

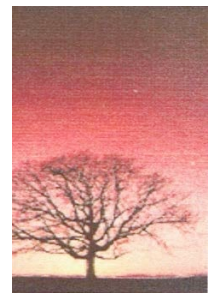
BUSHFIRE MANAGEMENT PLAN

Lot 6 and portions of Lots 10 and 9000 Sydney Road

Gnangara

'Gnangara Rural Community'

City of Wanneroo



FirePlan WA

September 2011

Updated June 2014

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Bushfire Management Plan

Lot 6 and portions of Lots 10 & 9000 Sydney Road, Gnangara

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Document Status

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Version 1		BWH	13.09.11
Version 2	Developer comments	SR & BWH	18.09.2011
Version 3	Update to reflect new lot numbers and further planning	SR & BWH	06.2014

Disclaimer: The measures contained in this fire management plan are considered to be minimum standards and they do not guarantee that a building will not be damaged in a bush fire. All surveys, forecasts, projections and recommendations made in this report associated with the project are made in good faith on the basis of information available to FirePlan WA at the time; and achievement of the level of implementation of fire precautions will depend among other things on the actions of the landowners or occupiers over which FirePlan WA has no control. Notwithstanding anything contained therein, FirePlan WA will not, except as the law may require, be liable for any loss or other consequences (whether or not due to the negligence of the consultants, their servants or agents) arising out of the services rendered by the consultants.

1.0 INTRODUCTION

The purpose of this Bushfire Management Plan is to assess bush fire risk and to detail the fire management methods and requirements that will be implemented for Lot 6 and portions of Lots 10 and 9000 (formerly Lot 50) Sydney Road, Gngangara. This Bushfire Management Plan is prepared for the ‘Rural Community’ zone, including Bush Forever Area (No. 463). The Bushfire Management Plan has been updated (2014) to reflect the further planning which has been undertaken over the area and becomes operational through the Gngangara Rural Community Local Structure Plan. In particular, the Bushfire Management Plan recognises the environmental significance of the Bush Forever Area and does not require any clearing of this area to facilitate its implementation.

The site has various bush fire hazard rating ranging from “Low” to “Moderate” in the areas identified for community uses, including dwellings, and “Moderate” to “Extreme” within the areas identified as Bush Forever. This will be offset by:

- Implementation of Building Protection Zones (BPZ); and
- Increased construction standards of buildings, in accordance with current adopted AS 3959.

This Bushfire Management Plan complies with the acceptable solutions detailed in Appendix 2 of *Planning for Bush Fire Protection* Edition 2 (2010) and as summarised in ‘Compliance Checklist for Performance Criteria and Acceptable Solutions’ at the end of this Bushfire Management Plan (Section 8) and is consistent with the principles of the Draft ‘Planning for Bushfire Risk Management Guidelines’ (2014).

This Bushfire Management Plan outlines the responsibility and timing for implementing and maintaining the fire protection measures and strategies contained within, allocating these responsibilities between the landowner and the City of Wanneroo.

The Bushfire Management Plan is an ongoing dynamic document that can be varies by the City of Wanneroo as it may deem necessary to do so if fire management strategies require altering to meet changing weather, environment and land use needs. It is noted that the provisions of the *Bush Fires Act 1954* may still be enforced, in addition to this Bushfire Management Plan.

2.0 AIM

The aim of the Bushfire Management Plan is to reduce the occurrence of and minimise the impact of bush fires.

The Bushfire Management Plan sets out to reduce this threat by:

- Identifying the objectives of this Bushfire Management Plan (Section 3)
- Describing the site's description, topography, cultural features and land use (Section 4);
- Identifying the site's potential bush fire issues (Section 5); and
- Outlining the fire mitigation strategies for the site, including identifying the parties responsible for undertaking these fire mitigation strategies (Section 6).

The City of Wanneroo has the responsibility and powers under the Town Planning Scheme and the *Bush Fires Act 1954* to ensure that this Bushfire Management Plan, City of Wanneroo Fire Control notice and any Special orders issued under the *Bush Fires Act 1954* are complied with.

3.0 OBJECTIVES

The objectives of this Bushfire Management Plan are to:-

- Assess the bush fire hazard and propose bush fire prevention measures for the site.
- Define the building construction standards and exclusion zones for proposed dwellings.
- Identify access for firefighting operations.
- Identify landowner and City of Wanneroo responsibilities for various components of this Bushfire Management Plan.
- Document the acceptable solutions adopted for the development of the subject land to demonstrate compliance with the requirements of 'Planning for Bush Fire Protection – Edition 2 (2010).

4.0 DESCRIPTION OF THE AREA

4.1 GENERAL

This Bushfire Management Plan applies to Lot 6 and portions of Lot 10 and 9000 Sydney Road, Gnangara encompassing an area of approximately 25ha (refer Figure 1 – Site Location). The site adjoins the extension to the Wangara Industrial Estate to the south. To the north and west is a ‘Special Rural’ estate.

