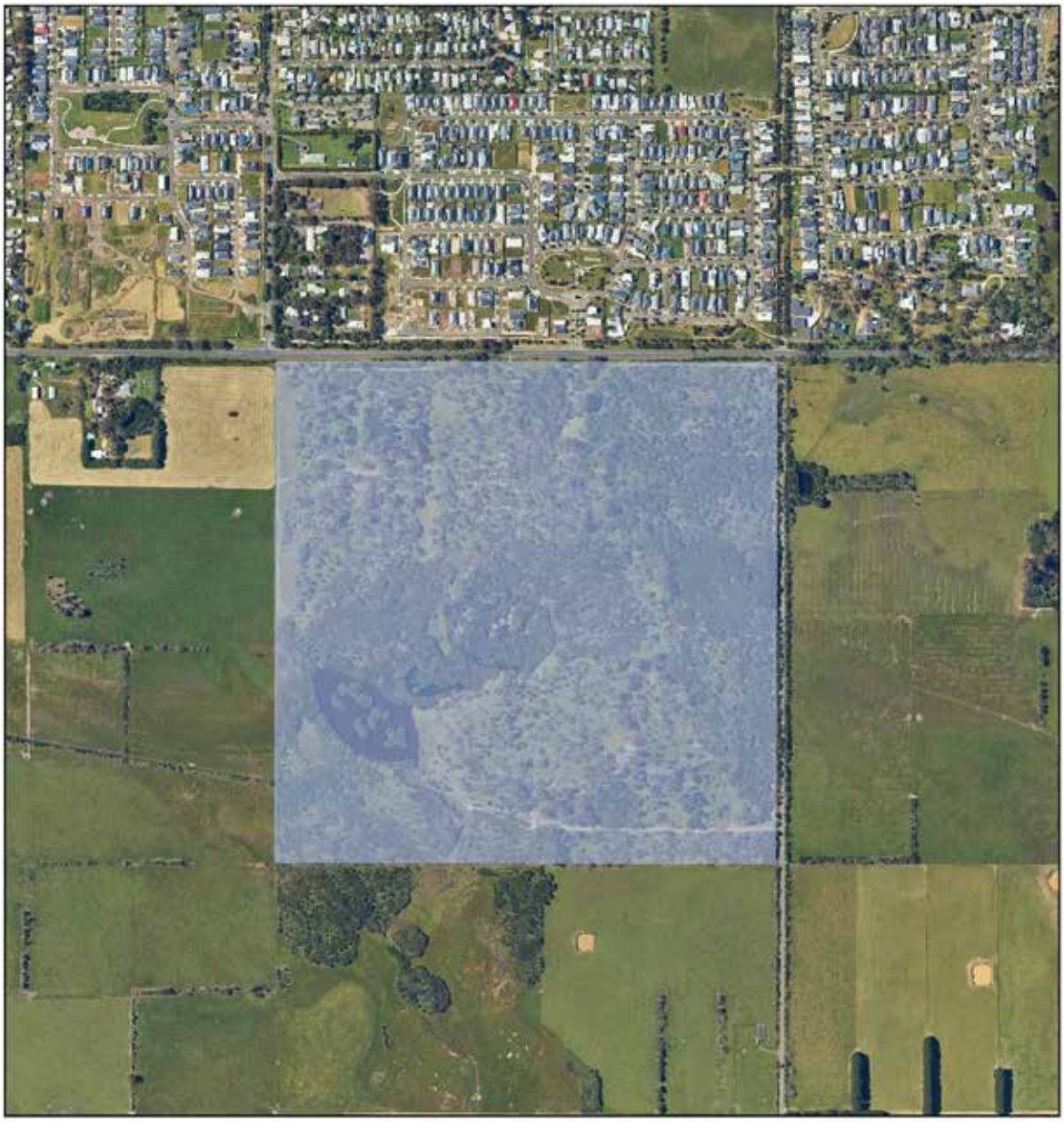
OSWIN ROBERTS RESERVE



KOALA CONSERVATION RESERVE AND FIVEWAYS RESERVE



VENTNOR KOALA RESERVE



Legend

- Asset Protection Zone
- Landscape Management Zone
- Exclusion Zone

N

0 125 250 500 750 **Meters** 1,000

Attachments

ATTACHMENT B1: PHILLIP ISLAND BUSHFIRE HISTORY

Source: Media reports, Nature Parks' records and local knowledge as cited, excludes planned burning, compiled by Oates Environmental Consulting (2010)

