



# Bushfire Hazard Assessment

Norman Griffith Oval

2 Lofberg Road, West Pymble

Prepared for  
Ku-ring-gai Council



Version 1.0  
23 September 2022

Project Name:	Norman Griffith Oval
Site Details	- 2 Lofberg Road, West Pymble
Client Details:	Mr. William Birt Acting Manager Technical Services Ku-ring-gai Council By email: William Birt <a href="mailto:wbirt@krg.nsw.gov.au">wbirt@krg.nsw.gov.au</a>
BlackAsh Contact Details	
Lew Short	Director
0419 203 853	<a href="mailto:Lew.short@blackash.com.au">Lew.short@blackash.com.au</a>

Version	Primary Author(s)	Description	Date Completed
1.0	Lew Short	Final	23 September 2022



## Lew Short

Blackash Bushfire Consulting

B.Sc., Grad. Dip. (Design for Bushfire Prone Areas)

Fire Protection Association of Australia BPAD Level 3 – 16373



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## 1. Summary

Table 1 is a summary of compliance with relevant documents and approaches to limit bushfire attack and meet the requirements of the NSW planning framework for new development in Bushfire Prone Areas.

Table 1: Summary

Planning for Bushfire Protection 2019 Classification	"Other" sports field
Location	2 Lofberg Road, West Pymble (the site) which is legally known as Lot 6 DP 564939
Local Government Area	Ku-ring-gai
Can this proposal comply with AS3959, 2009	AS3959, 2009 does not apply as a DTS Provision
Does this development comply with the requirements of <i>Planning for Bushfire Protection 2019</i> ?	YES – Not Bushfire Prone
Does this development comply with the Aims and objectives of <i>Planning for Bushfire Protection 2019</i> ?	YES – Not Bushfire Prone
Is referral to the NSW RFS required?	NO

Assessment Framework	<input checked="" type="checkbox"/> <i>Planning for Bushfire Protection 2019</i>
	<input checked="" type="checkbox"/> Meets the deemed to satisfy provisions
	<input type="checkbox"/> Alternate solution/ performance-based assessment

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## 2. Introduction

Blackash Bushfire Consulting has been engaged by Ku-ring-gai Council to review the bushfire risk and bushfire issues at Norman Griffiths Oval (the oval), located at 2 Lofberg Road, West Pymble (the site) which is legally known as Lot 6 DP 564939 (Attachment 1) and for assessment purposes includes bushfire prone vegetation within context of the site.

