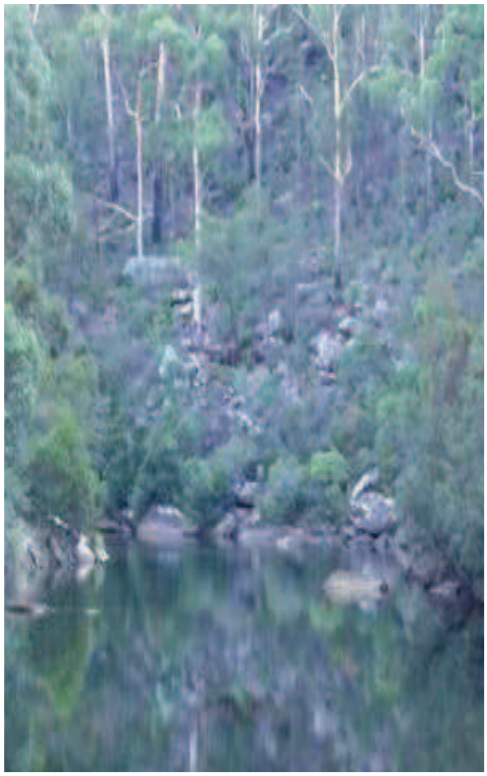
Appendix F
Bushfire Investigation

Bushfire Planning Investigation
Proposed rezoning of land at South Dural

Proposal prepared for
South Dural Land Owners Group

13 January 2009



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BUSHFIRE PLANNING INVESTIGATION

Our Reference: B2080012

Proposed rezoning of land at South Dural

Hornsby Shire Council

Prepared January 2009

for

South Dural Land Owners Group

PROJECT TEAM:

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EXECUTIVE SUMMARY

The aim of this study was to investigate the capability of the South Dural lands to accommodate future urban land use with the appropriate bushfire protection measures as guided by the relevant legislation and policy into bushfire planning and design of new development precincts within bushfire prone land in NSW. This report will guide more detailed technical investigations into bushfire planning at a rezoning stage.

The study area is approximately 240 hectares in size located in South Dural in the Hornsby Shire. The area is comprised of 130 separate land titles and bounded by Old Northern Road to the north, west and south, and Hastings Road and New Line Road to the east.

When investigating the capability of lands for future rezoning or preparing a draft Local Environment Plan (LEP) the Minister for Planning (under Section 117 ministerial directions) requests councils to consult the Commissioner of the RFS under Section 62 of the *Environmental Planning and Assessment Act 1979* and have regard to the planning principles within the document 'Planning for Bushfire Protection'. This report provides an introduction to such an assessment.

The investigation consisted primarily of a desktop analysis relying on previous information gathered and supplied (e.g. GIS layers such as contours, land use features, constraints and biophysical characteristics, and aerial photography), a ground-truthing exercise, and the local experience and expertise of the author.

The study area is dominated by a broad bushland/riparian corridor associated with Georges Creek and associated tributaries consisting of open forest and a bushland-development interface areas on downslopes. The likely Asset Protection Zones (APZ) to be applied to these bushland corridors ranges from 35 m to 50 m for residential development and 85 m to 100 m for Special Fire Protection Purpose (SFPP) developments. The APZ is to be appropriately managed to achieve fuel load and structure specifications and is to include a public perimeter road for those higher density areas outside of large rural lots. The access design and construction is also to allow safe access for firefighters while residents are evacuating the area, and the road system is to be equipped with the appropriate services.

The investigation into bushfire planning constraints of the study area as they relate to future possible rezoning and subsequent development has demonstrated that the study area is suitable and capable to be developed for urban use whilst accommodating the minimum bushfire protection measures as required by NSW legislation and policy, namely 'Planning for Bushfire Protection' (PBP).

1. INTRODUCTION

This report has been prepared by Eco Logical Australia Pty Ltd at the request of Pascoe Planning Solutions and on behalf of the South Dural Land Owners Group. The report presents the findings and recommendations of a preliminary bushfire planning investigation into the potential rezoning of land at South Dural for future development and use.

