

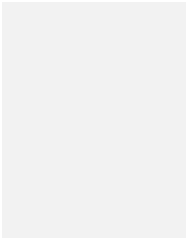
# CAIRNCROSS WASTE MANAGEMENT FACILITY

## Bushfire and Fuel Management Plan

29 OCTOBER 2020



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# PORT MACQUARIE HASTINGS COUNCIL CAIRNCROSS WASTE MANAGEMENT FACILITY

## BUSHFIRE AND FUEL MANAGEMENT PLAN

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### REVISIONS

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A	19/06/2020	Draft for Internal Review	HT	KP
1	23/06/2020	Draft for PMHC Review	HT	KP
2	24/09/2020	Updated to address PHMC comments and Bushfire Consultant Review	HT	KP
3	18/10/2020	Draft Final for consultation	HT	KP
4	29/10/2020	Updated following RFS consultation	HT	KP

## ACRONYMS AND DEFINITIONS

Acronym / Term	Meaning
APZ	Asset Protection Zones
BFFMP	Bushfire and Fuel Management Plan
BFMC	Bushfire Management Committee
BFRMP	Bushfire Risk Management Plan
Cairncross WMF	Cairncross Waste Management Facility
C&D	Construction and Demolition
C&I	Commercial and Industrial
DP	Deposited plan
DPIE	Department of Planning, Industry and Environment (NSW)
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regs	<i>Environmental Planning and Assessment Regulations 2000</i>
EPA	Environmental Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPL	Environmental Protection License
FDI	Fire Danger Index
FFDI	Forest Fire Danger Index
GFDI	Grass Fire Danger Index
ha	Hectares
KBDI	Keetch-Byram Drought Index
LEMP	Landfill Environmental Management Plan
LGA	Local Government Area
km	kilometres
MRF	Material Recovery Facility
NSW	New South Wales
NPWS	National Parks and Wildlife Service
OEMP	Operational Environmental Management Plan
ORRF	Organic Resource Recovery Facility
PBP	Planning for Bushfire Protection Guidelines
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
PMHC or Council	Port Macquarie-Hastings Council
RFS	Rural Fire Service
SOP	Standard Operating Procedures
SSD	State Significant Development

Acronym / Term	Meaning
SFAZ	Strategic Fire Advantage Zone
TOBAN	Total Fire Ban day
WMF	Waste Management Facility
WTS	Waste Transfer Station

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# 1 INTRODUCTION

## 1.1 Background

The Cairncross Waste Management Facility (Cairncross WMF) (the Facility) is located at 351 Telegraph Point Road, Pembroke, NSW, approximately 5 km south-west of Telegraph Point and approximately 15 km north-west of Port Macquarie within Lot 10 / DP 1240278. The Facility is operated by Port Macquarie-Hastings Council (PMHC) (Council).

The Cairncross WMF is the primary centre for PMHC's waste operations, and in addition to the landfill, also includes of the following components:

- Waste Transfer Station (WTS);
- Organics Resource Recovery Facility (ORRF);
- Material Recovery Facility (MRF).

The ORRF, MRF and WTS sites have entirely separate leachate and stormwater management systems. The ORRF and MRF are operated under contracts by external parties. Day to day management of these facilities are separated from management of the landfill and WTS operation area.

The Cairncross WMF was constructed to replace the existing Port Macquarie landfill, which was closed in 2001. The Cairncross WMF was opened in 2001 and operates under the *Operational Environmental Management Plan: Cairncross Waste Management Facility* (PMHC, 2016) (OEMP), *Cairncross Waste Management Facility Landfill Environment Management Plan* (2001) (Connell Wagner, 2001) and Environment Protection Licence 11189.

The original Cairncross WMF development approval was granted to PMHC for the current landfill stage (Stage E) in 1999, however the approval was time limited to 20 years. In February 2013, an extension of five years was sought on the original approval and subsequently granted. The approved Stage E of the landfill is now nearing the end of its capacity. The current approval for the progressive excavation, landfilling and rehabilitation of three new landfill cells (Stage 1, 2 and 3) and extension of the life of the landfill by a further 36 years (until 2056) was granted by the Department of Planning, Industries and Environment (DPIE) on 5 November 2019 (State Significant Development (SSD) 5792).

Development Consent (SSD 5792) also permits the increase in the amount of waste received to no more than:

- 150,000 tonnes of general solid (putrescible) waste per year on site for landfill disposal;
- 50,000 tonnes of general solid (non-putrescible) waste and asbestos per year on site for landfill disposal.

The landfill will continue to receive waste from all areas within the Port Macquarie-Hastings Local Government Area (LGA) including the major townships of Port Macquarie, Wauchope and Camden Haven. Waste will include general solid waste (i.e. putrescible and non-putrescible materials) and asbestos from domestic and commercial and industrial (C&I) sources.

A Landfill Environmental Management Plan (LEMP) has been prepared to reflect conditions of the Development Consent for the landfill expansion and is the overarching environmental management framework for the landfill operation. It provides an overview of potential environmental impacts of the landfill during its construction and operational phases. This Bushfire and Fuel Management Plan (BFFMP) has been updated to support the LEMP.

The Cairncross WMF is surrounded by native bushland which is designated as Bushfire Prone Land. The Facility provides an essential service to the Port Macquarie community and any disruption or closure of the Facility would have a significant impact on the local community and economy. The site is considered isolated development and may be impacted by high intensity wildfire.

The BFFMP is to provide the owner and land manager with an overview of the key components contributing to bushfire risk and to provide a set of bushfire mitigation treatment actions that support the Facility and associated legal responsibilities. This BFFMP details the use of a combination of bushfire protection measures which are required to mitigate bushfire risk and improve life safety, property protection and community resilience to bushfire attack.

## 1.2 Scope

This BFFMP has been revised to address Condition B34 of the Development Consent (SSD5792) which requires that the Bushfire and Fuel Management Plan be updated to the satisfaction of the Secretary of the DPIE within 12 months of the date of this consent. The specific conditions relevant to the development of this plan are identified in **Section 3.2**.

The most recent, approved version of this plan will also be implemented to manage impacts to the Rawdon Creek Nature Reserve adjacent to the landfill construction and operation activities (detailed in **Section 2**).

## 1.3 Objectives and Targets

The primary objective of the BFFMP is to assign responsibilities and timing for prescribed actions relating to:

- General fire management standards;
- Fire protection zones;
- Fuel management standards;
- Access and egress from/to the site
- Reducing the risk of wildfire impacting on the Facility and to reduce the risk of fire spreading from the site onto neighbouring lands.

## 1.4 Consultation

Under Condition B34 (a) of the Development Consent, the BFFMP is required to be prepared in consultation with the NSW Rural Fire Service Mid-Coast District Fire Control Centre (NSW RFS MCD FCC). **Appendix A** demonstrates evidence of consultation.

Table 1-1: Summary of consultation with Agencies

Relevant Agency	Date	Person Contacted	Comments	Status
NSW RFS MCD FCC	20/10/2020	Steve Farrell, A/District Coordinator - Community Preparedness	Emailed copy of the BFFMP for review and comment	Open
	28/10/2020	PMHC Waste Project Officer	Email received with minor updates requested. Rev 4 of BFFMP includes comments	Closed

Condition B34 of the Development Consent requires that the BFFMP is approved by the Planning Secretary. The most recent version of the BFFMP approved by the Planning Secretary will be implemented for the duration of the Landfill construction and operation.

## 1.5 Plan Structure

The structure of this BFFMP is as follows:

- **Section 2** describes the landfill site including climate, topography and existing vegetation which influence potential fire behaviour and risk;
- **Section 3** covers the statutory requirements;
- **Section 4** provides assessment of the hazard and risk for the site and surrounding landscape;
- **Section 5** identifies the mitigation measures to reduce the risk of fire to life and property, including emergency vehicle access, fire-fighting equipment and vegetation clearance;
- **Section 6** specifically addresses the management strategies to be engaged to reduce the amount of fuel on the site.
- **Section 7** addresses complaints management, incident reporting and review of the BFFMP.

## 2 LANDFILL DESCRIPTION

### 2.1 Facility Overview

The Landfill site is located within the Cairncross WMF, approximately 5 km south-west of Telegraph Point, 15 km north-west of Port Macquarie and approximately 2 km west of the upgraded Pacific Highway. The site location is shown in **Figure 2-1**.

The existing Stage E landfill cell covers an area of about 11 ha. The future Stages 1-3 of the landfill covers an operational area of approximately 40.2 ha, including ancillary areas such as access roads and the 50 m wide corridor designated as a Koala Connectivity Corridor.

The landfill is open every day, with the exception of Sundays, Good Friday, and Christmas Day, and operates during the following hours:

- Monday to Friday: 7am – 4pm;
- Saturday, Public holidays: 8am – 4pm;
- No works on Sundays.

The landfill management activities, such as daily covering operations, may continue one hour after closure of the landfill.

**NOTE::** Hours of Work in the Development Consent (SSD 5792) allow for longer operating hours than those detailed above.

### 2.2 Surrounding Land Uses

The land uses surrounding the landfill are shown on the Cairncross WMF site layout map (**Figure 2-1**). To the north-east of the landfill operation area lies the ORRF and MRF (which form part of the broader Cairncross WMF) and an Industrial Precinct is currently being developed to the east of the landfill.

Cairncross State Forest borders the landfill operation area to the north and south, with the Rawdon Creek Nature Reserve located to the south-east. The western edge of landfill is bordered by a compensatory habitat area that was established as part of the Cairncross WMF. To the west of the compensatory habitat area is Pembroke Road, beyond which is agricultural land zoned for Primary Production (RU1).

### 2.3 Bushfire Risk

Bushfire is a normal part of Australia's natural environment, particularly in eucalypt forests. However, the frequency and intensity of bushfires varies throughout the landscape and seasons. Bushfires are a common occurrence during drier parts of the year.

Climate change is expected to bring longer bushfire seasons to parts of Australia, an increasing number of extreme fire weather days, and increasing fire intensity. Bushfires of low or moderate intensity often pose little threat to life, property and community assets, but the potential for changes in wind direction can be a significant hazard. However, bushfires that burn in heavy fuels, steep terrain or on hot, dry and windy days often spread rapidly, crown in forests, produce powerful convection columns and create extensive spot fires ahead of the fire front, often making their control impossible until weather conditions moderate.

As the fire danger reaches 'Extreme', bushfires are often described as firestorms and become impossible to control. When the fire danger reaches 'Catastrophic', the risk of serious injury or death to people in the path of a bushfire increases significantly, and many properties and other community infrastructure can become difficult or impossible to defend.

The intensity of a bushfire, which determines to a large extent how much damage it will do, is a product of the fuels burning (quantity, arrangement, size, moisture content), the weather at the time (temperature, wind speed and direction, relative humidity, atmospheric stability) and the topography of the land where the fire is burning (slope and aspect).

Vulnerability to bushfire risk is a combination of the physical location of the persons under threat and the understanding and ability that person has that enables them to deal with the risk.

It is the position of Australian fire agencies that the safest action to protect life is for people to be away from the bushfire or threat of bushfire as early as possible.

## 2.4 Fires within the Site

While the BFFMP is primarily focused on the impact from bushfires, consideration has been given to the potential for fires to start and spread within the Site.

Fire and Rescue NSW recently released (27 February 2020) a *Fire Safety Guideline for Fire Safety in Waste Facilities*. This Guideline states that “historically, fire brigades have attended numerous fires at waste facilities in NSW. These fires are often quite large and have a detrimental impact on firefighting intervention, the environment, local community and the waste industry itself.”

Fires within the waste facility can arise across all stages of the waste management chain, including waste collection, transport, transfer stations, recycling and disposal at landfill. The source of combustible material also varies greatly and includes tyres, used oils, green waste, wood waste, solvents, batteries and municipal solid waste (Fattal, et al, 2016). Fire outbreaks have occurred at the Facility on occasion when ash and other hot materials/acids are deposited in the waste material. The site’s *Standard Operating Procedures (SOP)* identify protocols for managing these outbreaks.

The report by Fattal, et al (2016) stated that the economic costs of waste fires can be significant, and research has shown the cost of prevention is less expensive than the cost of fighting waste fires and clean-up costs after a fire has occurred.

### 2.4.1 Underground Fires

Fires underground within landfill occur deep below the surface. These fires are generally more difficult to extinguish than surface fires and produce flammable and toxic gases from incomplete combustion (e.g. carbon monoxide). These underground fires have the potential to damage leachate containment liners and landfill gas collection systems.

A common cause of underground fires is an increase in the oxygen content of the landfill, which increases bacterial activity and raises internal temperatures. If these hotspots come in contact with pockets of methane then it is possible for combustion to occur resulting in an underground fire.

### 2.4.2 Methane Gas

Methane gas is a highly flammable gas that represents a potentially dangerous fire hazard. Methane levels are regularly monitored on capped areas of the landfill, perimeter bores and inside nearby buildings.

The PMHC has commissioned a trial to estimate the predicted rate of landfill gas generation from the existing and new landfill stages. Section 3.2.3 of the LEMP provides details on the investigation. A landfill gas management plan will be prepared based on the findings of the trial and will be considered in management of bushfire risks.

## 2.5 Existing Environment

### 2.5.1 Climate

The Cairncross WMF is located within the area managed under the Mid-Coast Bushfire Management Committee (BFMC). The BFMC covers an area of about 1,3 million hectares, from 50 km north of Newcastle, and extending 170 km along the mid-north coast of NSW. The area includes the former Local Government Area/s (LGA) of Gloucester, Great Lakes and Greater Taree and also now includes Port Macquarie Hastings LGA.

The typical/average climate across the area managed under the Mid-Coast Bushfire Management Committee (BFMC) varies from warm temperatures with a summer rainfall pattern to a humid subtropical climate characterised by warm humid summers and mild winters along the coastal area. The climate of the western section of the BFMC area is tempered by elevation. In these higher altitude areas, there are generally lower temperatures, higher rainfall and slower drying conditions than in the coastal areas.

The statutory Bush Fire Danger Period runs from **1 October** to **31 March**; however, it may vary due to local conditions. The RFS Commissioner has powers to declare this period earlier depending on prevailing weather conditions. See **Section 2.5** for more details regarding the local bushfire danger period.

The Bushfire Coordinating Committee<sup>1</sup> recognises that climate change has the potential to increase bushfire risk. The risk assessment process applied in the relevant Bushfire Risk Management Plan (BFRMP) was based on current climatic conditions.

## 2.5.2 Bioregions and landscapes

The landfill expansion area is located within the Northern Rivers Bioregion and the Macleay – Hastings Subregion classified under Interim Biogeographic Regionalisation for Australia. The landfill expansion area is located within the Wauchope Coastal Foothills Mitchell landscape.

