Bushfire Hazard Assessment

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ALLAMBIE LUTHERAN HOMES
3 MARTIN LUTHER PLACE,
ALLAMBIE

For

Allambie Lutheran Homes Inc

16 June 2004

Version A

REPORT ISSUE AUTHORISATION

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Version	Extent of revision

The attention of the readers of this report is drawn specifically to the Preface preceding the body of this report.

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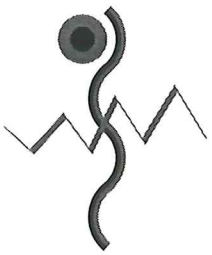


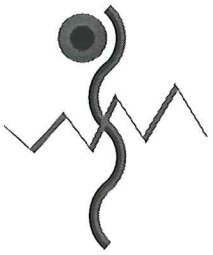
PREFACE

Readers of this report must be aware that the buildings have been in existence since the 1960's and are currently serving a significant social need. While the bushfire mitigation recommendations described in this report will not completely remove the risk of bushfire impacting the site they will significantly improve the level of protection offered to residents and the existing dwellings. Recommendations contained herein provide solutions to bushfire related issues identified as being non-compliant within the Rural Fires and Environmental Assessment Legislation Amendment Act 2002, The Building Code of Australia, AS 3959 and Planning for Bushfire Protection, 2001. With regard to the proposed development, diligent maintenance of Asset Protection Zones, together with the application of recommendations, in their entirety, will provide for a reduction of the bushfire threat and the associated risk.

This report caters specifically for the requirements of this project and the Client. No warranty is intended or implied, or responsibility undertaken by Holmes Fire & Safety Ltd for its use on any other project or by any third party.

This report does not include an environmental assessment, Aboriginal heritage assessment or identify endangered species in the area.

This report is provided in accordance with Holmes Fire & Safety's fee proposal (97820DXC.FFP001) and the Agreement for Provision of Consulting Engineering Services (97820DXC.CA001), both dated 20 April 2004 as executed between Holmes Fire & Safety Ltd and the Client. No obligations in contract exist between Holmes Fire & Safety Ltd and any other party.



1 INTRODUCTION

1.1 Report Purpose

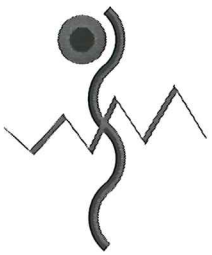
The project involves the upgrading and minor extensions of existing buildings at Allambie Lutheran Homes, 3 Martin Luther Place, Allambie Heights. In the submission of a Development Application for the proposed development, Warringah Council will require a Bushfire Hazard Assessment to be provided due to the classification of the site as 'Bushfire-prone'.

The Bushfire Hazard Assessment has been undertaken to determine the necessary requirements for the development in accordance with:

- NSW Rural Fire Service, Planning NSW, *Planning for Bushfire Protection*, 2001; and
- AS 3959-1999: *Construction of Buildings in Bush Fire Prone Areas.*

The proposed alterations to the existing development will be classified as Special Protection Development for the purposes of the Bushfire Hazard Assessment.

Holmes Fire & Safety have been engaged by Allambie Lutheran Homes Inc. to prepare this Bushfire Hazard Assessment report.



2 BUSH FIRE LEGISLATION IN NSW

The *Environmental Planning and Assessment Act 1979* and the *Rural Fires Act 1997* was amended recently via the *Rural Fires and Environmental Assessment Legislation Amendment Act 2002.*

With regard to the *Environmental Planning and Assessment Act 1979*, the amendments:

a) Require local government councils to record on maps land identified by the Commissioner of the NSW Rural Fire Service as bush fire prone land; and

b) Prevent development consent being granted for the carrying out of development for certain purposes on bush fire prone land unless the consent authority is satisfied that the development conforms to certain documented bush fire protection specifications and requirements (*Planning for Bushfire Protection* and *AS 3959 – Construction of Buildings in Bushfire-Prone Areas*) or has consulted with the Commissioner; and

c) Provide for the integration of procedures to obtain development consent with a requirement to obtain a Bush Fire Safety Authority from the Commissioner under the *Rural Fires Act 1997* with respect to the fire safety of:

   (i) a subdivision of bush fire prone land that could lawfully be used for residential or rural residential purposes; or

   (ii) developments for purposes that are particularly vulnerable in bush fires and that require special protection. Such developments may include schools, child care centres, hospitals, hotels, motels, tourist accommodation, homes for mentally incapacitated persons, SEPP 5 developments (housing for older people or people with disabilities), SEPP 9 developments (Permanent and transitional group homes for disabled or socially disadvantaged persons) and retirement villages.

Planning for Bushfire Protection, defines bushfire prone areas as an area that can support a bushfire or is likely to be subject to bush fire attack. In general, a bush fire prone area is an area occurring within or within 100m of a high or medium bush fire hazard, within or within 30m of a low bush fire hazard but are not existing urban areas or water bodies (other than wetland vegetation) as identified by a bush fire hazard map produced under an approved Bushfire Risk Management Plan, or such other map certified by the NSW Rural Fire Service for this purpose.

3 SITE ASSESSMENT

Holmes Fire & Safety conducted a site inspection of Allambie Lutheran Homes, 3 Martin Luther Lane, Allambie Heights and the surrounding area on 13 May 2004. The following assessment has been undertaken in accordance with the requirements of *Planning for Bushfire Protection*, 2001.

3.1 Site Description

The site of Allambie Lutheran Homes at 3 Martin Luther Lane, Allambie is bounded by Martin Luther Lane to the north, existing residential development to the east and the Manly-Warringah War Memorial Park to the west and south. The site is located within the Warringah Council Local Government Area.

The site area is 14,321 m^2 and contains three Class 9c aged care hostels (Hostels A, B & C), thirteen Class 3 buildings each containing a number of sole-occupancy units (Blocks A, B, C, E, F, G, H, K, L, M, N, O and P), a Community Room, maintenance shed, carports and car parking. The three Class 9c hostels are located in the centre of the site, protected from direct bushfire attack by the Class 3 dwellings provided a degree of screening.

The construction of a Chapel, relocation of the maintenance shed and upgrading and minor extensions to Blocks G, H and K are proposed, and form the basis of this report. As the Chapel and maintenance shed are non-residential developments the requirements of *Planning for Bushfire Protection* are not considered to be applicable. Therefore, the ensuing report will solely address the proposed upgrading and minor extensions to Blocks G, H and K.

The Manly-Warringah War Memorial Park to the west and south is the vegetation presenting the bushfire threat. This is predominantly unmanaged bushland under the control of Warringah Council. A portion of this bushland immediately adjoining the Allambie Lutheran Homes site is being managed to a degree, which Holmes Fire & Safety understand to be by Allambie Lutheran Homes personnel under the guidance of Warringah Council.

Refer to Appendix A for the Site Plan. Figure 1 below shows the site location.

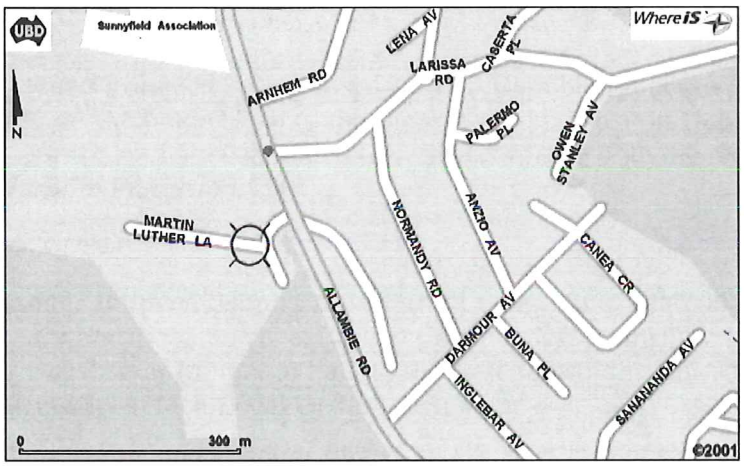


Figure 1 – Location of Allambie Lutheran Homes (www.whereis.com.au)

3.2 Vegetation

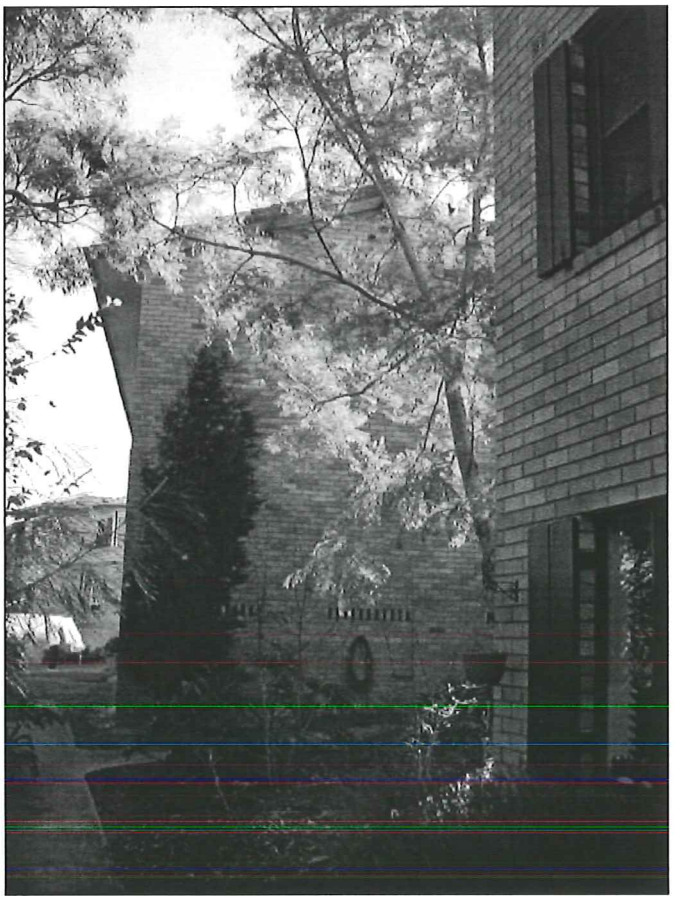
The vegetation has been assessed over a distance of 140 m from the external faces of Buildings G, H and K in all directions, in accordance with Figure A2.2 of *Planning for Bushfire Protection* (refer to Appendix B).