The subject land has been rezoned to ‘Rural Community’ zone (refer Figure 2 – Rezoning Area). Approximately 18ha of the subject land is identified as Bush Forever with the balance of the site being able to be developed for rural community purposes. The area identified for community uses has some 2 existing dwellings and a workshop and is partly cleared. The remainder of the site, generally corresponding to the Bush Forever area is remnant Swan Coastal Plain Banksia woodland that is generally in good condition, although some parts are degraded and are identified for rehabilitation.

The Bushfire Management Plan has been developed having regard to the proposed Gnangara Rural Community Local Structure Plan developed for the site (refer Figure 3 – Gnangara Rural Community - Proposed Structure Plan). The structure plan recognises the proposed Bush Forever boundaries and provides for up to a further 2 houses and small-scale community building being developed on the site. The portion of land to be used for community uses, including dwellings, will include the provision of a Building Protection Zone which will be a dwelling exclusion zone.

4.2 CLIMATE

The Mediterranean climate experienced by this area is such that the majority of rain falls in late autumn through to late spring. This rainfall supports substantial vegetation growth which dries off in Summer/Autumn.

The combination of prevailing winds and dry vegetation poses a fire risk and bush fire control is considered essential for the protection of life and property, and to ensure that frequent and uncontrolled burning does not degrade existing and replanted vegetation.

The bush fire season is generally from October to the following May, but is subject to seasonal changes and drought conditions.

4.3 TOPOGRAPHY

The site is undulating, generally sloping up from east to west and south to north, and as vegetation is upslope of the community use areas, is rated as flat (or 0°) for the purposes of this Bushfire Management Plan.

4.4 BUSH FIRE FUELS

Parts of the site have been cleared with the remainder of the site being Swan Coastal Banksia woodlands. A separate Fuel Assessment and proposed Hazard Reduction Program was undertaken in early 2013 (refer Section 9.0), and identified fuel loads of 5-8 tonnes/ha increasing to 12.5 tonnes/ha in areas where Banksia woodland is more dense and there is leaf litter. In the partly cleared area annual grasses are prevalent. A fuel reduction burning program comprising mosaic burns over a number of years was prepared in consultation with the City of Wanneroo Fire Officers and commenced by the City of Wanneroo bushfire brigade in winter 2013. The staged fuel reduction program was designed to minimise fuel loads in a manner that recognises the conservation significance of the Bush Forever area.

4.5 LAND USE

It is proposed that the majority of the site will be managed as Bush Forever. A portion of the site will be retained for existing rural community use and landuse and development will be subject to a local structure plan.

4.6 ASSETS

There is a 'special rural' area adjoining to the north and west (larger vegetated lots developed for rural living purposes). Lake Gngangara is located to the east. Light industry is proposed to be developed to the south.

4.7 ACCESS

The structure plan for the development site proposes an entrance onto Sydney Road and a trafficable limestone firebreak within the development to separate the community use area, including dwellings, from the Bush Forever site. The internal driveway forms part of the Bushfire Management Plan and will be constructed to the minimum private driveway standard Acceptable Solution A2.5. Maintenance of the driveway and firebreak system within the site will be the responsibility of the Community.

4.8 WATER SUPPLIES

4.8.1 Water for Fire Fighting

The site will be reticulated from Water Corporation mains supply. Fire hydrants exist within the adjoining industrial estate and in Sydney Road and the City of Wanneroo Fire Officers have confirmed that this is appropriate. This complies with Acceptable Solution A3.1.

5.0 FIRE PROBLEM

5.1 BUSH FIRE HISTORY

It is likely that the site has been subject to infrequent wildfires, however, no documented fire history is available. There is very little blackening on the trees in the Banksia woodland which indicates that the majority of the area has not been burnt for 15-20 years.

5.2 BUSH FIRE RISK

It is unlikely that a bush fire will occur in the proposed industrial area to the south of the site. A bush fire that could threaten the rural community area is likely to come from the Bush Forever area or the special rural areas to the north and west. The adjoining special rural landowners are responsible for complying with the City of Wanneroo Firebreak Notice. The City of Wanneroo also has the powers under the Bush Fires Act to issue Special Orders requiring landowners to reduce bush fires fuels to levels detailed in the Special Order.

In a bush fire in this general area (including adjoining land) ember attack may cause damage to buildings, power poles may be burnt down cutting power supplies to some areas, trees/vegetation may fall across roads causing temporary road closures. During a bushfire fighting operation access to roads may be restricted.

There is a risk that buildings that have evaporative air conditioners installed without effective screening around the roof mounted unit have an increased risk of a building catching on fire due to embers starting a fire in the air conditioning unit.