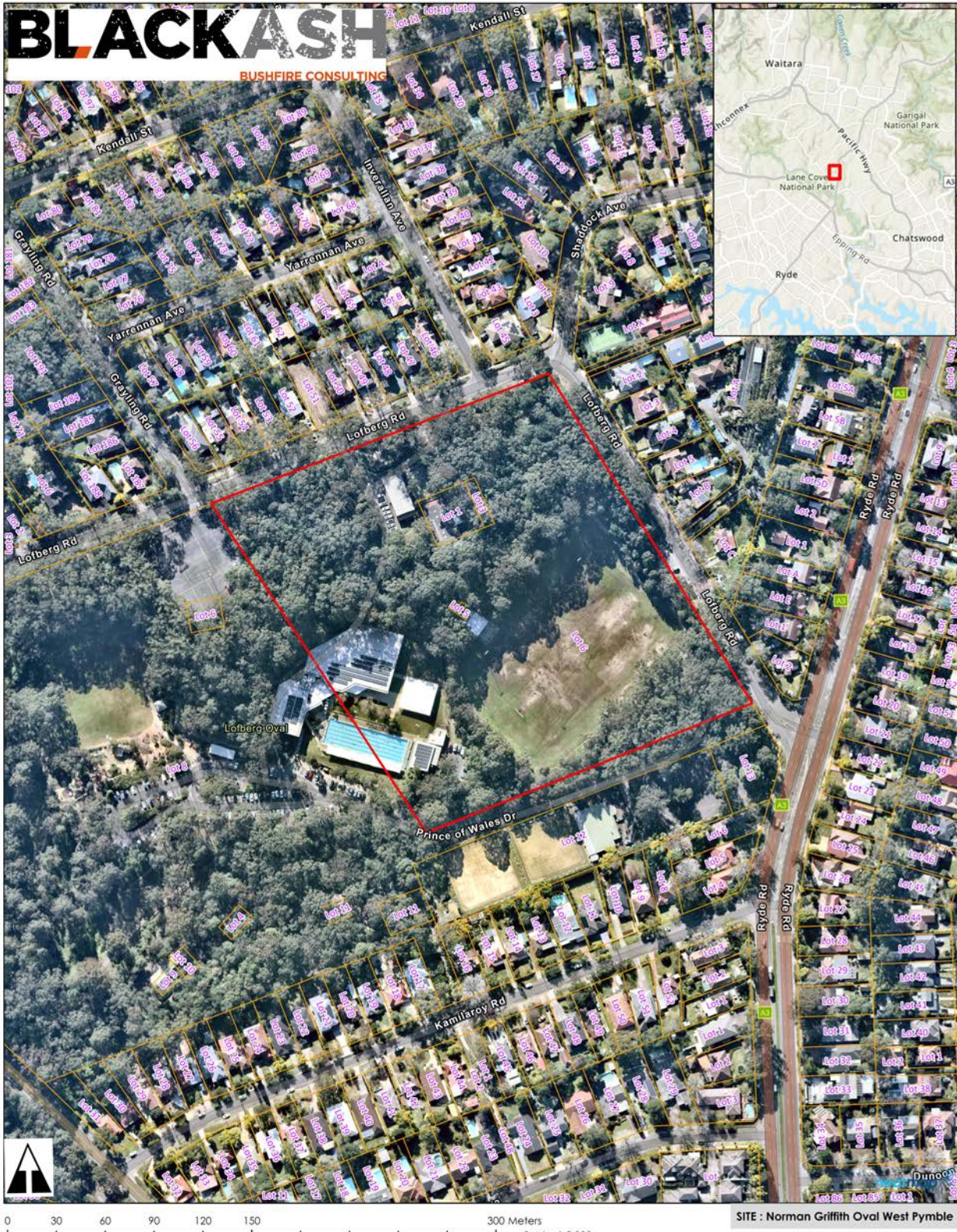
The oval is managed by Ku-ring-gai Council and has a designated use as a soccer field. Council is seeking to replace the surface with a synthetic surface (Figure 3).

This report assesses the bushfire risk to the proposed synthetic surface and from the surface in the event of bushfire impacting the synthetic surface.

The oval is within the Ku-ring-gai Bicentennial Park Precinct. To the north is a stand of remnant Sydney Turpentine Ironbark Forest vegetation, then residential properties. Residential properties are to the east of the site. West Pymble Bowling and Sports Club is to the south, then residential development and Ku-ring-gai Fitness and Aquatic Centre is to the west of the site. Small areas of remnant vegetation is to the east of the site which is fragmented and managed within a parkland setting.

This assessment has been prepared by Lew Short (FPAA BPAD Level 3 Certified Practitioner No. BPD-L3-16373) who is recognised by the NSW RFS as qualified in bushfire risk assessment and have been accredited by the Fire Protection Association of Australia as a suitably qualified consultant to undertake alternative solution proposals.






<b>Site Location</b>		DATE : 03/09/2022	Map Version : 1_0
<ul style="list-style-type: none"> <li><span style="border: 1px solid red; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> - Subject Site</li> <li><span style="border: 1px solid yellow; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> - Cadastre (NSW DCDB)</li> </ul>		Projected Coordinate System : GDA 2020 Zone 56 NSW Digital Cadastral Database (DCDB) Aerial Imagery: Nearmap - 28/07/2022 Although all care has been taken - WizarDtech accepts no responsibility from the use or inaccuracies of this map and spatial data. Copyright © WizarDtech Spatial Services 2022.	
		 WizarDtech Spatial Services	

Figure 1 Location



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### 3. Legislative Framework

The proposed synthetic surface and oval is designated as “other” development by PBP 2019. Generally, an oval is designated as managed land within PBP 2019. However, the cork underlay within the synthetic surface adds a combustible element to the playing surface.

Whilst bushfire is not captured in the PBP 2019, the following objectives which will be applied in relation to access, water and services, and emergency and evacuation planning:

- to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation;
- to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;
- to provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and
- provide for the storage of hazardous materials away from the hazard wherever possible.

The general fire safety construction provisions (of the NCC) are taken as acceptable solutions, however construction requirements for bush fire protection will need to be considered on a case-by-case basis.

### 4. Bushfire Prone Land

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

The oval has designated Category 2 vegetation Ku-ring-gai Bushfire Prone Land Map (Attachment 3). The bushfire prone land map is the trigger for the consideration of bush fire protection measures for new development (Planning for Bush Fire Protection and Australian Standard 3959-2009 – Construction of buildings in bush fire prone areas).