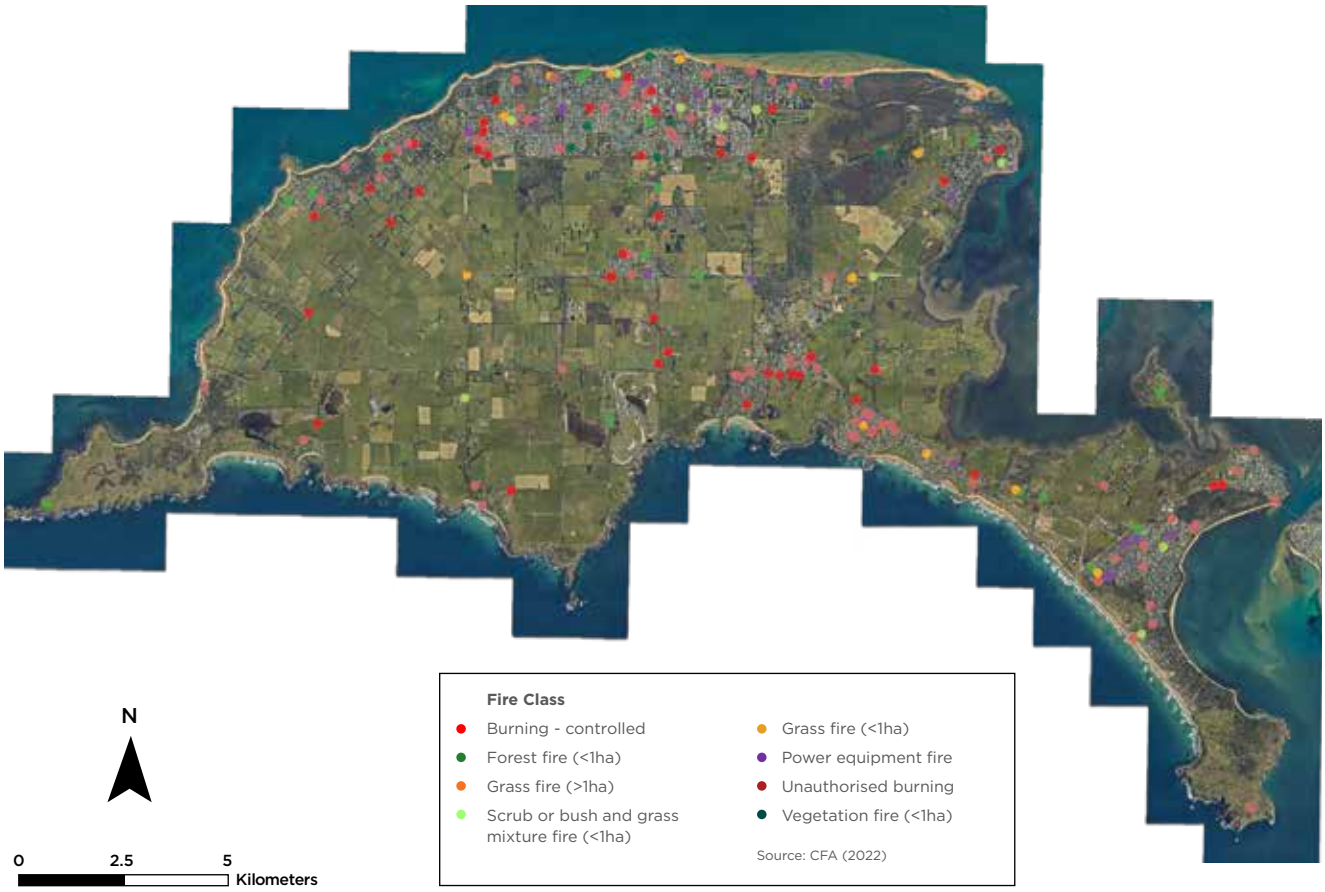
YEAR	DATE	FIRE TYPE	LOCATION	SIZE	STARTED BY	COMMENTS	SOURCE
1824		Camp fire	Coast	Extensive	Sealer	Boultbee was involved in sealing in Bass Strait and found himself on Phillip Island in 1824. He inadvertently set fire to the island after falling asleep near his campfire: "on waking, I found the whole island in a blaze".	Starke, J (ed.) 1986, p24
1827	Prior to 13.1	Bush	Interior of Phillip Island	Extensive	Runaway convicts?	The Island is nearly overrun with timber of a stoutish growth, and low scrub, or thick, but yielding underwood. ... The interior bears in many instances marks of an extensive conflagration, the sealers attribute it to some runaways from Van Diemens Land, or elsewere.	The Monitor, Sydney NSW Sat 13 Jan 1827. "Westernport and the Expedition" (A letter written by a gentleman on board the Dragon of Westernport dated Dec 27 1826 to his friend in Sydney)
1888	Prior to 10.3	Grass	The Nobbies and inland cape	Extensive		A day or two since a fire [burnt] over the whole breadth ot the inland cape, and left it black and bare and permanently blasted, it might well be supposed. For there is no timber growth out here, and the inumerable charred tussocks are like hearse plumes.	Sat 10 March 1888 The Argus. Picturesque Victoria. Br Telemaohus
1893?		Grass	Cape Wollamai	About six acres		"A fire broke out ... on Cape Wollamai, the property of Mr. John Cleland. The fire raged for half a mile along the cape. About six acres of grass, partly English, were burned".	The Argus, Melbourne, Friday 3 February, 1893
1906	22.2	Grass and Bush	Half mile from Cowes	at least 5mi²		The fire was the most disastrous on record, due to a hot north wind carrying the fire at such speed as to render hopeless all attempts to control it.	The Mercury (Hobart, Tas. : 1860-1954), Tuesday 27 February 1906, p3
1922	12.2	Grass	4mi from Cowes on Newhaven Rd			Change of wind caused fire to sweep through a paddock in which the cemetery was situated, little damage was done.	The Argus (Melbourne, Vic. : 1848-1954), Wednesday 15 February 1922, p16
