

Appendix K:
Bushfire Risk Assessment and
Management Plan

Blackash

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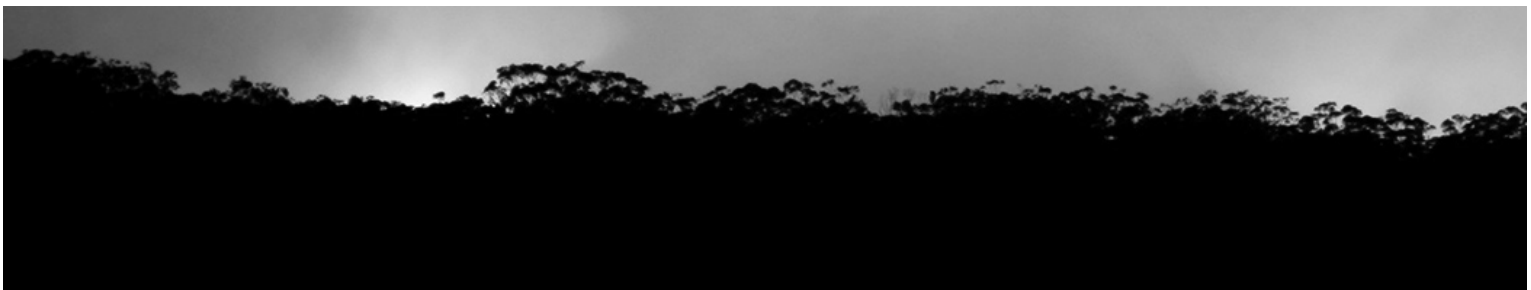
BUSHFIRE CONSULTING

Capital Recycling Solutions Materials Recovery Facility and Rail Freight Terminal 16 Ipswich Street & Lithgow Street Fyshwick

Bushfire Risk Assessment and Management Plan

Prepared for
Capital Recycling Solutions

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Glossary of Terms

APZ	Asset protection zone
AS2419	<i>Australian Standard – Fire hydrant installations</i>
AS3745	<i>Australian Standard – Planning for emergencies in facilities</i>
AS3959	<i>Australian Standard – Construction of buildings in bushfire-prone areas 2009</i>
BAL	<i>Bushfire attack level</i>
BCA	<i>Building Code of Australia</i>
PBRMGC	<i>Bushfire Risk Mitigation General Code</i>
ESA	ACT Emergency Services Authority
FDI	Fire danger index
ha	Hectare
m	Metres
PBP	<i>Planning for Bush Fire Protection 2006</i>
SBMP	<i>ACT Strategic Bushfire Management Plan Version 3 2014</i>
SFPD	<i>Special Fire Protection Developments</i>

1. Introduction

Blackash Bushfire Consulting (**Blackash**) has been engaged by Capital Recycling Solutions (**CRS**) to provide a bushfire risk assessment and management plan for a proposed material recovery facility (**MRF**) and rail freight terminal (**RFT**) at 16 Ipswich Street & Lithgow Street Fyshwick (**the site**) (see Figure 1).

CRS is a joint venture formed between Benedict Industries Pty Ltd (Benedict) and Access Trading Company Pty Ltd (**Access Recycling**).

Benedict is a Sydney-based and family owned quarrying, resources and recycling company. The Company has been operating for some 50 years and has numerous quarries and recycling facilities throughout NSW. Benedict continues to expand into surrounding areas to further develop its core markets and opportunities. Benedict currently produces, markets, and/or recycles more than 2 million Tonnes of products per annum. To find out more on Benedict, please go to www.benedict.com.au.

Access Recycling is a leading supplier of metal recycling services to mining, rail and other heavy industries for 30 years. The company is well established in the eastern states of Australia, including NSW, ACT and South Australia; processing and exporting in excess of 100,000 Tonnes of metal per annum. To find out more on Access Recycling, please go to www.accessrecycling.com.au.

The ACT Government has recognised waste management as an integral part of delivering a more sustainable ACT. To address this, the direction of waste policy objectives in the ACT has shifted from a focus purely on protecting population health and the environment, to also achieving sustainability through resource recovery. This progressive approach requires a transformation to the way the ACT manages waste.