The NSW Rural Fire Service (RFS) Guide for Bushfire Prone Land Mapping (Version 5b – 2015 p. 11) states that:

*Vegetation Category 2 is considered to be a lower bush fire risk than Category 1 and Category 3 but higher than the excluded areas. It is represented as light orange on a bush fire prone land map and will be given a 30 metre buffer. This vegetation category has lower*

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combustibility and/or limited potential fire size due to the vegetation area shape and size, land geography and management practices. Vegetation Category 2 consists of:

- Rainforests.
- Lower risk vegetation parcels. These vegetation parcels represent a lower bush fire risk to surrounding development and consist of:
  - Remnant vegetation;
  - Land with ongoing land management practices that actively reduces bush fire risk. These areas must be subject to a plan of management or similar that demonstrates that the risk of bush fire is offset by strategies that reduce bush fire risk; AND include:
    - Discrete urban reserve/s;
    - Parcels that are isolated from larger uninterrupted tracts of vegetation and known fire paths;
    - Shapes and topographies which do not permit significant upslope fire runs towards development;
    - Suitable access and adequate infrastructure to support suppression by firefighters;
    - Vegetation that represents a lower likelihood of ignitions because the vegetation is surrounded by development in such a way that an ignition in any part of the vegetation has a higher likelihood of detection.

Ku-ring-gai Council prepared the Bushfire Prone Map which was reviewed and certified by the Commissioner of the RFS. Blackash supports the Category 2 designation of Bushfire Prone Land within the site and surrounds.

Category 1 vegetation is greater than ~350m to the southwest and 400m to the east. It is unlikely that a large, developed fire will push into the site and surrounds. Small fires or hazard reduction burns are a potential within the Category 2 vegetation surrounding the site. However, emergency service response is satisfactory (see Section 6.5).





Figure 2 Bushfire Prone Land



## 5. The Proposal

Fieldturf Australia Pty Limited (the Sponsor) have provided a Test Certificate to Council (dated 14 April 2022) which is at Appendix 2. The Sponsor described the test specimen as:

A synthetic grass with monofilament and fibrillated polyethylene (PE) yarns with cork and sand infill. The yarns were tufted into a woven PP (polypropylene) primary backing. The primary backing was coated with a styrene-butadiene latex secondary backing. The silica sand infill was applied on the synthetic grass surface at an application rate of 22 – kg/m<sup>2</sup>. The cork granule (diameter 0.8mm to 2mm) infill was applied on the synthetic grass above the sand at an application rate of 6kgm<sup>2</sup>

The test results in relation to fire behaviour included:

Mean distance of flame travel: 640mm  
Average Critical Radiant Heat Flux: 4.2 kW/m<sup>2</sup>  
Average integrated smoke value: 19% x min



Figure 3 Proposed Development

## 6. Site Assessment Methodology

The Bushfire Assessment Report is based on an assessment of the site utilising the following resources:

- *Planning for Bushfire Protection* (NSW RFS, 2019)
- Aerial mapping
- Site Inspection
- Detailed GIS analysis

The methodology used in this assessment is in accordance with PBP 2019 and is outlined in the following sections.

### 6.1. Bushfire Hazard

An assessment of the bushfire hazard is necessary to determine the application of bushfire protection measures such as Asset Protection Zone (APZ) locations and dimensions and future building 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 2019.

### 6.2. Fire Weather

The fire weather is dictated by PBP and assumes a credible worst-case scenario and an absence of any other mitigating factors relating to aspect or prevailing winds. The sites have a Fire Danger Index (FDI) of 100 as per PBP 2019. This represents a probable worst case fire weather scenario for the site.

### 6.3. Vegetation

Predominant Vegetation is classified by structure or formation using the system adopted by Keith (2004) and by the general description using PBP 2019. 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. A narrow band of forest is located to the north of the site.



## 6.4. Slopes Influencing Bushfire Behavior

The 'effective slope' influencing fire behaviour approaching the sites has been assessed in accordance with the methodology specified within PBP 2019. This is conducted by measuring the worst-case scenario slope where the vegetation occurs over a 100 metre transect measured outwards from the development boundary or the existing/ proposed buildings. The slope to the north is upslope 6.5 degrees and upslope 4.8 degrees.