1922	13.2	Tea tree scrub	Back of racecourse	Large area		Carried by strong northerly wind, little serious damage resulted.	The Argus (Melbourne, Vic. : 1848-1954), Wednesday 15 February 1922, p16
1936	17.2	Bush	South side of Phillip Island to Middle Farm (Mrs C Cleeland)				The Argus Wednesday 19 February 1936
1936	18.2	Firestick farming	Newhaven Road, Anderson to Grantville, road to Korumburra		Firestick farming (burning off Gorse in February)	The fire has extended in places far beyond the gorse has done much damage to the eucalyptus and in all probability has destroyed a number of koala bears. [The fires are destructive] to everything that attracts the nature lover and tourist and resulted in bracken growth.	Letter to the editor from James W Barrett, President Town Planning and National Parks Association. The Argus Thursday 20 February 1936
1936	26.2	Grass and bush	North side of the Rhyll road and wooded land adjacent to cemetery		Persons lighting bushfires?	A number of koalas destroyed. "If persons persist in lighting bushfires the bears will soon be extinct."	The Argus (Melbourne, Vic. : 1848-1954), Friday 28 February 1936, pp1, 10
1936	Prior to 5.3			A few hundred acres	Deliberately set fire by persons in order to destroy timber on roads which then enables them to cut up and sell as firewood	1. Eight koalas were incinerated in the fire and not the dozens attributed by outsiders (W Dawson Davie). 2. The estimate of three to four dozen koalas being destroyed reached me on the most reliable authority (James W Barrett). 3. Resulted in blackened stems, dead timber and bracken and a lifeless bush. Scores of attempts to set fire to parts of the Island have been made and a good deal of the limited forest has been destroyed.	1. The Argus (Melbourne, Vic : 1848-1954), Thursday 5 March 1936, p10 2. The Argus (Melbourne, Vic : 1848-1954), Monday 9 March 1936, p10 3. The Argus (Melbourne, Vic :1848-1954), Tuesday 10 March, 1936, p12
1930s or 40s			Oswin Roberts			North-west wind which changed to south-west helping firefighters, possibly deliberately lit. (Harry Cleeland)	