3.2.1 WITHIN SITE BOUNDARY

The vegetation within the boundary of the site consists of only a few isolated trees, shrubs and managed grassland. There is no vegetation within the site presenting a bushfire threat to Buildings G, H and K.

The vegetation located between Buildings H and K, as shown in Photograph 1, will be removed to allow for the extension of Building H, which will connect to Building K.

There are shrubs located along the western face of Buildings G, H and K, refer to Photograph 2. This vegetation will not comply with the Inner Protection Area requirements specified later in this report due to the vegetation touching and overhanging the dwellings. The requirements for the area between the western face of Buildings G, H and K and the western boundary are detailed in Section 3.4.



Photograph 1 – Vegetation between Buildings H and K, which will be removed to allow for extension of Building H.

Photograph 2 – Shrubs located along western face of Building H.

3.2.2 BEYOND SITE BOUNDARIES

Bounding the subject site to the north is Martin Luther Lane, beyond which are existing residential development for a depth of greater than 140 m. There is no vegetation within this area considered to present a bushfire threat to the subject development.

Located to the east of the subject site is an existing residential development and associated grounds, which contain managed grassland. From the eastern boundary of the subject site the managed grassland extends for a depth of approximately 80 m beyond which is vegetation considered to approximate Group 1, Vegetation Structure 5 – Open Forest (M3)[1]. This vegetation is an extension of the Manly-Warringah War Memorial Park, which wraps around the eastern side of the adjacent property. Refer to Photograph 3.

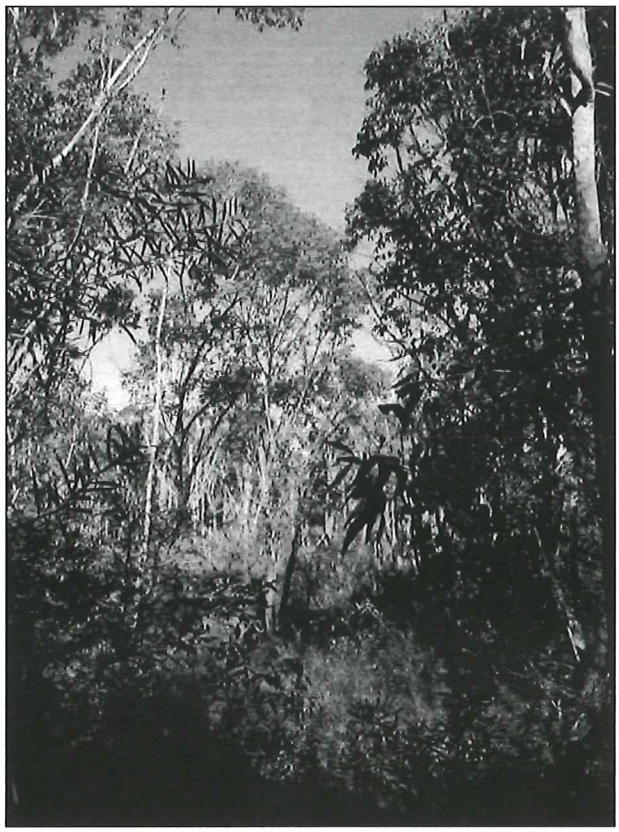
To the west and south of the subject site is the Manly-Warringah War Memorial Park, which contains vegetation considered to approximate Group 1, Vegetation Structure 5 – Open Forest (M3)[1]. It is this vegetation that presents the bushfire threat to the subject site. Refer to Photograph 4.

[1] Vegetation Structure 5 is defined by *Planning for Bushfire Protection* as "Trees 10-30m high; 30-70% foliage cover; understorey of sclerophyllous low trees & tall shrubs or grass. Usually dominated by ecualypts."

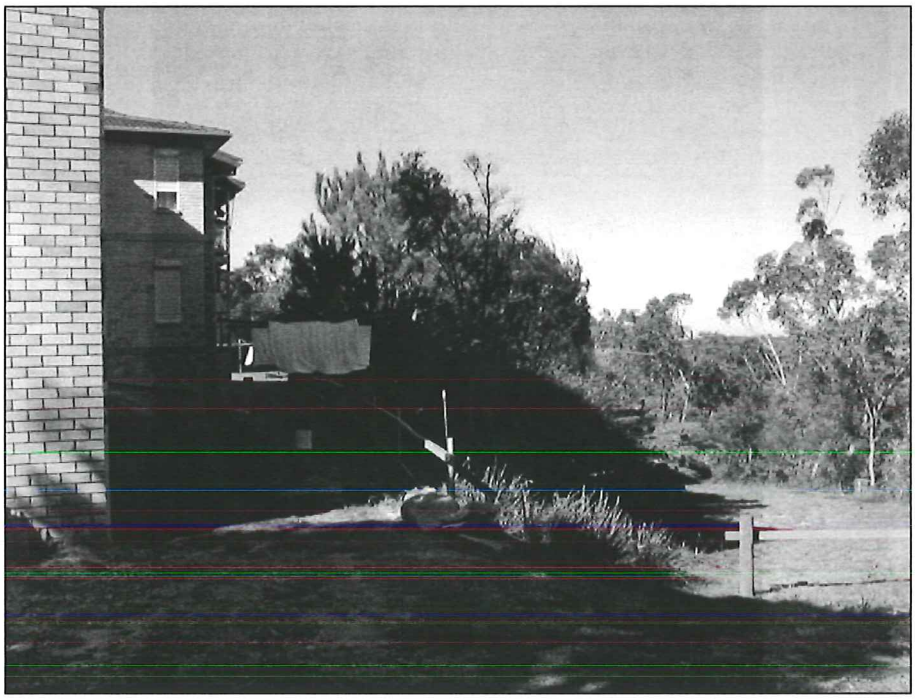
The vegetation immediately beyond the western boundary of the site from the north-west corner of Building N to the near the north-west corner of Building K, is currently undergoing a bushland management/regeneration process, undertaken by Allambie Lutheran Homes under the guidance of Warringah Council. This is being undertaken as a condition placed on the approval of previous extensions to Buildings L and M, as agreed with Warringah Council and the NSW Rural Fire Service prior to the implementation of *Planning for Bushfire Protection*. While the depth of the managed area is approximately 30 m, it is not considered to comply with the requirements of an Inner Protection Area, as detailed in Section 3.4.1 of this report, primarily due to the extent of the ground fuel cover, the partial lack of a discontinuous canopy and the piles of collected dead material. While offering additional protection to the entire site the management/regeneration process has been implemented solely as a result of previous alterations and additions to Buildings L and M.

A vehicular fire trail of approximately 3.5 m width is provided within the Manly-Warringah War Memorial Park adjacent to the site, connecting at the western end of Martin Luther Lane and running around the western side of Building N and parallel to the western boundary up to a point approximately adjacent to the north-west corner of Building H. From this point the fire trail narrows, suitable only for pedestrian access and continues south-west parallel to the site boundary and also branches west deeper into Manly-Warringah War Memorial Park. At a point adjacent to the western side of Building G the fire trail again widens and connects to the southern end of Martin Luther Place, however the trail would only be suitable for use of a 4WD vehicle. Photograph 5 shows where this vehicular fire trail connects to the subject site adjacent to Building N and Photograph 6 shows the 4DW portion of the fire trail.

Photograph 3 – View from the southern corner of the site, adjacent to Building G looking to the south-east showing managed grassland of the adjacent property and the bounding Manly-Warringah War Memorial Park vegetation.



Photograph 4 – View of typical vegetation within Manly-Warringah War Memorial Park.



Photograph 5 – North-west corner of Building N at left of photo and vehicular fire trail within Manly-Warringah War Memorial Park at right of photo.

Photograph 6 – 4WD portion of fire trail which connects to southern end of Martin Luther Place.