## 2.5.3 Soil and geology

The Hastings 1:20,000 Hastings geological sheet (Brunker et al., 1970) indicates the Facility is underlain by the Lower Permian Beechwood Beds that are comprised of sandstone, siltstone and mudstone. The Beechwood Beds are described as laminated blue grey mudstone with quartz, mica sandstone.

The Port Macquarie Area 1:100,000 Quaternary Geological Sheet (Hashimoto and Troedson, 2008) identifies Carboniferous and Permian sedimentary rocks including coal measures and minor volcanics in the landfill operation area.

## 2.5.4 Topography

Appendix 2 of *Planning for Bushfire Protection 2019* states that slopes should be assessed, over a distance of at least 100 m and that the gradient of the land should be determined which will most significantly influence the fire behaviour on the site.

The landfill occupies land each side of a drainage line that is a tributary to Rawdon Creek which flows to the south from Stage E, between Stages 1 and 2 and Stage 3, turning to the southwest and flowing across the forestry land to the south of Stage 2.

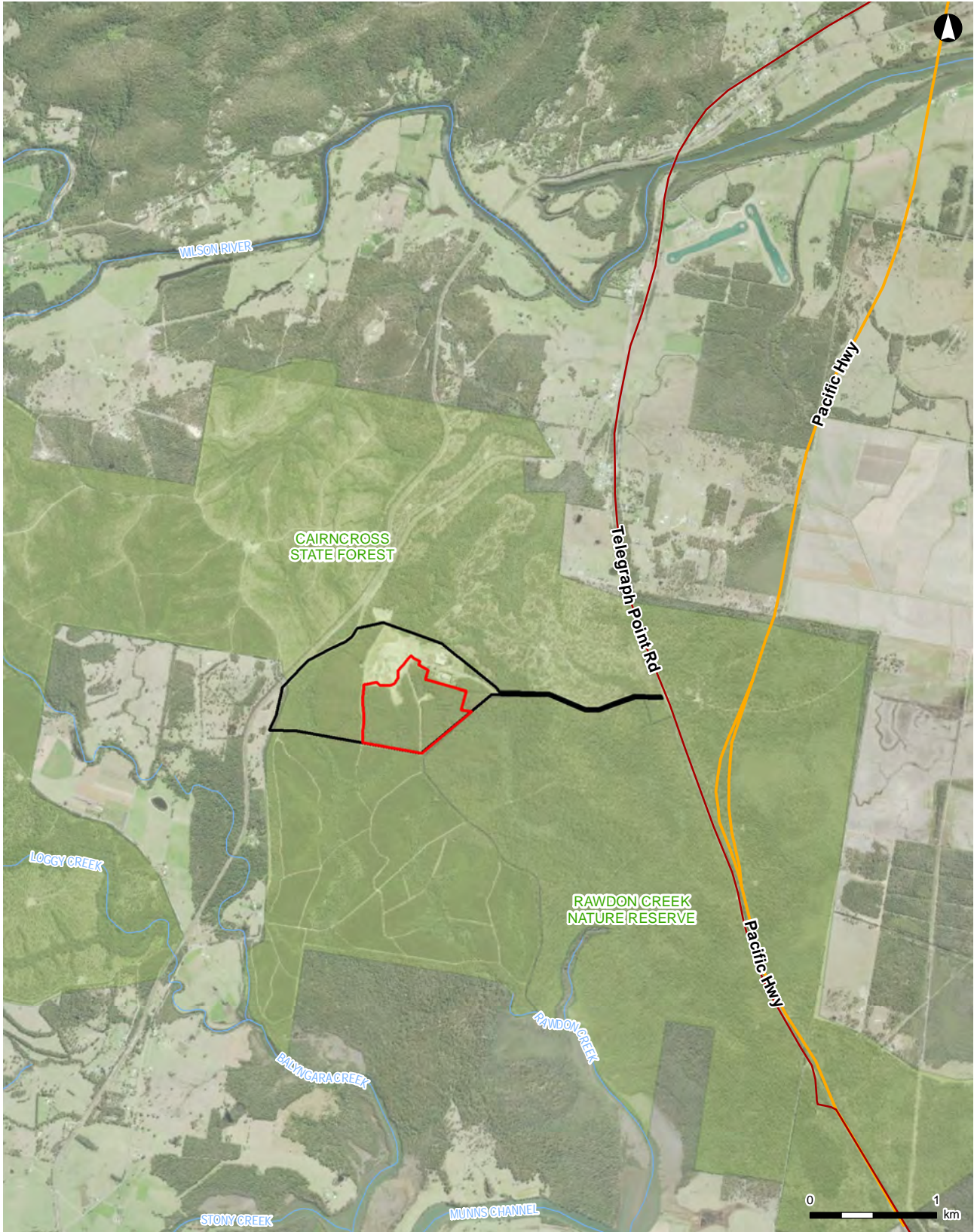
The land to the west and southwest of Stages 1 and 2 falls to the west/southwest at less than 3° (degrees) into Rawdon Creek. The land to the south of Stage 2 falls to the south into Rawdon Creek at less than 3°.

The land within the adjacent Nature Reserve, to the southeast of Stage 3 falls to the southeast at 1-2°.

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<sup>1</sup> <https://www.rfs.nsw.gov.au/resources/publications/corporate-governance-and-planning/bush-fire-coordinating-committee-policies>

# Cairncross Waste Management Facility



**LEGEND**

- ▭ Amended Proposal Site
- Cairncross Waste Management Facility
- Forest and Reserve
- Watercourse

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 Aerial Imagery supplied by NSW LPI

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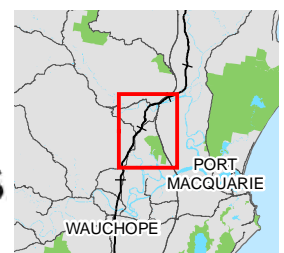
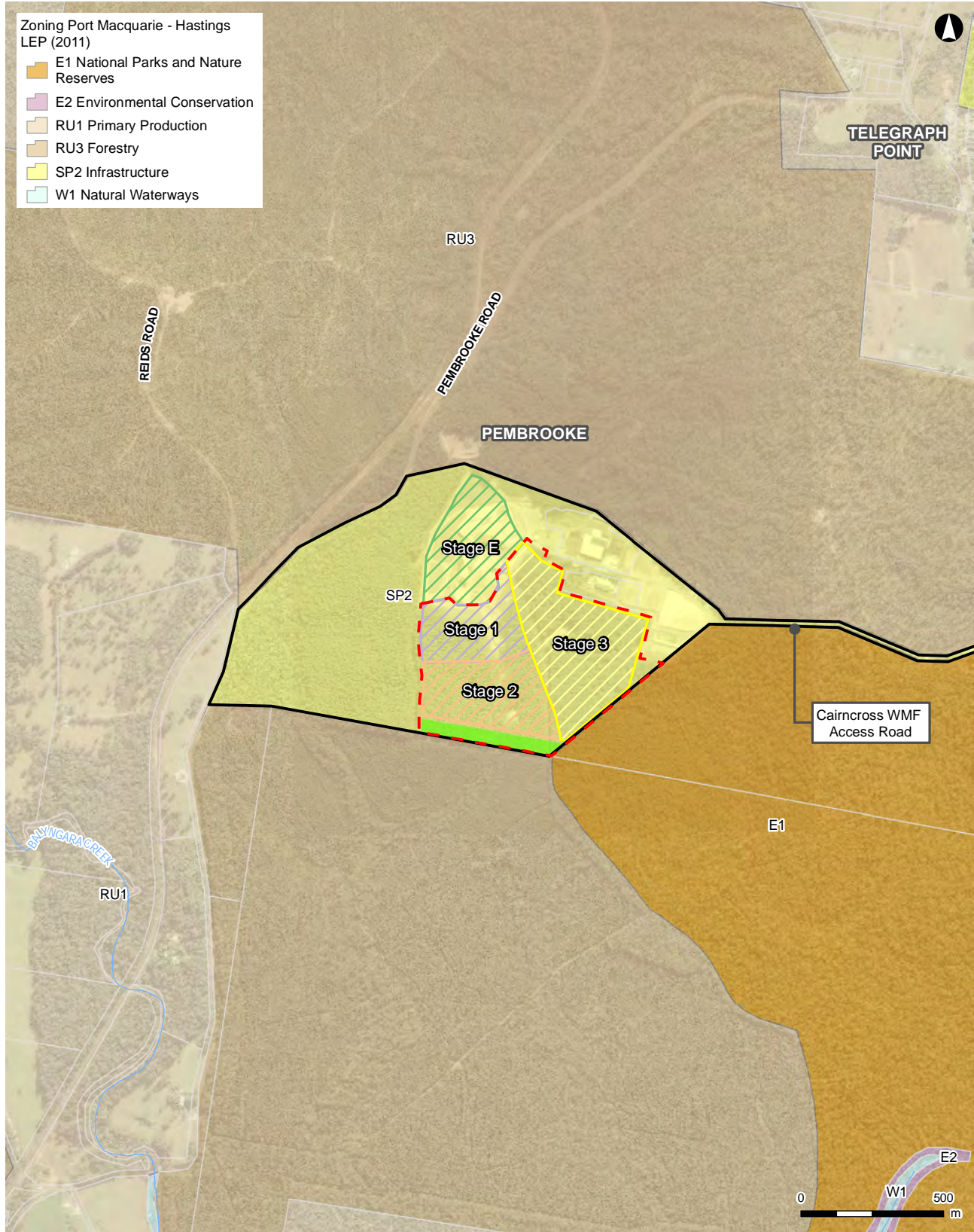


Figure 2-1: Cairncross WMF location

# Cairncross Waste Management Facility



## LEGEND

- |                                      |                              |
|--------------------------------------|------------------------------|
| Proposal Site                        | Existing and Future Landfill |
| Cairncross Waste Management Facility | Stage 1                      |
| Koala Connectivity Corridor          | Stage 2                      |
| Cadastre (LPI, 2017)                 | Stage 3                      |
| Watercourse                          | Stage E                      |

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Figure 2-2: Land Zoning

# Cairncross Waste Management Facility

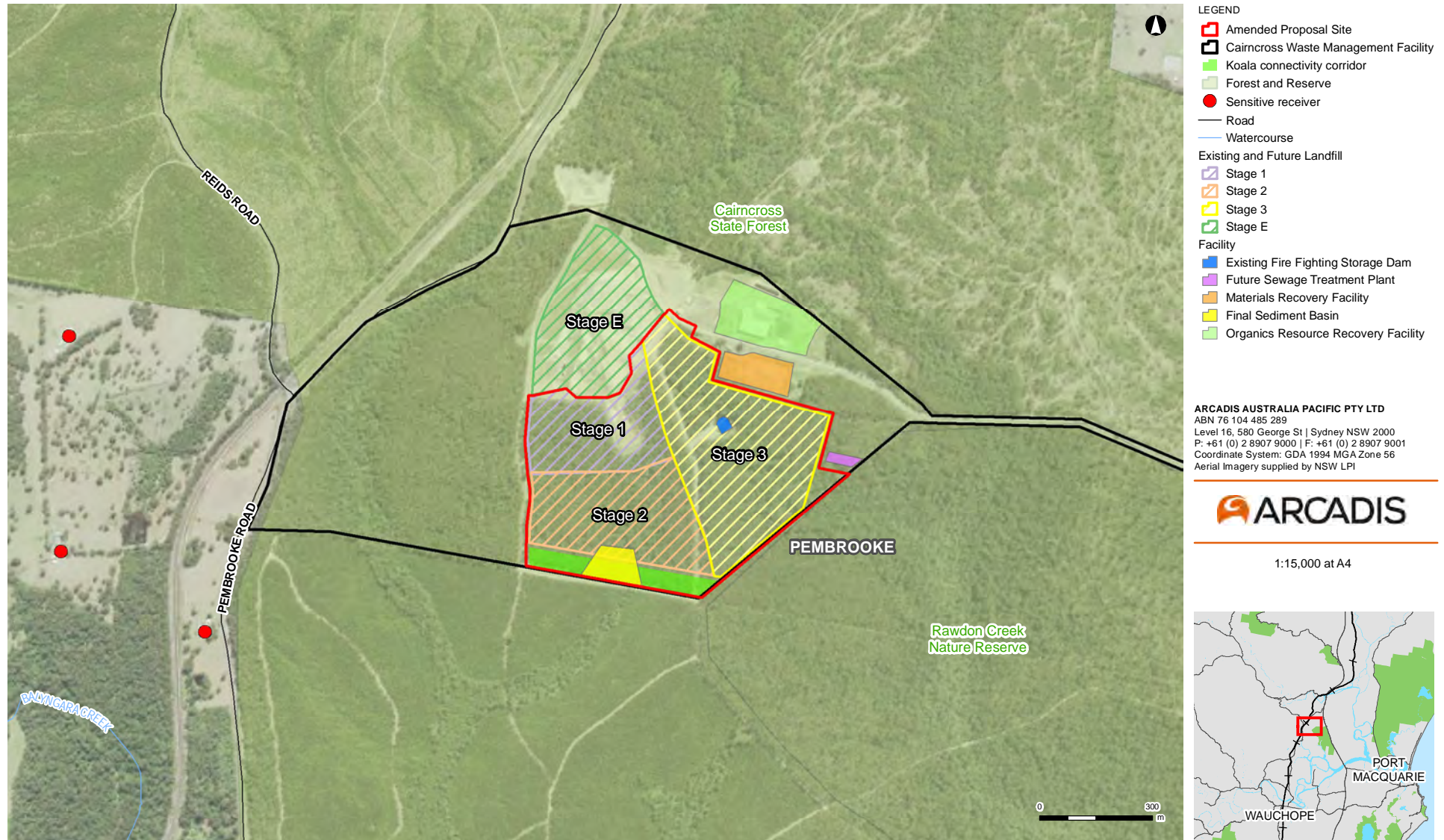


Figure 2-3: Cairncross WMF site layout

## 2.5.5 Existing vegetation

Appendix A1.2 of *Planning for Bushfire Protection 2019* provides a methodology for determining the predominant bushfire prone vegetation for at least 140 m in all directions from a proposed development. The vegetation classification system used within this document is based on the Keith (2004)<sup>2</sup> framework. Table A1.12.8 provides details of vegetation formations (fuel loads) for the following groups:

- Rainforest;
- Forests (wet and dry sclerophyll forests) including Coastal Swamp Forest, Pine Plantations and Sub-Alpine Woodland;
- Grassy and Semi-Arid Woodland (including Mallee);
- Forested Wetland (excluding Coastal Swamp Forest);
- Tall Heath;
- Short Heath;
- Arid-Shrublands (acacia and chenopod);
- Freshwater Wetlands;
- Alpine Complex;
- Grassland.

