



Bushfire Assessment Report

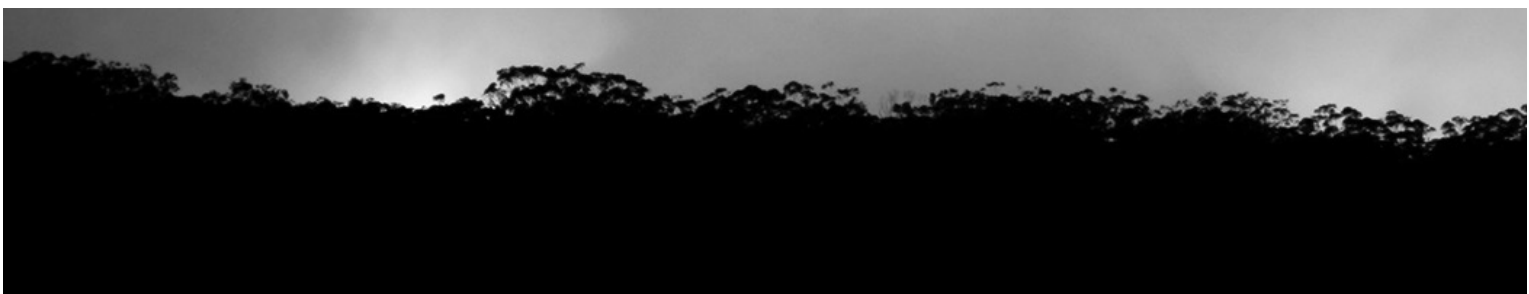
for

Georges Cove Marina Planning Proposal

Prepared

Mirvac Homes (NSW) Pty Limited



Version 1.1 10th May 2018



Document Tracking

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Client Details:	Mirvac Homes (NSW) PTY Limited
Project Address	Lot 7 in DP 1065574 (Lot 7) being No.146 Newbridge Road Georges
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Lew Short | Principal

BlackAsh Bushfire Consulting

Fire Protection Association of Australia BPAD Level 3

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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>
BSA	Bushfire safety authority
EPA Act	<i>Environmental Planning & Assessment Act 1979</i>
FDI	Fire danger index
ha	Hectare
m	Metres
PBP	<i>Planning for Bush Fire Protection 2006</i>
RF Act	<i>Rural Fires Act 1997</i>

1. Introduction

Mirvac Homes (NSW) PTY Limited (**Mirvac**) commissioned Blackash Bushfire Consulting (**Blackash**) to provide a Bushfire Assessment Report to support a planning proposal to allow residential development within in Lot 7 in DP 1065574 (Lot 7) being No.146 Newbridge Road Moorebank (the study area) which is known as Georges Cove Marina (see Figure 1) and is part of the former Benedict Industries sand and soil quarry and recycling facility.

The planning proposal only relates to the part of the RE2 Private Recreation zoned area within the southern portion of the development site (see figure 1) and includes the construction of the collector road on the western boundary to the site and internal road network.

This report has been prepared to support the planning proposal for the subject site to allow a residential use in two parts. The first part being a rezoning of a portion of residue land from RE2 Private Open Space to R3 Residential to join the existing zoned R3 residential area subject to development under an application with Liverpool City Council. This is referred to as the 'Approximate area to be rezoned R3' and is hatched yellow in Figure 2.

The second part is for the approval of an enabling clause for terraces and residential flat buildings over part of the existing zoned RE2 - this is referred to as 'Residential use envelope' and edged red in the Figure 2.

Access to the proposed road network will be from Brickmakers Drive, to the west via a bridge-overpass and a future connection to Newbridge Road, to the north.

The land to the north and northeast, between the R3 zoned land and Newbridge Road is zoned B6 – Enterprise Corridor. The site is zoned RE2 – Private Recreation and is proposed to contain the Georges Cove Marina. The adjoining land to the northeast is currently being rezoned to residential whilst the adjoining land to the west is SP – Drainage and E2 – Environmental Conservation.

The development is linked Integrated Development for 7//1065574 146 Newbridge Road Moorebank to the north of the site. Previous bushfire reports have been completed and the application for residential development was lodged with the RFS. On 15 December 2018, the RFS issued a Bushfire Safety Authority (**BFS**A) with conditions for this development. A copy of the BFS A is at Appendix 1. Of note, the RFS conditions recognised a temporary secondary access into the development. This application will utilise this access way to provide options for movement within and external to the site.

The proposal meets the deemed to satisfy (**DTS**) asset protection zone (**APZ**) requirements of *Planning for Bushfire Protection 2006* (**PBP 2006**) and a conservative approach has been taken to provide confidence to the RFS of approving the proposal.

An inspection of the site and adjoining land occurred in late 2017. This assessment has been prepared by Lew Short, Principal Blackash Bushfire Consulting (FPAA BPAD-A Certified Practitioner No. BPD-PA-16373) who is recognised by the NSW Rural Fire Service (**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.

Table 1 is a summary of compliance with relevant documents and approaches to mitigate bushfire attack.

2. Summary

A summary of the key assessment requirements for the RFS is provided in Table 1.

Table 1

Can this proposal comply with AS3959, 2009 + addendum to Appendix 3 of PBP?	YES
What is the recommended level of construction as per AS3959?	Various. Minimum setbacks for BAL 29 provided
Does this development comply with the requirements of PBP?	YES – Deemed to Satisfy
Does this development comply with the Aims and Objectives of PBP?	YES
Is referral to the NSW RFS required?	YES
APZ	Achieved
Access Internal Roads	YES
Access Public Roads	New and linking to existing
Services	DTS achieved
Emergency and Evacuation Planning	Can be achieved