3.3 Slope

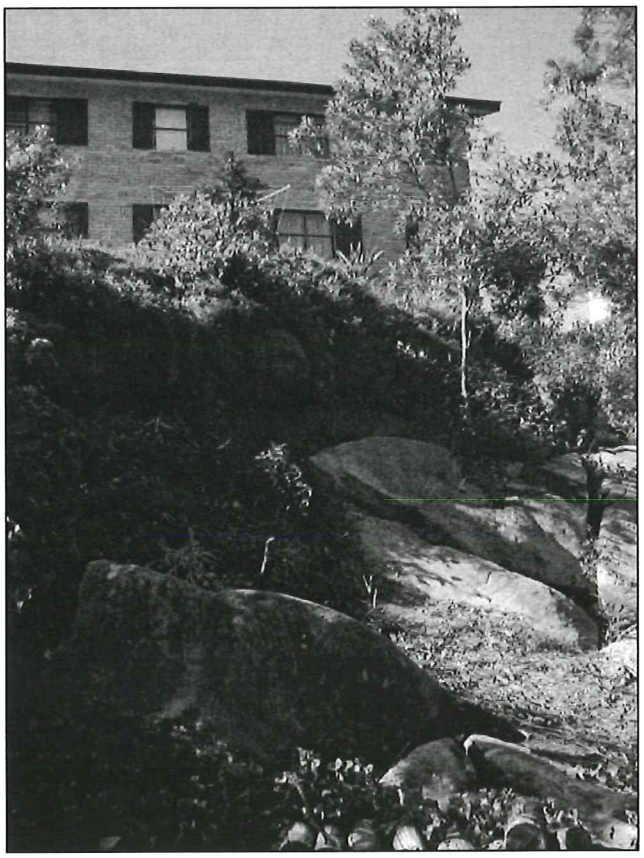
Based on the site inspection the slope of the land over a distance of 100 m from the proposed building lines in all directions has been assessed. In accordance with *Planning for Bushfire Protection*, the slope has been assessed based on the gradient that will most significantly influence the fire behaviour of the site.

The highest elevated point within the site is located at the north-east with the site sloping down to the south-west, however there is no vegetation within the site that presents a bushfire threat.

The managed grassland to the east of the site and the forest vegetation beyond is located on a slope of zero to five degrees upslope.

The forest vegetation within Manly-Warringah War Memorial Park to the west and south of the subject site is located on a slope that averages five to ten degrees downslope to Manly Creek. Immediately beyond the western boundary is a steep downslope varying in the order of 20 to 75 degrees commencing at a point adjacent to the north-west corner of Building N and increasing to a height of approximately 5 m to the west of Building H. The width of this slope varies from zero up to approximately 5 m. At the north-west corner of Building N the commencement of this steep slope is on the boundary line, however adjacent to Buildings G, H and K the commencement of the steep slope is 1.5 to 2 m within the western boundary line.

The topographic drawing presented in Figure 2 has been reproduced with permission from Land and Property Information (LPI). The slope assessment described in this report has not been based on the LPI information, however it is included to provide the reader with a clearer understanding of the slope within the area of the proposed development. The approximate site of the proposed development is hatched and 10 m height intervals are provided.



Photograph 7 – Steep slope within Manly-Warringah War Memorial Park immediately beyond western boundary. Building H in background.

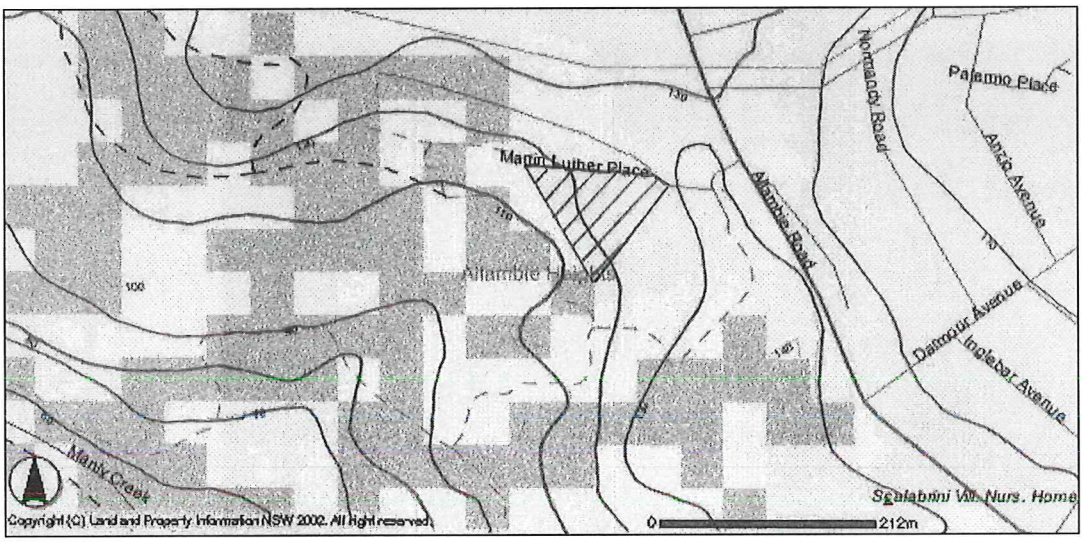


Figure 2 – Topographic diagram of subject site and surrounding area, © Land and Property Information (2002).

3.4 Asset Protection Zone

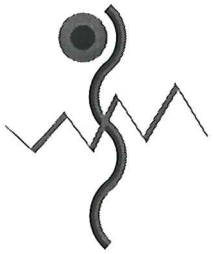
The Asset Protection Zone (APZ) acts as a buffer zone between the residential dwellings and the hazard. The primary purpose of an APZ is to ensure that a progressive reduction of bushfire fuels occurs between the bushfire hazard and any habitable structures. The APZs consists of an Inner Protection Area (IPA) and an Outer Protection Area (OPA), refer to Sections 3.4.1 and 3.4.2.

Tables A2.2 to A2.4, *Planning for Bushfire Protection*, specify the minimum APZ required in bushfire-prone areas (refer to Appendix C) with Table A2.3 being relevant in this instance.

In accordance with Table A2.3, vegetation with characteristics of Group 1, Vegetation Structure 5 – Open Forest (M3) located on an upslope of zero to five degrees is required to be provided with an APZ of 75 m, consisting of a 60 m IPA and a 15 m OPA. In accordance with Table A2.4, managed grassland vegetation, irrespective of the slope, is required to be provided with an APZ of 20 m. These are the two situations which exist to the east of the proposed development. In applying the more stringent requirements, a 75 m APZ is applicable to the east. This is currently achieved, however the APZ is not located within the subject site, but rather the neighbouring residential development.

In consideration of the Group 1, Vegetation Structure 5 – Open Forest (M3) located on a downslope of five to ten degrees, Table A2.3 requires an APZ of 90 m, consisting of a 75 m IPA and a 15 m OPA. Existing buildings G, H, K, M and N which are located immediately adjacent to the western boundary are provided with a significantly reduced APZ.

With no bushfire threat to the north APZs are not required to be located within the site boundary in this direction.



3.4.1 INNER PROTECTION AREA

3.4.1.1 Location

The Inner Protection Area extends from the edge of the Outer Protection Area to the development.

3.4.1.2 Purpose

The IPA ensures that the presence of fuels, which could become involved in a fire, are minimised close to a development. Therefore the impact of direct flame contact and radiant heat on the development is minimised.

3.4.1.3 Depth

The depth of the IPA is dependent upon the slope of the land. The greater the slope, the greater the intensity of any approaching fire and hence the greater the depth required for the IPA.

3.4.1.4 Fuel Loadings

It is more practical to determine the specifications of the IPA in terms of performance than in terms of a minimum fuel loading.

The performance of the IPA must be such that:

(a) there is minimal fine fuel at ground level which could be set alight by a bushfire; and

(b) any vegetation in the IPA does not provide a path for the transfer of fire to the development – that is, the fuels are discontinuous.

The presence of a few shrubs or trees in the IPA is acceptable provided that they:

(a) do not touch or overhang the building;

(b) are well spread out and do not form a continuous canopy;

(c) are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and

(d) are located far enough away from the house so that they will not ignite the house by direct flame contact or radiant heat emissions.

Woodpiles, wooden sheds, combustible material storage areas, large areas/quantities or garden mulch, stacked flammable building materials etc should not be permitted in the IPA.

3.4.2 OUTER PROTECTION AREA

3.4.2.1 Location

The OPA is located adjacent to the hazard. Originally the OPA would have been part of the bushfire hazard but has become an area where the fuel loadings are reduced.

3.4.2.2 Purpose

The reduction of fuel in this area substantially decreases the intensity of an approaching fire and restricting the pathways to crown fuels; reducing the level of direct flame, radiant heat and ember attack on the IPA.

3.4.2.3 Depth

The depth of the OPA is largely dependent on the type of land use and vulnerability of the dwelling or persons affected.

3.4.2.4 Fuel Loadings

Within the OPA any trees and shrubs should be maintained in such a manner that the vegetation is not continuous.

Fine fuel loadings within the OPA should be kept to a level where the fire intensity expected will not impact on adjacent developments. In the absence of any policy to the contrary, 8 tonnes per hectare of fuel is commonly used.

In grasslands, fuel height should be maintained below 10 cm.

3.5 Level of Construction

Tables A3.1 and A3.3 of *Planning for Bushfire Protection* allows the determination of the relevant level of construction in accordance with AS 3959-1999: *Construction of Buildings in Bushfire-Prone Areas*. Level 3 construction is the highest level of construction detailed by AS 3959-1999. An extract from AS 3959-1999 is provided in Appendix E detailing the requirements for all levels of construction.

Due to the distance between the dwellings and the forest vegetation to the east being approximately 80 m, *Planning for Bushfire Protection* does not impose any construction requirements as a result of this particular hazard.