1.2 The Study Area

The study area for the purposes of this report is an area of land of approximately 240 hectares in size located in South Dural in the Hornsby Shire, as located in Figure 1. The area is comprised of 130 separate land titles and bounded by Old Northern Road to the north, west and south, and Hastings Road and New Line Road to the east (Figure 1).

1.3 Aim and Objectives

The aim of this study is to investigate the capability of the South Dural lands to accommodate future urban land use with the appropriate bushfire protection measures as guided by the relevant legislation and policy into bushfire planning and design of new development precincts in NSW.

The objectives of this study are to:

a) Provide a statement as to the capability of the study area to achieve the required minimum bushfire protection measures for future development;

b) Investigate the application of Asset Protection Zone (APZ) building setbacks to vegetation/bushland likely to be retained for all types of development and report on the location and dimensions of any required APZ;

c) Provide input into the creation of an Indicative Concept Master Plan (ICMP);

d) Provide guidance on the establishment and maintenance requirements of APZs on public and private land and in an environmental impact context;

e) Provide guidance on the access and egress requirements for public road design and construction;

f) Provide guidance on other bushfire protection measures such as the provision of utilities.

Figure 1: Location of South Dural study area

2. METHODOLOGY

2.1 Review of Existing Data

The following documents were reviewed as past of the investigation:

- South Dural Future Urban Release Area, prepared by McKenzie Land Planning Services, April 2002;
- Land Capability Planning Context Report, submission to Hornsby Shire Council, prepared by Michael Brown & Associates for the South Dural Land Owners Group, March 2007; and
- Hornsby Shire Council Executive Manager's Report No. PLN191/07, Rezoning Request of Land in South Dural Area.

2.2 Desktop analysis

The investigation was largely a desk-top analysis and review suitable for the level of planning and the creation of an ICMP. This desk-top approach involved detailed analysis of an aerial photography and topographic contours layer in Geographical Information Systems (GIS) as well as review of vegetation mapping and constraints layers produced by the consulting ecologist (Hayes Environmental).

2.3 Field reconnaissance

An inspection of the study area, including the bushland gullies and remnants and surrounding bushland areas, was undertaken to ground-truth the findings of the desk-top review.

2.4 Consultation with ecologist

Consulting ecologist, Rebecca Hayes (Hayes Environmental) prepared a similar style report investigating the rezoning constraints in regards to flora and fauna, including vegetation communities and riparian corridors (Hayes Environmental 2008). The bushfire protection measures and constraints discussed within this report are based on the ecological constraints indicated within the ecological investigation.

2.5 Expert knowledge

The analysis and investigation were combined with the local experience and expert knowledge of the author to provide bushfire planning requirements and design principles applicable to the study area.

3. BUSHFIRE PLANNING FRAMEWORK

The study area has been identified as containing Bush Fire Prone Land as mapped by Hornsby Shire Council and the NSW Rural Fire Service (RFS) under a requirement of the *Rural Fires Act 1997*. In NSW, Bush Fire Prone Lands are those identified as lands that can support a bushfire or are likely to be subject to bushfire attack and are generally lands that contain or are within 100 m of significant stands of bushland.

When investigating the capability of lands for future rezoning or preparing a draft Local Environment Plan (LEP) for land identified as Bush Fire Prone Land, the Minister for Planning (under Section 117 ministerial directions) requests councils to consult the Commissioner of the RFS under Section 62 of the *Environmental Planning and Assessment Act 1979* and have regard to the planning principles within 'Planning for Bushfire Protection' (RFS 2006) hereafter referred to as PBP. Appendix 1 contains the full written ministerial direction.

After the rezoning stage, future subdivision of land (and the construction of Special Fire Protection Purpose development) also requires an assessment against PBP under EP&A Act Section 91 and RF Act Section 100B. These assessments are more detailed and specify an accurate APZ based on the known retention and management of bushland along with a compliant access design. The construction of dwellings and other buildings such as commercial and industrial development requires an assessment against PBP under EP&A Act Section 79BA and these are similar to an assessment done for a subdivision but require an analysis of building construction standards based on known building siting and design.