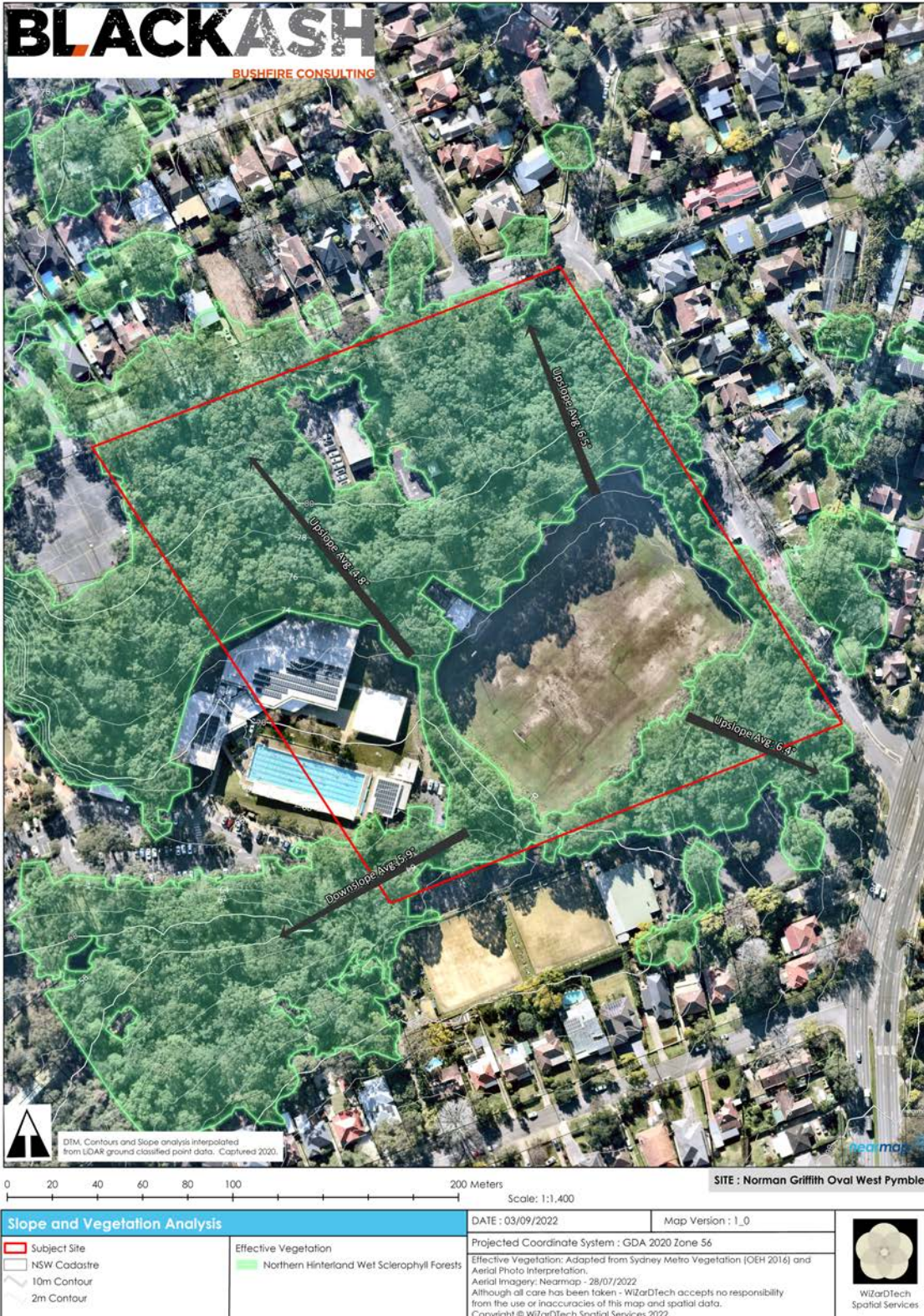


Figure 4 Vegetation and Slope Assessment



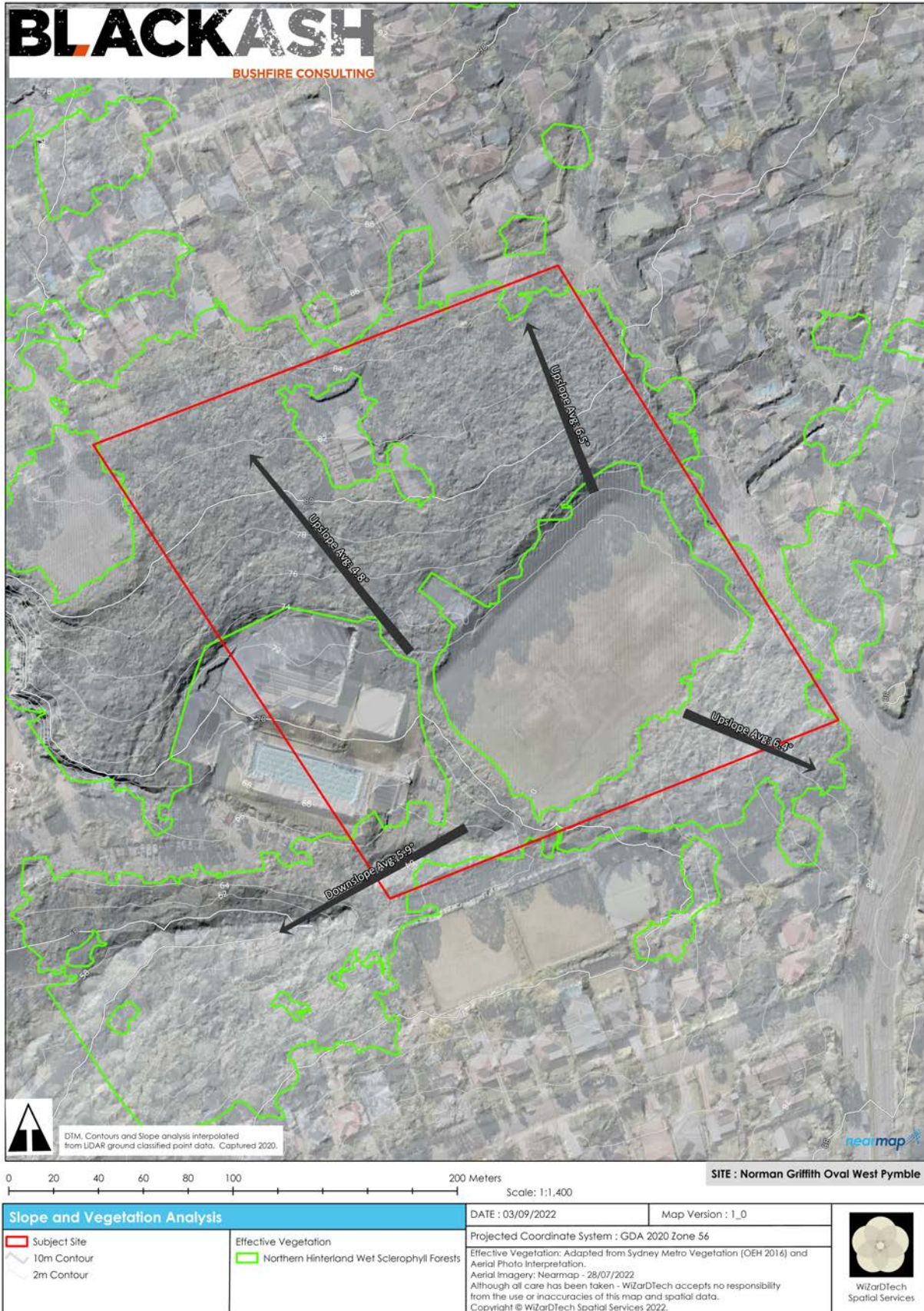


Figure 5 Slope Assessment

## 6.5. Bushfire Response

The nearest Fire and Rescue NSW has a station at Pacific Highway Gordon which is 2.2km from the oval. The response time is approximately 3 minutes.

The nearest Rural Fire Brigade is Ku-ring-gai Rural Fire Service which is collocated with Killara Rural Fire Service at Golden Jubilee Oval, Wahroonga which is 9km from the oval. The response time is approximately 15 minutes.

Fire coverage to the oval is available and within fast response times.

## 6.6. Asset Protection Zones

An Asset Protection Zone (APZ) is a buffer zone between a bushfire hazard and buildings. The APZ is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, smoke and ember attack. The appropriate APZ distance is based on vegetation type, slope and the nature of the development.

The APZ can include roads or properties managed to be consistent with APZ standards set out in NSW RFS document *Standards for Asset Protection Zones*. The APZ provides a fuel-reduced, physical separation between buildings and bush fire hazards is a key element in the suite of bush fire measures and dictates the type of construction necessary to mitigate bushfire attack.