CRS are committed to implementing a fully funded, world's best practice waste management system to receive, sort, separate and leverage the ACT's waste that is currently going to landfill. CRS intends to process these waste streams to achieve a greater than 90% landfill diversion rate for the ACT as well as reducing Greenhouse Gas (**GHG**) emissions.

The proposal is a recycling solution for waste management. CRS contends that greater outcomes can be achieved by adopting a holistic approach to household waste management, with the key infrastructure on a single site.

The CRS proposal includes one of the best located sites for this type of project in the Territory. Importantly, CRS has already purchased the land and reached agreements to lease the adjacent rail siding.

The development of the Facility is in accordance with the currently land use zoning for the Site with no planning/zoning exemptions required.

Capital Recycling Solutions Waste Facility

The site has required some remediation which has already commenced. The proposed industrial activity is to be located in an established industrial precinct that is zoned specifically for these types' of activities. There is existing hardstand, kerb and gutter and sealed roads to and from the site. The railway sidings associated with this proposal have already been the subject of separate development application approval (DA No.201630668), on 7 April 2017, such that the environmental aspect of the intermodal aspect of the proposal has already been considered and determined.

A risk assessment for bushfire has been completed in the Environmental Impact Statement (EIS), see Table 1 for the bushfire risk assessment which has assessed the bushfire risk to and from the site as Negligible. Based on this Bushfire Hazard Report and Management Plan, Blackash supports this determination.

Table 1 EIS Risk Assessment - Bushfire¹

ID	Potential Impact	Project Phase	Description	Unmitigated Likelihood	Unmitigated Consequence				Risk Level/ Significance	Design/actions/studies to be conducted for mitigation
					Magnitude	Temporal	Ecological	Social		
13	Risk from Bushfire	Operational	Potential to be impacted by bushfire event	Remote	Minimal	Specific Event only	No bush and significant buffers	Minor	Negligible	Urban Industrial location with other buildings surrounding and no significant bush environment

The subject site is zoned IZ2 Industrial Mixed Use under the Territory Plan. The immediate vicinity of the subject site is also zoned IZ2 except for the railway easement, which is zoned TSZ2 Transport and Services.

The ACT provides an integrated approach to new development in bushfire prone areas to reduce risk and build resilience. The *ACT Strategic Bushfire Management Plan* recognises the obligation of landholders to manage fuels and for new development to provide a degree of resilience from bushfire. *Planning for Bushfire Risk Mitigation General Code* provides guidance for new development in the ACT.

The land is zoned is IZ2 Industrial Mixed Use, which is not non-urban land, therefore the proposal is exempt development assessments and no bushfire requirements are applicable. However, CRS recognises the need to provide a safe and resilient community for the future industrial development and it has chosen to follow an assessment methodology in this report which is considered "best practice."

The *ACT Strategic Bushfire Management Plan* requires public landholders within bushfire prone land to manage fuel and reduce the threat to existing assets. Improved landuse planning, building codes and maintenance of systems to reduce the impact of bushfire provide mechanisms to reduce the bushfire risk and enhance the resilience of communities exposed to bushfire.

¹ Capital Recycling Solutions Scoping Application May 2017

Figure 1 The Site Location



2. Legislative Framework

Under the Building Act 2004 and Building Regulations 2008, only non-urban areas in the ACT are declared as bushfire prone (see Appendix 1 Clause 44 of Building Regulations).

Planning for Bushfire Risk Mitigation General Code, 2008 (the Code) provides guidance for new development in the ACT. The Code references *NSW Planning for Bushfire Protection 2006 (PBP)* to provide a high level of compatibility between NSW and the ACT. The Code seeks to ensure that bushfire risk is appropriately considered during the planning, development and construction stages in the ACT.

The Code is complementary to the ACT Emergency Services Authority (**ESA**) Strategic Bushfire Management Plan Version 1 (**SBMP**) which is a strategic document outlining measures to reduce the impact of bushfire in the ACT.