Approximately 36 ha of the landfill expansion area is currently vegetated. An authorisation for timber plantation (Department of Infrastructure, Planning and Natural Resources, 2004) applies to 32.6 ha of this area, and comprises *Eucalyptus pilularis* (Blackbutt) plantation. This vegetation can be progressively cleared for the purposes of expansion of the landfill under approval GR0412P (26 October 2004), upon written notification to the DIPNR<sup>3</sup>.

The remaining 3.4 ha (See **Figure 2-4**) consists of native vegetation mapped as Blackbutt Grassy Forest, which will be cleared within the Stage 3 landfill area as part of SSD 5792. At the time the Bushfire Assessment was written (2017), this vegetation consisted of:

- A tall open forest with a mature canopy of *Eucalyptus microcorys* (Tallowwood) *Eucalyptus pilularis* (Blackbutt), *Corymbia intermedia* (Pink Bloodwood), *Eucalyptus resinifera* (Red Mahogany) and *Eucalyptus globoidea* (White Stringybark);
- The mid-layer included small trees and tall shrubs such as *Alphitonia excelsa* (Red Ash), *Allocasuarina littoralis* (Black She-Oak), *Acacia floribunda* (White Sally) and *Callistemon salignus* (White Bottlebrush);
- The ground layer was generally grassy and herbaceous, with *Gahnia sieberiana* (Red-fruit Saw-sedge), *Entolasia marginata* (Bordered Panic), *Imperata cylindrica* (Blady Grass), *Entolasia stricta* (Wiry Panic) and *Oplismenus imbecillis* (Narrow-leaved Basketgrass) dominant.

In the eastern parts of the site, the ground was slightly boggy and swamp forest elements of the community were dominant, with *Callistemon salignus* forming a dense mid-storey and *Gahnia sieberiana* prevalent in the ground layer.

Occurrence of exotic species was low and limited to some small patches of *Lantana camara* (Lantana).

The vegetation on the land to the west and southwest of the site comprised all Open Forest, while the land to the south of Stage 2 and Stage 3 contained forest plantation in the early stages of growth. The Nature Reserve to the southeast of Stage 3 comprised Dry Sclerophyll Tall Open Forest.

The nature of the vegetation and slope provide the opportunity for the site and occupants to be impacted by high intensity bushfire.

## 2.6 Site Access

The main access to the Facility is via the sealed, two-lane all-weather Access Road which runs east-west from Telegraph Point Road. The access road is 6.5 m wide and located within a 20 m wide tree to tree corridor. The road also includes a turning circle immediately inside the access handle property boundary and

<sup>2</sup> Keith (2004), *Ocean Shores to Desert Dunes*.

<sup>3</sup> Authorisation for timber plantation (Department of Infrastructure, Planning and Natural Resources (DIPNR), 2004)

the lockable gate at the site entrance. This road runs through Bushfire Prone Vegetation and has the potential to be immersed in flame or to be cut by fire.

The landfill is accessed via gravel roads/tracks from the site work shed. These are maintained to an all-weather two-wheel drive vehicle standard.

The entire Cairncross WMF property is bounded by Extension Road to the south and Pembroke Road to the west. The northern boundary is a trail nominally known as the Northern Break. The eastern boundary with Rawdon Creek Nature Reserve is in poor condition and will be upgraded as a part of this development.

## 2.7 Assets and Infrastructure

### 2.7.1 Landfill assets

The PHMC landfill operations site has the following assets and infrastructure.

- Landfill site including:
  - leachate tanks;
  - water storage/sediment basins (use for dust suppression);
  - firefighting dam (about 3,000 m<sup>3</sup>);
- Internal roads and trails;
- Chain wire fencing is currently installed around the Stage 1 landfill and will be progressively extended as new landfill stages become active.

### 2.7.2 Other assets

Assets within the larger Cairncross WMF include the following facilities and these are located more than 50 m from the closest unmanaged vegetation (See **Figure 2-5**).

#### **Materials recovery facility (MRF)**

Processes recyclable material including paper and cardboard (e.g. newsprint, cardboard, paper, paper products); glass; PET plastics; aluminium; steel and aerosol cans; HDPE (e.g. two litre milk bottles); and liquid paperboard (e.g. milk and juice cartons). Material is processed using manual sorting, trommels, conveyor systems, magnets, air separator systems, balers etc. Rejected material not suitable for processing is disposed of in the landfill.

#### **Organics resource recovery facility (ORRF)**

Receives organic material from domestic kerbside collections, commercial sources and other waste facilities. This material is mulched on hard stand areas and composted in sealed concrete tunnels.

#### **Waste transfer station (WTS)**

The WTS provides storage of small quantities of general waste, recyclables, tyres, mattresses, chemicals, batteries and oil, which are later periodically removed from site.

#### **Industrial precinct**

This is an area of about 7.5 ha located at the eastern edge of the Cairncross WMF. The Telegraph Point Sewage Treatment Plant (STP), and gas bottle recycling are currently located here. Vacant development pads are intended for future ancillary waste activities.

#### **Common assets / facilities**

- Office, amenities and weighbridge;
- Workshop, wheel-wash and wash down bay;
- Parking is provided at the weighbridge and at workshop areas;
- Stockpile areas for scrap metal, concrete and green waste are located throughout the Facility.

### 2.7.3 Hazardous material

Small volumes of hazardous paints and chemicals are stored on the Cairncross WMF site. Estimated quantities of these materials are identified in the site's Pollution Incident Response Management Plan.

### 2.7.4 Power lines

There are no large overhead power lines running through the Facility property. The closest transmission line is a 275 kV line located east of the Pacific Highway<sup>4</sup>. There are underground power lines throughout the Facility, but none located in the active landfill area.

## 2.8 Koala Connectivity Corridor

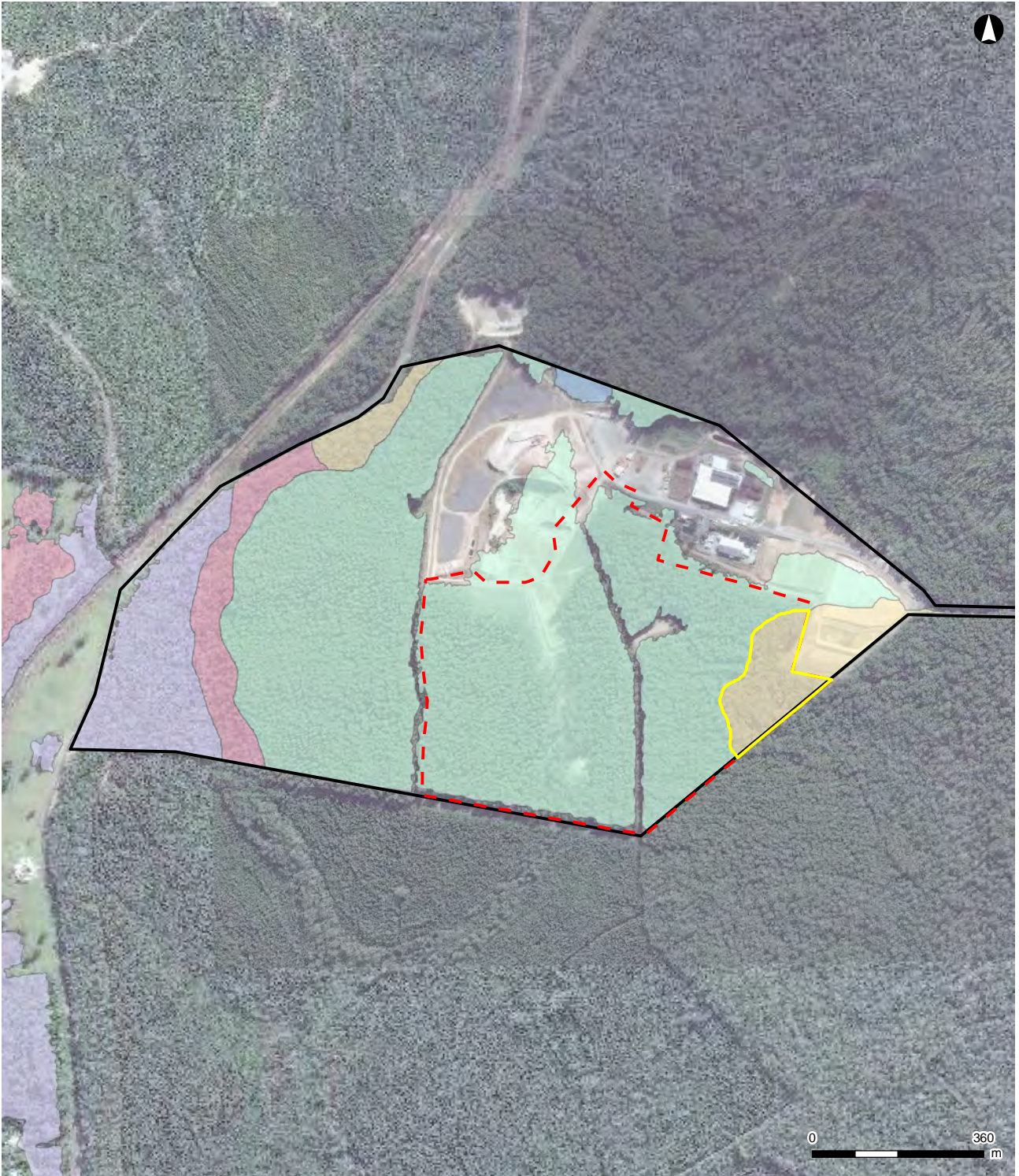
The koala connectivity corridor is located just south of Stage 2 (**Figure 2-3**). The corridor will be fenced off from the Stage 2 landfill area adjacent to the corridor to prevent migration of koalas onto the landfill site, but will not be fenced on other sides to maintain connectivity.

This corridor will be enhanced and maintained as part of PMHC's Public Bushland Management Programme and will be managed in perpetuity. Management of the area will also include the provision of bushfire control measures. The area will be rezoned for environmental protection with the next standard PMHC Local Environmental Plan (LEP) instrument amendment. The area will also be managed in accordance with the Cairncross Vegetation Management Plan.

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<sup>4</sup> <https://www.aemo.com.au/aemo/apps/visualisations/map.html>

# Cairncross Waste Management Facility



## LEGEND

- Development site
- Proposal Site
- Cairncross Waste Management Facility
- Vegetation mapping (Biolink 2013)
  - Blackbutt Grassy Forest
  - Flax-leaved Paperbark - Mixed Eucalypt Coastal Floodplain Wetlands Forest Complex
  - Grey Gum - Tallowood - White Mahogany Grassy Forest
  - Plantation (Der)
  - Wattle Scrub (Dist)

ARCADIS AUSTRALIA PACIFIC PTY LTD  
 ABN 76 104 485 289  
 Level 16, 580 George St | Sydney NSW 2000  
 P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001  
 Coordinate System: GDA 1994 MGA Zone 56  
 Aerial Imagery supplied by NSW LPI

1:12,500 at A4

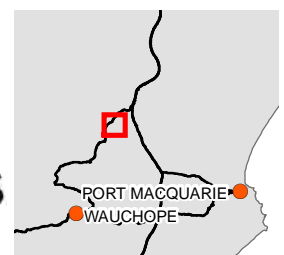


Figure 2-4: Vegetation mapping (Biolink 2013)

# Cairncross Waste Management Facility

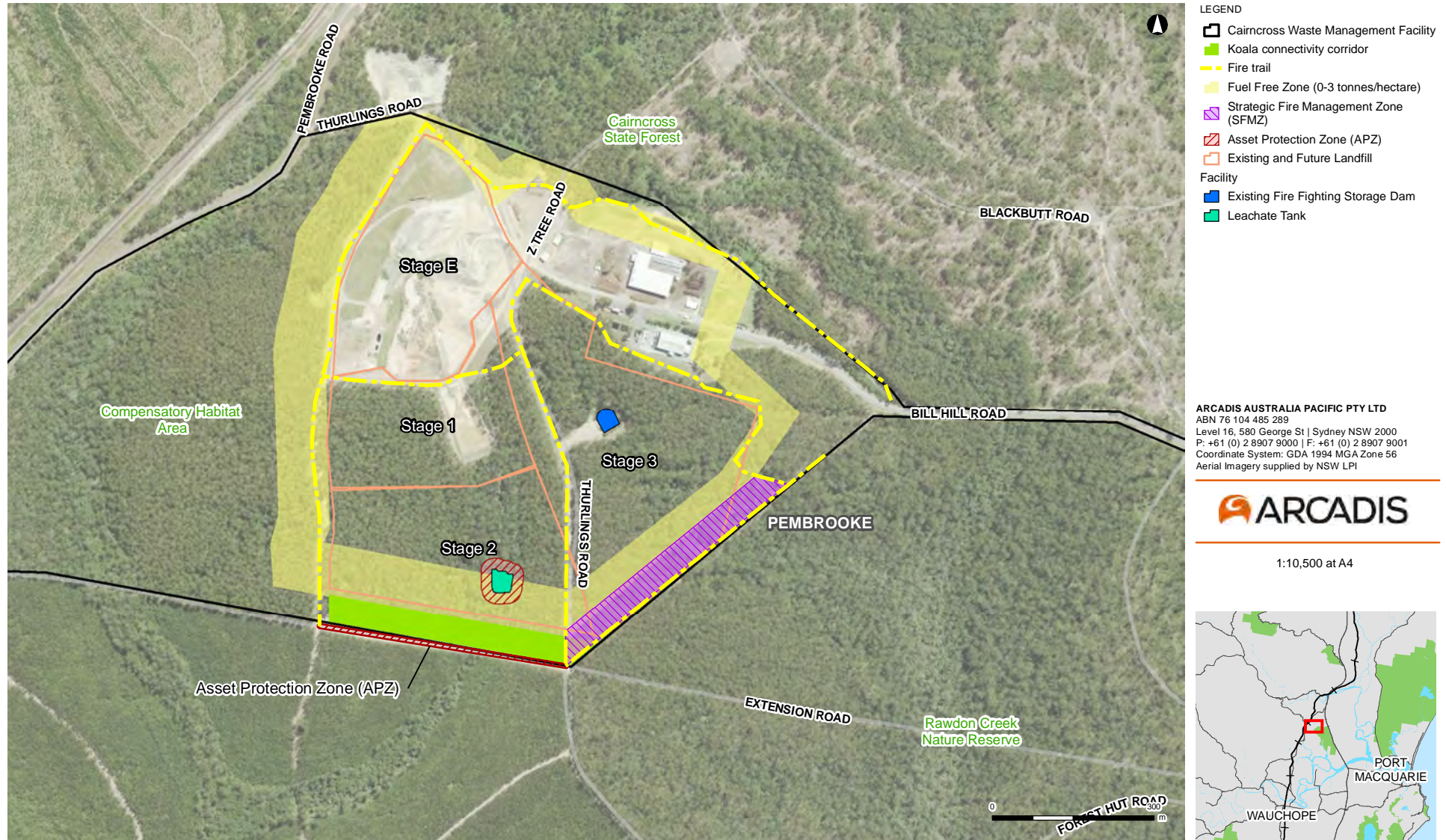


Figure 2-5: Cairncross WMF bushfire management strategy

## 3 STATUTORY REQUIREMENTS

### 3.1 Bushfire Legislation and Guidelines

#### 3.1.1 Bushfire Environmental Code for Asset Protection and Strategic Fire Advantage Zones

The *Bushfire Environmental Code for Asset Protection and Strategic Fire Advantage Zones* came into effect in 1 July 2003 and was established for the purpose of providing a streamlined environmental assessment process in determining bushfire hazard reduction certificates. The code applied to Asset Protection Zones (APZ) and Strategic Fire Advantage Zones (SFAZ) for residential buildings and other significant buildings identified in the local BFRMP. This code was revoked in February 2006 and replaced with the *Bushfire Environmental Assessment Code* (NSW Rural Fire Service, 2006).