PBP 2019 requires APZs for commercial and industrial development to provide a defensible space and minimise material ignition. The assets are houses to the north and east of the site. The proposed playing field will be a managed ground space which is generally not considered a bushfire hazard in PBP 2019. However, given the test results (Appendix 2), potential exist for limited fire propagation and growth within the cork and synthetic filling. The radiant heat load outlined within the test for a Mean distance of flame travel of 640mm with an average Critical Radiant Heat Flux of 4.2 kW/m<sup>2</sup>. The houses are separated by Lofberg Road to the east and north of the site. Radiant heat levels of less than critical limits ((4.7kW for people and 10kW for unprotected buildings) are available at surrounding assets.



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## 6.7. Hornsby Ku-ring-gai Bushfire Risk Management Plan

The Hornsby Ku-ring-gai Bushfire Risk Management Plan (Risk Plan) has been prepared by the Hornsby Ku-ring-gai Bushfire Management Committee.

The Risk Plan (Attachment 5) identifies two assets within the vicinity of the oval:

- 242 KU West Pymble Preschool with a risk likelihood of “unlikely” and a Consequence of “Catastrophic” with a “high” bushfire risk
- 329 Bicentennial Park with a risk likelihood of “unlikely” and a Consequence of “Moderate” with a “low” bushfire risk

The Risk Plan Treatment Register (Attachment 5) provides that the KU West Pymble Preschool implement a Bushfire Emergency Plan and that no risk treatment strategy or requirement is required within Bicentennial Park.

The Normal Griffiths Oval is not identified as a specific asset or an asset at risk in the Risk Plan. This designation is supported by Blackash.

## 6.8. Bushfire Risk

The Bushfire Prone Map and Risk Plan assign a low level of bushfire risk by the remnant vegetation to the north of the Oval. Vegetation to the between the oval and the entry road to the Aquatic Centre consists of canopy trees with managed understory that consists of remnant native vegetation. Walking paths and informal paths dissect this vegetation. Access to this area is good and a large fire does not have sufficient space to develop.

The vegetation to the north of the oval is remnant Sydney Turpentine Ironbark Forest which is a Critically Endangered Ecological Community under NSW and Commonwealth law<sup>1</sup>. It is an Open forest, with dominant canopy trees including Turpentine *Syncarpia glomulifera*, Grey Gum *Eucalyptus punctata*, Grey Ironbark *E. paniculata* and Thin-leaved Stringybark *E. eugenoides*. The remnant north of the oval is approximately 66 metres wide and 70m wide (from the KU West Pymble Preschool to Lofberg Road). The vegetation is in a relatively natural state with invasive weeds and informal walking tracks fragmenting the vegetation.

Fire fighting access to the oval and surrounding areas is readily available. Mains water is available in Lofberg Road. The bushfire risk to the oval is considered low.

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<sup>1</sup> <https://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10789>

## 6.9. Bushfire Attack Levels

The Bushfire Attack Level (BAL) is a means of measuring the severity of a building's or sites potential exposure to ember attack, radiant heat and direct flame contact. In the Building Code of Australia, the BAL is used as the basis for establishing the requirements for residential construction to improve protection of building elements.

Asset Protection Zones will be provided around the site that will include perimeter roads and hardstand areas.

The vegetation to the north of the site provides potential bushfire attack onto the surface of the synthetic field (Figure 6) with potential for radiant heat and embers to impact the surface. The radiant heat load outlined within the test for a Mean distance of flame travel of 640mm with an average Critical Radiant Heat Flux of 4.2 kW/m<sup>2</sup>. The houses are separated by Lofberg Road to the east and north of the site. Radiant heat levels of less than critical limits ((4.7kW for people and 10kW for unprotected buildings) are available at surrounding assets.