Figure 1 Subject Site Location

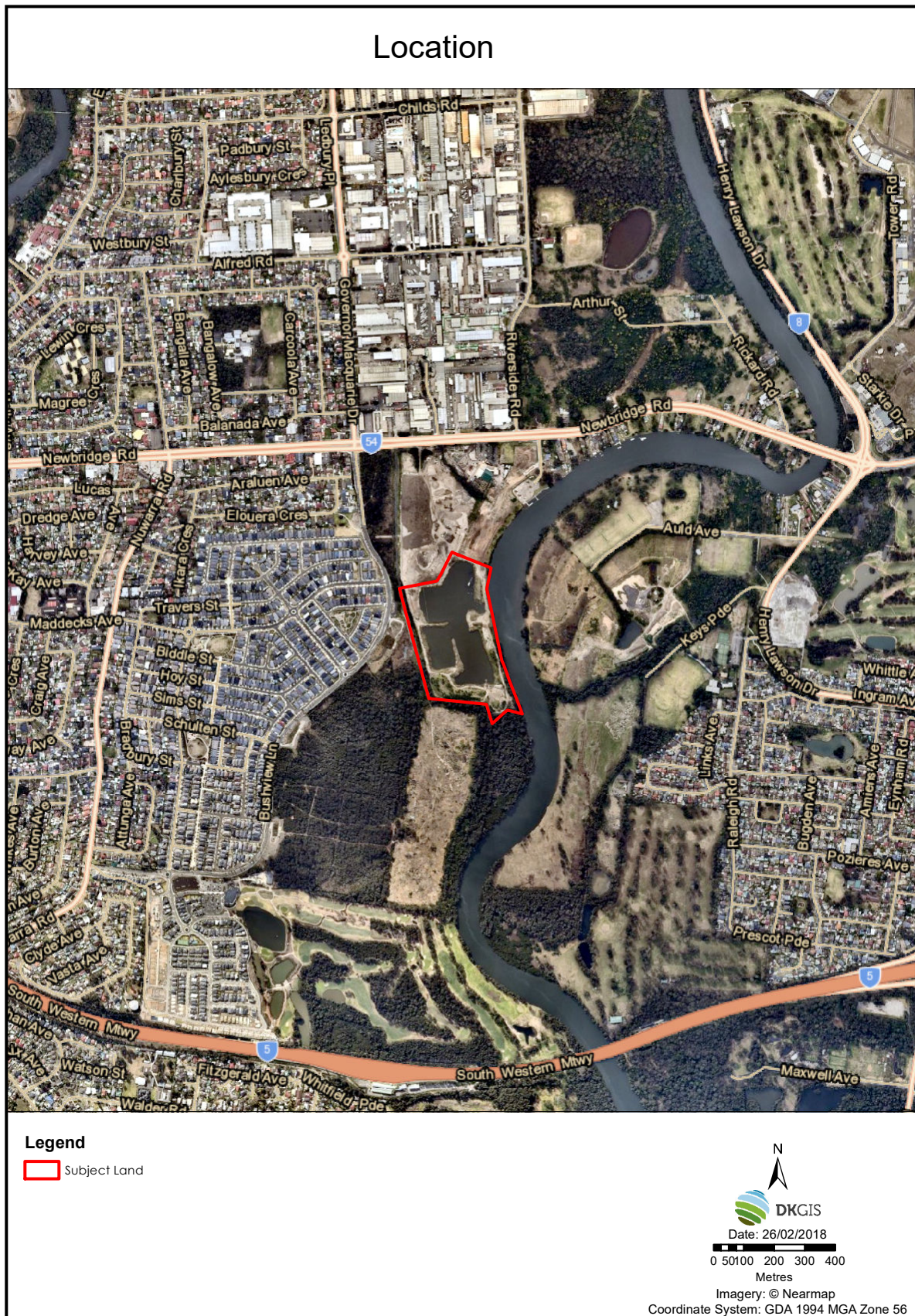
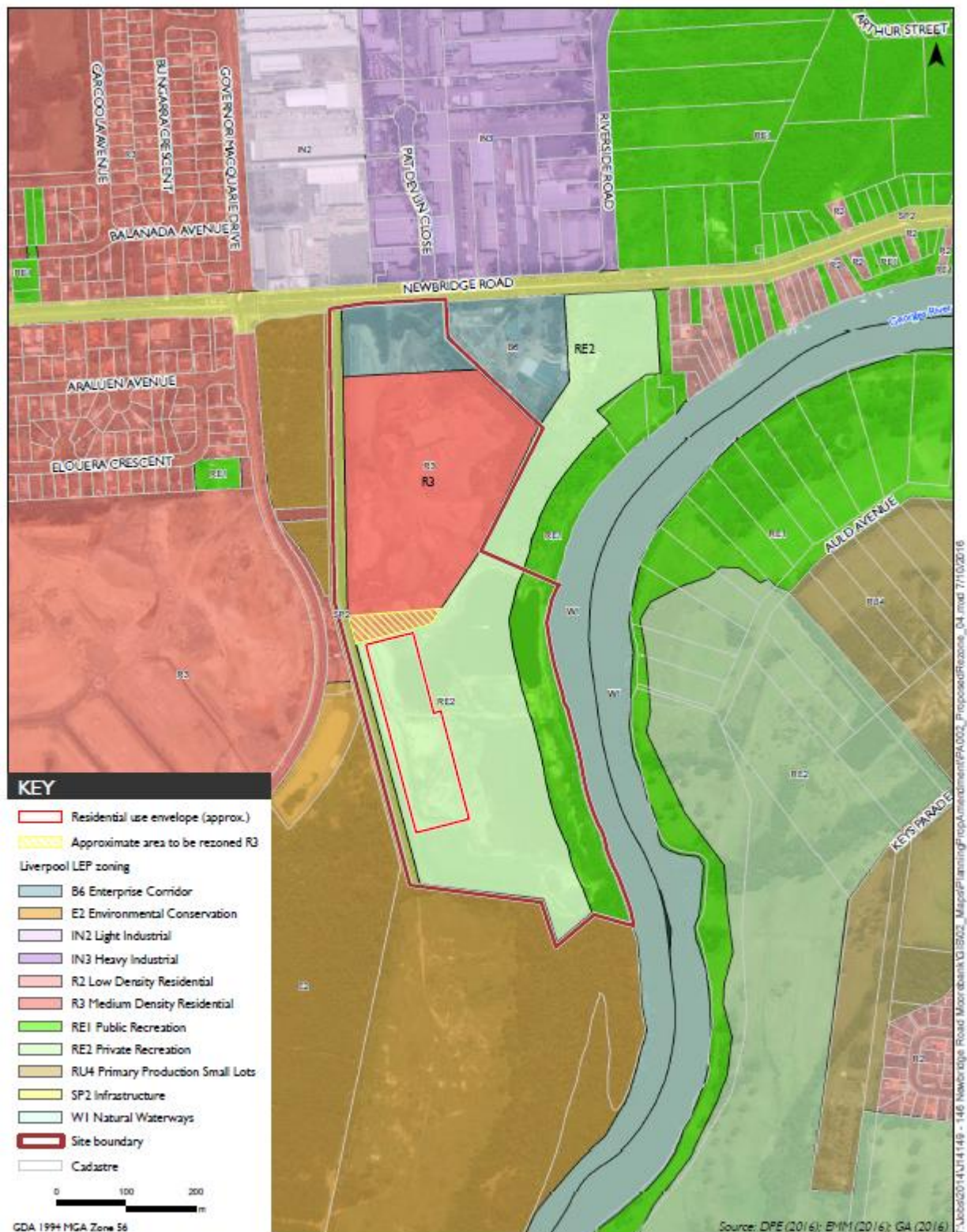


Figure 2 Proposed Zone Boundary Change (source EMM)



3. Proposed Development

The proposal seeks to include an enabling clause within the Liverpool Local Environmental Plan (**LLEP**).