1942/43			Near corner of Coghlan Road near Golf Course back 9 (most likely went through Oswin Roberts Reserve)		Fire started by council?	Burning off scrub, northerly winds.	Oswin Roberts Fire History (McPhee pers. comm.)
1944	15.2	Bush	Sanctuary	two thirds of sanctuary		Although two-thirds of the sanctuary had been swept by fire – the mortality among the Koala bears was not very great.	Tues 15 Feb 1944 The Mercury
1944	29.3		Phillip Island	Minor fires			The Argus 29 March, 1944
1940s			Ventnor Beach Rd			Bad fire remembered by locals.	
1940s and 50s			Oswin Roberts			Several big fires remembered by locals which accounts for the moribund state of so many old trees there.	
1951		Grass and scrub	Outskirts of Cowes	90ac			The Argus Wednesday 7 February 1951
-1956			Cowes foreshore near Yacht Club			Bad fire remembered by locals.	
1950s			Red Rocks Rd and foreshore			Bad fire remembered by locals.	
1960s			Boundary of Oswin Roberts Reserve and McGraths	Narrow strips along boundary			Oswin Roberts Fire History (McPhee pers. comm.)
1966-67			Forrest Caves				Norman and Gottsch, 1967
1967	Prior to 12.1		Penguin Parade - high tide water mark and burnt 150yd inland	3ac	Visitor (gas fire, cigarette)	Two fires, destroyed many penguins and mutton birds.	The Express, Wonthaggi, 12/1/67
Late 60s early 70s			Woolamai Beach carpark			Eleven cars burnt. Heat of car exhaust believed to have started fire (mowed bracken in carpark).	
1972	Dec		Point Grant				R. M. Warneke pers comm
2000	29.3	Pole fire	Summerland Estate	4ac	Electricity pole	Penguins killed.	5 April 2000, The Advertiser
2006	26.1	Pole fire	Summerland Estate - Solent Ave	est from photo 25m²	Electricity pole	Extinguished quickly.	Nature Parks
2008	17.1	Pole fire/ Poa grassland	Summerland Estate, Cnr Solent and Bideford Sts. 5:30am	1800m²	Electricity pole	Corroded high voltage power line dropped. Three penguins died, three injured, and snakes died.	Nature Parks
2022		Grass and scrub	Samuel Ames Drive, Fishers Wetland	0.1Ha	Angle grinder	Started in construction site of new Chocolate Factory building on adjacent private property. Was quickly contained by CFA and Nature Parks personnel.	Nature Parks
2023	30.1	Grass	Ventnor Road, Cowes	Small			abc.net.au