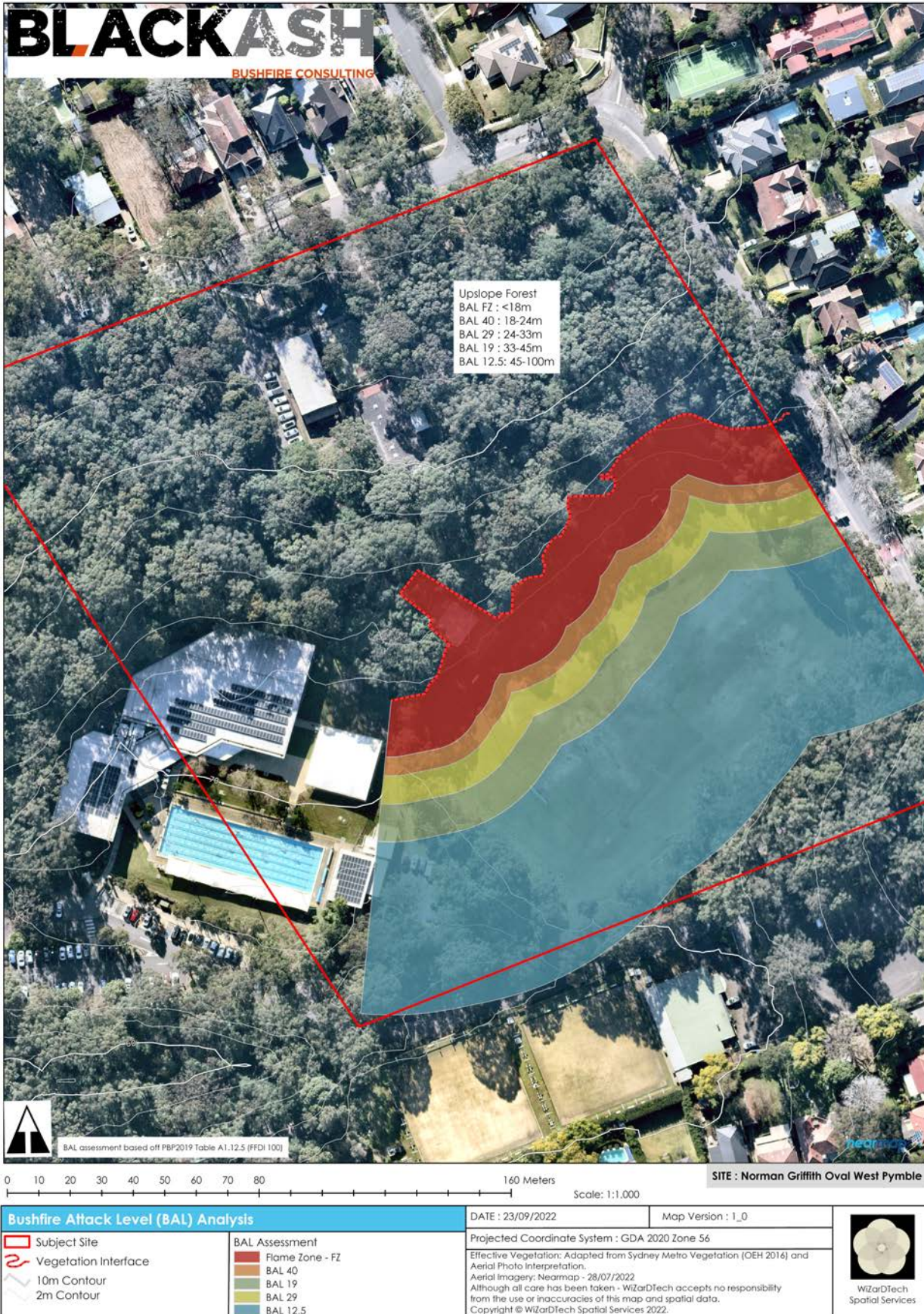


Figure 6 Bushfire Attack Levels



## 7. Assessment Against the Aim and Objective of PBP

All development in Bushfire Prone Areas needs to comply with the aim and objectives of PBP. 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 are in accordance with the requirements of PBP and the aims of PBP have been achieved.
Objectives	Meets Criteria	Comment
Afford occupants of any building adequate protection from exposure to a bushfire.	Yes	The development provides opportunity for all occupants to be shielded from any external bushfire.
Provide for a defensible space to be located around buildings.	Yes	Defensible space is provided around the site.
Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent the likely fire spread to buildings.	Yes	The site is separated from the vegetated areas. Radiant heat levels are within acceptable limits.
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 for emergency vehicles and evacuation is adequate.
Provide for ongoing management and maintenance of bushfire protection measures.	Yes	The site will be managed by Council
Ensure that utility services are adequate to meet the needs of firefighters.	Yes	Utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).

The suite of bushfire protection measures provided for the proposed development satisfies the objectives for buildings of Class 5-8 under the NCC as identified in section 8.3.1 of PBP 2019.



## 8. Conclusion

The bushfire risk to Norman Griffiths Oval from surrounding vegetation is low. This is reflected in the classification of vegetation as Category 2 vegetation on Ku-ring-gai Councils Bushfire Prone Land Map and low categorisation and risk assessment completed in the *Hornsby Ku-ring-gai Bushfire Risk Management Plan*.