PHMC is a 'local authority' under Part 1.7 of the *Bushfire Environmental Assessment Code* (NSW Rural Fire Service, 2006) and is also a Certifying Authority for the purpose of self-determination and issuing Bushfire Hazard Reduction Certificates. PHMC will comply with the conditions of the Code and can self-issue a Bushfire Hazard Reduction Certificate for the purpose of reducing the hazard in the mapped SFAZ when required.

Condition B33 of SSD 5792 requires PHMC to establish and maintain a 30 m wide<sup>5</sup> SFAZ around the southern side of Stage 2 and the eastern side of Stage 3. The SFAZ is shown on **Figure 2-5**.

#### 3.1.2 Rural Fires Act 1997

Under the *Rural Fires Act 1997* a Bushfire Management Committee (BFMC) must be in place for each area in the State, which is subject to the risk of bushfires.

The Cairncross WMF is located within an area governed by the Mid Coast BFRMP, approved by the NSW Bushfire Coordinating Committee on 26 July 2019. The Mid Coast BFRMP can be accessed via the NSW Rural Fire Service website<sup>6</sup>.

All landowners and managers have obligations under the RF Act to reduce the risk of bushfire on and from their land. Section 63 (2) of the *Rural Fires Act 1997* outlines the duties of owners and occupiers of land to prevent bushfires.

Section 63 (2) states "*It is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of bushfires on or from, that land.*"

#### 3.1.3 Planning for Bushfire Protection 2019 (PBP)

PBP provides development standards for designing and building on bushfire prone land in NSW. The general principles underlying this document are:

- Bushfire protection measures (BPM) are required to reduce the impact of a bushfire threat;
- These protection measures are governed by the degree of threat posed to a development and the vulnerability of occupants;
- Minimising the interface of a development to the hazard reduces the bushfire risk to the development;
- Good practice in planning, building and management reduces the risk to developments and their occupants, and increases their resilience.

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<sup>5</sup> Arcadis, 2017: Cairncross Landfill Expansion EIS, dated 10 November 2017, Section 5.2.4.

<sup>6</sup> <https://www.rfs.nsw.gov.au/plan-and-prepare/know-your-risk/bush-fire-risk-management-plans>

### 3.1.4 Other legal obligations

The legislation, planning instruments and guidelines considered during development of this plan are listed below.

- *Plantation and Reafforestation Regulation (Code) 2001;*
- *Environmental Planning and Assessment Act 1979 (EP&A Act);*
- *Environmental Planning and Assessment Regulation 2000 (EP&A Reg);*
- *Protection of the Environment Operations Act 1997 (POEO Act);*
- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act);*
- *Biodiversity Conservation Act 2016 (BC Act);*
- *Biosecurity Act 2015.*

### 3.1.5 Applicable Australian Standards (AS)

- AS 3745 *Planning for emergencies in facilities;*
- AS 1815 *Maintenance of fire suppression system and equipment;*
- AS 2419.1 *Fire hydrant installations – System design, installation and commissioning.*

### 3.1.6 Bushfire Emergency Management and Evacuation Plan

A *Bushfire Emergency Management and Evacuation Plan (BEMEP)* should be completed/reviewed for the Facility that is in accordance with NSW Rural Fire Service *Guide to Developing A Bushfire Emergency Management Plan* and with consideration of AS 3745-2010 – *Planning for Emergencies in facilities* and NSW Government *Evacuation Management Guidelines* (March 2014).

Evacuations at the Facility are managed in accordance with the PMHC *Facility Evacuation Cairncross Waste Management Facility [SOP17.1]*.

## 3.2 Development Consent

The landfill expansion was approved as State Significant Development SSD 5792 (Development Consent) on 5 November 2019 under section 4.38 of the *Environmental Planning and Assessment (EP&A) Act 1979*. Approval was granted for the progressive excavation, landfilling and rehabilitation of three new landfill cells (Stage 1, 2 and 3) and for the extension of the life of the landfill for a further 36 years (until 2056).

Condition B34 of the Development Consent includes requirements to be addressed in this BFFMP and requirements to be delivered during construction and operation of the new landfill cells.

These requirements and how they are addressed are provided within **Table 3-1**.

Table 3-1: SSD 5792 relevant conditions

CoC	Requirement	Document Reference
<b>Defendable Space</b>		
B30	The Applicant must establish a defendable space around the operational areas of the landfill to allow for emergency service personnel to undertake property protection activities.  The defendable space shall be a minimum 10 m in width and managed as an inner protection area (IPA) as outlined in section 4.1.3 and Appendix 5 of <i>Planning for Bushfire Protection (NSW RFS 2006)</i> and the <i>NSW Rural Fire Service Standard for Asset Protection Zones</i> .	Section 5.3 Figure 2-5
B31	The Applicant must establish a 6 m wide trafficable space with adequate access for a fully laden 15 tonne (GVM) Rural Fire Service State Forests Category 1 Tanker around the perimeter of the landfill. The trafficable space may be contained within the defendable space area required by Condition B30.	Section 5.4 Figure 2-5

CoC	Requirement	Document Reference
B32	Any hazardous materials storage, buildings and open space areas must be located a minimum 50 m from unmanaged vegetation.	Figure 2-3 Figure 2-5
B33	The Applicant must establish and maintain a 30 m wide Strategic Fire Advantage Zone (SFAZ) around the southern side of Stage 2 and the eastern side of Stage 3, as shown on Figure 3 in Appendix 1.	Section 5.1 Figure 2-5
<b>Bushfire and Fuel Management Plan</b>		
B34	Within 12 months of the date of this consent, the Applicant must update the Bushfire and Fuel Management Plan (BFFMP) for the Cairncross Waste Management Facility to include the development, to the satisfaction of the Planning Secretary. The BFFMP must:	This Plan
(a)	be prepared in consultation with the NSW Rural Fire Service Mid-Coast District Fire Control Centre	Section 1.4 Appendix A
(b)	be prepared by a suitably qualified and experienced person(s)	Page V
(c)	include details of:	
	(i) 24/7 contact details including alternative telephone contact	Section 3.5
	(ii) maintenance measures for the defensible spaces and SFAZ	Section 5.3 Section 5.1.1
	(iii) location of hazards (physical, chemical and electrical) that may impact on firefighting operations and procedures to manage identified hazards during firefighting operations	Section 2.7 Figure 2-5
(d)	identify strategies to contain and minimise the effects of any threats to the environment and public health including but not limited to:	
	(i) measures to minimise the risk of fire on site, including in the landfill area/s	Section 5.10
	(ii) actions to extinguish any fires on site promptly	Section 5.10
	(iii) measures to ensure adequate firefighting capacity on site, including a firefighting tanker	Section 5.7 Section 5.8
(e)	include plans of site infrastructure, firefighting water supply, site access and internal roads	Figure 2-5
(f)	detail a communication strategy for notifying the relevant government agencies and potentially affected community in a fire event; and	Section 6.2.2 Table 6-3
(g)	any additional matters required by the NSW Rural Fire Service	TBC
B35	The Applicant must implement the most recent version of the BFFMP approved by the Planning Secretary for the duration of the development.	Section 1.4

The Applicant's Management and Mitigation Measures are presented within Appendix 2 of the Development Consent (SSD 5792). A list of Mitigation Measures as relevant to bushfire risk management at the landfill and management of the koala connectivity corridor, and how they have been complied within this plan are provided in **Table 3-2**.

Table 3-2: Relevant mitigation measures

#	Mitigation Measures	Document Reference
<b>Hazards and Risks</b>		
HR-01	Operational procedures for responses to fire would be included in the update to the 2015 OEMP in accordance with: <ul style="list-style-type: none"> <li>AS 3745 - 2010 Planning for emergencies in facilities;</li> <li>AS 1815 Maintenance of Fire Suppression System and Equipment;</li> <li>AS 2419.1-2005 Fire hydrant installations – System design, installation and commissioning.</li> </ul>	The OEMP has been superseded by the LEMP. See Section 6.3.10 Section 3.1.5
HR-02	The existing Cairncross WMF emergency response plan will be updated to include the Proposal Site.	LEMP Section 5.5 and Section 5.6
HR-03	The following safe operating procedures would be adopted: <ul style="list-style-type: none"> <li>Clear signage and road markings (speed limits, give way signs, directions, no access areas and disposal areas);</li> <li>Limited number of heavy vehicles to be onsite at any one time;</li> <li>Ensure all personnel operating vehicles on site are licenced and competent;</li> <li>Inspection of trucks entering facility to ensure any hazardous waste is identified prior to entering the site;</li> <li>Excavator operators will receive training.</li> </ul>	LEMP Section 6.3.10
HR-04	Defendable Spaces will be maintained by regular slashing to limit vegetation (grass) height to 150 mm during the Bushfire Operation Danger Period.	Section 5.3
HR-05	The SFAZ adjacent to the adjoining nature reserve will be provided and maintained along the boundary. This zone will be managed in accordance with the prescriptions provided by the NSW Rural Fire Service's <i>Environmental Assessment Code 2006</i> .	Section 3.1.1 Section 5.1.1
HR-06	The forest vegetation retained within each landfill stage, being the residual vegetation beyond the operating cell, will be fuel managed by hazard reduction burning in accordance with the prescriptions provided by the NSW Rural Fire Service's <i>Environmental Assessment Code 2006</i> . Management of the combustible fuels will be undertaken to maintain a Low – Moderate Overall Fuel Hazard, pursuant to the DSE Overall Fuel Hazard Guide.	Section 5.5
HR-07	The Landfill plant and equipment such as Water Tankers and heavy earth moving plant will be maintained on "stand-by" readiness during days of Total Fire Ban status	Section 5.5
HR-08	Work practices will be established in recognition of the likely risk of ignition of the vegetation on the adjoining land by the operation of machinery such as slashers etc. These will include the provision of portable fire extinguishers during maintenance activities that involve cutting, grinding, welding and slashing etc.	Section 5.6
HR-09	To mitigate the risk of ignition of the surrounding vegetation, contractors undertaking drilling, cutting, grinding, welding and slashing operations on the site will not undertake such hot works without the provision of a portable fire extinguisher. These activities will; not be undertaken on Total Fire Ban days.	Section 5.6
HR-10	For the purpose of fuel reduction from hazard reduction burning, the following will be part of the ongoing management: <ul style="list-style-type: none"> <li>All perimeter trails clear and maintained;</li> </ul>	Section 6 Section 5.9

#	Mitigation Measures	Document Reference
HR-10	<ul style="list-style-type: none"> <li>Internal trails maintained to allow for mosaic burning;</li> </ul>	Section 5.10.1
HR-10	<ul style="list-style-type: none"> <li>Asset Protection Zones (APZ) / Defendable Spaces to be constructed and maintained around infrastructure;</li> </ul>	Section 5.2 (APZ) Section 5.3 (defendable spaces)
HR-10	<ul style="list-style-type: none"> <li>Provide and maintain temporary fire trails, Asset Protection Zones/Defendable Spaces adjacent to each stage.</li> </ul>	Section 5.2 (APZ) Section 5.3 (defendable spaces) Section 5.4 (temporary fire breaks)
HR-11	The <i>Cairncross Waste Management Facility Bushfire and Fuel Management Plan (2001)</i> will be updated to include the proposed bushfire mitigation measures for the Amended Proposal (HR-04 to HR-10), with consideration of the progressive development of the site.	This Plan
HR-12	Contractors will not undertake drilling, cutting, grinding, welding and slashing operations on Total Fire Ban days - unless during an emergency.	Section 5.6

### 3.3 Roles and Responsibilities

The responsibility matrix of all parties involved in the bushfire risks management are outlined in **Table 3-3**.