This enabling clause will allow residential apartments and terraces to be constructed within an area of the existing RE2 zoning that is being rezoned as R3 Residential. The proposal seeks approximately 374 apartments and terraces within the residential use envelope (Figure 2) in a highly desirable corner of the Georges River. The site plan is shown in Figure 3.

This initiative is in keeping with the NSW Government's intent for a *Plan for Growing Sydney* to provide new housing that will be located close to jobs, public transport, community facilities and services. The Planning Proposal will also offer choices in location and size to better suit the community's lifestyles and budgets.

The planning proposal will also amend the appropriate LEP maps to allow the residential development (such as the building height map).

Upon approval and gazettal of the planning proposal, a Development Application will be lodged with the detailed designs of the residential development at which time RFS will be referred the DA under the integrated development provisions.

Figure 3 Site Plan

MIRVAC
DESIGN



Georges Cove Marina

0 18.75 37.5 75
Scale 1 : 1000



SITE PLAN

SK_001

4. Site Description

Georges Cove Marina is legally described as Lot 7 in DP 1065574 (Lot 7) being No.146 Newbridge Road Moorebank.

Works have commenced on the Lot to the north and northeast of the site and vegetation has been removed from the site. Adjoining land to the west of the site is SP – Drainage and E2 – Environmental Conservation. A track runs parallel to the site on the western boundary which accesses the Lot to the south of the site. This access track provides a fuel free zone and a buffer from the land to the west of the site.

The land to the south of the site is extensively cleared (south western portion).

The site was previously used as a sand and soil recycling centre and was cleared of bushfire prone vegetation during the operation of this facility.

The subject site has been filled and will be further filled to be above the 1:100 year flood levels and to provide flood free access.

Land to the west of the site has been developed and is bound by Brickmakers Drive. Brickmakers Drive pinches into the site at its northern most boundary. A sewerage pump station is on the north-western boundary of the site and provides a fuel managed area.

5. Legislative Framework

This is a planning proposal to include an enabling clause for residential use within the existing zoning of the LLEP.

Strategic planning is an effective way of achieving bushfire protection objectives for new development. Planning instruments and policies can ensure bushfire management principles are given appropriate consideration at all stages of the planning and development process. A key element of strategic planning should be an assessment of the impact on existing infrastructure and the provision of adequate bushfire protection measures.

Planning for Bush Fire Protection 2006 (PBP 2006) provides guidelines for use once an area has been identified and zoned for development. Its primary purpose is to assist with the development of bushfire prone land. Instruments and policies that guide planning and land use control allow for a more strategic approach to planning and developing in bushfire prone areas and ensure future applications have considered bushfire risk.

Local Environmental Plans (**LEPs**) guide planning decisions at the local government area and are a useful mechanism for managing bushfire risk. The Minister for Planning, under section 117(2) of the *Environmental Planning and Assessment Act 1979 (EP&A Act)* issues directions that relevant planning authorities (such as local councils) must follow when preparing planning proposals for new LEPs. *Direction 4.4 Planning for Bushfire Protection* identifies matters for consideration for planning proposals that will affect, or are in proximity to land mapped as bush fire prone.

The RFS *Practice Note 2/12 Planning Instruments and Policies* provides the framework to consider planning proposal applications. The Practice Note provides guidance on areas that should not be rezoned where the bushfire risk is unacceptable. This could include¹:

- development is likely to be difficult to evacuate during a bush fire,
- development is likely to create control difficulties during a bush fire,
- development will adversely affect other bush fire protection strategies or place existing development at increased risk,
- development is likely to result in a substantially increased requirement for government spending on bush fire mitigation measures, infrastructure or services,
- environmental constraints to the site cannot be overcome,
- required bush fire protection measures would incur significant environmental costs.

¹ RFS *Practice Note 2/12 Planning Instruments and Policies*

The Practice Note also provides guidance on preparing a planning proposal relating to bushfire prone land, the primary objectives should be to:

- a) protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas, and*
- b) encourage sound management of bush fire prone areas.*

Importantly, the planning proposal must:

- a) not increase the risk to life from bushfire;*
- b) not introduce controls that place inappropriate developments in areas exposed to unacceptable bushfire hazard;*
- c) ensure that appropriate bush fire protection measures can be afforded to property at risk of bushfire;*
- d) minimise negative impacts on the surrounding environment;*
- e) ensure that provision is made for adequate evacuation/shelter options for the community, and;*
- f) ensure that development is capable of complying with Planning for Bush Fire Protection 2006.*

A key principle of a merits based assessment of rezoning applications is to ensure that future development is capable of complying with PBP 2006. As such, our assessment has been completed against the subdivision requirements of PBP 2006 to ensure that future applications under s.100B of the *Rural Fires Act, 1997* (**RF Act**) can be issued with a Bushfire Safety Authority (**BFSA**).

Once the rezoning application is approved, a development application will be prepared for residential subdivision. This is identified as Integrated Development in Section 91 of the EPA Act. As Integrated development, Council must seek approval from the RFS for a BFSA. The BFSA authorises development to the extent that it complies with the RFS document PBP 2006.

The BFSA authorises development to the extent that the development complies with standards regarding setbacks, provision of water supply and other matters considered by the RFS Commissioner to be necessary to protect persons, property or the environment from danger that may arise from a bush fire.

The RF Act requires that a person must obtain such a BFSA before developing bush fire prone land and that an application for a BFSA is to be made to the Commissioner of the RFS in accordance with the regulations.

This Bushfire Assessment Report has been completed in accordance with the Rural Fires Regulation to ensure that a future DA can achieve a BFSA. However, it must be stated that the Planning Proposal, while providing a degree of detail is not the final form of the proposal as this will be tightened up prior to submission of a future DA. To assist the RFS, this Bushfire Assessment Report has been completed in accordance with the RF Reg.

This report will demonstrate that an appropriate combination of bushfire protection measures and compliance with PBP 2006 can be achieved to support the planning proposal for rezoning the residue land from RE2 Private Open Space to R3 Residential to join the existing zoned R3 residential area subject to development under an application with Liverpool City Council. As such, the RFS ought to support the Planning Proposal in its current form.