4. DESCRIPTION OF BUSHFIRE HAZARD

An analysis of the bushfire hazard (vegetation and bushland) within and adjoining the study area is essential in determining the location and extent of necessary bushfire protection measures such as APZs. An assessment of the hazard is based on an understanding of the vegetation type (fuels) that currently occur and are likely to occur in the future, and the topography or slope upon which the vegetation is found.

Certain characteristics of the vegetation can influence bushfire behaviour and may need to be considered in the design of bushfire protection measures. Such characteristics include vegetation type (as a surrogate for fuel structure, moisture and loading), location with reference to the development, size (i.e. possible length of fire run), and orientation and exposure to the development. Similarly, slope of terrain with respect to where the vegetation is found is also important to consider, such as the gradient of the slope (e.g. steeper slopes can significantly increase the rate of spread of fires), the length of the slope, effect of cliff lines, and whether the slope is upslope or downslope leading away from the development.

The study area is dominated by a broad bushland/riparian corridor associated with Georges Creek that has its headwaters in the northern section of the study area and drains south-east towards the intersection of Hastings and New Line Road. The spatial distribution of this bushland can be appreciated from the aerial photograph in Figure 1. The vegetation within this main gully has been assessed by Hayes Environmental (2008) as relatively intact and undisturbed with some large patches of weed infestations and the usual edge effects where the bushland abuts existing development and rural land. Several tributaries also support bushland/riparian vegetation, including one larger one flowing from south-west towards the intersection of Hastings and New Line Roads. The large bushland corridor continues eastward out of the study area.

Three native vegetation communities previously mapped within the study area and confirmed by Hayes Environmental (2008) are Blackbutt Gully Forest, Sydney Turpentine Ironbark Forest and Blue Gum High Forest. All three communities fall into the broad vegetation and fuel categorisation of ‘forest’ under PBP.

The topography of the bushland areas are very much associated with the creek and gully formations of Georges Creek and its tributaries. Therefore most, if not all bushland interface areas are on downslopes leading away from the interface into the bushland with a general fall to the south-east in the direction of flow. The gradient of the slopes ranges between 5 and 15 degrees.

5. BUSHFIRE PROTECTION MEASURES

This section details the bushfire protection measures recommended to be included in the future preparation of an LEP and subsequent development. The measures and recommendations follow the Acceptable Solutions of PBP. The bushfire protection measures most relevant for this investigation and discussed below include the provision of Asset Protection Zones (APZ), access and services.

5.1 Asset Protection Zones (APZ)

PBP identifies three groups or types of development, each requiring a different level of bushfire protection, hence requiring a different method of assessment and application of Asset Protection Zones (APZ):

1. APZ for residential subdivision can be based on the Acceptable Solutions contained within Appendix 2, Table A2.4 of PBP;

2. APZ for Special Fire Protection Purpose Development (SFPP) can be based on the Acceptable Solutions within Appendix 2, Table A2.6 of PBP; and

3. APZ for Class 5 to 8 and 10 buildings (such as commercial and industrial development) is not specified within PBP, however, aims and objectives of PBP to be satisfied which includes an appropriate separation from the bushfire hazard, defendable space and adequate access.

As it is proposed to have predominantly housing within the study area and at bushland interface areas (refer to ICMP in Figure 2), this assessment focuses on the bushfire protection standard for residential subdivision, however, the detail necessary for the planning of SFPP developments (such as schools) and other developments (such as shopping centres and employment lands) is also included.

Residential subdivision means the subdivision of land for future housing and may include multi-housing developments such as townhouses. Subdivision is integrated development as recognised under Section 100B of the RF Act, and therefore an application is to be referred to the NSW Rural Fire Service for assessment and the issuing of a Bush Fire Safety Authority. Development applications for single dwellings are assessed by the local council under Section 79BA of the EP&A Act which calls for an assessment of the proposed development against PBP.