The proposed synthetic surface and underlay has a high ignition point that will not be affected by fire in the adjoining vegetation. A risk of embers damaging the surface in the event of uncontrolled fire in the adjoining bushland exists. However, fast fire emergency response to the oval is provided by local Fire and Rescue NSW and the NSW Rural Fire Service stations.

The proposed surface does not pose a bushfire risk in itself or to surrounding properties or assets. The radiant heat load outlined within the test for a Mean distance of flame travel of 640mm with an average Critical Radiant Heat Flux of 4.2 kW/m<sup>2</sup>. The houses are separated by Lofberg Road to the east and north of the site. Radiant heat levels of less than critical limits ((4.7kW for people and 10kW for unprotected buildings) are available at surrounding assets.

If you require any further information, please do not hesitate to contact me on 0419 203 853.

Yours sincerely



Lew Short | Principal

B.A., Grad. Dip. (Design for Bushfires), Grad. Cert. of Management (Macq), Grad. Cert. (Applied Management)

BPAD Level 3 BPAD 16373

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## Appendix 1 References

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

Councils of Standards Australia AS3959 (2018) – Australian Standard Construction of buildings in bushfire-prone areas

Keith, David (2004) – Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT. The Department of Environment and Climate Change

NSW Rural Fire Service (2015) Guide for Bushfire Prone Land Mapping

NSW Rural Fire Service (NSW RFS). 2019. Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.

Appendix 2 Certificate of Test

## Certificate of Test

**Quote No.: NR8623** **No. FNR12903C**

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without written authorisation from CSIRO is forbidden.

This is to certify that the specimen described below was tested by CSIRO Infrastructure Technologies in accordance with Australian Standard ISO 9239, Reaction to fire tests for floorings, Part 1: Determination of the burning behaviour using a radiant heat source, 2003, on behalf of:

Fieldturf Australia Pty Limited  
1A Hale Street  
Unit 8A Port Air Industrial Estate  
BOTANY NSW 2019  
AUSTRALIA

A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FNR 12903.

**SAMPLE IDENTIFICATION:** RGF XM7 60-10.5 ProPlay 23 Purefill

**DESCRIPTION OF SAMPLE:**

The sponsor described the tested specimen as a synthetic grass with monofilament and fibrillated polyethylene (PE) yarns with cork and sand infill. The yarns were tufted into a woven PP (polypropylene) primary backing. The primary backing was coated with a styrene-butadiene latex secondary backing. The silica sand infill was applied on the synthetic grass surface at an application rate of 22 -kg/m<sup>2</sup>. The cork granule (diameter 0.8-mm to 2-mm) infill was applied on the synthetic grass above the sand at an application rate of 6-kg/m<sup>2</sup>.

The synthetic grass was loose laid on a 'ProPlay' 23-mm thick shock pad comprising of thermal bond closed cell crosslink polyethylene (XPE) foam.

Nominal pile height:	60 mm
Nominal thickness of woven PP primary backing:	0.5 mm (measured)
Nominal thickness of secondary backing:	1.5 mm (measured)
Nominal total thickness:	85 mm
Nominal mass of pile:	2.9 kg/m <sup>2</sup> ± 0.29 kg/m <sup>2</sup>
Nominal mass of foam:	4.0 kg/m <sup>2</sup>
Colour:	green (facing) / black (grey)

**TEST PROCEDURE:** Samples were tested in accordance AS ISO 9239; Australian Standard, Reaction to fire tests for floorings, Part 1: Determination of the burning behaviour using a radiant heat ignition source, 2003. Three (3) samples were tested in accordance with AS 9239.1-2003.

**SAMPLE CLASSIFICATION:**

Mean distance of flame travel:	640 mm
Average Critical Radiant Flux:	4.2 kW/m <sup>2</sup>
Average integrated smoke value:	19 % x min

These test results relate to the behaviours of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Testing Officer: Clive Broadhead Date of Test: 14 April 2022

Issued on the 2<sup>nd</sup> day of May 2022 without alterations or additions.

Stephen Smith  
Team Leader, Reaction to Fire & Façade Fire Laboratory

**End of Report**

**NATA Accredited Laboratory**  
Number: 165  
Corporate Site No 3625  
Accredited for compliance with ISO/IEC 17025 - Testing.

**CSIRO INFRASTRUCTURE TECHNOLOGIES**

14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA  
Telephone: 61 2 9490 5444 Facsimile: 61 2 9490 5555 [www.csiro.au](http://www.csiro.au)