The National Construction Code (**NCC**) Part G5 Construction in Bushfire Prone areas only applies to Class 1, 2, 3 or 10a structures. Industrial buildings are Class 5 or 10 and therefore the bushfire provisions in the BCA and related standards does not apply. This is recognised in the PBRMGC as it states that the BCA does not apply to non-residential buildings.

The land is zoned IZ2 Industrial Mixed Use, which is not non-urban land, therefore in principle any industrial development is exempt development and no bushfire requirements are applicable. It should be noted that the bushfire legislative framework in the ACT does not provide requirements for industrial development.

The Code refers to a requirement to undertake a *bushfire risk assessment at the Structure Planning and or Concept Planning Stage* (p. 5) and requires that the assessment is undertaken using the *Australian Standard for Risk Management AS/NZS 4360 (AS4360)* and AS3959 and is based on the process outlined in *NSW Planning for Bushfire Protection 2001 (PBP 2001)*². Blackash have held discussions with ESA and advised them that AS4360 and PBP 2001 are both out of date. AS4360 has been superseded by ISO 31000 and PBP 2001 has been superseded by *Planning for Bushfire Protection 2006 (PBP)*.

ESA (personal communication with Mr Greg Potts) have previously advised Blackash to use current documents to ensure best practice is applied to new development. PBP 2006 establishes the bush fire planning objectives for industrial, commercial and warehousing types of development³ and these types of development are required to address the aim and objectives of PBP 2006. This will be demonstrated in this report.

The NCC does not provide for any bushfire specific performance requirements and as such AS 3959 does not apply as a set of 'deemed to satisfy' provisions. The general fire safety construction provisions

² *Planning for Bushfire Risk Mitigation General Code, 2008 p. 5*

³ *Planning for Bushfire Protection 2006 p. i*

are taken as acceptable solutions, but the aim and objectives of PBP apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management.

The Final Scoping Document under Part 8 of the Planning and Development Act 2007 identifies the need to consider Hazard and Risk of bushfire on neighbouring sites impacting the proposed facility. This Bushfire Risk Assessment and Management Plan describes how the site is suitable for the proposed use by considering identified bushfire hazards and risks including risk of fire and adequate fire suppression. Recommendations are provided in this document.

3. Industrial Development

PBP recognises industrial development as "other development." It does not have specific standards, however, the general principles of PBP apply such that protection measures are governed by the degree of threat/ risk posed to a development, a minimum setback from a hazard is always required, and access is provided for firefighting purposes.

All development on bushfire prone land must consider the bushfire planning framework in the ACT. However, industrial development has considerable flexibility and the nature of the development often results in the structures providing a higher degree of bushfire resistance than required by the RFS.

This type of development should meet the aim and objectives of PBP and integrate the suite of bush fire protection measures (**BPM**) for assessment purposes.

In a development assessment context, there are six key BPMs, which include:

- The provision of clear separation of buildings and bush fire hazards, in the form of fuel-reduced APZ (and their subsets, inner and outer protection areas and defensible space);
- Construction standards and design;
- Appropriate access standards for residents, fire fighters, emergency service workers and those involved in evacuation;
- Adequate water supply and pressure;
- Emergency management arrangements for fire protection and/or evacuation; and
- Suitable landscaping, to limit fire spreading to a building.

There are no formal referral mechanisms or bushfire Standards that apply in the ACT for industrial development. However, where the ESA is consulted, the Commissioner has powers to recommend conditions or to refuse to support an application. As there are no provisions in the ACT, the guiding principle of this bushfire assessment is to comply with the NSW Standards.

4. Bushfire Prone Land

The site and surrounds are identified as a “bushfire prone area” (see Figure 2).

The Bushfire Prone Area (**BPA**) map is a single risk-based map that defines areas of the ACT that have been assessed as being at high risk to life and property due to bushfires. BPA are designated on the ACT Government mapping portal actmapi.act.gov.au

Bushfire prone land maps provide a trigger for new development and consideration of sites that are bushfire prone.

Bushfire prone land (**BFPL**) is land, which can support a bushfire or is subject to bushfire attack.

Canberra's built-up areas that are adjacent to forest and grassland are designated as BPAs.