Based on a preliminary and desk-top assessment, Appendix 2 Table A2.4 of PBP requires a minimum APZ ranging from 35 m to 50 m for residential development adjacent the retained bushland corridor areas. Table 1 calculates the APZ and Figure 2 shows the APZ within the study area on the ICMP.

Unless managed accordingly, smaller internal bushland parks or remnants may also require an APZ depending on their size, width and proximity to the bushland corridors. Generally, remnants less than 1 hectare or corridors less than 50 m in width could be categorised as ‘low hazard’ vegetation and may attract an APZ much smaller than those quoted in Table 1.

Special Fire Protection Purpose (SFPP) developments require a higher standard of bushfire protection due to the vulnerability of the occupants and the potential need for assisted evacuation. The RF Act and *Rural Fires Regulation 2008* identify SFPP developments to include:

- School;
- Child care centre;
- Hospital;
- Hotel, motel or other tourist accommodation;
- Building for mentally incapacitated persons;
- Housing for older people (SEPP Seniors Living) or disability (SEPP 5);
- Group homes (SEPP 9);
- Retirement village;
- Estates under SEPP 36;
- Employment areas solely for employees with disabilities;
- Respite care centres or similar; and
- Accommodation associated with an educational institution.

These types of developments are recognised under Section 100B of the RF Act as integrated development, and therefore a development application is to be referred to the NSW Rural Fire Service head office for assessment and the issuing of a Bush Fire Safety Authority.

Based on a preliminary and desk-top assessment, Appendix 2 Table A2.6 of PBP requires a minimum APZ ranging from 85 m to 100 m for SFPP development adjacent the retained bushland corridor areas. Table 1 calculates the APZ.

Class 5, 6, 7, 8 and 10 buildings (which include offices, factories, warehouses and other commercial or industrial facilities) do not have specific bushfire performance requirements under the BCA and as such building construction standards under AS 3959 'Construction of Buildings in Bushfire Prone Areas' (Standards Australia 2000) do not apply as a set of deemed to satisfy provisions. The general fire safety constructions provisions within the BCA 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 objectives of PBP are:

a) *Afford occupants of any building adequate protection from exposure to bushfire*;

b) *Provide for defendable space to be located around buildings;*

c) *Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition*;

d) *Ensure that safe operation access and egress for emergency service personnel and residents is available;*

e) *Provide for ongoing management and maintenance of bushfire protection measures, including fuel loads in the asset protection zone (APZ)*; and

f) *Ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bushfire fighting.*

To satisfy the above objectives, an acceptable solution would be to provide an Asset Protection Zone as for residential development to prevent flame contact and ignition of external building materials (see objective c). An alternative option, and one more reliant on a detailed assessment of the bushfire attack at a specific location and for a specific building, is to provide an APZ of a size where it acts as 'defendable space' only. PBP defines 'defendable space' as "*an area within the asset protection zone that provides an environment in which a person can undertake property protection after the passage of a bushfire within some level of safety*". This option relies on the high standard of construction (with respect to bushfire protection) inherent within commercial and industrial buildings common to employment lands, and is appropriate for the style of the development (i.e. not a dwelling or SFPP development). A minimum defendable space of 10 m is recommended and is to consist of a perimeter road compliant with the acceptable solutions listed in Section 5.2 of this report.

It is important to note that the calculation of these APZs have been based primarily on a desk-top analysis at a landscape scale and will require refinement in subsequent planning stages. For example, a site specific slope measurement based on a purpose built contour layer or ground measurement may reduce or increase the APZ dimension in some places. The information presented in this report does, however, act as a good guide to create an indicative concept master plan to assist a capability assessment and future rezoning exercises.