With less than 20 m between the existing dwellings and the bushfire hazard to the south, *Planning for Bushfire Protection* classifies the category of bushfire attack as being within the Flame Zone for which it acknowledges that the level of construction required is above Level 3 and beyond the scope of AS 3959. It should be noted, however, that the existing level of construction falls significantly short of Level 3 construction, and in fact short of Level 1, due to:

(i) The provision of timber decorative shutters to all windows;

(ii) Openable windows without the provision of screens;

(iii) Windows provided with standard float glass rather than toughened glass;

(iv) Non-combustible shutters not provided to windows;

(v) Vents and weep holes are not provided with spark guards;

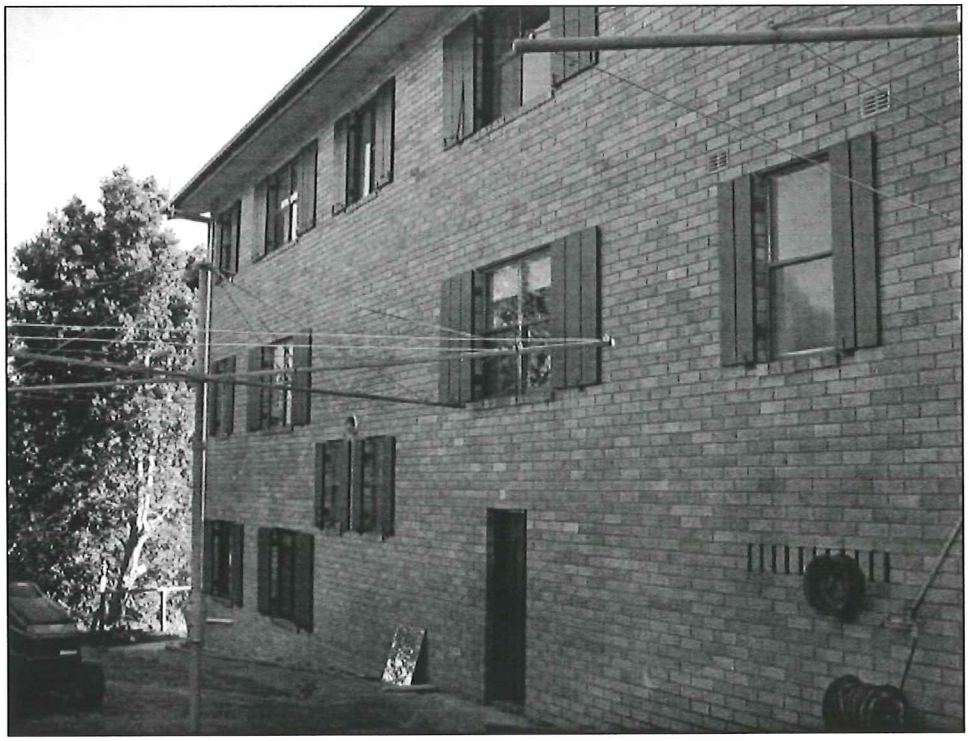
(vi) Timber eaves linings are not fire-retardant treated timber;

(vii) Timber fascias are not fire-retardant treated timber;

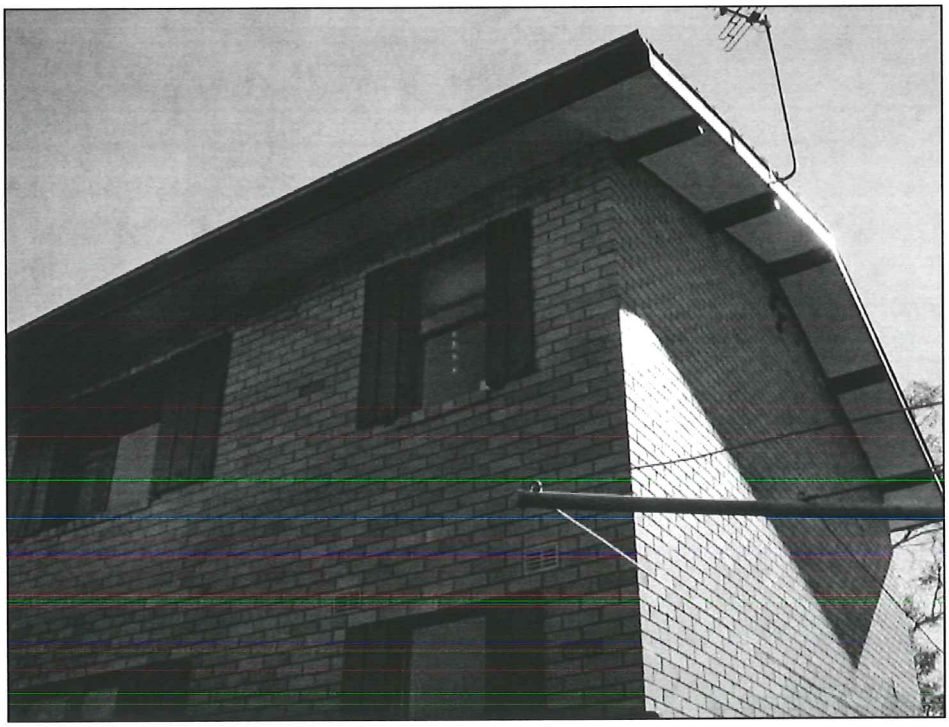
(viii) Gutter guards are not provided; and

(ix) External retractable awnings are of a combustible material.

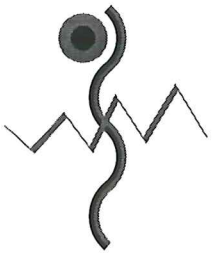
Refer to Photographs 8 and 9 showing these shortcomings.



Photograph 8 – Southern elevation of Building G showing typical construction of Buildings G, H & K.



Photograph 9 – Southern elevation of Building G showing typical construction of Buildings G, H & K.



3.6 Proposed Upgrading and Minor Extensions

The following extensions are proposed to Building G, H and K, as indicated in Appendix A:

(a) Building G:

- Additional bedrooms to the south and west;
- Fully enclosed balconies to the First and Second Floor north; and
- Open balcony to the Ground Floor north.

(b) Building H:

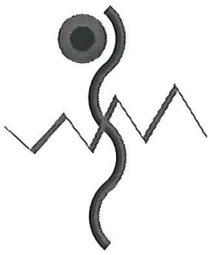
- Fully enclosed balconies to the First and Second Floor west;
- Open balcony to the Ground Floor west;
- Fully enclosed balconies to the Second Floor east;
- Open balconies to the First Floor east; and
- Additional two units per floor (Ground, First and Second) to the north up to existing southern external wall of Building K.

(c) Building K:

- Fully enclosed balconies to the First and Second Floor west;
- Open balcony to the Ground Floor west;
- Additional bedroom to First and Second Floor west;
- Fully enclosed balconies to the Second Floor east; and
- Open balconies to the First Floor east.

The ensuing discussion makes reference to the unmanaged vegetation located to the west of Buildings G, H and K. The western site boundary criss-crosses with the top of the steep incline leading into the Manly-Warringah War Memorial Park. The current APZs provided to the west of Buildings G, H and K are measured to the furthest point of either the western site boundary or the top of the steep incline. This approach is being taken as where the top of the steep incline is beyond the western boundary Allambie Luthern Homes have been maintaining this additional area to the same extent as the area within their boundary. For ease of reference, this point will be referred to as the edge of the unmanaged vegetation.

Existing buildings G, H, K, M and N were constructed prior to the implementation of *Planning for Bushfire Protection* and associated legislation. Their western exterior walls are in a jaggered line, a minimum of 1.5 m from the unmanaged vegetation, thereby falling significantly short of the *Planning for Bushfire Protection* APZ requirements. Of particular note is Building G which is currently located 1.5 m from the unmanaged vegetation, beyond which is vegetation not currently required to be managed. Additionally, the construction of these buildings is to a standard far below that of Level 3 construction in accordance with AS 3959, and below Level 1 construction in numerous instances.



Based upon agreement with Warringah Council, it is proposed to manage the adjacent vegetation to the west of the entire length of the western site boundary, within the Manly-Warringah War Memorial Park, to a depth of 30 m in accordance with the IPA specifications provided in Section 3.4.1. This vegetation management will be an extension to the existing bushland management/regeneration process. Agreement in writing is to be provided by Warringah Council confirming acceptance of this condition.

3.6.1 BUILDING K

Unmanaged vegetation is currently located at a distance of between 3 m to 9 m from the west of Building K, as this vegetation is to the south of that which is currently undergoing a bushland management/regeneration process. The proposed extensions to the western side of Building K will not result in any part of Building K being located closer than 3 m to this vegetation, that is, no closer than the existing building extremities, and further than the worst-case situation that exists with Building G.

While the proposed alterations do not impact upon the entire external façades of the building, the northern and western façades of Building K will be upgraded to Level 3 construction. The eastern façade of Building K, which is not directly exposed to the bushfire threat, will be upgraded to Level 2 construction. An external southern façade will not be provided as Building H is being extended to the north and will adjoin Building K. The construction upgrades will exclude structural elements and roof sarking. Additionally Building K will not be provided with any external timber materials and will be provided with non-combustible shutters, in addition to toughened glass, to all new northern and western windows.

The vegetated area to the north and west of Building K, within the site boundaries, is to be maintained as an IPA in accordance with the specifications provided in Section 3.4.1.