Identifying the at-risk areas on the BPA map requires assessment to determine mandatory construction standards for **residential** buildings under the Australian Standards AS 3959 – Construction of buildings in bushfire prone areas (**AS3959**).

The site is not designated as Bushfire Prone Land (see Figure 2). A small portion of Bushfire Prone Land is bound by the Monaro Highway and Ipswich Street. It is considered unlikely that a fully developed bushfire would impact the site.

Figure 2 Bushfire Prone Land Map

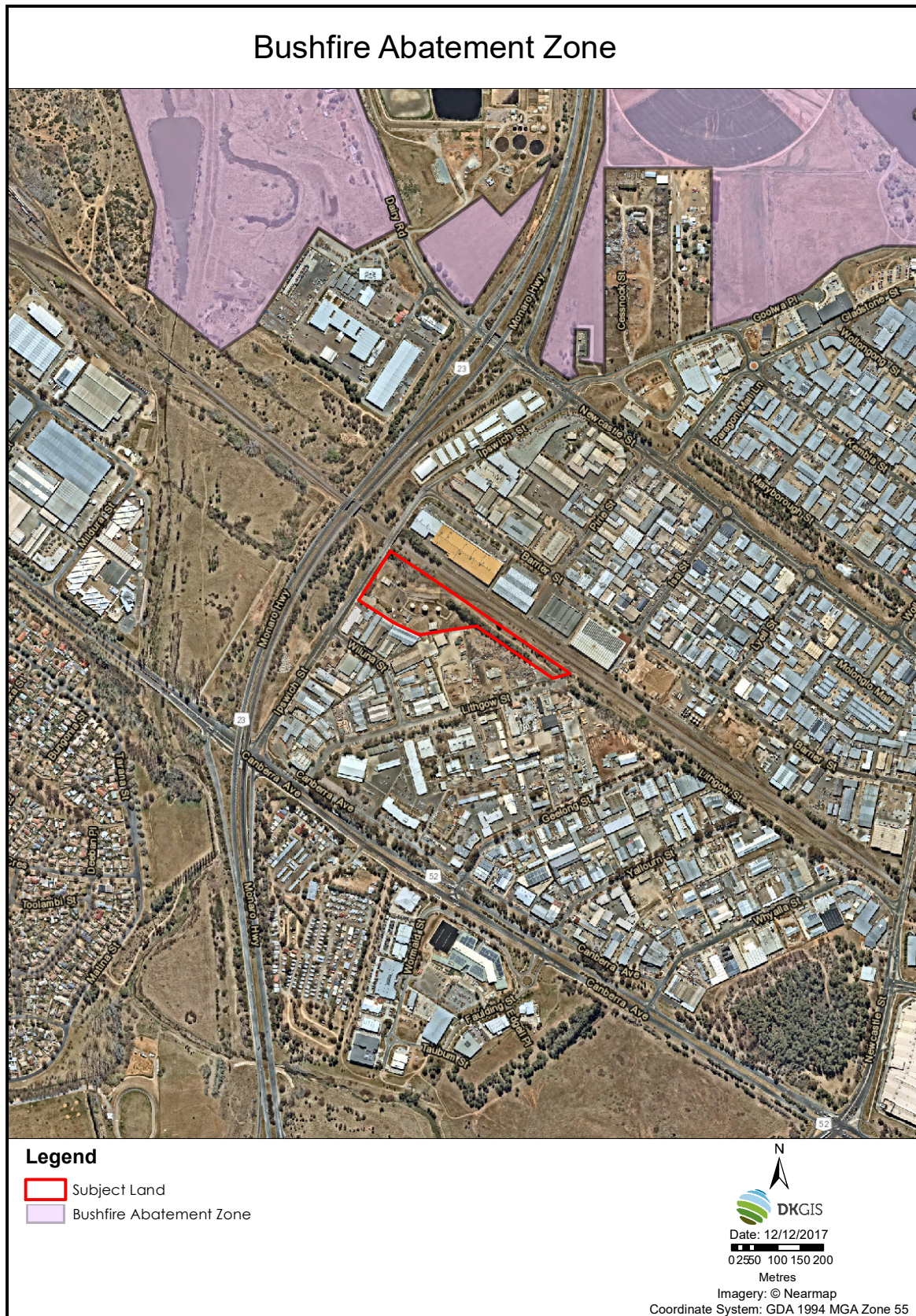


5. Bushfire Abatement Zone

Under the *Emergencies Act*, the Commissioner has declared the land (see Figure 3) to the north of the site as a Bushfire Abatement Zone (**BAZ**). The BAZ surrounds Canberra and extends west towards the Murrumbidgee River. It is a subset of the BPA, and was developed to identify rural areas where specific measures are required to reduce risk to life and property to the built-up area within the ACT. These measures include land-use constraints, planning requirements for land managers (both public and private) and pre-incident planning for bushfires.

The BAZ does not affect the site.

Figure 3 Bushfire Abatement Zone (source <http://app.actmapi.act.gov.au>)



6. Regional Fire Management Zones

In the *Strategic Bushfire Management Plan (SBMP)*, Fire Management Zones are identified as a subset of BPAs where measurable fuel management treatments are applied (see Figure 4). The location and alignment of these zones reflect the risk of bushfires starting and spreading, and impacting on life, property and other assets.