6. Draft Planning for Bush Fire Protection 2017

The RFS is in the process of reviewing PBP 2006. The *Draft Planning for Bush Fire Protection 2017* was available for public exhibition from 15 May 2017 until COB 14 July 2017. The RFS has indicated that they will have the review finalised before the end of 2017 with release intended in April 2018. Legislative enactment is anticipated between November 2018 and May 2019. Transition arrangements and savings provisions from PBP 2006 to the new document are not known at this stage. However, the document that is in force at the time a DA is lodged is the document that must be used in any assessment by RFS.

The review has been flagged as significant and will seek to consolidate RFS Fast Facts and Practice Notes developed over the last ten years and to reflect the current planning considerations, such as exempt and complying development within the document. It is not expected that the review will change legislative provisions or technical requirements.

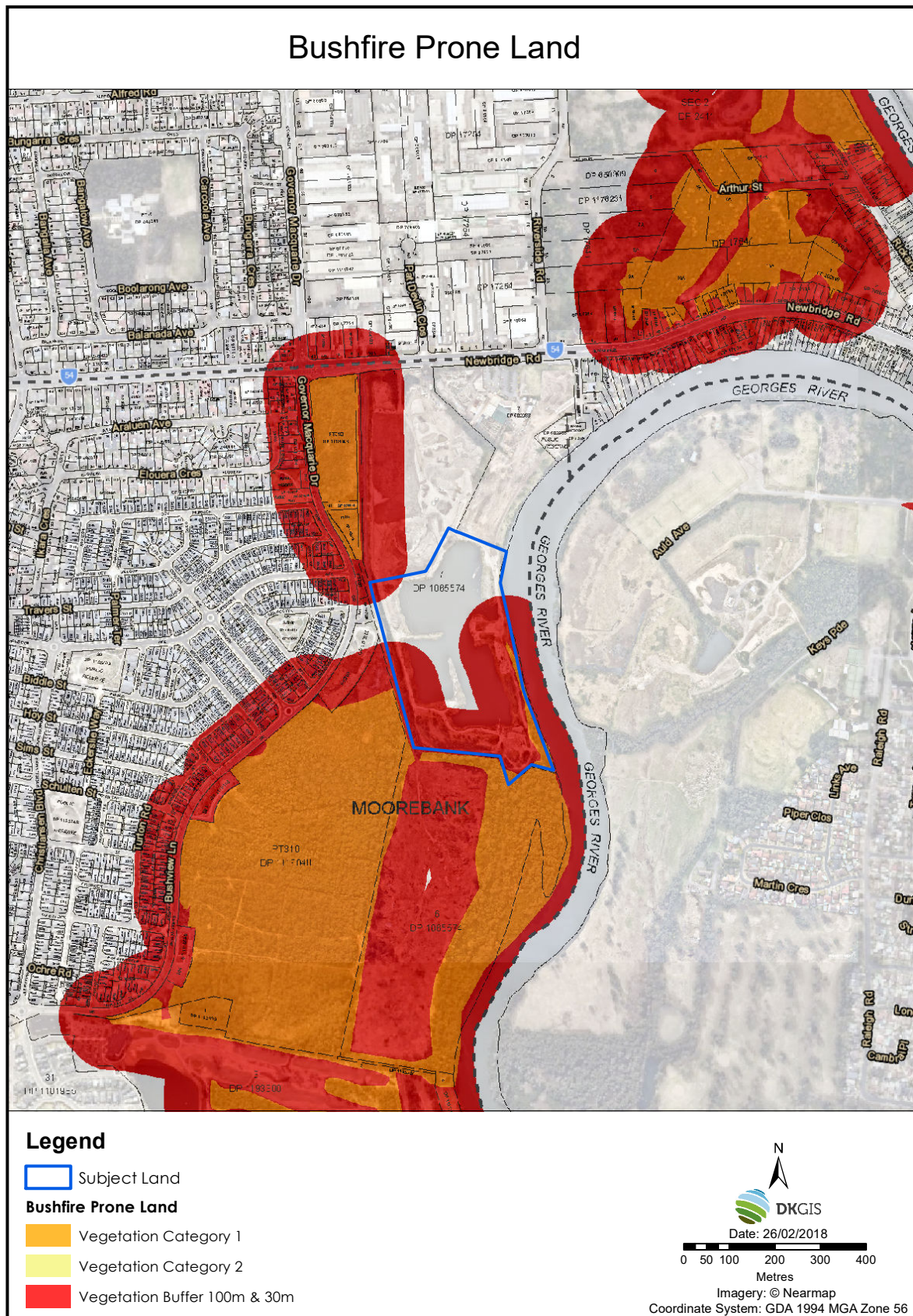
7. Bushfire Prone Land

The site is identified as 'bushfire prone land' (Figure 4) for the purposes of Section 146 of the EPA Act and the legislative requirements for building on bushfire prone lands are applicable.

Bushfire prone land maps provide a trigger for the development assessment provisions and consideration of sites that are bushfire prone. Bushfire prone land (**BFPL**) is land that has been identified by council, which can support a bushfire or is likely to be subject to bushfire attack. Bushfire prone land maps are prepared by local council and certified by the Commissioner of the RFS.

The site is affected by the 100 metre vegetation buffer from the Category 1 vegetation on adjoin land to the west and south of the site and a small portion of the 100 metre buffer from Category 1 land to the north west of the site.

Figure 4 Bushfire Prone Land



8. Bushfire Threat Assessment

8.1. Methodology

PBP provides a methodology to determine the bushfire threat and commensurate size of any APZ that may be required to offset possible bushfire attack. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation. For new residential subdivision, APZ requirements are based on keeping radiant heat levels at new buildings below 29kW/m².

The following assessment is prepared in accordance with Section 100B of the RF Act, Clause 44 of the RF Reg and PBP. This assessment is based on the following resources:

- *Planning for Bushfire Protection* (NSW RFS, 2006);
- Council Bushfire Prone Land Map;
- Aerial mapping;
- Detailed GIS analysis;
- Site inspections undertaken in late 2017.

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 is necessary to determine the application of bushfire protection measures such as 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

The RF Regulation requires a classification of the vegetation on and surrounding the property (out to a distance of 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in PBP.

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 and our assessment is based on the vegetation that will "most significantly affecting fire behaviour."

Figure 5 shows the vegetation adjacent to the site is categorised as forest.

8.4. Slopes Influencing Bushfire Behavior

The RF Reg requires an assessment of the slope of the land on and surrounding the property out to a distance of 100 metres from the boundaries of the property or from the proposed development footprint.