3.6.2 BUILDING H

Unmanaged vegetation is currently located at a distance of 3 m to the west of Building H. The proposed extensions to the western side of Building H will result in the building being 1.5 m from the existing vegetation, however additional clearing up to the western boundary will be provided, thus maintaining a 3 m separation distance and further than the worst-case situation that exists with Building G.

While the proposed alterations do not impact upon the entire external façades of the building, the southern and western façades of Building H will be upgraded to Level 3 construction. The eastern façade of Building H, which is not directly exposed to the bushfire threat, will be upgraded to Level 2 construction. An external northern façade will not be provided as Building H is being extended to the north and will adjoin Building K. The construction upgrades will exclude structural elements and roof sarking. Additionally Building H will not be provided with any external timber materials and will be provided with non-combustible shutters, in addition to toughened glass, to all new western and southern windows.

The vegetated area to the west of Building H, within the site boundaries, is to be maintained as an IPA in accordance with the specifications provided in Section 3.4.1.

3.6.3 BUILDING G

Unmanaged vegetation is currently located at a distance of 1.5 m to the west of Building G. The proposed extensions to the southern side of Building G will not result in any part of Building G being located closer than 1.5 m to this vegetation, that is, no closer than the existing building extremities.

While the proposed alterations do not impact upon the entire external façades of the building, the southern and western façades of Building G, along with the western facing portions of the northern façade, will be upgraded to Level 3 construction. The eastern façade and the remainder of the northern façade of Building G, which are not directly exposed to the bushfire threat, will be upgraded to Level 2 construction. The construction upgrades will exclude structural elements and roof sarking. Additionally Building G will not be provided with any external timber materials and will be provided with non-combustible shutters, in addition to toughened glass, to all new west and south facing windows.

The vegetated area to the west and south of Building G, within the site boundaries, is to be maintained as an IPA in accordance with the specifications provided in Section 3.4.1.

3.7 Vehicular Access

Access is provided to the Allambie Lutheran Homes site from Martin Luther Lane, which is accessed via Martin Luther Place leading off Allambie Road.

All public roads required for site access are sealed roads capable of supporting fully loaded firefighting vehicles. All public roads in the immediate area are two-way, of minimum 8 m width allowing for traffic to pass in opposite directions with road grades allowing for access for fire-fighting vehicles.

The existing internal road network will remain unchanged and as such vehicular access is provided to the north-west corner of Building N and adjacent to the northern end of the Community Room.

Vehicular access is considered reasonable for both egress of residents and access by fire fighting personnel.

3.8 Gas

Reticulated gas shall be installed and maintained in accordance with AS/NZS 1596-2002: *Storage and Handling of LP Gas* and the requirements of the relevant authorities. If provided, gas cylinders are not to be located on the western side of the dwellings between the dwellings and the bushfire hazard. Release valves must be directed away from the building and away from any hazardous materials such as firewood, so that it does not act as a catalyst to combustion.

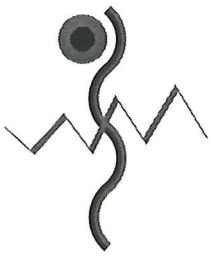
3.9 Electricity Supply

Modifications to the electrical transmission system are not proposed.

3.10 Water Supply

One duel-outlet fire hydrant is currently provided to serve the site, located adjacent to the north-west corner of Building P. The distance from this outlet to the western side of buildings located adjacent to the western boundary is significantly in excess of 90 m. The existing fire hydrant system is therefore required to be extended in accordance with AS 2419, with a minimum of one dual-outlet hydrant provided between Buildings G and H and another located between Buildings K and L. It is also advised that a dual-outlet hydrant is provided to the north of Building N.

In choosing the location of the new hydrants consideration should be given to affording protection to fire-fighting personnel in the connection of hoses to the hydrant outlets.



4 RECOMMENDATIONS

The proposed upgrading and minor extensions to Buildings G, H and K at Allambie Lutheran Homes, 3 Martin Luthern Place, Allambie is indicated on the drawings provided in Appendix A.

Due to the existing nature of the existing development, compliance with *Planning for Bushfire Protection* cannot be achieved.

Therefore, based on Holmes Fire & Safety's site inspection and assessment the following recommendations are required to be implemented to ensure a reduced risk of bushfire attack than currently exists, while allowing upgrading and minor extensions to the existing development.

(a) Building K:

Excluding structural elements and roof sarking:

(i) Northern and western façades to be upgraded to Level 3 construction in accordance with AS 3959. Non-combustible shutters, in addition to toughened glass, to be provided to all new windows within these façades;

(ii) Eastern façade to be upgraded to Level 2 construction in accordance with AS 3959;

(iii) No external timber materials to be provided throughout; and

(iv) The vegetated area to the north and west of Building K, within the site boundaries, is to be maintained as an IPA in accordance with the specifications provided in Section 3.4.1.

(b) Building H:

Excluding structural elements and roof sarking:

(i) Southern and western façades to be upgraded to Level 3 construction in accordance with AS 3959. Non-combustible shutters, in addition to toughened glass, to be provided to all new windows within these façades;

(ii) Eastern façade to be upgraded to Level 2 construction in accordance with AS 3959;

(iii) No external timber materials to be provided throughout; and

(iv) The vegetated area to the west of Building H, within the site boundaries, is to be maintained as an IPA in accordance with the specifications provided in Section 3.4.1.

(c) Building G:

Excluding structural elements and roof sarking:

(i) Southern and western façades and western facing portions of the northern façade to be upgraded to Level 3 construction in accordance with AS 3959. Non-combustible shutters, in addition to toughened glass, to be provided to all new windows within these façades;

(ii) Eastern façade and remainder of the northern façade to be upgraded to Level 2 construction in accordance with AS 3959;

(iii) No external timber materials to be provided throughout; and

(iv) The vegetated area to the west and south of Building G, within the site boundaries, is to be maintained as an IPA in accordance with the specifications provided in Section 3.4.1.

(d) The adjacent vegetation to the west of the entire length of the western site boundary, within the Manly-Warringah War Memorial Park, is to be managed to a depth of 30 m in accordance with the IPA specifications provided in Section 3.4.1. Agreement in writing is to be provided by Warringah Council confirming acceptance of this condition.

(e) Reticulated gas shall be installed and maintained in accordance with AS/NZS 1596-2002: *Storage and Handling of LP Gas* and the requirements of the relevant authorities. If provided, gas cylinders are not to be located on the western side of the dwellings between the dwellings and the bushfire hazard. Release valves must be directed away from the building and away from any hazardous materials such as firewood, so that it does not act as a catalyst to combustion.

(f) The existing fire hydrant system is to be extended in accordance with AS 2419, with a minimum of one dual-outlet hydrant provided between Buildings G and H and another located between Buildings K and L. It is also advised that a dual-outlet hydrant is provided to the north of Building N. Consideration should be given to affording protection to fire-fighting personnel in the connection of hoses to the hydrant outlets in choosing the location of the hydrant outlets.

5 CONCLUSION

Holmes Fire & Safety has conducted a site inspection and assessment of the proposed upgrading and minor extensions of existing Buildings G, H and K at Allambie Lutheran Homes, 3 Martin Luther Lane, Allambie Heights. The assessment has been undertaken in accordance with *Planing for Bushfire Protection* and AS 3959-1999: *Construction of Buildings for Bush Fire Prone Areas.*

Provided the recommendations stated above are implemented in full, Holmes Fire & Safety is of the opinion that the proposed development, while not in full compliance with the relevant legislation, will provided a significantly reduced risk of bushfire attack for the subject dwellings.

6 REPORT BASIS INFORMATION

The report is based on the following:

(i) Site inspection carried out on 13 May 2004 by Glen Mitchell (Holmes Fire & Safety);

(ii) Drawings as listed in Table 2.

Table 2 – Referenced Drawings

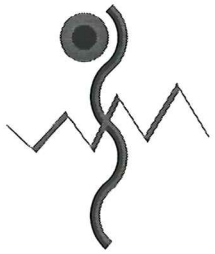
Drawing No.	Title	Date	Drawn By:
DA / 01	Site Plan	Feb 2004	Straesser Architects
DA / 02	Part Site Plan – Building G & H	Feb 2004	Straesser Architects
DA / 03	Part Site Plan – Building K	Feb 2004	Straesser Architects
DA / 04	Elevations – West K & H	March 2004	Straesser Architects
DA / 05	Elevations – North K & H	March 2004	Straesser Architects
DA / 06	Elevations – East K & H	March 2004	Straesser Architects
DA / 07	Elevations – West & South G	March 2004	Straesser Architects
DA / 08	Elevations – East & North G	March 2004	Straesser Architects

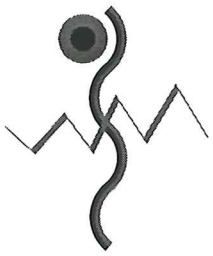
7 REFERENCES

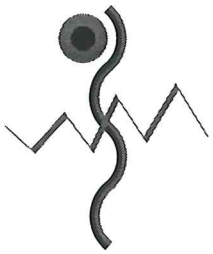
NSW Rural Fire Service, Planning NSW, 2001, *Planning for Bushfire Protection.*

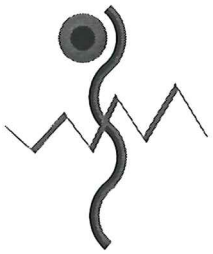
AS 3959-1999: *Construction of Buildings in Bush Fire Prone Areas.*