The zones established include Asset Protection Zones, Strategic Firefighting Advantage Zones, Land Management Zones and Rural Land Management Zones.

The widths and locations of the Zones shown in Figure 4. The zones affecting the site include:

- Inner zone, over Ipswich Street.

ESA has confirmed that the APZs as shown in Figure 5 can be relied on for planning purposes. The ACT *Strategic Bushfire Management Plan Version 3* (p.57) notes that:

Land managers will continue to apply the APZ fuel management standards in established areas to reduce bushfire fuel loads, noting that many established areas of Canberra did not require any bushfire management measures at the time of development (ACT Government, 2014).

As such, a combination of APZs will be provided off site and defensible space will be provided within the site.

Figure 4 shows the Regional Fire Management plan in context to the site. The SBMP requires regional fire management plans (**RFMPs**) to provide a link between the strategy of the SBMP and the more detailed bushfire operational plans (**BOPs**). RFMPs will be updated to cover the entire ACT to reflect boundaries based on bushfire risk and geography. RFMPs detail the five-year program (2014–19) of work for fuel reduction, access and infrastructure in the ACT. RFMPs for 2019–24 will be prepared during the life of the SBMP.

The ACT Emergency Services Commissioner is responsible for approval of RFMPs. They will be reviewed as required to reflect significant changes. These may include unplanned bushfires, which may provide strategic advantages or changes to the location or extent of assets – for example, the development of new estates.