Table 3-3: Key roles and responsibilities matrix

Role	Responsibility
Port Macquarie Hastings Council (PMHC)	<ul style="list-style-type: none"> <li>PMHC has responsibility, under Section 66 of the <i>Rural Fires Act 1997</i>, to issue a notice in writing requiring an owner / occupier of any land within the Local Government Area (LGA) to carry out bushfire hazard reduction works on that land;</li> <li>Section 100E of the <i>Rural Fires Act 1997</i> requires Council to issue bushfire hazard reduction certificates for hazard reduction to be undertaken on private lands. These need to be in accordance with signed service level agreement with the Mid Coast District RFS;</li> <li>Section 63(1) states that it is the duty of a public authority to take any practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of a bushfire on or from: <ul style="list-style-type: none"> <li>any land vested in or under its control or management; or</li> <li>any highway, road, street, land or thoroughfare, the maintenance of which is charged on the authority.</li> </ul> </li> <li>Section 63(2) states that “it is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of fires on, and to minimise the danger of the spread of fires on or from that land”;</li> <li>The management of the bushfire protection measures within the Facility is the responsibility of PMHC.</li> </ul>
NSW Rural Fire Service (RFS)	<p>The NSW RFS has the responsibility for undertaking fire suppression activities, hazard management activities and other functions relative to emergency management, within its areas of operation;</p> <p>Section 73 of the <i>Rural Fires Act 1997</i> enables the Commissioner to carry out bushfire hazard reduction works on any land as required by a BRMP if the work has not been carried out satisfactorily. Incurred costs can be recovered as a debt owed to the Crown.</p>

Role	Responsibility
Fire & Rescue NSW	<p>Fire &amp; Rescue NSW has the responsibility for undertaking fire suppression activities and other functions relative to emergency management, within its area of operation and through Mutual Aid Agreements, provide assistance to the NSW RFS, particularly for structural fire operations within the NSW Rural Fire Brigade Districts.</p> <p>Hazmat management within NSW is the responsibility of Fire &amp; Rescue NSW.</p>
PHMC Bushfire Management Committee (BFMC)	<p>The PHMC BFMC has the responsibility for planning for coordinated firefighting activities / hazard management activities on a local government level. It is not an operational organisation, a fire fighting organisation or a funding source for fire management activities.</p> <p>The BFMC is supported by the following provisions of the <i>Rural Fires Act 1997</i>:</p> <ul style="list-style-type: none"> <li>• Section 52 requires each BFMC to prepare and submit a draft BFRMP and a plan of operations;</li> <li>• Section 54 of the Act specifies that a draft BFRMP is to 'set out schemes for the reduction of bushfire hazards in the rural fire district or other part of the State';</li> <li>• A draft BFRMP may also restrict or prohibit the use of fire or other fire hazard reduction activities in all or specified circumstances or places to which the plan applies;</li> <li>• The Mid Coast BFRMP was approved by the NSW Bushfire Coordinating Committee on 26 July 2019.</li> </ul>
PMHC Waste Manager	<ul style="list-style-type: none"> <li>• Ensuring a BFMP is developed and implemented;</li> <li>• Ensuring compliance with conditions of Development Consent and any regulatory or other requirements;</li> <li>• Ensuring appropriate resources are available to implement all aspects of the BFFMP and maintain necessary records.</li> </ul>
PMHC Waste Services Coordinator	<ul style="list-style-type: none"> <li>• Identifying bushfire risks associated with construction and operation undertaken at the landfill;</li> <li>• Developing and implementing procedures and measures to minimise or eliminate any risks identified;</li> <li>• Ensuring that all personnel undertaking work at the landfill receive adequate training and education in the environmental measures developed to mitigate or minimise risks associated with bushfire at the landfill;</li> <li>• Undertaking reporting and internal audits as required by the Compliance Tracking Program;</li> <li>• Review, maintain and assist implementation of the Environmental Management System.</li> </ul>
Cairncross Team Leader (Landfill Supervisor)	<ul style="list-style-type: none"> <li>• Assisting in the development, implementation and maintenance of mitigation measures to minimise or eliminate the identified environmental risks;</li> <li>• Complying with environmental measures and procedures implemented to minimise or eliminate environmental risks;</li> <li>• Maintaining onsite records and documents for inspection as required;</li> <li>• Attending environmental training and other educational sessions;</li> <li>• Reporting any environmental incidents that may occur in accordance with the BFFMP;</li> <li>• Inducting all staff, works and any person conducting or engaged by the company to complete works onsite.</li> </ul>

Role	Responsibility
Cairncross Plant Operators / Waste Depot Attendance / Weighbridge Operator	<ul style="list-style-type: none"> <li>• Completing the site induction;</li> <li>• Being aware of and following onsite instructions and procedures implemented to minimise or eliminate environmental risks;</li> <li>• Assisting management to mitigate any environmental hazards and incidents;</li> <li>• Attending environmental training and other educational sessions;</li> <li>• Continuous awareness of activities and processes that may have environmental impacts;</li> <li>• Reporting incidents promptly and assisting with implementing control measures as required.</li> </ul>
Contractors	<ul style="list-style-type: none"> <li>• Completing the site induction</li> <li>• Identifying the environmental risks associated with their activities at the landfill</li> <li>• Developing mitigating measures to minimise or eliminate the identified environmental risks</li> <li>• Being aware of and following onsite instructions and procedures implemented to minimise or eliminate environmental risks</li> </ul>

### 3.4 Training and Awareness

Landfill operation personnel will undergo a variety of training to ensure an adequate level of skill and education is possessed to enable all tasks and activities to be carried out successfully. Training will be conducted by PMHC, and if required, external experts will be engaged to provide the specialist training.

All staff will undertake bushfire awareness training on a regular basis. This could include safety around fire, bushfire emergency procedures, bushfire seasons and requirements during total fire ban days (TOBAN).

Minimum training requirements are summarised in the LEMP (**Table 5.2**), including Program B which covers Fire Fighting. A record of all training undertaken will be maintained on site and within the *Solid Waste Management Manual (PMHC, 2018)*.

### 3.5 Emergency Contacts

Procedures for fire prevention and firefighting are provided in *Solid Waste Management Manual*<sup>7</sup> (PMHC, 2018). The Manual contains a range of Standard Operating Procedures (SOP) including *SOP12 Emergency Contact List*. The emergency contact detail relevant to this BFFMP are provided in **Table 3-4**.

Table 3-4: Key roles and responsibilities matrix

Organisation / Role	Name / Division	Contact
All Emergencies	Police, Fire, Ambulance	000
NSW Fire Brigade	Emergency response Port Macquarie Fire Station Wauchope Fire Station	1300 729 579 (02) 6583 3000 (02) 6585 2161
NSW Rural Fire Service	Rural Fire Service – Mid North Coast Region	(02) 6585 1999
NSW Rural Fire Service	Rural Fire Service – Mid Coast Region	1300 643 262
NSW Police Service	Port Macquarie Police Station	(02) 6583 0199

<sup>7</sup> PMHC Solid Waste Management (Manual) Operational Policies, Standard Operating Procedures and Safe Work Method Statements, November 2018

Organisation / Role	Name / Division	Contact
NSW Ambulance Service	Port Macquarie Ambulance Station	131 233
National Parks and Wildlife Services	Mid North Coast Regional Office	(02) 6588 5555
Forestry Corporation	Wauchope Office	(02) 6585 3744
State Emergency Service	Port Macquarie SES	132 500
PMHC Waste Manager	Michael Magalhaes	(02) 6581 8125 0438 667 492
PMHC Waste Service Coordinator Manager	Wayne Lenard	(02) 6581 8076 0407 417 414
Cairncross Landfill Supervisor (Team Leader)	Andrew Collins	0419 419 690

## 4 BUSHFIRE RISK ASSESSMENT

### 4.1 Introduction

A Bushfire Protection Assessment (the Bushfire Assessment) was prepared by Australian Bushfire Protection Planners (ABPP) Pty Limited in 2017 and was included as Appendix Q of the Environmental Impact Statement (Arcadis, 2017). The assessment of the bushfire risk to the expansion of the landfill operation examined the following aspects:

- Adequacy of the setbacks [defendable spaces] to the landfill cells from the bushfire prone vegetation;
- Defendable spaces to the leachate tanks;
- Fire-fighting access;
- Provision of fire-fighting water supplies; and
- Fuel management protocols and other matters considered necessary to mitigate any potential bushfire threat to persons, property and the environment.

The site is affected by Bushfire Prone Land. The PBP 2019 (See **Section 3.1.3** above) provides general principles for determining bushfire hazard and was considered in determining the risk for the Facility. Since the Bushfire Assessment (2017) was undertaken, the Mid Coast BFRMP<sup>8</sup>, required under the *Rural Fires Act 1997*, was approved by the Mid Coast Bushfire Management Committee on 26 July 2019.

The findings of the BFRMP consider the bushfire risks for the Facility to be higher than what was originally determined in the Bushfire Assessment and as such, the findings of the BFRMP have been considered more appropriate for the BFFMP than the original assessment. That being said, the mitigation measures identified in the Bushfire Assessment are still relevant and are included in this plan in **Section 5**.

### 4.2 Mid-Coast BFRMP Risk Assessment

The BFRMP is a strategic document that identifies community assets at risk and sets out a five-year program of coordinated multi-agency treatments to reduce the risk of bushfire to the assets. Treatments may include such things as hazard reduction burning, grazing, community education, fire trail maintenance and establishing community fireguard groups.

Appendix 2 of the Mid Coast BFRMP includes an Asset Register which identifies all assets valued by the community. This includes houses, crops, heritage buildings and places, infrastructure, the environment, businesses and forests that may be at risk from bushfire.

The Mid-Coast BFRMP covers the former LGAs of Gloucester, Great Lakes and Greater Taree and also now includes Port Macquarie Hastings LGA.

#### 4.2.1 Climate and bushfire Season

Average fire weather and severe fire weather days are projected to increase in Summer and Spring. The bushfire season for the Mid Coast BFMC generally runs from July to November, however, can extend into December or January if there are periods of low rainfall.

A longer bushfire season occurs when Summer rainfall is lower than normal, with the bushfire season extending though Summer to early Autumn and serious fires have occurred late in the season under dry summer conditions.

Mid-Coast BFRMP states that prevailing weather conditions associated with the bushfire season are characterised by dry north-westerly winds, usually associated with high pressure systems and the passage of cold fronts. Extended periods of low rainfall and the resultant fuel moisture deficiencies, combined with summer temperatures and hot dry westerly winds, form the circumstances for high intensity fires to develop. Climate projections indicate that there is a likelihood of more frequent and higher intensity bushfires occurring when low seasonal rainfall occurs.

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<sup>8</sup> Mid Coast BFMC, 2019: Mid Coast BFRMP, dated 26 July 2019

### 4.3 Potential Bushfire Scenarios

The forest vegetation on the landfill site and located on the adjoining land, to the west, southwest, south and southeast of the Facility presents a potential bushfire threat.

The Bushfire Assessment identified five bushfire scenarios likely to affect the Cairncross WMF and was based on the potential fire paths. The scenarios and the potential consequences and likelihood of an event happening, prior to the implementation mitigation measures, are summarised in **Table 4-1**. Mitigation measures are provided in **Section 5**.

Table 4-1: Potential bushfire risk scenarios

#	Scenarios	Consequences	Likelihood
1	Fire burning in unmanaged forest vegetation in the Compensatory Habitat, spreading across the landscape under north-westerly, westerly and south-westerly winds	Ignition of exposed waste. Burns to people exposed to radiant heat	Likely to occur during severe/ catastrophic fire danger periods
2	Fire burning in unmanaged forest vegetation on the State Forest to the south of Stage 2, spreading across the landscape under south-westerly winds	Ignition of exposed waste. Burns to people exposed to radiant heat	Likely to occur during severe/ catastrophic fire danger periods
3	Fire burning in unmanaged forest vegetation on the Nature Reserve to the southeast of Stage 3, spreading across the landscape under south-easterly winds	Ignition of exposed waste. Burns to people exposed to radiant heat	May occur during severe fire danger periods
4	Fire burning in unmanaged forest vegetation in the undeveloped landfill stages	Ignition of exposed waste. Burns to people exposed to radiant heat	May occur during severe fire danger periods
5	Fire burning in landfill, spreading into the adjoining forest vegetation within the facility or on the adjoining lands	Ignition of unmanaged vegetation on adjoining land. Burns to people exposed to radiant heat	May occur if fire within the landfill material is not immediately extinguished during severe fire danger periods

### 4.4 Assessment of Bushfire Risk

AS/NZS 4360: 2004 Risk Management was used by the Mid Coast BFMC, as the basis for the risk assessment process, and similar to that used in the Cairncross EIS and described in Section 6.2 of the LEMP.

The level of bushfire risk within the Mid-Coast BFRMP involved identifying community assets considered to be at risk from bushfire. Both Cairncross WMF and the surrounding Cairncross State Forest are considered be economic assets.

The consequence of an economic asset and likelihood of the asset being impacted by bushfire was determined as follows:

- Consequences were based on the level of economic impact at the local, regional or state level;
- Likelihood was determined based fire history, including ignition cause and patterns, known fire paths, access, containment potential and potential fire run (size of the vegetated area).

**Table 4-2** summarises the findings of the Mid-Coast BFRMP.

Table 4-2: BFRMP likelihood, consequences and risk level for the Facility and surrounding vegetation

Asset	Asset type	Map Ref	Likelihood	Consequence	Risk	Priority
Cairncross State Forest	Economic (commercial forest)	#62	Almost Certain	Major	Extreme	1C
Cairncross WMF	Economic (infrastructure)	#269	Likely	Major	Very High	2A

## 4.5 Managing Facility Bushfire Risk

**Table 4-2** identifies potential risk prior to the implementation of recommended mitigation measures. This also includes the potential risk of a fire igniting within the landfill operations and escaping into the vegetation either within the facility or on the adjoining lands. Staff and equipment may therefore be exposed to high levels of radiant heat and toxic smoke.

The current operational practices implemented in Stage E, will also be used during construction and operation of Stages 1, 2 and 3. This includes compaction of waste with heavy machinery and progressive capping of the landfill. All waste is covered with 150 mm of day cover material with no waste left exposed when the landfill is not operating. During total fire ban days, efforts will be made to reduce the amount of exposed material. In the event of a fire breaking out, the exposed material within the landfill will be covered by soil to prevent ignition of the subsurface elements.

Fire outbreaks have occurred on occasion when ash and other hot materials/acids are deposited in the waste material. Outbreaks of fire occurring during operating hours are extinguished using heavy machinery and water carts. The management of fire ignitions within the landfill reduces the risk of ignition of the surrounding vegetation both on the adjoining land and within the future Stages 1, 2 and 3.

This BFFMP outlines the mitigation measures to be implemented to minimise the impacts of fire during landfill operations. This includes measures for work practices by staff as well as providing defendable space, fire breaks and Strategic Fire Advantage Zones (SFAZ). Proposed mitigation measures are provided in **Section 5**.

Although the risk ratings of the 2017 Bushfire Assessment were superseded with the higher risk rating determined by the BFRMP, the mitigation measures proposed in the 2017 Bushfire Assessment were determined based on the assessment of the existing Cairncross WMF features and the surrounding vegetation, using a risk assessment based on the legislation and guidelines at the time.

The proposed mitigation measures described in Section 5 of the BFFMP are still identified as applicable measures required by the current legislation identified in **Section 3.1**, and are also generally in accordance with the standard bushfire treatments recommended by the BFRMP. See **Section 5.10.3** for more details.

Some of the mitigation measures (i.e. defendable space, SFAZ) are also requirements of the Development Consent SSD 5792.

## 5 Bushfire Management and Mitigation Measures

This section describes the overall approach to managing and mitigating risks of bushfire during operation of the expanded Landfill operation.

The bushfire management objectives for the site are:

- To mitigate bushfire risks as determined within **Section 4**;
- To reduce the risks of bushfire to life and property;
- To comply with the Development Consent and other legal requirements as detailed in **Section 3**.

To meet the above objectives, the following fire mitigation measures will be implemented for the Facility.

### 5.1 Strategic Fire Advantage Zone

A Strategic Fire Advantage Zone (SFAZ) provides fuel reduced areas which enable the protection of assets by firefighters when asset protection zones are not in place.

As required under Condition 33 of SSD 5792, a **30 m wide SFAZ** will be provided and maintained along the boundary with the adjoining Rawdon Creek Nature Reserve (eastern side of Stage 3).