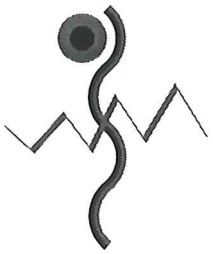
APPENDIX A – SITE PLAN, PART SITE PLANS & ELEVATIONS

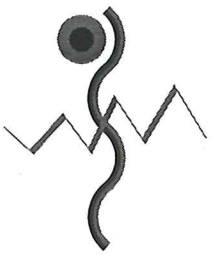


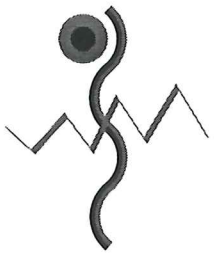


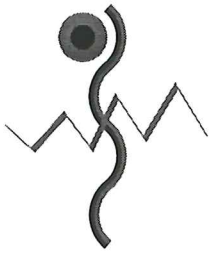












APPENDIX B – VEGETATION ASSESSMENT

Figure A2.2, *Planning for Bushfire Protection:*

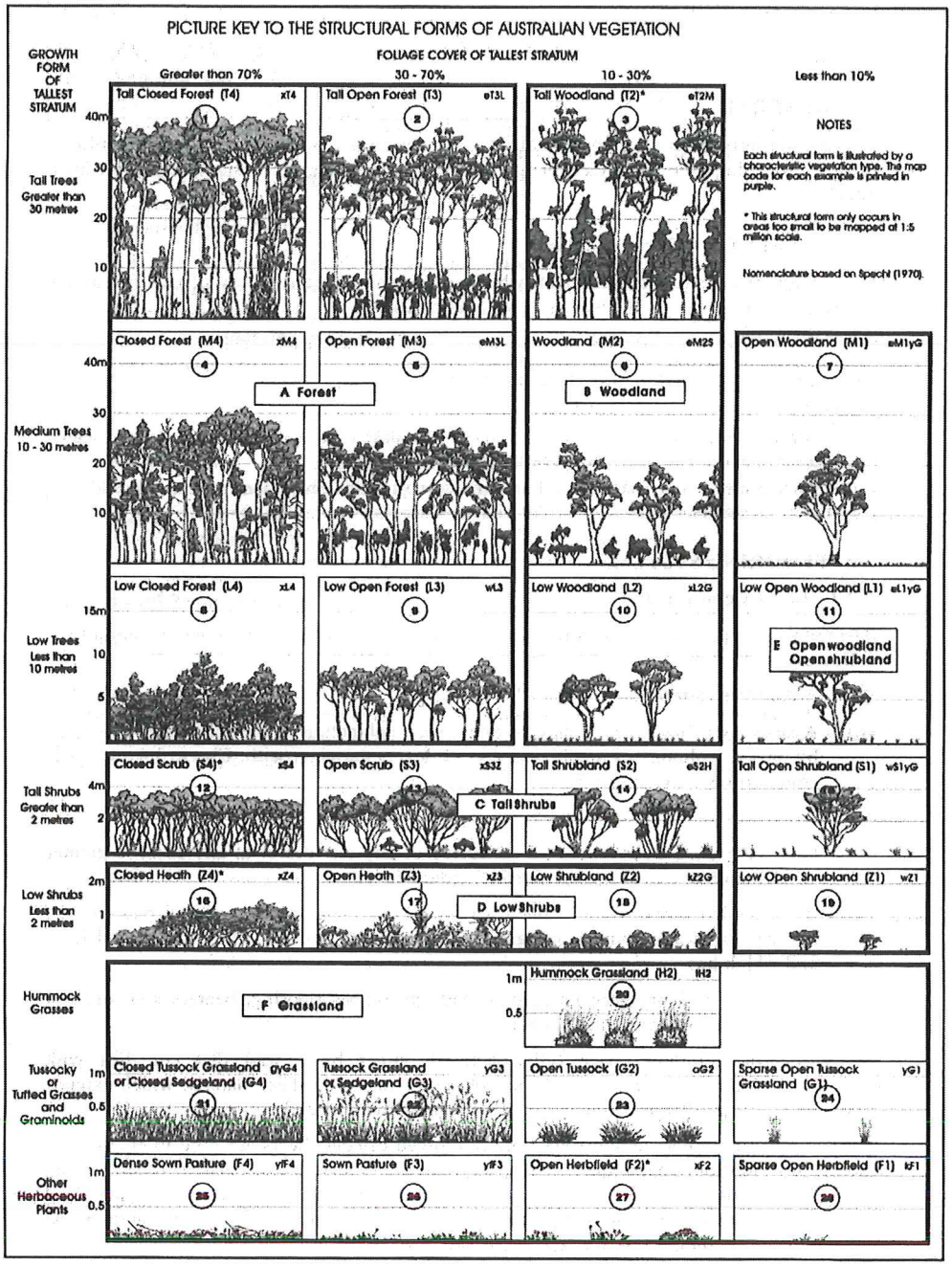


FIGURE 2.1 PREDOMINANT VEGETATION TYPES AND CLASS TYPES 1 TO 28 AND CLASSES A TO F

APPENDIX C – ASSET PROTECTION ZONES

Table A2.2, *Planning for Bushfire Protection* - Minimum Specifications for Asset Protection Zones (APZ) for Residential Purposes in Bushfire-prone Areas:

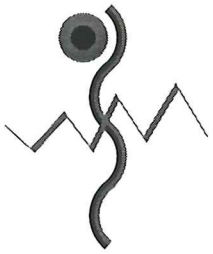
Forests (Group 1 – see Figure A2.2)				
Slope	Direction of Slope	Asset Protection Zone (m)		
		Total (IPA + OPA)	Inner Protection Area (IPA)	Outer Protection Area (OPA)
> 5°	Upslope	20	20	0
5 - 0°		30	20	10
> 0 - 5°	Downslope	40	30	10
> 5 - 10°		50	40	10
>10 - 15°		60	50	10
>15 - 18°		70	60	10
Woodlands, heaths, open scrub (Group 2 – see Figure A2.2)				
Slope	Direction of Slope	Asset Protection Zone (m)		
		Total (IPA + OPA)	Inner Protection Area (IPA)	Outer Protection Area (OPA)
> 5°	Upslope	20	20	0
5 - 0°		30	20	10
> 0 - 5°	Downslope	35	25	10
> 5 - 10°		40	30	10
>10 - 15°		50	40	10
>15 - 18°		60	50	10

Table A2.3, *Planning for Bushfire Protection* – Minimum Specifications for Asset Protection Zones (APZ) for Special Protection Developments in Bushfire-prone Areas:

Forests (Group 1 – see Figure A2.2)				
Slope	Direction of Slope	Asset Protection Zone (m)		
		Total (IPA + OPA)	Inner Protection Area (IPA)	Outer Protection Area (OPA)
> 5°	Upslope	60	50	10
5 - 0°		75	60	15
> 0 - 5°	Downslope	80	65	15
> 5 - 10°		90	75	15
>10 - 15°		100	85	15
>15 - 18°		100	85	15
Woodlands, heaths, open scrub (Group 2 – see Figure A2.2)				
Slope	Direction of Slope	Asset Protection Zone (m)		
		Total (IPA + OPA)	Inner Protection Area (IPA)	Outer Protection Area (OPA)
> 5°	Upslope	30	20	10
5 - 0°		40	25	15
> 0 - 5°	Downslope	50	35	15
> 5 - 10°		60	45	15
>10 - 15°		80	65	15
>15 - 18°		100	85	15

Table A2.4, *Planning for Bushfire Protection* – Minimum Specifications for Asset Protection Zones (APZ) for Residential Purposes and Special Protection Development in Bushfire-prone Areas by Vegetation Group 3:

Rainforests, grasslands, open woodlands, mallee (Group 3 – see Figure A2.1)
Minimum separation distance of 20 m (managed understory or grasses) required regardless of construction level for all slopes.



APPENDIX D – TABLE A3.1 AND A3.3

Table A3.1, *Planning for Bushfire Protection* – Categories Of Bushfire Attack

Category	Description
Low	Minimal attack from radiant heat and flame due to the distance of the site from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements.
Medium	Attack by burning debris is significant with radiant heat and flame attack insufficient to threaten building elements (unscreened glass). Specific construction requirements are therefore warranted. (AS 3959-1999, Level 1 construction applicable)
High	Attack by burning debris is significant with radiant heat levels and flame threatening some building elements (screened glass). Specific construction requirements are therefore warranted. (AS 3959-1999, Level 2 construction applicable)
Extreme	Attack by burning debris is significant and radiant heat levels and flame could threaten building integrity. Specific construction requirements are warranted. (AS 3959-1999, Level 3 construction applicable)
Flame Zone	Flames and radiant heat levels likely to significantly threaten building integrity and result in significant risk to residents who will not be adequately protected. (Beyond scope of AS 3959-1999)

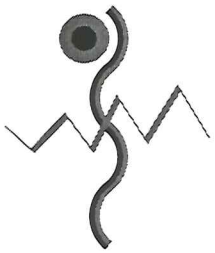


Table A3.3, *Planning for Bushfire Protection* – Determination of Category Of Bushfire Attack For A Site

Distance from vegetation	< 20 m	≥ 20 m to ≤ 30 m			> 30 m to < 50 m			> 50 m to < 80 m			> 80 m to < 100 m		
Slope	All slopes	> 15°	> 5° to ≤ 15°	0 to 5°	> 15°	> 5° to ≤ 15°	0 to 5°	> 15°	> 5° to ≤ 15°	0 to 5°	> 15°	> 5° to ≤ 15°	0 to 5°
Vegetation	Category of Bushfire Attack												
Forest	FZ	FZ	FZ	Ext	FZ	Ext	High	Ext	Ext	Med	Ext	High	Low
Woodland	FZ	FZ	Ext	Med	Ext	High	Low	Ext	Low	Low	Med	Low	Low
Shrub/Heath	FZ	FZ	FZ	Ext	FZ	Ext	High	Ext	High	Med	High	High	Low
Mallee/Mulga	FZ	Med	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Rainforest	FZ	High	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Grassland	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Non-vegetated	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low

Shading indicates situation applicable to Buildings G, H & K, Allambie Lutheran Homes, 3 Martin Luther Place, Allambie.