Figure 4 Regional Fire Management Zones

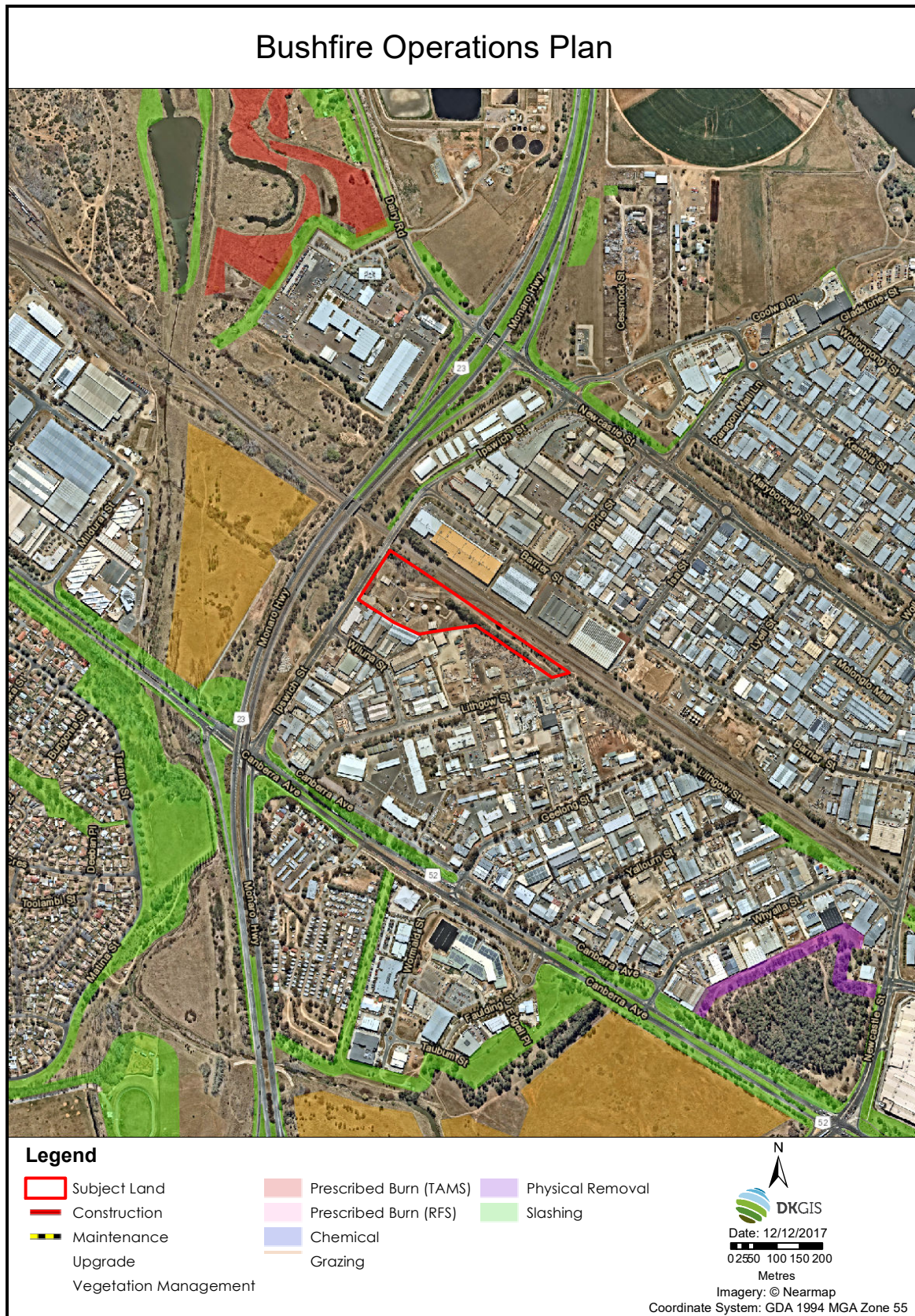


7. Bushfire Operations Plan

The Bushfire Operational Plan (**BOP**) details the specific timing, type and location of fuel reduction, access and infrastructure activities proposed to be undertaken in the ACT. BOPs are required from ACT Government land managers, rural land managers as well as other property managers (ACT Government, 2014).

Figure 5 shows the Fire Management Zones and their management practice as designated in ACTmapi. Due to the low risk of the site, there are no management provisions identified within or adjacent to the site for the BOP.

Figure 5 Bushfire Operational Plan



8. Bushfire Risk Assessment

8.1. Site Assessment Methodology

This bushfire assessment is based on a desktop assessment of the site utilising the following resources:

- *ACTmapi*
- *Planning for Bushfire Protection* (NSW RFS, 2006)
- Aerial mapping
- Detailed GIS analysis.

It has been previously agreed with ESA to use the methodology within NSW PBP as it provided the most up to date and comprehensive site assessment. As such, this assessment is based on mapping of vegetation formations and slope assessment in accordance with PBP.

Bushfire risk as influenced by fire history and future mitigation strategies (e.g. hazard reduction burning) has no bearing on the determination of bushfire protection strategies for future development at the sites. PBP assesses bushfire protection based purely on vegetation and slope (i.e. hazard and not risk), assuming that a fire may occur at a near worst-case scenario.

The methodology used in this assessment is in accordance with PBP and is outlined in the following sections.

8.2. Bushfire Hazard

An assessment of the Bushfire Prone Land (see Figure 2) is necessary to determine the application of bushfire protection measures such as Asset Protection Zone (**APZ**) locations and future building construction levels. The vegetation formations (bushfire fuels) and the topography (effective slope) combine to create the bushfire threat that may affect bushfire behaviour at the site and which determine the planning and building response of PBP.