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. Figure 5 shows the slopes affecting the site. Table 2 shows the effective slopes relevant to the proposal.

Table 2 APZ Assessment

Direction from site	Predominant Vegetation ¹	Effective Slope ²	PBP Acceptable Solution ³	AS3959 Acceptable Solution ⁴	Provided
West and South	Forest	Flat	20m	25m	25m
North	Cleared and managed	NA			
East	NA – Georges River	NA			

¹ Predominant vegetation is identified, according to PBP and "Where a mix of vegetation types exist the type providing the greater hazard is said to be predominate"

² Slope most significantly influencing the fire behaviour of the site having regard to vegetation found on each 'fire run line'.

³ APZ identified using Table 2.6 of PBP to achieve acceptable solution

⁴ APZ identified using Table 2.4.2 of AS3959 to ensure future development can comply with AS3959

Figure 5 Vegetation and Slope



8.5. 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 site has a Fire Danger Index (FDI) of 100 as per PBP.

8.6. Bushfire Attack Levels & APZ

PBP promotes detailed site analysis to minimise the potential for bush fire attack. An appropriate combination of Bushfire Protection Measures (**BPM**), commencing with an APZ, is to be provided to satisfy the specific objectives and the general aim and objectives of PBP.

The APZ ensures that buildings are separated from the hazard and is designed to minimize the presence of fuels, which could become involved in a fire. The APZ standards are designed to ensure that future buildings can conform to the deemed-to-satisfy arrangements under the National Construction Code (**NCC**).

The RFS will not approve the subdivision of land for a residential or rural-residential subdivision purpose when the building footprint is unable to meet the necessary setbacks to provide for future houses outside BAL 29 for an asset protection zone.

Figure 6 shows the required separation through APZs for the designated building footprints to meet BAL 29 using Table 2.6 of PBP 2006 to achieve the acceptable solution. Figure 7 shows the deemed-to-satisfy separation required to provide BAL 29 in accordance with Table 2.4.2 of AS3959 to ensure future development can comply with AS3959.

APZs can be provided to the proposed building footprints that meet the both PBP 2006 and AS3959. To provide surety, all APZs have been contained within the site. The APZs managed by the building and title management arrangements where adjoining the residential development. The foreshore area is to be dedicated to Council.

Figure 6 DTS APZ in accordance with PBP 2006



Figure 7 BAL 29 to meet AS3959 Table 2.4.2



9. Management of the Land as an APZ

An APZ is a buffer zone between a bushfire hazard and buildings, which is managed progressively to minimise fuel loads and reduce potential radiant heat levels, flame, ember and smoke attack. The appropriate APZ is based on vegetation type, slope and levels of construction. The APZ can include existing roads, other buildings and managed properties. Management of the site meets the requirements for an APZ. The site has been and continues to be extensively managed to mitigate the risk of bushfires.

10. High Rise Development

RFS Community Resilience Practice Note 2/12 provides information pertaining to high rise development in bushfire prone areas. The Practice Note identifies that:

High-rise buildings, for the purposes of PBP are defined as buildings exceeding three (3) stories in height.

The Practice Note identifies several challenges associated with High Rise Development in bushfire prone areas and articulates considerations that will need to be addressed in an application for a BFSa. These include:

- *Location – high-rise buildings should not be located along ridges or along slopes with significant fire runs;*
- *Existing infrastructure – when high-rise developments are proposed their impact during potential bush fire emergencies needs to be considered, particularly in terms of evacuating occupants along the road network and the availability of water supplies available for high-rise fire fighting;*
- *External facades – external facades may result in increased exposure to radiant heat and also convection columns. Specialised modelling may be needed and APZs may need to be increased over and above those specified to account for this;*
- *Potential for entrapment - the risk associated with occupant egress is higher in high-rise buildings than for lower-rise structures and therefore the potential for entrapment during a bush fire emergency should be addressed.*

The proposed buildings are located to meet the deemed-to-satisfy provisions of PBP 2006 and AS3959 for separation providing acceptable levels of radiant heat.

Due to the flood prone nature of the land, the site will be built up FFL of the ground floor is RL 7.6.

Considering recent high rise fires (Melbourne, London and Dubai), the facades of the buildings will be provided in accordance with the Building Code of Australia.

The Building Code of Australia (as part of the NCC) contains provisions for external walls to be non-combustible for most multi-storey buildings. The performance requirement identifies that they avoid the spread of fire within and between buildings.

Given this and many other features of the NCC, a new building constructed in Australia, built in accordance with the NCC, provides extremely high levels of safety. Provisions in the NCC that achieve these outcomes for a typical high-rise apartment building include²:

- Smoke detection and occupant warning systems.
- Fire-isolation of exits, such as exit stairs.
- More than one exit for each storey to allow alternative means of escape should one exit become unusable.
- Exclusion of smoke from exit stairs.
- Fire sprinklers.
- Fire-resisting construction to limit the spread of fire between apartments and between storeys.
- Non-combustible external walls.
- Resistance to collapse as a result of fire.
- Features to assist fire brigade operations, such as fire hydrants.

The key features of the NCC in relation to external wall claddings and wall assemblies requires that external walls must be non-combustible if using a Deemed-to-Satisfy Solution. The NCC Deemed-to-Satisfy Provisions also require that any attachments to the external wall must not impair the fire resistance of the external wall or create an undue fire risk to the building's occupants as a result of fire spread or compromising fire exits. Permitted attachments are generally incidental in nature such as a sign, sunscreen, blind, awning, gutter or downpipe.

If not following the Deemed-to-Satisfy compliance pathway, a Performance Solution for combustibility of external walls must be able to demonstrate that it will avoid the spread of fire within and between buildings, including providing protection from the spread of fire to allow sufficient time for evacuation.

In respect of suitability of materials to be used in a building, the NCC requires that every part of a building must be constructed in an appropriate manner using materials and construction being fit for the purpose for which they are intended.

The NCC mandates the forms of evidence that must be used to demonstrate the suitability of a product, form of construction or design.

² <https://www.abcb.gov.au/Connect/Articles/Fire-safety-in-High-Rise-Buildings>

While the bushfire risk to the site is low, a detailed bushfire risk evacuation plan will be completed prior to occupation.

11. High Density Development in Bush Fire Prone Areas

RFS Community Resilience Practice Note 2/12 also provides guidance on high density development in bushfire prone areas. High density development includes *dual occupancies, multi dwelling housing and residential flat buildings*³. The considerations are the same for High Rise Development and have been addressed in section 10.