#### 5.1.1 Maintenance

This zone shall be managed in accordance with the prescriptions provided by the *Bushfire Environmental Assessment Code for NSW (NSW Rural Fire Service 2006)*. A map defining the boundaries and extent of permissible work for a SFAZ will be attached to the bushfire hazard reduction burn certificate (See **Section 6.2**).

### 5.2 Asset Protection Zone

Asset Protection Zones (APZ) provide fuel reduced areas around assets or groups of assets which are adjacent to bushfire hazards. APZs generally contain highly modified vegetation to reduce the radiant heat impact during a fire, and provide a defensible space to allow residents and fire fighters to operate after the passage of the fire front.

The fire trail located to the south and outside of the koala corridor area will serve as the APZ along the southern boundary.

#### 5.2.1 Maintenance

The APZ will be managed in accordance with the NSW RFS documents *Standards for Asset Protection Zones* and *Planning for Bushfire Protection 2019*.

### 5.3 Defendable Space

Defendable space is an area adjoining an asset that is managed to reduce combustible elements. It is a relatively safe working environment for fire fighters to defend assets before and after the passage of a fire.

#### 5.3.1 Asset management

Two leachate tanks will serve Stage E, Stage 1 and Stage 2 and one will be constructed once for Stage 3 once operational. These assets will have security fencing, tank pad and bund, a pump shed and surrounded by a 3 m wide access track.

A **20 m wide Defendable Space** will be provided to each leachate tank (See **Figure 2-5**).

A minimum of 10m Defendable Space will be provided around operational areas of the landfill.

### 5.3.2 Maintenance

This space will require regular slashing to limit vegetation [grass] height to 150 mm during the Bushfire Danger Period (See **Section 4.2.1**).

## 5.4 Temporary Fire Breaks

Temporary cleared fire breaks, connected to existing fire trails, will be provided to the outer edge of the incremental landfill cells as landfill construction and operation commences.

The temporary fire breaks will include a 6 m access track which provides adequate access for a fully laden 15 tonne (GVM) Rural Fire Service State Forests Category 1 Tanker (Category 1 Tanker).

## 5.5 Hazard Reduction Burning

The residual forest vegetation is located outside of the operating stage (i.e. vegetation within Stage 2 and 3, when Stage 1 becomes operational). Where conditions and resources allow, this vegetation/fuel will be fuel managed by hazard reduction burning in accordance with the prescriptions provided by the *Bushfire Environmental Assessment Code for NSW (NSW Rural Fire Service 2006)* and/or the Mid-Coast BRMP.

Management of the combustible fuels will be undertaken to maintain a **Low –Moderate Overall Fuel Hazard**, pursuant to the *Overall Fuel Hazard Guide (Department of Sustainability and Environment (DSE), July 2009)*. The fuel management strategy and hazard reduction burning is provided in **Section 6**.

Hazard reduction burning is dependent on firefighting resources being available and the fuel being in a condition suitable for an effective burn. As such, the ability to implement hazard reduction burns is highly variable and is not to be relied upon to reduce risk. A range of strategies will be used to reduce the risk to tolerable levels.

## 5.6 Work Practices

Hot works (e.g. drilling, cutting, grinding, welding) and operation of machinery such as slashers have the potential to ignite the surrounding vegetation. All site personnel will receive training which will include an understanding of what work activities are a potential risk and procedures to mitigate these risks (See **Section 3.4**). No hot works will be undertaken on Total Fire Ban days.

The following work practices will be implemented:

- A portable fire extinguisher will be provided where hot works and slashing activities are undertaken.
- Firefighting equipment will be on 'stand-by' readiness during Total Fire Ban days. This will include water tankers and heavy earth moving plant.
- No hot works to be undertaken on Total Fire Ban days, unless during an emergency, in which case firefighting equipment must be available.

## 5.7 Firefighting Water Supplies

A firefighting water storage dam is located within the Stage 3 area, just east of Thurlings Road (See **Figure 2-5**). The storage dam is approximately 3,000 m<sup>3</sup>, which satisfies the fire-fighting water supply requirements.

This storage dam will remain in its current location during Stage 1 and 2 and will be relocated to the eastern side of Stage 3 prior to the commencement of landfilling in the Stage 3 area.

## 5.8 Firefighting equipment

Other Firefighting equipment available at the site includes:

- Fire Hose Reels;
- Portable Fire Extinguishers;
- Fire Hydrants;
- Portable Extinguishers (attached to all site plant for immediate use in the event of a fire);

- Landfill Compactor;
- Excavators;
- Water cart.

Firefighting equipment and facilities will be visually inspected on a weekly basis and tested and certified on a six-monthly basis. All extinguishers will be recharged, tested and certified following use.

## 5.9 Roads and Trails

Roads and trails can act as firebreaks and fire access tracks and are strategic for assisting with bushfire mitigation and suppression. The following roads and trails are available or will be made available during landfill construction and operation:

- Stage E is currently bounded by the following trails:
  - to the west is the 9.1 internal forestry trail, which is located within the western buffer zone and runs north to south;
  - to the east is Thurlings Road, which runs north-south from Extension Road to the Stage E cell fence and joins Tree Road, just south of the site access road. This road is accessible for a fully laden Category 1 Tanker, from Extension Road through the landfill site to the northern side. The road corridor is up to 20 m wide in some places;
  - to the south is a 4 m wide constructed fire trail within a 10 m wide treeless corridor;
  - to the north by the Northern Boundary trail. This trail is accessible for a fully laden Category 1 Tanker.
- The existing fire trail adjacent to the south-eastern boundary of the site shall be upgraded and maintained to provide an all-weather access having a width of 4 m within a 6 m corridor kept clear of shrubs and grasses. The trail shall be located within the SFAZ and shall be constructed to provide access for a fully laden Category 1 Tanker.
- The existing fire trail to the west of Stages 1 and 2 (9.1 internal forestry trail) and between Stages 2 and 3 (Thurlings Road) shall be retained and maintained to provide an all-weather access for a fully laden Category 1 Tanker.
- A temporary fire trail which connects to the existing/proposed perimeter/internal fire trail network will be provided around the perimeter of each incremental landfill cell. The temporary trail should be capable of carrying a fully laden Category 1 Tanker.
- Extension Road to the south of the site is accessible to Category 1 Tankers all the way from Pembroke road to Thurlings road. It is only 3 m wide in some places from Pembroke Road to 9.1 trail and then 20 m through to Thurlings Road. The road can be used as a burn boundary or as a mineral earth break for back burning in the event of wildfire.

Pembroke Road is an all-weather bitumen road located to the west of the Cairncross WMF property.

Road and trails are shown in Figure 2-5.

## 5.10 Ongoing Fire Management.

Ongoing fire management during operation of the facility will be managed in accordance with the following PMHC operating procedures:

- *SOP11 Fire prevention and firefighting;*
- *SOP13 Fire in a Load;*
- *SOP14 Fire in a Building and/ or Equipment; and*
- *SOP15 Fire in a Storage Container.*

These SOPs detail the procedures to follow in the event of a fire at the Facility.

Other key measures to be implemented as part of this BFFMP are described in the sections below.

### 5.10.1 Vegetation / fuel management

- Maintenance of existing site access roads and constructed fires trails (internal and perimeter) to ensure that these areas do not become overgrown with vegetation.
- Internal trails will be maintained to allow for mosaic burning;
- The establishment of a fuel free zone in accordance with this BFFMP (See **Figure 2-5**). These will be managed at 0-3 tonnes per hectare through the following measures:
  - Leaf litter will be thinned to 5 to 10mm depth;
  - Slashing of grassed areas to <50 mm;
  - Controlled burning (in consultation with Bushfire Officer and Fire Authorities);
  - Reduction of shrubs;
  - Removal of saplings less than 75mm breast height diameter.
- Asset Protection Zones<sup>9</sup>/Defendable Spaces will be constructed and maintained around infrastructure in accordance with this BFFMP. Vegetation in these zones will be managed to 8 to 10 tonnes per hectare. This can be achieved through the following measures<sup>10</sup>:
  - Trees tree canopy cover should be less than 30%; and canopies should be separated by 2-5 m;
  - Shrubs should not form a continuous canopy; and shrubs should form no more than 20% of ground cover;
  - Grass should be kept mown to a height of <100 mm and leaf and other debris should be removed.
- Fuel management activities to be carried out in winter for all suspended fuels such as shrubs and saplings and winter, and late spring and summer for ground layer fuels.

### 5.10.2 Waste management

To minimise the occurrence of fire outbreak resulting from waste materials (e.g. ash, flammable liquids and other hot materials and acids), the following controls are in place:

- Clear signs are displayed at the site entrance to notify the public what materials are permitted on the site.
- All loads are inspected in accordance with *SOP24 Inspection of Loads* to ensure that waste not permitted on site is identified.
- Combustible materials (including tyres, wood and vegetation) are divided into small piles to ensure any burning material can be kept away from other fuels.
- All waste will be covered in accordance with *SOP5 Covering of Waste & Litter Control* to minimise the risk of fire.
- Outbreaks of fire occurring during operating hours are extinguished using heavy machinery and water carts.

In addition to the above, Section 8.4 of the 2020 *Fire Safety Guideline for Fire Safety in Waste Facilities* provides details for managing stockpile size. These state (among other things):

- The maximum width of an external stockpile should be 20 m if the fire brigade vehicle access is provided to both sides of the stockpile and 10 m if access is provided down one side of the stockpile only;
- The maximum length of an external stockpile should be 50 m, or as determined from the required minimum separation distances.

These measures were not proposed in the EIS but should be carefully considered and incorporated into the relevant stockpile management procedures for the site.

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<sup>9</sup> Asset Protection Zones (APZ) Asset Protection Zones provide fuel reduced areas around assets or groups of assets which are adjacent to bushfire hazards. APZs generally contain highly modified vegetation to reduce the radiant heat impact during a fire, and provide a defendable space to allow residents and fire fighters to operate after the passage of the fire front.

<sup>10</sup> PBP 2019, Appendix 4.

### 5.10.3 Mid-Coast BFRMP measures

The Cairncross WMF is identified as an Economic Infrastructure Asset, surrounded by Commercial Forests. Specific treatments assigned to assets in the Mid Coast area are listed within the treatments table<sup>11</sup> and linked to the assets which they are designed to protect.

Standard BFMC wide treatments (i.e. not linked to a specific asset) which occur on an ongoing basis within the BFMC area are as follows. Where these are addressed in the BFFMP is include in parenthesis:

- Reviewing the bushfire prone land map (See Section 3);
- Ensuring developments in the bushfire prone land comply with *Planning for Bushfire Protection* (See Section 3.1.3);
- Using the Local Environment Plan/s (LEPs) to control development in areas with a bushfire risk (See Section 3);
- Varying the standard bushfire danger period as required (See Section 4.2.1 and Section 2.5.1);
- Requiring permits during bushfire danger periods (See Section 5.6);
- Prosecution of arsonists/offenders;
- Investigation of bushfire cause (See Section 7.4);
- Normal fire suppression activities (See Section 5 and Section 6);
- Assessing and managing compliance with strategic fire-fighting resource allocation management systems (See Section 5 and Section 6);
- Preparation of a S52 Operations Coordination Plan (Appendix B);
- Fire management plans or plans of management (Appendix B); and
- Bushfire hazard complaints (See Section 7.5).

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<sup>11</sup> Mid Coast BFRMP 2019, Map 16.

## 6 FUEL MANAGEMENT STRATEGY

PHMC is required under the *Rural Fires Act 1997* to manage fuel levels throughout the Facility and to prevent the occurrence and spread of fire into or from the Facility. This includes within the compensatory habitat, across the fire protection zones surrounding the Facility and within the undeveloped landfill compartments. This is required to reduce the risks of both external bushfires impacting the Facility and to prevent fire from the Facility spreading onto neighbouring lands.

The main strategy for this is to reduce the amount of available fuel in the area immediately surrounding the active cells through various techniques including prescribed burning, establishment of fuel free zones, asset protection zones, slashing and reduction of shrubs. Fuel management of the fire protection zones, and future landfill compartments will be undertaken by a PHMC appointed contractor.

### 6.1 Compensatory Habitat

PHMC will undertake fuel management of the compensatory habitat using methods and fuel levels adopted in the Rawdon Creek Nature Reserve. This ensures that the area is maintained in its natural state and biological diversity of the compensatory habitat area is maintained.

The key targets for vegetation management include:

- Provide a provision of bushfire protection measures;
- Provide for a defendable space to be located around assets;
- Ensure that appropriate operational access and egress for emergency service personnel and occupants is provided;
- Ensure that utility services are adequate to meet the needs of firefighters.

In the event of a bushfire, this strategy will enable the safe use of parallel or direct attack and the safe use of indirect attack (back burning) during periods of high to very high fire danger. It will also minimise the potential for crown fire development and reduce the incidence of spotting into the active cells of the landfill.

### 6.2 Prescribed Burning

If required, the amount of available fuel in the area immediately surrounding the active cells and the western compensatory habitat can be managed through the use of prescribed fire i.e. burning under controlled conditions.

Prior to any controlled burn, an Operational Burn Plan (OBP) will be prepared by a competent and trained fire fighter and prescribed burn planner. The OBP will include a site-specific map, detailing the burn boundary, including specific no burn areas (e.g. riparian buffers), notification requirements, area of burn and burning prescription (e.g. temperature, wind speed, maximum rate of spread etc.). An OBP template is provided in **Appendix B**.

The aim of burning under controlled conditions is to create a mosaic of burnt and unburned areas, and to achieve a burn coverage area of between 60% to 80%.

Low to moderate intensity fire will be used to reduce the available fuel (See **Table 6-1**).

The western compensatory habitat should be managed in partnership with NPWS as they manage the nearby Nature Reserve.

Table 6-1: Principles of low to moderate fire intensity

Fire intensity	Vegetation Removed	Description	Prescriptions
Low intensity	Removes leaf litter, grass and shrub layer with minimal canopy scorching	Fires will be patchy so that the actual burnt area <i>may</i> vary between 40% and 80% with an average flame height of <1 m.	Low temperatures, low relative humidity and low wind speed combined with a suitable lighting pattern.
Moderate intensity	Removes more of the shrub layer.	The flame height will be between 1-2 m and some crown scorch can be expected.  Fuel moisture differentials will be used to keep fire out of drainage lines and riparian buffers.  Burning will be carried out with a fire fighting agency in attendance. Ideally this could be accomplished with Forests Corporation of NSW or NSW NPWS these agencies carry out hazard reduction burning on their estate.	Temperature, relative humidity and wind strength will generally be higher than those for low intensity burns.