8.3. Vegetation Assessment

PBP requires a classification of the vegetation on and surrounding the property. Predominant vegetation is classified by structure or formation using the system adopted by Keith (2004) and by the general description using PBP.

Vegetation types give rise to radiant heat and fire behaviour characteristics. The predominant vegetation is determined over a distance of at least 140 metres in all directions from the proposed site boundary or building footprint on the development site. Where a mix of vegetation types exist, the type providing the greater hazard is said to predominate.

The site is not considered to have any value as habitat for threatened flora or fauna.

The predominant vegetation adjacent to the site is grassland with small pockets of woodland as per Figure 6.

8.4. Slopes Influencing Bushfire Behavior

The 'effective slope' influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP. This is conducted by measuring the worst-case scenario slope where the vegetation occurs over a 100 m transect measured outwards from the development boundary or the existing/ proposed buildings. The credible worst case slope affecting the site has been determined as 0 – 5 degrees downslope as per Figure 6.

Figure 6 Vegetation & Slope



8.5. Fire Weather

PBP and assumes a credible worst-case scenario for fire weather. FDI is not determined for the ACT. However, the surrounding local government areas have the following FDIs as designated in PBP:

- Southern Ranges: FDI 100
- Monaro Alpine: FDI 80
- Southern Slopes: FDI 80

A conservative approach has been taken and FDI 100 has been used for assessment purposes.

8.6. Bushfire Attack Levels

Figure 7 combines the aspect, vegetation classification and slopes (0 – 5 degrees downslope) for a credible worst case scenario to determine the Bushfire Attack Level (**BAL**) as designated in AS3959 using the site boundary as the start of the unmanaged area.

The BAL for built elements within the site is BAL12.5. This is the lowest construction level in the *Australian Standard for Construction of Buildings in Bushfire Prone Areas (AS3959)*. While it is unlikely that a fully developed fire will impact the site, potential exists for ember attack. Ember attack is *attack by smouldering or flaming windborne debris that is capable of entering or accumulating around a building, and that may ignite the building or other combustible materials and debris*⁴.

Given the history of fires impacting the ACT, providing ember protection to the assets is considered good management and reduces the risk of catastrophic loss from bushfire.

⁴ AS3959 p. 10

Figure 7 Bushfire Attack Levels within the site boundary



9. Water Supplies and Services

Adequate water supplies will be provided for firefighting in accordance with AS2419 *Fire hydrant installations System design, installation and commissioning*.

10. Access

The site is connected to surrounding public roads. An internal road is proposed throughout the site that will accommodate heavy vehicles. This road is will be one way with parking provided outside the carriage ways and will facilitate movement throughout the site by trucks.

Access within and surrounding the site is considered adequate for firefighting and fire management purposes.

These provisions are above the access requirements of the ESA.

11. Fire Maintenance Plan and Emergency Procedures

It is recommended that the bush fire maintenance plan and fire emergency procedures for the site be completed prior to occupation to ensure appropriate management responses in the event of fires near the future complexes.

12. Construction Standards

The construction standards to be used for building elements within bushfire affected areas (as per Figure 7) in the development can be in accordance with AS3959.

Where required by the Building Code of Australia, sprinkler systems and other fire protection measures should to be incorporated into the development.

13. Assessment Against the Aim and Objective of PBP

For this proposal, an assessment has been undertaken using PBP to provide a framework of assessment. Table 2 shows the compliance with PBP.

Table 2 Compliance with Aim & Objectives of PBP

Aim	Meets Criteria	Comment
The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bushfire, while having due regard to development potential, onsite amenity and the protection of the environment.	Yes	Landscaping, defensible space, access and egress, emergency risk management and construction standards can meet requirements of PBP. A Bushfire Attack Level of BAL 12.5 can be achieved for the future developments.
Objectives	Meets Criteria	Comment
Afford occupants of any building adequate protection from exposure to a bushfire.	Yes	The maximum exposure to a bushfire for the area where the development is proposed is within tolerable limits for building elements.
Provide for defensible space to be located around buildings.	Yes	Defensible space can be provided on all sides of the proposed development.
Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent direct flame contact and material ignition.	Yes	An asset protection zone is provided in accordance with the SBMP.
Ensure that safe operational access and egress for emergency service personnel and occupants is available.	Yes	The site has direct access to public roads, and access and egress within and throughout the site for emergency vehicles and evacuation is adequate.
Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads, in the asset protection zone.	Yes	A landscape and bush management plan should be provided to ensure ongoing management.
Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).	Yes	Utility services will be adequate to meet the needs of firefighters (and others assisting in bushfire fighting).