12. Water Supplies

The site land will be serviced by reticulated water. The extension of services will comply with AS2419. Future buildings will be connected to the reticulated town's water main for domestic needs. Existing water supply will be available in the adjoining Moorebank Cove development (R3) to the north feeding from Newbridge Rd and Brickmakers Dr.

13. Gas and electrical supplies

Electricity supply will comply with PBP. Any gas services are to be installed and maintained in accordance with *Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'* (Standards Australia 2008). This complies with PBP.

14. Access

During a meeting with RFS on 12th October 2017, the RFS outlined their concerns about the cumulative impact of the development of the release area as a whole including the future Marina development and other adjoining sites (being the Flower Power site and the development of the B6 zoned site fronting Newbridge Road).

At the meeting Mirvac and Blackash discussed the nature of risk to the sites, the development cycle for the sites and issues pertaining to access based on risk. At the meeting, the RFS acknowledged these constraints and suggested an interim or "band aid" solution be found to ensure safe and viable access in accordance with PBP 2006 and the next version of the document.

³ RFS Community Resilience Practice Note 2/12 p. 6

The RFS have maintained their position that a secondary access would be required once the total release area is developed and until such time as the collector road through the adjoining Flower Power site is constructed. The proposed collector road finishes before the Marina access road as outlined in 'Liverpool Development Control Plan 2008, Part 2.10 Development in Moorebank East'. As such, site access road will be provided into the site that is 7.1 metres wide. The collector road is shown in Appendix 2 shows it is proposed to be 7m wide, with 2.5m wide parallel parking bays that provide access in accordance with PBP 2006.

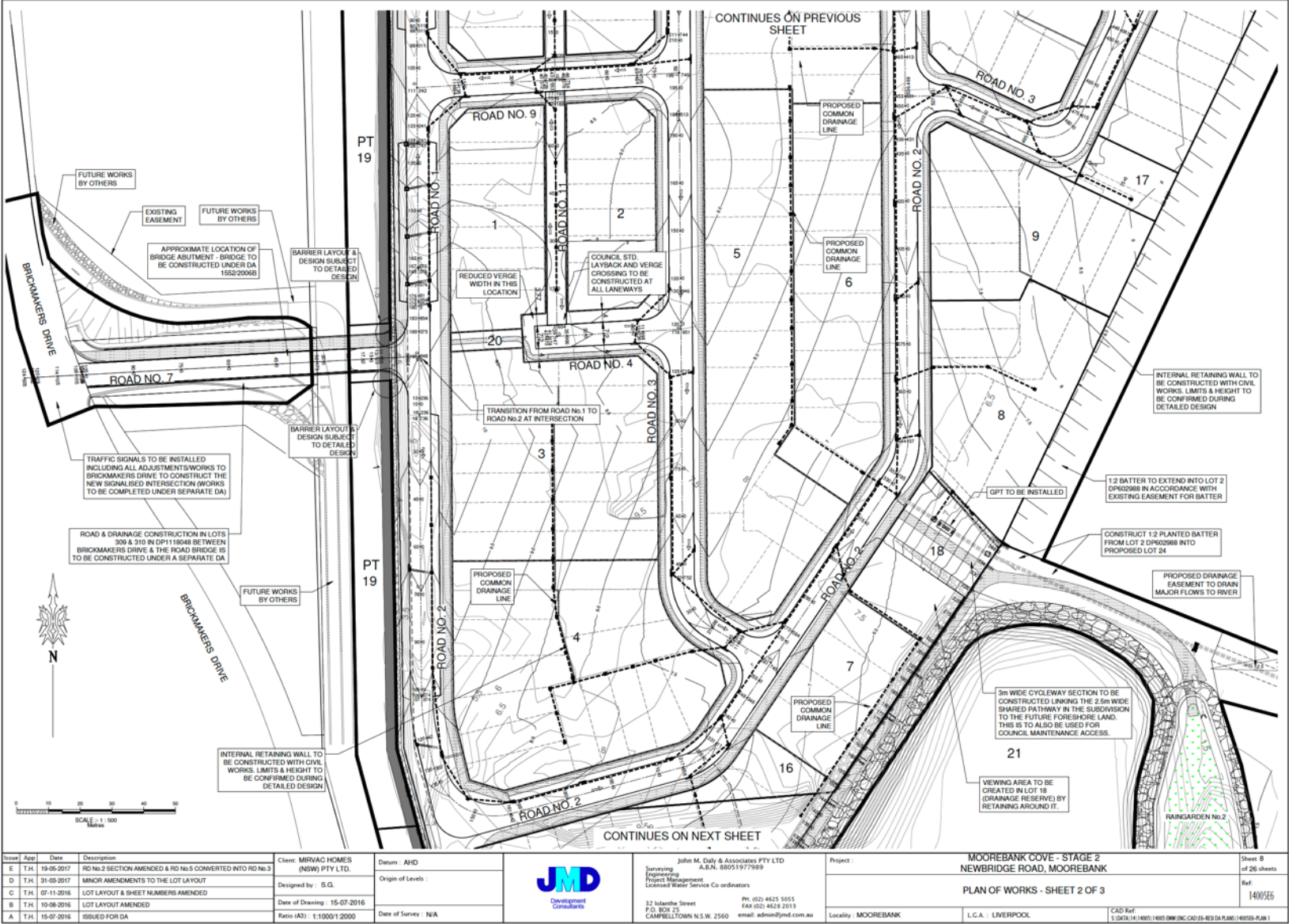
Proposed access into the site is from will be from the existing public road network via Brickmakers Drive, to the west of the site. Access into the site is by a bridge-overpass from Brickmakers Drive and a future connection to Newbridge Road, to the north. Figure 2 shows detailed access arrangements for proposed Stage 2 works and the overall development plan. Detail is shown in Figures 8, 9 and 10. The access bridge will provide a 7.7m carriageway and a 3.5m wide pedestrian/ shared cycleway.

The subdivision will create lots which will be accessed directly off the new road network. The internal road adjacent to the bushfire hazard to the west shall have a minimum pavement width of 7.1 metres with 'No Parking' to the side of the road which accommodates the services (e.g. Water Main and Fire Hydrants). The internal roads shall have a minimum pavement width of 6.5 metres with parking provided in designated parking bays and in underground parking.

Figure 9 shows directly adjacent to Road Number 8 is additional access ways (supported by easements) that provide access into lots not associated with the DA. These additional access points will provide a fuel free area that is considered APZ.

In the event of a fire a range of options exist including sheltering in place. This presents a viable option as the narrow band of remnant bushland represents a low hazard and would burn through with low intensity in a short period of time.