### 6.2.1 Fire frequency

**Section 2.5.5** and **Figure 2-4** provides details on Vegetation Formation (based on Keith 2004) and the type of vegetation mapped for the whole site. Appendix A of the *Bushfire Environmental Assessment Code for NSW (NSW Rural Fire Service 2006)* provides the fire intervals for SFAZs based on Vegetation Formation.

Burning frequencies for known vegetation communities onsite are shown in Table 6-2.

Table 6-2: Burning frequencies for known vegetation communities

Formations	Class	Site Vegetation	Frequency
Dry sclerophyll forests (shrubby sub-formation)	Northern Escarpment Dry Sclerophyll Forests	Eucalypt forest or sometimes woodland with a sparse hard leaved shrub layer and a mainly grassy ground cover.	5 Years
Dry sclerophyll forests	Northern Hinterland Wet Sclerophyll Forests	Grey Gum – Tallowood – White Mahogany Grassy Forest	5 Years
Forested Wetlands	Costal Floodplain Wetlands	Flax-leaved Paperbark - Mixed Eucalypt Coastal Floodplain Wetlands Forest Complex	7 years
Wet Sclerophyll Forests	Northern Escarpment Wet Sclerophyll Forests	Blackbutt Grassy Forest	10 years

The OEH is developing plant community types mapping which is currently in draft form and shows differences from PMHC's existing mapping. Once complete, to ensure that appropriate fire regimes are established, an on-ground assessment will need to be undertaken in the compensatory habitat to check the OEH mapping for accuracy.

### 6.2.2 Notification of fire authorities and neighbours

Prior to commencing prescribed hazard reduction burning, PMHC will give at least 24 hours' notice to the relevant stakeholders provided in **Table 6-3**.

The RFS Port Macquarie Hastings (Mid-Coast Office) Fire Control Officer will confirm whether a "No Burn" notice has been issued by the Environment Protection Authority.

Table 6-3: Stakeholder notification requirements

Relevant Stakeholder	Contact details
Fire Control Officer RFS Port Macquarie Hastings (Mid Coast) Office	<b>Street Address:</b> 108 Cameron Street, Wauchope 2446 <b>Postal Address:</b> PO BOX 126, Wauchope 2446 <b>Phone Number:</b> 02 6588 9000 <b>Fax Number:</b> 02 6585 2400
Forestry Corporation Wauchope office	<b>Street Address:</b> Maher Street, Wauchope <b>Postal Address:</b> PO Box 168, Wauchope 2446 <b>Phone Number:</b> 02 6585 3744
Fire and Rescue NSW	<b>Address:</b> 1 Amarina Avenue, Greenacre NSW 2190 <b>Postal address:</b> Locked Mail Bag 12, Greenacre NSW 2190 <b>Phone Number:</b> 02 9265 2999 <b>Fax:</b> 02 9265 2988 <b>Business hours:</b> 8:30am to 5pm Mon – Fri <b>Email:</b> <a href="mailto:info@fire.nsw.gov.au">info@fire.nsw.gov.au</a>
National Parks and Wildlife Services (NPWS)	<b>Phone number:</b> 1300 072 757 (13000 PARKS) <b>Email:</b> <a href="mailto:parks.info@environment.nsw.gov.au">parks.info@environment.nsw.gov.au</a>
Private landowners adjacent to the burn area	Via letter drop and electronic media.
General public	Via the print and electronic media.

### 6.2.3 Traffic management

The OBP will detail any traffic control measures, including signage, that will be required to manage potential impacts from smoke to traffic on Pembroke Road, Telegraph Point Road, the Pacific Highway and the Facility access road.

## 6.3 Environmental Protection

### 6.3.1 Flora and fauna

The Environmental Impact Statement (EIS), prepared by Arcadis in 2017, states that no threatened flora species were recorded within landfill operation area, however the following threatened fauna species (listed under the BC Act or EPBC Act) were considered to have a high likelihood of occurrence:

- Koala (*Phascolarctos cinereus*);
- Rufous Fantail (*Rhipidura rufifrons*) (listed as migratory under the EPBC Act);
- Spotted-tail Quoll (*Dasyurus maculatus maculatus*);
- Grey-headed Flying-fox (*Pteropus poliocephalus*);
- Southern Myotis (*Myotis macropus*).

As such, the management actions identified in the *Threatened Species Hazard Reduction List – Part 2 (Animals)*<sup>12</sup> will be incorporated into the OBP and included as a condition of the bushfire hazard reduction burn certificate. This information is available from Forestry Corporation and the NSW Rural Fire Service and can be used to assist with the OBP preparation.

### 6.3.2 Soil and water

Riparian buffers on Rawdon Creek and a number of smaller drainage lines will be protected from fire using fuel moisture differentials. The OBP will state a minimum fuel moisture content for the riparian buffers and a corresponding minimum fuel moisture content for the burn area.

No lighting of fire within the buffers is permitted. All buffers will be clearly defined on the OBP map.

### 6.3.3 Heritage features

The location of Stages 1, 2 and 3 and the compensatory habitat area comprise unharvested native forest areas where there is a likelihood of scarred and canoe trees. PMHC does not have a data license agreement with NPWS and therefore a full copy of the application for a certificate (including OBP) will be forwarded to NPWS (Cultural Heritage Division) at the time of plan preparation for determination.

PMHC may elect to subcontract the OBP preparation and implementation to an external body, like the Forestry Corporation, who has a data license agreement with NPWS.

If Aboriginal Heritage items (e.g. scar trees) are identified within the area being managed, *Conditions for Hazard Reduction and Aboriginal Heritage*<sup>13</sup> must be addressed. This paper provides the conditions that are to be adhered to if Aboriginal heritage items may occur at a site. Both AHIMS search and on-ground assessment can be undertaken by PMHC or external consultant with referral to NPWS heritage section as required.

Locations of previously registered Aboriginal sites as detailed in the EIS (2017) are shown in **Figure 6-1**.

There are no known European Cultural Heritage sites located with the Facility property.

### 6.3.4 Significant environmental areas

Currently there are no environmental protection areas zoned/identified within the PMHC LEP within the Facility property. However, as discussed in **Section 2.8**, the koala connectivity corridor located south of Stage 2 will be rezoned for environmental protection with the next standard LEP instrument amendment.

The fire trail located to the south and outside of the koala corridor area will serve as the APZ along the southern boundary. The APZ will be managed in perpetuity in accordance with the NSW RFS guidelines (**Section 5**).

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<sup>12</sup> This List is to be applied with reference to the "Rules and Notes for the implementation of the Threatened Species Hazard Reduction List for the Bush Fire Environmental Assessment Code". NSW Rural Fire Service. Part 1 relates to plants and Part 3 relates to Threatened Ecological Communities. These documents are available on the NSW Rural Fire Service website at <https://www.rfs.nsw.gov.au/resources/publications/hazard-reduction/bush-fire-environmental-assessment-code>.

<sup>13</sup> NSW Rural Fire Service: *Conditions for Hazard Reduction and Aboriginal Heritage* (<https://www.rfs.nsw.gov.au/resources/publications/hazard-reduction/bush-fire-environmental-assessment-code>)

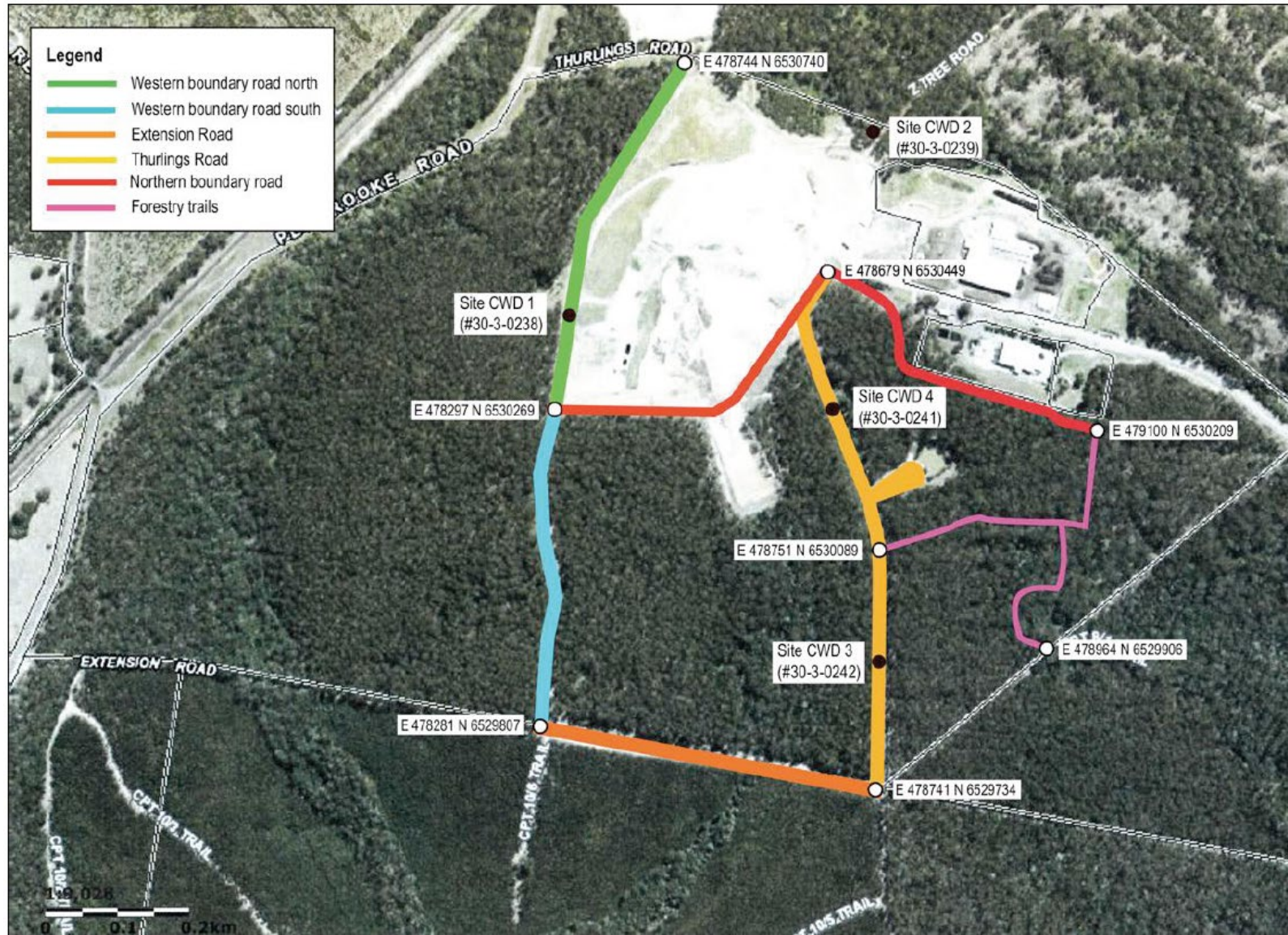


Figure 6-1: Locations of previously registered Aboriginal sites (Source: Adise, 2016)

## 7 REVIEW

### 7.1 Environmental Auditing

Environmental audits will be undertaken in accordance with the Independent Environmental Audit program approved by the DPIE, the Conditions of Consent and LEMP requirements.

Detailed audit requirements used to evaluate environmental performance and the compliance status of the Facility operation is outlined in Section 7.3 of the LEMP.

### 7.2 Reporting

#### 7.2.1 Compliance reporting

Annual monitoring and compliance summary monitoring reports will be prepared and submitted to the EPA and DPIE in accordance with Section 7.5.1 of the LEMP.

### 7.3 Review and Improvement

Review and improvement of this plan will be undertaken in accordance with the Conditions of Consent and in accordance with section 7.6 of the LEMP. Continuous improvement will be achieved by the ongoing evaluation of environmental management performance and effectiveness of this plan against environmental policies, objectives and targets.

The updated plan and a summary of changes will be available at the Facility and distributed to all relevant stakeholders.

### 7.4 Incidents

In the event of a safety / environmental incident or unpredicted impacts relating to the landfill construction and operation, it is the responsibility of all personnel to report the incident or event to the Landfill Supervisor.

All environmental incidents are to be reported and managed in accordance with the PMHC *Pollution Incident Response Management Plan (PIRMP)* and in accordance with to Section 5.5 and Section 5.6 of the LEMP.

### 7.5 Complaints

Complaints may be received directly from stakeholders, or indirectly via the dedicated phone number, website. Complaints handling will be undertaken in accordance with Section 5.4 of the LEMP.

### 7.6 Non-Compliance, Non-Conformances and Corrective Actions

Non-compliance may be identified via internal and external audits, compliance monitoring, inspections and observations, environmental incidents and emergencies, complaints and management reviews.

Non-compliance, non-conformances and resulting corrective actions are to be managed in accordance with Section 7.4 of the LEMP.

#### 7.6.1 Contingency operational measures

Operations of the landfill have the potential to be disrupted by various internal and external factors. Some disruptions may be planned, such as scheduled maintenance work, while other disruptions may occur without notice.

## **7.7 Access for information**

A comprehensive summary of the monitoring results of the construction and operation will be reported in accordance with Section 7.2 of the LEMP and will be published at PMHC website:

<https://www.pmhc.nsw.gov.au/Services/Environment/Environment-Reports/Landfill-reports>.

## 8 RELEVANT DOCUMENTATION

The following are the key operating procedures and checklists relevant to the landfill construction and operation are listed in **Table 8-1**.