14. Recommendations

The following recommendations are made for the bushfire protection measures for the Industrial Master Plan for the site:

1. **Construction Standard:** New development should be constructed to AS3959 as per Figure 12;
2. At the commencement of building works and in perpetuity, an **Asset Protection Zone** should be established and maintained to the site boundaries from buildings. The APZ shall be established and maintained as an inner protection area.
3. **Fire hydrant** spacing, sizing and pressures should comply with Australian Standard AS 2419.1–2005 'Fire Hydrant Installations' and fire hydrants should not be located within any road carriageway.
4. **Roads** are designed to provide safe operational access to structures and water supply for emergency services, while occupants are seeking to evacuate from an area.
5. An **emergency management plan** should be developed to ensure currency and compliance with current guidelines.

15. Conclusion

This report consists of a bushfire risk assessment for Capital Recycling Solutions to provide a bushfire risk assessment and management plan for a proposed material recycling facility and rail freight terminal at 16 Ipswich Street & Lithgow Street Fyshwick.

The subject site is zoned IZ2 Industrial Mixed Use under the Territory Plan. The immediate vicinity of the subject site is also zoned IZ2 except for the railway easement, which is zoned TSZ2 Transport and Services.

As IZ2 Industrial Mixed Use, the land is not non-urban land, therefore no bushfire requirements are applicable in accordance with ACT legislative framework. However, Benedict Industries recognises the need to provide a safe and resilient community for the future industrial development and it has chosen to follow an assessment methodology in this report which is considered "best practice."

There are no formal referral mechanisms or Standards that apply in the ACT for industrial development. The Building Code of Australia does not provide for any bushfire specific performance requirements for the proposed development and as such AS3959, 2009 does not apply as a deemed to satisfy provision.

However, where the ESA is consulted, the Commissioner has powers to recommend conditions or to refuse to support an application. As there are no provisions in the ACT, the guiding principle (confirmed during discussions with ESA staff) of this bushfire assessment is to comply with the NSW Standards and the ACT Standards.

The proposed development is designated as "other" development in NSW *Planning for Bushfire Protection 2006* and should comply with the aim and objectives of that document. Section 15 of this document demonstrates such compliance.

This report has considered all elements of bushfire attack and provided the proposed development is constructed in accordance with the recommendations included in section 13 of this report.

This Report is a Bush Fire Hazard Assessment and Management Plan that provides the required information to assist in determining compliance in accordance with the aims and objectives of *Planning for Bushfire Protection 2006* and the ACT bushfire framework. The report demonstrates compliance with all aspects of the bushfire framework in the ACT and as such, ought to be supported.



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Fire Protection Association of Australia BPAD Level 3 BPD-PA 16373



Appendix 1 44 Application of building code to bushfire-prone area—Act, s 136 (4)

(1) For the building code, an area of non-urban land is a bushfire-prone area.

(2) In this section:

non-urban land means—

(a) territory land in 1 of the following zones under the territory plan:

(i) broadacre zone;

(ii) rural zone;

(iii) hills, ridges and buffer areas zone;

(iv) river corridor zone;

(v) mountains and bushlands zone;

(vi) transport and services zones TS1-TS2; or

(b) land other than land in an area identified under the national capital plan as —

(i) an urban area; or

(ii) the Central National Area.

Appendix 2 References

Australian Building Codes Board *Building Code of Australia Volumes 1&2*

ACT Government (2014) *ACT Strategic Bushfire Management Plan Version 3*

ACT Government (2014) *ACT Strategic Bushfire Management Plan ACT Bushfire Management Standards*

ACT Government & ACT Planning & Land Authority (2008) *Planning for Bushfire Risk Mitigation General Code*

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