Table 1: APZ calculation, location and dimensions for South Dural lands

Location description	Slope class of most influence[1]	Predominant vegetation community[2]	Residential APZ[3]	SFPP APZ[4]
Georges Creek corridor (as marked on ICMP in Figure 2)	Downslope 10 - 15°	Forest	50 m (25 m OPA)	100 m (30 m OPA)
South-west tributary (as marked on ICMP in Figure 2)	Downslope 5 - 10°	Forest	35 m (15 m OPA)	50 m (25 m OPA)
Smaller, isolated remnants	Varies	Low Hazard vegetation (forest)	10 – 15 m (OPA not allowed)	30 - 50 m (OPA not allowed)

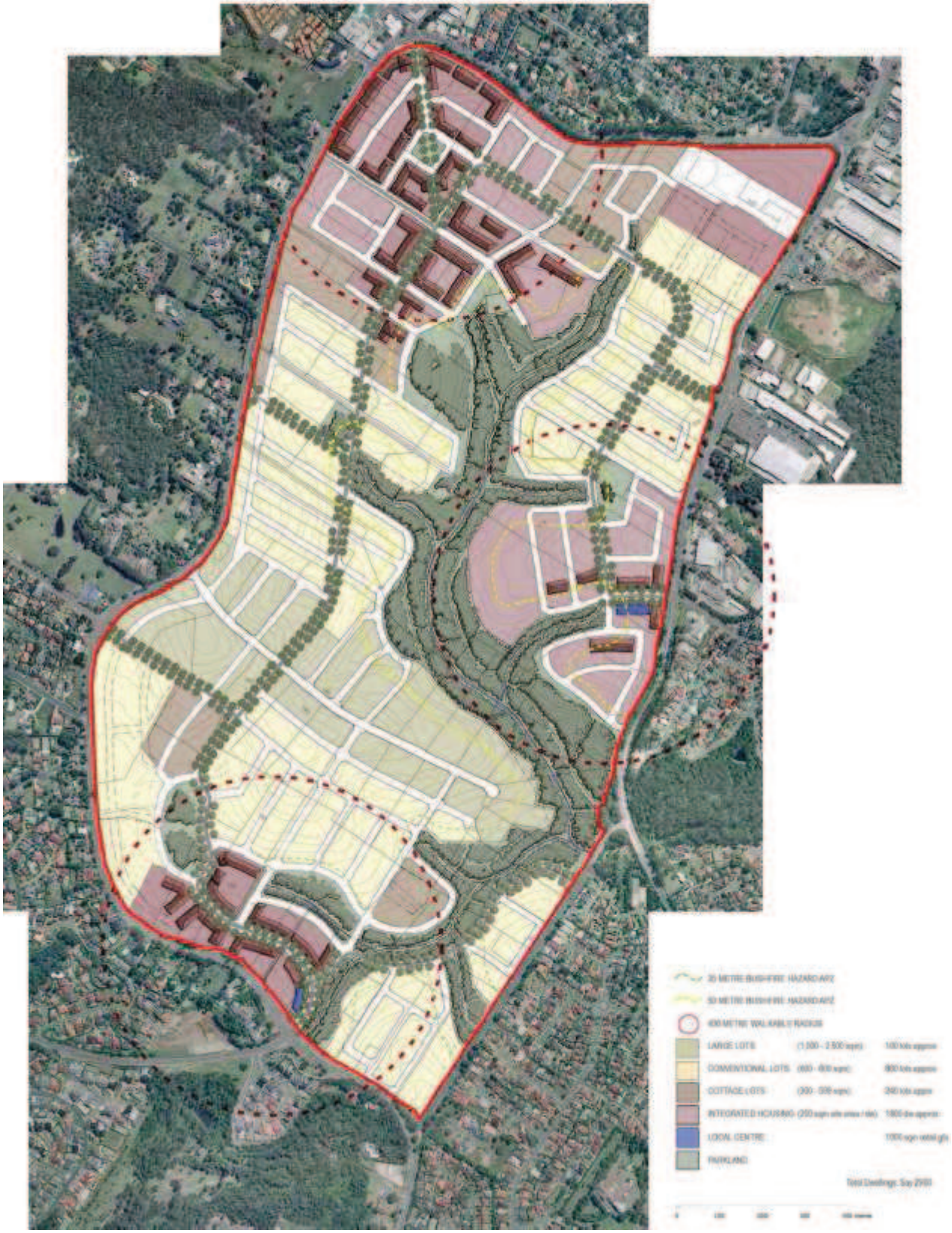
[1] Slope class most significantly influencing fire behaviour where the vegetation (bushfire hazard) is found over 100 m from the development boundary.