APPENDIX E – AS 3959-1999, SECTION 3

The following is an extract from Section 3 of AS 3959-1999: *Construction of Buildings in Bush Fire Prone Areas.*

SECTION 3 - BUILDING CONSTRUCTION

3.1 GENERAL

This Section sets out the requirements for the construction of various elements of a building in order to reduce the likelihood of ignition of that building when subjected to bushfire attack.

3.2 LEVELS OF CONSTRUCTION

Three levels of construction are given which correspond to the category of bushfire attack determined for the site of the building (see Section 2):

(a) Level 1 construction for the category of medium bushfire attack.

(b) Level 2 construction for the category of high bushfire attack.

(c) Level 3 construction for the category of extreme bushfire attack.

3.3 FLOORING SYSTEMS

3.3.1 Level 1 construction

The requirements for a floor in a Level 1 construction shall be one, or a combination, of the following:

(a) A concrete slab-on-the-ground.

(b) A suspended floor, which may be one, or a combination of the following, supported by posts, columns, stumps, piers or poles complying with Clause 3.4 or walls complying with Clause 3.5:

  (i) A concrete floor.

  (ii) A framed floor where the underside of any one bearer at any point is greater than 600 mm above the finished ground level.

(c) A suspended timber floor, framed with timber or metal, where the underside of any one bearer, at any point, is not greater than 600 mm above the finished ground level and which has-

  (i) the subfloor space unenclosed and any timber flooring, bearers and joists of fire-retardant-treated timber; or

  (ii) the subfloor space fully enclosed, either by a wall that complies with Clause 3.5.1(a), or by the use of non-combustible sheet material which extends for at least 400 mm above the finished ground level.

  Where non-combustible fire-reinforced cement sheets are used to enclose the subfloor space, the material shall have a minimum thickness of 6 mm and all joints shall be covered or sealed (see Figure 3.1). The non-combustible sheet material shall meet the bottom of the cladding material to ensure there are no gaps on the exterior face of the building.

3.3.2 Level 2 construction

The requirements for a floor in a Level 2 construction shall be as for Level 1 construction (see Clause 3.3.1).

3.3.3 Level 3 construction

The requirements for a floor in a Level 3 construction shall be as for Level 2 construction (see Clause 3.3.2) except that in the case of a framed floor, where any bearer of joist is greater than 600 mm above finished ground level and the floor is not enclosed as described in Clause 3.3.1 (c)(ii), the bearer, joists and flooring shall be of fire-retardant-treated timber or sheeted underneath with non-combustible material.

3.4 SUPPORTING POST, COLUMNS, STUMPS, PIERS AND POLES

3.4.1 Level 1 construction

The requirements for supporting posts, columns, stumps, piers and poles in a Level 1 construction shall be one, or a combination, of the following:

(a) Non-combustible.

(b) Fire-retardant-treated timber for a minimum of 400 mm above the finished ground level.

(c) Timber mounted on galvanized metal shoes with a clearance of not less than 75 mm above the adjacent finished ground level or paving level (see Figure 3.2).

The above do not apply where the subfloor space is totally enclosed as described in Clause 3.3.1 (c) (ii).

3.4.2 Level 2 construction

The requirements for supporting posts, columns, stumps, piers and poles in a Level 2 construction shall be as for Level 1 construction (see Clause 3.4.1).

3.4.3 Level 3 construction

Except in enclosed subfloor spaces, the requirements for supporting posts, columns, stumps, piers and poles in a Level 3 construction shall be as for Level 2 construction (see Clause 3.4.2) except that all timber shall be fire-retardant-treated to full height.

3.5 EXTERNAL WALLS

3.5.1 Level 1 construction

The requirements for external walls in a Level 1 construction shall be as follows:

(a) External walls shall be one, or a combination, of the following:

(i) A wall having an external leaf of masonry, concrete, pisé, rammed earth or stabilized earth.

(ii) A framed wall that incorporates either –

(A) breather-type sarking complying with AS/NZS 4200.1 and with a flammability index of not more than 5 (see AS 1530.2) installed immediately behind the external cladding; or

(B) an insulation material conforming to the appropriate Australian Standard for that material.

(iii) A wall of timer logs that have the butting faces of adjacent logs, gauge-planed, and the space between the logs sealed in a manner that prevents the entry of burning debris and which allows for building movement.

(b) Where the external leaf or cladding is of a combustible sheet material and is less than 400 mm above finished ground level, the cladding shall be protected for not less than 400 mm above the adjacent finished ground level (see Figure 3.3)-

(i) by covering it with a suitable non-combustible material, or fire-retardant-treated timber suitably sealed to the existing cladding so as to prevent the entry of burning debris (see Figures 3.3 (a) and 3.3 (b));

(ii) by substituting with a suitable non-combustible sheet material, or fire-retardant-treated timber (see Figure 3.3 (c)); or

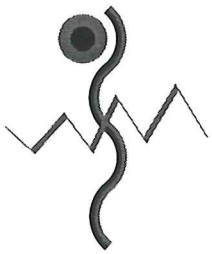
(iii) where the external cladding is timber, by using fire-retardant-treated timber.

3.5.2 Level 2 construction

The requirements for walls in a Level 2 construction shall be as for Level 1 construction (see Clause 3.5.1), except that PVC cladding is not permitted and all external timber wall cladding shall be of fire-retardant-treated timber.

3.5.3 Level 3 construction

The requirements for external walls in a Level 3 construction shall be as for Level 2 construction (see Clause 3.5.2).



3.6 WINDOWS

3.6.1 Level 1 construction

All openable windows, including louvers, in a Level 1 construction shall be screened with corrosion-resistant steel, bronze or aluminium mesh with a maximum aperture size of 1.8 mm in such a way that the entire opening remains screened when the window is open.

3.6.2 Level 2 construction

The requirements for all windows, including louvers, in a Level 2 construction shall be as for Level 1 construction (see Clause 3.6.1) except that aluminium mesh shall not be used.

In addition to the above, the following applies:

(a) Where timber is used, it shall be fire-retardant-treated timber except where protected by non-combustible shutters.

(b) Where leadlight windows are used, they shall be protected by shutters constructed of a non-combustible material or of toughened glass.

3.6.3 Level 3 construction

The requirements for windows in a Level 3 construction shall be as for Level 2 construction (see Clause 3.6.2) except that where the windows are not protected by non-combustible shutters, they shall be glazed with toughened glass.

3.7 EXTERNAL DOORS

3.7.1 Level 1 construction

External doors in a Level 1 construction shall be fitted with –

(a) weather strips or draught excluders to prevent the penetration or build-up of burning debris beneath the door; and

(b) tight fitting door screens fitted with corrosion-resistant steel, bronze or aluminium mesh with a maximum aperture size of 1.8 mm.

3.7.2 Level 2 construction

The requirements for external doors in a Level 2 construction shall be as for Level 1 construction except that aluminium shall not be used for the mesh (see Clause 3.7.1). If leadlight glazing panels are incorporated in the doors, they shall be protected by shutters constructed of a non-combustible material or of toughened glass.

3.7.3 Level 3 construction

The requirements for external doors in a Level 3 construction shall be as for Level 2 construction (see Clause 3.7.2) except that –

(a) timber doors shall be fire-retardant-treated or shall have a non-combustible covering on the exterior surface; or

(b) doors shall be protected by shutters of non-combustible material; or

(c) doors shall be solid-core having a thickness not less than 35 mm.

3.8 VENTS AND WEEPHOLES

3.8.1 Level 1 construction

Vents and weepholes in a Level 1 construction shall be protected with spark guards made from corrosion-resistant-steel, bronze or aluminium mesh with a maximum aperture size of 1.8 mm (see Figure 3.4).

3.8.2 Level 2 construction

The requirements for Level 2 construction vents and weepholes shall be as for Level 1 construction (see Clause 3.8.1), except that aluminium mesh shall not be used.

3.8.3 Level 3 construction

The requirements for vents and weepholes in a Level 3 construction shall be as for Level 2 construction (see Clause 3.8.2).

3.9 ROOFS

3.9.1 Level 1 construction

3.9.1.1 General

The following general requirements shall apply to all types of roofing systems in a Level 1 construction:

(a) Timber shakes or shingles shall not be used for the roof covering.

(b) The roof/wall junction shall be sealed either by the use of fascias and eaves linings, or by sealing the gaps between the rafters with a suitable non-combustible material.