Figure 8 Access to the site from Brickmakers Drive



ROAD No. 7

BRICKMAKERS DRIVE, MOOREBANK COVE

FINAL DESIGN & LAYOUT
SUBJECT TO BRIDGE ENGINEER'S DESIGN

BRIDGE TYPICAL SECTION (SECTION A-A)
NOT TO SCALE

ROAD TYPICAL SECTION (SECTION B-B)
NOT TO SCALE

ROAD No. 7 LONGITUDINAL SECTION, TYPICAL SECTION & PAVEMENT DETAIL

MOOREBANK COVE - ENTRY BRIDGE
BRICKMAKERS DRIVE, MOOREBANK

Client: MIRVAC HOMES (NSW) PTY LTD.
Designed by: S. G.
Date of Drawing: 15-11-2016
Date of Survey: N/A

Issue: 1
Date: 15-11-2016
Description: BRIDGE & ROAD TYPICAL AMENDED

Scale: 1:1000

North Arrow: (Indicated by a north arrow pointing towards the top right of the drawing)

Legend: (Includes symbols for bridge, road, pedestrian, and cycleway)

Notes: (Includes notes on bridge design, easements, and construction details)

Table: (Includes a table with columns for Issue, Date, and Description)

Figure 10 Entry Bridge



15. Significant Environmental Features

There are no known significant environmental features on the property.

16. Threatened Species

There are no known threatened species, population or ecological communities identified under the Threatened Species Conservation Act 1995 that is known to the applicant to exist on the property.

17. Aboriginal Objects or Places

There are no known Aboriginal objects or Aboriginal places (within the meaning of the National Parks and Wildlife Act 1974) that is known to the applicant to be situated on the property.

18. Assessment Against the Aim and Objective of PBP

The RF Reg requires an assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives and performance criteria set out in Chapter 4 (Performance Based Controls) of PBP.

All development in Bushfire Prone Areas needs to comply with the aim and objectives of PBP. Table 4 shows the compliance with PBP.

Table 3 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. Bushfire Attack Level of less than BAL 29 can be achieved, meeting the deemed to satisfy requirements for the NSW RFS.
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 BAL 29 .
Provide for defensible space to be located around buildings.	Yes	Defensible space is able to be provided on all sides of the proposed development.
Provide appropriate separation between a hazard and buildings, which, in combination with other measures, prevent	Yes	An asset protection zone commensurate with the BAL 29 can be provided at construction stage.

direct flame contact and material ignition.		
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. The roads within the site may be private, but will link to existing public roads in the surrounding environment.
Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads, in the asset protection zone.	Yes	Ongoing management can be provided.
Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting).	Yes	Utility services can be appropriate throughout the site.

19. Recommendations

The following recommendations are made for the bushfire protection measures for the site.

1. **Asset Protection Zones:** The land within the site and identified as future Asset Protection Zones, to the west and south of the development shall be maintained as an inner protection area (IPA) as outlined within section 4.1.3 and Appendix 5 of '*Planning for Bush Fire Protection 2006*' and the NSW Rural Fire Service's document 'Standards for asset protection zones'.
2. The **property access roads** shall comply with section 4.1.3 (3) of '*Planning for Bush Fire Protection 2006*'.
3. Any **gas** services are to be installed and maintained in accordance with AS/NZS 1596:2008 The storage and handling of LP gas (Standards Australia, 2008).
4. **Electricity** transmission lines are underground.
5. **Fire hydrant** spacing, sizing and pressure complies with AS2419.1
6. Non-combustible **cladding** shall be used on the external façade of the buildings.

20. Conclusion

This is a planning proposal to include an enabling clause for residential use within the existing zoning of the LLEP. The planning proposal only relates to the part of the RE2 Private Recreation zoned area within the southern portion of the development site.

The planning proposal seeks rezoning of a portion of residue land from RE2 Private Open Space to R3 Residential to join the existing zoned R3 residential area subject to development under an application with Liverpool City Council. In addition, the proposal with Council seeks approval of an enabling clause for terraces and residential flat buildings over part of the existing zoned RE2 land.

The planning proposal is on designated bushfire prone land buffer and the legislative requirements for development in bushfire prone areas are applicable. This assessment has been completed having regard to section 117(2) of the *Environmental Planning and Assessment Act 1979* and *Planning for Bushfire Protection 2006*.

A key principle of a merits based assessment of rezoning applications is to ensure that future development is capable of complying with PBP 2006. As such, our assessment has been completed against the subdivision requirements of PBP 2006 to ensure that future applications under s.100B of the *Rural Fires Act, 1997* can be issued with a Bushfire Safety Authority.

The proposed development can achieve the minimum setback to achieve APZs of BAL 29 in accordance with AS3959 and has been designed to meet the Bushfire Protection Requirements of *Planning for Bushfire Protection 2006*. The Planning Proposal, while providing a degree of detail is not the final form of the proposal as this will be tightened up prior to submission of a future DA. Once the rezoning application is approved, a development application will be prepared for residential subdivision.

This Report is a Bush Fire Hazard Assessment that provides the required information to assist Council and the Rural Fire Service in determining the ability of the Planning Proposal to meet *Planning for Bushfire Protection 2006*.

This report has demonstrated that an appropriate combination of bushfire protection measures and compliance with PBP 2006 can be achieved to support the planning proposal for rezoning the residue land from RE2 Private Open Space to R3 Residential to join the existing zoned R3 residential area.

This bushfire assessment demonstrates that the subject land is capable of accommodating future development and associated land use with appropriate bushfire protection measures. In the author's professional opinion, the planning proposal provides opportunity for future development to comply with *Planning for Bush Fire Protection 2006*. As such, the RFS ought to support the Planning Proposal in its current form.



Lew Short | Principal

BlackAsh Bushfire Consulting

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

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



Appendix 1 RFS Bushfire Safety Authority

All communications to be addressed to:

Headquarters
15 Carter Street
Lidcombe NSW 2141

Headquarters
Locked Bag 17
Granville NSW 2142

Telephone: 1300 NSW RFS
e-mail: pes@rfs.nsw.gov.au

Facsimile: 8741 5433



The General Manager
Liverpool City Council
Locked Bag 7064
LIVERPOOL BC NSW 1871

Your Ref: DA-24/2017
Our Ref: D17/539
DA17022206149 MA

ATTENTION: Marcus Jennejohn

15 December 2017

Dear Sir/Madam

Integrated Development for 7//1065574 146 Newbridge Road Moorebank NSW 2170

I refer to your letter dated 16 February 2017 seeking general terms of approval for the above Integrated Development in accordance with Section 91 of the 'Environmental Planning and Assessment Act 1979'.