Table 8-1: Key Operating Procedures and Checklists

Document name
<i>Solid Waste Management Manual (PMHC, 2018)</i>
<i>PMHC Pest Management Plan for Cairncross WMF (dated 2013)</i>
<i>PMHC Incident Follow-Up [SOP1]</i>
<i>PMHC Fire Prevention and Fire Fighting [SOP11]</i>
<i>PMHC Fire Incident Contacts List [SOP12]</i>
<i>PMHC Fire in a Load [SOP13]</i>
<i>PMHC Fire in a Building and/or Equipment [SOP14]</i>
<i>PMHC Fire in a Storage / Transport Container [SOP15]</i>
<i>PMHC Facility Evacuation Cairncross Waste Management Facility [SOP17.1]</i>
<i>PMHC Inspection of Loads [SOP24]</i>
<i>PMHC Incident Reporting [SOP25]</i>
<i>PMHC Site Inspection and Audit Checklist [SOP39.2]</i>
<i>Pollution Incident Response Management Plan (PMHC, 2020)</i>
<i>Authorisation for timber plantation GR0412P (the DPIE, 26 October 2004)</i>
<i>Operational Environmental Management Plan: Cairncross Waste Management Facility (landfill) (PMHC, 2015)</i>

## 9 REFERENCES

- Arcadis, 2017: Cairncross Landfill Expansion EIS, dated 10 November 2017.
- Arcadis, 2017: Cairncross Landfill Expansion Biodiversity Assessment Report, dated 01 June 2017.
- Arcadis, 2019: Cairncross Waste Management Facility Expansion SSD 5792 Response to Submissions – Supplementary responses, dated 9 May 2019.
- Brunner et al, 1970: Hastings 1:20,000 Hastings geological sheet
- Australian Bushfire Protection Planners Pty LTD, 2017: Bushfire Protection Assessment for the Cairncross Landfill Expansion, dated 16 February 2017.
- Department of Sustainability and Environmental, 2009: Overall Fuel Hazard Guide, Third Edition.
- Fattal, A., Kelly, S., Liu, A., Giurco, D. 2016: Waste Fires in Australia: Cause for Concern? Prepared for the Department of Environment, Canberra by the UTS Institute for Sustainable Futures, Sydney.
- Hashimoto and Troedson, 2008: Port Macquarie Area 1:100,000 Quaternary Geological Sheet
- Mid Coast Bushfire Management Committee, 2019: Mid Coast Bushfire Management Bushfire Risk Management Plan dated 26 July 2019. Accessed via <https://www.rfs.nsw.gov.au/plan-and-prepare/know-your-risk/bush-fire-risk-management-plans>
- NSW NPWS, 2018: Fire Management Manual 2018-2019, Version 1.0.
- NSW Rural Fire Service, 2006: Bushfire Environmental Assessment Code, February 2006.
  - NSW Rural Fire Service: Rules and Notes for the implementation of the *Threatened Species Hazard Reduction List for the Bushfire Environmental Assessment Code*.
  - NSW Rural Fire Service. Part 1 relates to plants
  - NSW Rural Fire Service. Part 2 relates to animals
  - NSW Rural Fire Service. Part 3 relates to Threatened Ecological Communities.
  - NSW Rural Fire Service: Conditions for Hazard Reduction and Aboriginal Heritage
  - Accessed via: <https://www.rfs.nsw.gov.au/resources/publications/hazard-reduction/bush-fire-environmental-assessment-code>
- NSW Rural Fire Service, 2019: Planning for Bushfire Protection.
- Port Macquarie Hastings Council, 2018: Solid Waste Management Operational Policies, Standard Operating Procedures and Safe, Work Method Statements, November 2018.
- <https://www.aemo.com.au/aemo/apps/visualisations/map.html>

# APPENDIX A CONSULTATION

**Tilley, Heather**

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**Subject:** FW: Cairncross WMF - Bushfire and Fuel Management Plan - RFS Consultation

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**From:** Steve Farrell <[Steve.Farrell@rfs.nsw.gov.au](mailto:Steve.Farrell@rfs.nsw.gov.au)>  
**Sent:** Wednesday, 28 October 2020 2:34 PM  
**To:** Sean McKinnon <[Sean.McKinnon@pmhc.nsw.gov.au](mailto:Sean.McKinnon@pmhc.nsw.gov.au)>  
**Cc:** Michael Magalhaes <[Michael.Magalhaes@pmhc.nsw.gov.au](mailto:Michael.Magalhaes@pmhc.nsw.gov.au)>  
**Subject:** RE: Cairncross WMF - Bushfire and Fuel Management Plan - RFS Consultation

Hi Sean,

I have reviewed the attached documents and I trust this meets the criteria of consultation.

I do not have any concerns however may I suggest some very slight changes?

BFFMP – Emergency Contacts, May I suggest we reference the NSW Rural Fire Service – Mid Coast District 1300 643 262.

Appendix Q – Section 3.4 – May I suggest reference to Mid Coast Bush Fire Management Committee.

Please let me know if you have any further questions.

Stay safe



**Steve Farrell** | A/District Coordinator - Community Preparedness | Mid Coast District  
**NSW RURAL FIRE SERVICE**  
PO Box 327 Taree NSW 2430  
**P** 1 300 643262 **F** 02 6585 2420 **E** [Steve.Farrell@rfs.nsw.gov.au](mailto:Steve.Farrell@rfs.nsw.gov.au)  
[www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au) | [www.facebook.com/nswrfs](https://www.facebook.com/nswrfs) | [www.twitter.com/nswrfs](https://www.twitter.com/nswrfs)  
**PREPARE. ACT. SURVIVE.**

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**From:** Sean McKinnon <[Sean.McKinnon@pmhc.nsw.gov.au](mailto:Sean.McKinnon@pmhc.nsw.gov.au)>  
**Sent:** Tuesday, 20 October 2020 8:04 AM  
**To:** Steve Farrell <[Steve.Farrell@rfs.nsw.gov.au](mailto:Steve.Farrell@rfs.nsw.gov.au)>  
**Cc:** Michael Magalhaes <[Michael.Magalhaes@pmhc.nsw.gov.au](mailto:Michael.Magalhaes@pmhc.nsw.gov.au)>  
**Subject:** Cairncross WMF - Bushfire and Fuel Management Plan - RFS Consultation  
**Importance:** High

Hi Steve,

Melinda Losh, Port Macquarie-Hastings Council's (PMHC) bushfire officer, has kindly provided me with your contact details.

PMHC owns and operates the Cairncross Waste Management Facility (WMF) located at 351 Telegraph Point Road, Pembroke.

PMHC received approval for the expansion of the Cairncross WMF on 4 November 2019.

Condition B34 of the conditions of consent (CoC) (SSD 5792) require PMHC to update the Bushfire and Fuel Management Plan (BFFMP) in consultation with the NSW Rural Fire Service MidCoast District Fire Control Centre.

Please find attached:

- Signed CoC
- BFFMP Rev. 3, 19 October 2020 (word and pdf)
- Appendix Q of the 2017 EIS - Bushfire Assessment Report
- Bushfire and Fuel Management Plan 2001 - for approval of original landfill stage

Could you please review the BFFMP and provide me with any comments or concerns that you have.

The CoC require the BFFMP to be approved by the Planning Secretary by 3 November 2020. I understand that we are only providing you this plan rather late, however if you could please review this plan as a priority it would be greatly appreciated.

Let me know if you require any further information or would like to discuss anything.

Regards,

**Sean McKinnon**

Waste Projects Officer

Waste Services

Commercial Business Units

p (02) 6581 8691



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# APPENDIX B OPERATIONAL BURN PLAN

Certificate No: \_\_\_\_\_

## Planning Information

**Name of Site:** \_\_\_\_\_ **Compartment(s):** \_\_\_\_\_  
**State Forest No:** \_\_\_\_\_ **LGA** \_\_\_\_\_

### Fuel Management Zone & Proposed Burn Summary

**Gross Area (ha):** \_\_\_\_\_ **Fuel Load (t/ha):** 5-10  / 10-15  / 15-20  / 20 +

**Season:** Summer  / Autumn  / Winter  / Spring

**Zone 1 (Asset Protection)**  **Zone 2 (Strategic Fire Adv.)**  **Zone 3A (Broad Area)**

**Zone 3B (Post-Harvest)**  **Zone 3C (Regrowth Protection)**  **Zone 3D (Ecological)**

### Fuel reduction Objective:

**% of gross area to be burned:** \_\_\_\_\_ **Reduce fine fuels to (t/ha):** \_\_\_\_\_

## Burning Prescriptions

**Max Temp (°C):** \_\_\_\_\_ **Min RH (%):** \_\_\_\_\_

**Max Wind Speed (km/h):** \_\_\_\_\_ **Min Fuel Moisture Content (%):** \_\_\_\_\_

**Max FDI:** \_\_\_\_\_ **Max FFDI:** \_\_\_\_\_

**Max GFDI:** \_\_\_\_\_ **Max KBDI:** \_\_\_\_\_

**Max Rate of Spread (ROS) (m/min):** \_\_\_\_\_ **Average Flame height (m):** \_\_\_\_\_

**Scorch Height (m):** \_\_\_\_\_

## Environmental Prescriptions

### Flora and Fauna / Vegetation Type

**Schedule 1 & 2 species /habitat identified:**

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**Prescriptions to protect threatened species:**

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### Soil, Water and Aquatic Habitat

**Rainfall Erosivity – preferred months to burn:** \_\_\_\_\_

**Filter Strip Protection:** Fire to be excluded from filter strips using fuel moisture differentials.

**Soil Exposure:** Mineral earth exposure limited to <15% of undisturbed area (post-harvest burn only)

**Aquatic Habitat Protection:** Fire to be excluded from filter strips using fuel moisture differentials.

## Notification and Resource Requirements

Neighbours  Lessees  Apiarists  Contractors  Council FCO  Govt Agencies

Smoke / Hazard Reduction Signs required:  (x indicates notifications made)

Neighbours burning in conjunction:

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### Resources Required:

Personnel: \_\_\_\_\_ Tankers: \_\_\_\_\_ Slip-ons: \_\_\_\_\_

Dozers: \_\_\_\_\_ Aircraft: Helo / C337 No. of Capsules: \_\_\_\_\_

Other agency resources:

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Plan Prepared by: \_\_\_\_\_ Date: Click or tap to enter a date.

Plan Approved by: \_\_\_\_\_ Date: Click or tap to enter a date.

### Acronyms / Definitions:

Fire Danger Index (FDI):	Difficulty to control a small test fire (1 is easy, 100 impossible)
Forest Fire Danger (FFDI):	Calculated using a Drought Factor Value (DFV) calculated by the Bureau of Meteorology (BOM) based on either the Keetch Byram Drought Index (KBDI) or the Mount Soil Dryness Index (MSDI).
Grassland Fire Danger Index (GFDI):	Calculated using grass curing and fuel load data supplied by the Fire Authority
Keetch-Byram Drought Index (KBDI):	Assesses the risk of fire by representing the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in deep duff and upper soil layers. The index ranges from zero, the point of no moisture deficiency, to 800, the maximum drought that is possible.
Rate of spread (ROS):	Speed with which the fire is moving away from the site of origin, noting that wind, moisture, and slope drive the fire measured in m/min
Rainfall Erosivity i	Largely a function of rainfall amount and peak rainfall intensity and is a multi-annual average index that measures rainfall's kinetic energy and the rate of associated run-off.
BOM Max FDI Maps:	<a href="http://www.bom.gov.au/nsw/forecasts/fire-map.shtml">http://www.bom.gov.au/nsw/forecasts/fire-map.shtml</a>


## Burn Site Map


**Prompts:** show containment lines; safety areas; control point; any fire exclusion areas; adjacent areas to be protected.


Replace this page with a copy of the map section used for planning the burn, or draw the main features and burning area below.

### Plan of Operations Key:


Map scale: \_\_\_\_\_


Roads for control lines – 4 x 2: 

Roads for control lines – 4 x 4: 

Perimeter control lines (not trafficable): 

Internal control lines (not trafficable): 

Gullies suitable for control lines: 

Areas to be excluded from the burn: 

Danger points: 

Location of water: 

Other roads – 4 x 2: 

Other roads – 4 x 4: 

Other: \_\_\_\_\_

## Risk Assessment and Safety Measures

### Risk Assessment and Safety Requirements

#### 1. Burn injury to crew members

**For all burning operations supervisor is to brief all crew members on:**

- Fire behaviour prescriptions and expected weather and fire behaviour
- Safe lighting patterns and direction
- Location of safety zones and escape routes
- 'Stop-lighting, withdraw to safe area' conditions
- Location and activity of other burning crews in the area
- Communication arrangements and reporting requirements

**For burning operations which require personnel to work within the burn area perimeter, or from non-vehicular tracks, brief crews to:**

- Use buddy system when lighting up
- Report progress at pre-designated time intervals via hand-held radio
- Take extreme care not to light fire below other lighting crew in the block
- Work downslope, keeping below active fire (except where breaks in fuel provide for safety)

#### 2. Fire escaping from planned burn area

**For all burning operations supervisor is to brief all crew members on:**

- Expected trouble points and/or conditions for fire control
- Actions to be taken in event of escape
- Identifying and reporting any fuels likely to require patrol after lighting operations completed (e.g. bark heaps, windrows, slash heaps, patches still burning adjacent to control lines)

#### 3. Vehicle accident due to smoke

**For all burning operations supervisor is to brief all crew members on:**

- Safe driving speed whilst operation in progress
- Crew vehicles to have headlights on
- Locations for placing of 'Smoke Hazard' signs for warning of public

#### 4. Trees/limbs burning out and falling on crew members

**For all burning operations supervisor is to brief all crew members on:**

- Areas of likely tree or limb falling hazards
- 'Look up and around' procedure

#### 5. Crew fatigue and heat stress

**For all burning operations supervisor is to:**

- Schedule adequate rest breaks and set appropriate work pace
- Ensure lighting crews have access to supplies of drinking water

**Risk Assessment and Crew briefing conducted by:**

**Burn Supervisor:** \_\_\_\_\_

**Date:** Click or tap to enter a date.

**Commencement of lighting authorised by:**

**Plan Approved by:** \_\_\_\_\_

**Date:** Click or tap to enter a date.

## Burning Operations Record

**Forecast Weather and Indices** (obtain from Office)

Date	Time (hrs)	Max Temp (°C)	Min RH (%)	Wind Direction	Wind Speed (km/h)	BKDI	Drought Factor	Weather changes due (expected time and nature)

### Burn Site Weather Readings

Take daily on-site readings (at burn start and completion) and if unforecast weather changes occur.

Date	Time (hrs)	Temp (°C)	RH (%)	Wind Direction	Wind Speed (km/h)	FDI	Fuel Moisture Content (%)	Comments

### Fire Behaviour

Date	Time (hrs)	Predicted			Actual		
		Flame Height	ROS (m/min)	Assessment Method	Flame Height Average	ROS (m/min)	Comment

### Ignition Details

**Type:** Aerial  / Ground

**Pattern:**

**Methods:** Contour  / Ridge  / Road Edge  / Top disposal

**Incendiary Capsules used (aerial ignition only):** \_\_\_\_\_

**Burn completed by:** \_\_\_\_\_ **Date:** Click or tap to enter a date.

**Burn Supervisor:** \_\_\_\_\_ **Date:** Click or tap to enter a date.

## Post Burning Assessment

### Area Information

Gross Area of Burning Block (ha): \_\_\_\_\_

Estimated burn coverage (% of gross area): \_\_\_\_\_

Fine fuel reduced to an average of (t/Ha): \_\_\_\_\_

Estimated area of crown scorch (%) \_\_\_\_\_

### Operational Performance

Burn contained within planned boundaries? Yes  / No

Burn coverage objective met? Yes  / No

Fine fuel reduction objective met? Yes  / No

Environmental prescriptions met? Yes  / No

License conditions met? Yes  / No

### Remedial action required (if any)

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Remedial works certified as complete \_\_\_\_\_ **Date:** Click or tap to enter a date.

Supervisor: \_\_\_\_\_ **Date:** Click or tap to enter a date.

### Comments:

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