[2] Predominant vegetation is the most predominant and problematic vegetation over 140 m from the development boundary.

[3] PBP required setback for residential subdivision.

[4] PBP required setback for Special Fire Protection Purpose (SFPP) development.

Figure 2: Indicative Concept Master Plan (ICMP)



5.1.1 APZ management

The APZ is to be measured from the edge of the unmanaged bushland to the most external building point of a building and the APZ can contain managed vegetation and can be utilised as areas of public open space, recreational areas such as sportsgrounds, access ways such as roads, and ancillary parts of development

such as yards and car parks. Hayes Environmental (2008) also supports the use of riparian buffers as Outer Protection Areas (OPA) of the APZ.

Appropriate landscaping and vegetation and fuel management is started at the planning phase and carried through construction to occupation of dwellings and future maintenance. Landscaping within the APZ may differ between the Outer Protection Area (OPA) and Inner Protection Area (IPA). The OPA is a relatively smaller portion of the total APZ and extends from the bushfire source towards the IPA, which is adjacent the building. The purpose of the OPA is to reduce the rate of spread of fire, and reduce the likelihood of crown fire whilst providing a slightly denser tree canopy than the IPA to filter embers. The IPA offers more protection for defendable space and managing heat intensities at the building. The dimension of the OPA depends on the type of development and effective slope. These dimensions are indicated in Table 1.

The APZ, including differences in OPA and IPA management, should be landscaped and managed in the following manner:

- No part of a building is to be within the APZ.
- Mature canopy trees may be within the OPA providing crowns and canopies (which may include small clumps of crowns or a single grove of trees) do not overlap and have an overall canopy cover of less than 30%.
- Mature canopy trees may be within the IPA providing crowns and canopies (e.g. a small clumps of crowns or a single grove of trees) are separated and have an overall canopy cover of less than 15%.
- Understorey saplings, shrubs and groundcovers within both the OPA and IPA are to be managed in the following manner:
    - The saplings provide a sparse scatter of individuals useful for the long-term replacement of canopy species typically retained within the APZ;
    - The saplings and shrubs are well spread out and do not form a contiguous pathway from the bushfire source to a dwelling;
    - A minimal ground fuel is to be maintained to include either mown/slashed grass, mulch, managed groundcovers, organic matter, bare or sealed ground, providing the final groundcover does not exceed 4 tonnes per hectare of fine fuel (*i.e.* material less than 6 millimetres in diameter). The OPA may have up to 8 tonnes per hectare of fine fuel;
    - Landscaped and garden areas with higher fuel loads can be within the APZ providing they are within well-defined and managed garden beds that do not provide a continuous pathway of fuels from the bushfire source to a dwelling.

5.1.2 Perimeter access within the APZ

All bushland/development interface areas within the study area that require an APZ are to contain a perimeter access road linked to the internal road network at regular intervals. These roads should be in the form of public perimeter roads designed and constructed in compliance with the specifications listed in Section 5.2 of this report. It is not essential to provide a public perimeter road to larger rural lifestyle lots as long as fire tanker access can be provided to the hazard side of a dwelling using a private property access road or fire trail standard.

5.2 Access

The design and construction of public roads within the study area are recommended to meet the accepted provisions within PBP (RFS 2006; pg 21), as listed below. The performance criterion of the road system is to allow safe access for firefighters while residents are evacuating the area.