This response is to be deemed a bush fire safety authority as required under section 100B of the 'Rural Fires Act 1997' and is issued subject to the following numbered conditions:

Asset Protection Zones

The intent of measures is to provide sufficient space and maintain reduced fuel loads so as to ensure radiant heat levels of buildings are below critical limits and to prevent direct flame contact with a building. To achieve this, the following conditions shall apply:

1. At the issue of subdivision certificate and in perpetuity the entire property shall be managed as an inner protection area (IPA) as outlined within section 4.1.3 and Appendix 5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zones'.

Water and Utilities

The intent of measures is to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building. To achieve this, the following conditions shall apply:

2. Water, electricity and gas are to comply with section 4.1.3 of 'Planning for Bush Fire Protection 2006'.

Access

The intent of measures for public roads is to provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from an area. To achieve this, the following conditions shall apply:

- Public road access shall comply with the performance criteria as outlined within section 4.1.3 (1) of 'Planning for Bush Fire Protection 2006'.
- The proposed pedestrian access from the temporary turning head at the end of Road No. 1 to Newbridge Road shall be a secondary access for fire fighting resources until such time the link road connection to Davy Robinson Drive is completed.

General Advice – consent authority to note

This approval is for the subdivision of the land only. Any further development application for class 1,2 & 3 buildings as identified by the 'Building Code of Australia' may be subject to separate application under section 79BA of the EP & A Act and address the requirements of 'Planning for Bush Fire Protection 2006'.

This bush fire safety authority is issued on the basis of further information supplied to the NSW RFS in response to our correspondence dated 29/6/2017.

For any queries regarding this correspondence please contact Matthew Apps on 1300 NSW RFS.

Yours sincerely

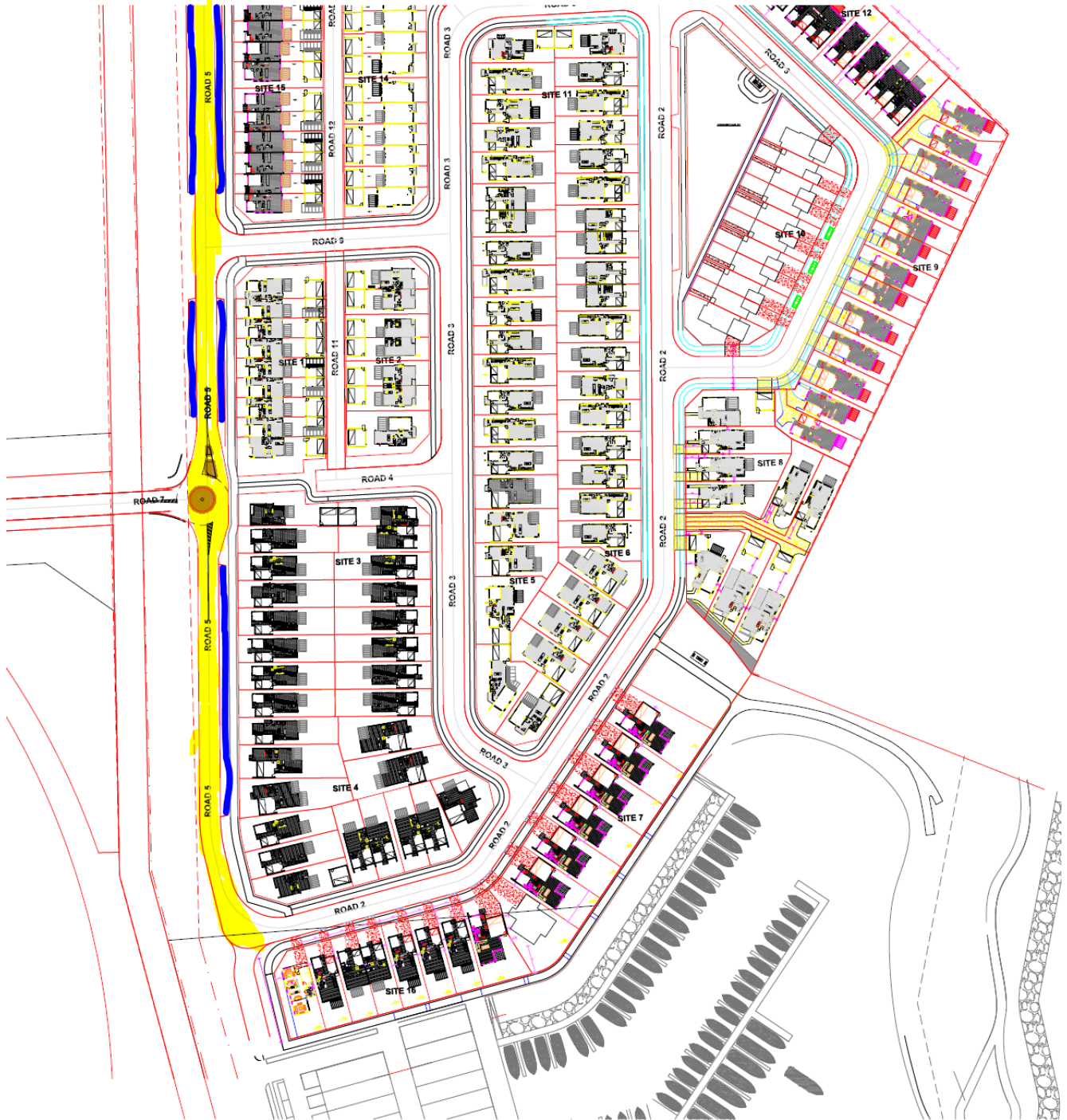


Nika Fomin
Manager, Planning and Environment Services (East)

The RFS has made getting information easier. For general information on 'Planning for Bush Fire Protection, 2006', visit the RFS web page at www.rfs.nsw.gov.au and search under 'Planning for Bush Fire Protection, 2006'.

Appendix 2

The collector road shown below highlighted yellow) itself is proposed to be 7m wide, with 2.5m wide parallel parking bays (as shown in blue below) as outlined in 'Liverpool Development Control Plan 2008, Part 2.10 Development in Moorebank East'



References

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

Australian Standard AS/NZS 1596 'The storage and handling of LP Gas'

Councils of Standards Australia AS3959 (2009) – *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 (RFS). 2006. *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners*. Australian Government Publishing Service, Canberra

NSW Government (1979) *Environmental Planning and Assessment Act 1979*. NSW Government Printer