Attachments

ATTACHMENT B2: PHILLIP ISLAND BUSHFIRE HISTORY – IGNITION POINTS

Bushfire Ignition Map

1 January 2014 to 20 September 2020



ATTACHMENT C: RISK ASSESSMENT TEMPLATES

CONSEQUENCE OR IMPACT

Source: Risk management Procedure ORG-OPS-001 Jan 2022, as proposed in 2016 FMP with minor variations

ASSETS + VALUES	OBJECTIVES	RISK CATEGORY	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC
PEOPLE	Minimise harm to people, no loss of human life	**Health And Safety** (employees, visitors, contractors and Phillip island community)	No injury or treatment required	Minor injury (or equivalent near miss) which requires minor first aid treatment	Injury (or equivalent near miss) that requires external medical treatment or attendance by ambulance	Serious injury (or equivalent near miss) or multiple minor injuries that requires hospital treatment	Permanent disabling injury or death (or equivalent near miss)
SOCIAL	Minimise impacts on community assets	**Community and Stakeholders**	Negligible damage to habitable property/is adjoining the Nature Parks	Minor damage to habitable property/is adjoining the Nature Parks	Repairable damage to habitable property/is adjoining the Nature Parks Negligible damage to assets critical to community function	Irreparable damage to habitable property/is adjoining the Nature Parks Repairable damage to assets critical to community function	Irreparable damage, at a street scale, to habitable property/ is a adjoining the Nature Parks Irreparable damage to, or loss of assets critical to community function
ENVIRONMENT	Protect iconic species, the environment, cultural heritage and visual amenity	**Environment**	Negligible impact or harm to native wildlife populations or local ecosystems	Transient harm or impact to native wildlife population or local ecosystems	Short-term harm or impact to native wildlife populations or local ecosystem	Medium-term harm or impact to native wildlife populations or local ecosystem	Long-term harm or impact to native wildlife populations or local ecosystem
		Environment – Iconic Species	Transient harm or impact to iconic species population or significant ecosystems	Short-term harm or impact to iconic species population or significant ecosystems	Medium-term harm or impact to iconic species population or significant ecosystems (e.g. degradation of natural environment or wildlife population management issues)	Massive loss of iconic species population or long-term contamination of significant ecosystems	Permanent loss of iconic species population or significant ecosystems (e.g. extinction of colony or wetland rendered uninhabitable)
CULTURAL HERITAGE		**Cultural Heritage**	Negligible damage to listed or significant cultural heritage assets	Minor damage to listed or significant cultural heritage assets	Repairable damage to listed or significant cultural heritage assets	Irreparable damage to listed or significant cultural heritage assets	Irreparable or permanent loss of listed or significant cultural heritage assets
VISUAL AMENITY		**Visual Amenity**	Negligible impact to visual amenity	Minor impact to visual amenity	Significant impact to visual amenity	Impact on visual amenity detracts from visitor experience	
ECONOMY	Maintain business continuity	**Business Continuity**	Operations are disrupted intermittently during a one-day period	Operations are disrupted for up to two days at the Penguin Parade or up to one week at other sites	Operations are disrupted for a period of two days to one week at the Penguin Parade or from one week to two weeks at other sites	Operations are disrupted for a period of one to three weeks at the Penguin Parade or from two weeks to one month at other sites	Operations are disrupted for more than three weeks at the Penguin Parade or more than one month at other sites

ATTACHMENT C: RISK ASSESSMENT TEMPLATES CONT.

LIKELIHOOD

Source: Risk management Procedure ORG-OPS-001 Jan 2022, propose use of probabilities rather than timeframes for consistency with emergency service communication

LIKELIHOOD	DEFINITION	DESCRIPTION *Source: Community Emergency Risk Assessment Guidelines (SES 2014)*	QUANTITATIVE GUIDELINES Based on recorded incidents *Source: Risk Management Procedure (Phillip Island Nature Parks 2023)*
ALMOST CERTAIN	Event is expected to occur in the near future in most circumstances	Expected to occur in most circumstances; with strong anecdotal evidence of recorded incidents	Currently occurring or within six months > 75% chance of occurring
LIKELY	It is probable that the event will occur	Many recorded events Some events in comparable jurisdictions Great opportunity, reason or means to occur	Within 12 months 50-75% chance of occurring
POSSIBLE	The event may occur	Many recorded events Some events in comparable jurisdictions Great opportunity, reason or means to occur	Within two years 25%-49% chance of occurring
UNLIKELY	The event could occur in the future	Some recorded events Some events in comparable jurisdictions Some opportunity, reason or means to occur	Within five years <25% chance of occurring
RARE	It is improbable that the event would occur except for in exceptional circumstances	Few recorded events Some events in comparable jurisdictions Little opportunity, reason or means to occur	Not within five years Minimal chance of occurring (<1%)

RISK MATRIX

Source: Risk Management Procedure ORG-OPS-001 Jan 2022

		CONSEQUENCES				
		INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC
LIKELIHOOD	ALMOST CERTAIN	Medium	High	High	Very High	Very High
	LIKELY	Medium	Medium	High	HIgh	Very HIgh
	POSSIBLE	Low	Medium	Medium	HIgh	HIgh
	UNLIKELY	Low	Low	Medium	Medium	HIgh
	RARE	Low	Low	Low	Medium	High

Image 17: CFA assisting Nature Parks with fuel reduction burn

Little Wonders
PENGUIN PARADE

Antarctic Journey
NOBBIES OCEAN DISCOVERY

Time Unwinds
CHURCHILL ISLAND

Bushland Escape
KOALA CONSERVATION RESERVE

ECO CERTIFIED
advanced ecotourism

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NATURE PARKS

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