- Public roads are two-wheel drive, all weather roads
- Urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions. Roads that are not perimeter roads can comply with the road widths within Table 2 below;
- The perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas;
- Traffic management devices are constructed to facilitate access by emergency services vehicles;
- Public roads have a cross fall not exceeding 3 degrees;
- Public roads are through roads. Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200 metres in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end and direct traffic away from the hazard;
- Curves of roads (other than perimeter roads) are a minimum inner radius of six metres and minimal in number, to allow for rapid access and egress;
- The minimum distance between inner and outer curves is 6 metres;
- Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient;
- There is a minimum vertical clearance to a height of 4 metres above the road at all times;
- The capacity of road surfaces and bridges is sufficient to carry fully loaded firefighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas). Bridges clearly indicated load rating;
- Public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression;

- Public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression;
- Public roads up to 6.5 metres wide provide parking within parking bays and located services outside of the parking bays to ensure accessibility to reticulated water for fire suppression;
- One way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and located services outside of the parking bays to ensure accessibility to reticulated water for fire suppression;
- Parking bays are a minimum of 2.6 metres wide from kerb to kerb edge to road pavement. No services or hydrants are located within the parking bays.

Table 2: Minimum road widths for roads that are not perimeter roads

Curve radius (inside edge)	Swept path width	Single lane width	Two way width
< 40 m	3.5 m	4.5 m	8.0 m
40 – 69 m	3.0 m	3.9 m	7.5 m
70 – 100 m	2.7 m	3.6 m	6.9 m
> 100 m	2.5 m	3.5 m	6.5 m

Private property roads, such as those used in larger rural lots, should be designed and constructed in accordance with the PBP specifications listed below:

- At least one alternative property access road is provided for individual dwelling (or groups of dwellings) that are located more than 200 metres from a public through road;
- Bridges clearly indicate load rating and pavements and bridges are capable of carrying a load of 15 tonnes;
- Roads do not traverse a wetland or other land potentially subject to periodic inundation (other than a flood or storm surge);
- A minimum carriageway width of four metres for rural-residential areas, rural landholdings or urban areas with a distance of greater than 70 metres from the nearest hydrant point to the most external part of a proposed building (or footprint);

  Note: No specific access requirements apply in a urban area where a 70 metres unobstructed path can be demonstrated between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles (i.e. a hydrant or water supply.

- In forest, woodland and heath situations, rural property access roads have passing bays every 200 metres that are 20 metres long by two metres wide, making a minimum trafficable width of six metres at the passing bay;
- A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches;
- Internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum 12 metre outer radius;
- Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress;
- The minimum distance between inner and outer curves is six metres;
- The crossfall is not more than 10 degrees;
- Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads;

  Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m), extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above
- Access to a development comprising more than three dwellings have formalised access by dedication of a road and not by right of way.

5.3 Services

5.3.1 Water supply

Reticulated water (e.g. hydrant spacing, sizing and pressures) is to be supplied throughout the development in accordance with to comply with AS 2419-2005 'Fire hydrant installations – System design, installation and commissioning'. Hydrants are not to be located within any road carriageway and the provisions of parking and hydrant locations in the public road access specifications in Section 5.2 above are to be met.

Dwellings within larger rural lots that are separated from hydrants so that they do not comply with AS 2419-2005 will require a static water supply made available for fire fighting.

The tank volume ranges from 5,000 litres to 20,000 litres depending on lot size, bushfire threat and distance to the nearest hydrant.

5.3.2 Electricity

Where practicable, electrical transmission lines are to be underground. If above ground, they are to be installed with short pole spacing (e.g. 30 metres) and no part of a tree is closer to a powerline than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002).

5.3.3 Gas

Reticulated or bottled gas is installed and maintained in accordance with AS/NZS1596:2008 'The storage and handling of LP gas' and the requirements of relevant authorities.

6. CONCLUSIVE STATEMENTS

The investigation into bushfire planning constraints of the study area as they relate to future possible rezoning and subsequent development has demonstrated that the study area is suitable and capable to be developed for urban use whilst accommodating the minimum bushfire protection measures as required by NSW legislation and policy, namely 'Planning for Bushfire Protection' (PBP).