(c) Sarking shall have a flammability index of not more than 5 (see AS 1530.2).

3.9.1.2 Tiled roofs

Tiled roofs shall be fully sarked (see Clause 3.9.1.1 (c)). The sarking shall be located directly below the tiling battens and shall cover the entire roof area including the ridge.

3.9.1.3 Sheeted roofs

The requirements for sheeted roofs in a Level 1 construction are as follows:

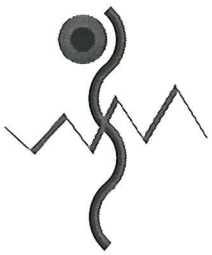
(a) Only metal or fibre-cement sheet shall be used.

(b) All gaps under the corrugations or ribs of the roofing material where it meets the fascia or wall line shall be sealed or protected –

  (i) by fully sarking the roof; or

  (ii) by providing corrosion-resistant steel or bronze mesh, with a maximum aperture size of 1.8 mm, profiled metal sheet, neoprene seal, compressed mineral wool or similar.

(c) Rib caps and ridge capping shall be sealed in accordance with Clause 3.9.1.3 (b) (see Figure 3.5 (a)), or performed rib caps or ridge capping shall be used (see Figures 3.5 (b) and (c)).



3.9.1.4 Rooflights

The requirements for rooflights in a Level 1 construction are as follows:

(a) All penetrations of the roof space for the installation of rooflights and associated shafts shall be sealed with a non-combustible sleeve or lining.

Thermoplastic sheet in a metal frame may be used for a rooflight, but the diffuser installed at ceiling level shall be of wired or toughened glass in a metal frame.

(b) Vented rooflights shall be provided with corrosion-resistant steel or bronze mesh having a maximum aperture size of 1.8 mm.

3.9.1.5 Roof ventilators

All components of roof ventilators, including the rotary type, in a Level 1 construction shall be constructed of non-combustible material and shall be sealed against the entry of sparks and embers with corrosion-resistant steel or bronze mesh having a maximum aperture size of 1.8 mm.

3.9.1.6 Roof-mounted evaporative units

Roof-mounted evaporative cooling units shall only be used if the openings to the cooling unit are encased in corrosion-resistant steel or bronze mesh with a maximum aperture size of 1.8 mm.

3.9.2 Level 2 construction

The requirements for a roof in a Level 2 construction shall be as for Level 1 construction (see Clause 3.9.1), except that all roof sheeting shall be non-combustible and sarked, and rooflight glazing shall be of wired glass. Thermoplastic material or toughened glass shall not be used as the glazing for rooflights. The case of the evaporative cooler shall be manufactured from a non-combustible material.

3.9.3 Level 3 construction

The requirements for roof covering in a Level 3 construction shall be as for Level 2 construction (see Clause 3.9.2) except that no fibre-reinforced cement or aluminium sheet shall be used.

3.10 EAVES

3.10.1 Level 1 construction

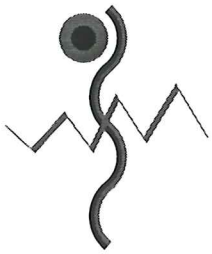
All eaves in a Level 1 construction shall be enclosed, and the fascia or the gaps between the rafters shall be sealed (see Clause 3.9.1.1).

3.10.2 Level 2 construction

The requirements for eaves in a Level 2 construction shall be as for Level 1 construction (see Clause 3.10.1), except that all timber eaves lining and joining strips shall be of fire-retardant-treated timber.

3.10.3 Level 3 construction

The requirements for eaves in a Level 3 construction shall be as for Level 2 construction (see Clause 3.10.2) except that aluminium shall not be used.



3.11 FASCIAS

3.11.1 Level 1 construction

There are no requirements for fascias in a Level 1 construction.

3.11.2 Level 2 construction

All materials used for fascias in a Level 2 construction shall be either non-combustible or of fire-retardant-treated timber.

3.11.3 Level 3 construction

The requirements for fascias in a Level 3 construction shall be as for Level 2 construction (see Clause 3.11.2) except that no fibre-reinforced cement or aluminium sheet shall be used.

3.12 GUTTERS AND DOWNPIPES

3.12.1 Level 1 construction

Any materials or devices used to stop leaves collecting in the gutters of a Level 1 construction shall have a flammability index of not greater than 5 when tested in accordance with AS 1530.2.

3.12.2 Level 2 construction

The requirements for gutters and downpipes in a Level 2 construction shall be as for Level 1 construction (see Clause 3.12.1).

3.12.3 Level 3 construction

The requirements for gutters and downpipes in a Level 3 construction shall be as for Level 2 construction (see Clause 3.12.2).

3.13 VERANDAS AND DECKS

3.13.1 Level 1 construction

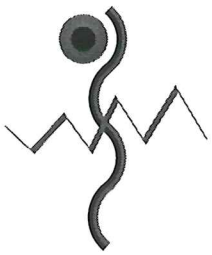
Verandas, decks, and the like, forming part of a building required to be Level 1 construction shall comply with one, or a combination, of the following:

(a) *Slab* A reinforced concrete suspended slab floor, supported by posts or columns complying with Clause 3.4 or walls complying with Clause 3.5, or a slab-on-the-ground floor complying with Clause 3.3.

(b) *Sheeted or tongued and grooved solid flooring* The requirements for flooring are as follows:

  (i) Compliance with the flooring requirements shall be in accordance with Clause 3.3.

  (ii) Where the clearance between the finished ground level and the underside of the floor is not greater than 400 mm above finished ground level, all joints in the flooring shall be covered (above the floor level) or shall be sealed.



(c) *Spaced decking* The requirements for spaced decking are as follows:

(i) The decking timbers shall be fixed with a clearance of not less than 5 mm between adjacent timbers.

(ii) The external perimeter beneath the decking shall not be enclosed nor shall access to the space beneath the decking be impeded.

(iii) Any supports for the decking shall be treated as set out in Clause 3.4.

(iv) Decking timbers shall not be allowed to connect with the remainder of the building unless measures are used to prevent the spread of fire into the building.

3.13.2 Level 2 construction

The requirements for verandas and decks in a Level 2 construction shall be as for Level 1 construction (see Clause 3.11.1) except that if spaced decking is used, fire-retardant-treated timber shall be used for the decking material.

3.13.3 Level 3 construction

The requirements for verandas and decks in a Level 3 construction shall be as for Level 2 construction (see Clause 3.13.2) except that all materials shall be non-combustible or where timber is used, it shall be fire-retardant-treated (including any balustrades).

3.14 SERVICE PIPES (WATER AND GAS)

3.14.1 Level 1 construction

All exposed piping, for water and gas supplies, in a Level 1 construction shall be metal. Pipes of other materials shall be buried to a depth of at least 300 mm below the finished ground level.

3.14.2 Level 2 construction

The requirements for service pipes in a Level 2 construction shall be as for Level 1 construction (see Clause 3.14.1).

3.14.3 Level 3 construction

The requirements for service pipes in a Level 3 construction shall be as for Level 2 construction (see Clause 3.14.2).

APPENDIX F – DEFINITIONS

AS 3959-1999 – Australian Standard AS 3959 Construction of buildings in bushfire-prone areas, Standards Australia 1999, that outlines construction standards applicable to residential developments in bushfire-prone areas.

Asset Protection Zone - Often referred to as a fire protection zone. Aims to protect human life, property and highly valued public assets and values. Comprises inner protection area (IPA) and outer protection area (OPA). An area surrounding a development managed to reduce the bushfire hazard to an acceptable level. The width of the Asset Protection Zone will vary with slope and construction level.

Building Line – The extremities of a dwelling.

Bushfire – A fire involving grass, scrub or forest.

Bushfire Attack – Arises from direct flame impingement, radiant heat or ember attack.

Bushfire Hazard – The potential severity of a fire. Usually measured in terms of intensity (kW/m), the factors that influence a bushfire hazard include climate and weather patterns, vegetation (fuel quantity, distribution and moisture) and slope.

Bushfire-Prone Area - Is an area that can support a bushfire or is likely to be subject to bush fire attack. In general, a bush fire prone area is an area occurring within or within 100m of a high or medium bush fire hazard, within or within 30m of a low bush fire hazard but are not existing urban areas or water bodies (other than wetland vegetation) as identified by a bush fire hazard map produced under an approved Bushfire Risk Management Plan, or such other map certified by the NSW Rural Fire Service for this purpose.

Bushfire Risk - Is the chance of a bush fire igniting, spreading and causing damage to assets of value to the community. Risk may be rated ass being extreme, major, moderate or insignificant and is related to the vulnerability of the asset.

Development – For the purpose of this report, the development is considered to be the subdivision and subsequent residential dwelling construction within the defined boundaries of Lot 5.

Inner Protection Area – The inner component of an Asset Protection Zone, consisting of an area maintained to minimal fuel loads and comprising a perimeter road, fire trail, rear yard or reserve, so that a fire path is not created between the hazard and the building.

Outer Protection Area – The outer component of an Asset Protection Zone, where fuel loads are maintained to a level (usually 8t/ha) where the intensity of an approaching bushfire would be significantly reduced.

Public Road – These include perimeter roads and the internal road system of any urban subdivision as well as public roads in rural-residential subdivisions.

Setback – The distance required through planning provisions to separate a building from the bushfire hazard, street frontage or from adjacent building.