The retention of the Georges Creek bushland and riparian corridor, including its associated tributaries, creates a bushfire hazard that requires detailed assessment to design the appropriate bushfire protection measures. The preliminary investigation undertaken has identified the need for Asset Protection Zones (APZ) ranging in width from 35 m to 50 m for residential development around the bushland corridors. Special Fire Protection Purpose (SFPP) development would require an APZ of approximately 85 m to 100 m.

Areas requiring an APZ will also require a public perimeter road to be linked to an internal road system also capable of allowing safe access for firefighters while residents are evacuating the area. The road system is to be equipped with the appropriate services.

From this preliminary investigation it is concluded that the South Dural study area could be developed to comply with 'Planning for Bushfire Protection' so long as the guiding principles within this report are followed.

REFERENCES

Hayes Environmental (2008). *Proposed Rezoning of Land – Old Northern Road, Hastings Road and New Line Road, South Dural.* A report prepared for South Dural Land Owners Group.

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Standards Australia (2000). *Construction of Buildings in Bushfire Prone Areas, AS 3959*, Second edition 1999 and Amendment 1, 2000, Standards Australia International Ltd, Sydney.

Standards Australia. 2005. *Fire hydrant installations - System design, installation and commissioning*, AS2419.1, Fourth edition 2005, Standards Australia International Ltd, Sydney

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APPENDIX 1: Section 117 ministerial direction – Planning for Bushfire Protection

4.4 Planning for Bushfire Protection

Objectives

(1) The objectives of this direction are:

(a) to 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) to encourage sound management of bush fire prone areas.

Where this direction applies

(2) This direction applies to all councils that are required to prepare a bush fire prone land map under section 146 of the Environmental Planning and Assessment Act 1979 (the EP&A Act), or, until such a map has been certified by the Commissioner of the NSW Rural Fire Service, a map referred to in Schedule 6 of that Act.

When this direction applies

(3) This direction applies when a council prepares a draft LEP that affects, or is in proximity to land mapped as bushfire prone land.

What a council must do if this direction applies

(4) In the preparation of a draft LEP a Council shall consult with the Commissioner of the NSW Rural Fire Service under section 62 of the EP&A Act, and take into account any comments so made,

(5) A draft LEP shall:

(a) have regard to Planning for Bushfire Protection 2006,

(b) introduce controls that avoid placing inappropriate developments in hazardous areas, and

(c) ensure that bushfire hazard reduction is not prohibited within the APZ.

(6) A draft LEP shall, where development is proposed, comply with the following provisions, as appropriate:

(a) provide an Asset Protection Zone (APZ) incorporating at a minimum:

(i) an Inner Protection Area bounded by a perimeter road or reserve which circumscribes the hazard side of the land intended for development and has a building line consistent with the incorporation of an APZ, within the property, and

(ii) an Outer Protection Area managed for hazard reduction and located on the bushland side of the perimeter road,

(b) for infill development (that is development within an already subdivided area), where an appropriate APZ cannot be achieved, provide for an appropriate performance standard, in consultation with the NSW Rural Fire Service. If the provisions of the draft LEP permit Special Fire Protection Purposes (as defined under section 100B of the Rural Fires Act 1997), the APZ provisions must be complied with,

(c) contain provisions for two-way access roads which links to perimeter roads and/or to fire trail networks,

(d) contain provisions for adequate water supply for firefighting purposes,

(e) minimise the perimeter of the area of land interfacing the hazard which may be developed,

(f) introduce controls on the placement of combustible materials in the Inner Protection Area.

Consistency

(7) A draft LEP may be inconsistent with the terms of this direction only if council can satisfy the Director-General of the Department of Planning (or an officer of the Department nominated by the Director-General) that the council has obtained written advice from the Commissioner of the NSW Rural Fire Service, to the effect that, notwithstanding the non-compliance, the NSW Rural Fire Service does not object to the progression of the draft LEP.