5.3 BUSH FIRE HAZARD

In *Planning for Bush Fire Protection*, Appendix 1 details a methodology for classifying bush fire hazard levels. The methodology rates bush fire hazard using vegetation type and is also based on the underlying assumption that land in Western Australia is predominantly undulating. The methodology specifies three bush fire hazard levels “Low”, “Moderate” and “Extreme”.

This methodology has been used in this Bushfire Management Plan to determine bush fire hazard (refer Figure 4: Bush Fire Hazard Assessment). This methodology identifies that the vegetation class within the Bush Forever area is ‘Type B – Woodland’.

The assessment of fire risk takes into account existing site conditions which include:

- Topography, with particular reference to ground slopes and accessibility;
- Vegetation cover – both remnant and likely revegetation; and
- Relationship to adjoining land.

The Bush Fire Hazard Assessment identifies various bush fire hazard rating varies across the Rural Community site, ranging from “Low” to “Moderate” in the areas identified for community uses, including dwellings, and “Moderate” to “Extreme” within the areas identified as Bush and

in some of the adjoining ‘special rural’ lots. The hazard rating is “Low” for the adjoining industrial site.

The minimum distance of 100 metres (from vegetation rated ‘Moderate’ or ‘Extreme’) may be reduced in compliance with AS3959. Under AS3959 as the distance from the vegetation is reduced, the dwelling construction standard must be increased. Table 2.4.3 of AS3959 sets out this relationship and Section 2 of AS3959 details the methodology of determining the Bushfire Attack Level (BAL), which applies to any dwellings within the Rural Community zone.

Table 1 Summary of Determination of BAL using Fire Danger Index 80

Vegetation Class	Setback from Vegetation (meters)	Slope	BAL	Construction Standard AS 3959-2009	BPZ (metres)	HSZ (metres)
B	20-29	0°	19	S. 3 & 6	20	0

In order to ensure no modification to vegetation is required within the Bush Forever area as a result of any development within the Rural Community zone, a 20m Building Protection Zone is to be established within the community use area abutting the Bush Forever area which will effectively serve as a dwelling exclusion zone.

All dwellings constructed within the Rural Community zone will require an increased construction standard to a BAL 19 rating in accordance with AS3959 as a condition of development. Refer to Section 7.3.2 for further details on Building Construction requirements.

5.4 BUSH FIRE THREAT

The bush fire threat is from fires starting within the community use area, Bush Forever site and adjoining special rural estate to the north/west. Structural fires may start in industrial areas, Community Housing and house in Special Residential areas, however, with a quick fire response structural fires are unlikely to spread from one lot to another.

5.5 SUMMARY OF BUSH FIRE POTENTIAL ISSUES

The protection of future dwellings will be enhanced by the installation of Building Protection Zones. All new dwellings within rural community zone will be constructed to AS3959 BAL 19 rating which will reduce the chance of the dwelling catching on fire due to ember attack.

The City of Wanneroo Firebreak Notice is to be enforced within and on properties adjoining the subject site and to ensure that bush fire fuel loads are maintained to acceptable standards.

6.0 FIRE MITIGATION

6.1 HAZARD MANAGEMENT

Hazard Management on the lots will be controlled by:-

- Setbacks of buildings from vegetation to be managed as Building Protection Zones and driveway/firebreaks (including internal firebreaks) are to be installed and managed by the landowner.
- All dwellings are to be constructed to comply with AS 3959 to meet BAL 19 rating.
- The City of Wanneroo is to ensure fuel reduction is implemented within the subject site and on vegetated lots adjoining the site, as required.

6.2 BUSH FIRE RISK MANAGEMENT

6.2.1 Total Fire Ban Days

The Fire and Emergency Services Authority and the City of Wanneroo are to continue to educate the public on what a Total Fire Ban means and what actions do the public need to take.

6.2.2 Public Education Program

The City of Wanneroo is to continue to provide the community with advice on bush fire prevention and preparedness through brochures, newspaper articles, Firebreak Notice issued to landowners and on their website, as detailed in Section 6.5 of this Bushfire Management Plan.

6.3 FUTURE DEVELOPMENT

This Bushfire Management Plan has been prepared on the basis of the site being developed in accordance with the structure plan layout detailed in Figure 3. Any future proposed subdivision or development that results in a variation to this structure plan and would impact on the Bush Fire Risk Management will require approval from Local Government and may result in the need to review the provisions of this Bushfire Management Plan.

6.4 ACCESS AND FIREBREAKS

6.4.1 Road System

The structure plan for the development site proposes a private driveway entrance onto Sydney Road linked to a trafficable limestone firebreak within the development to separate the existing/proposed dwellings from the Bush Forever site. The internal driveway is required to be constructed by the landowner to achieve the requirements of this Bushfire Management Plan and will be constructed to the minimum private driveway standard Acceptable Solution A2.5. At the

western end of the east-west portion of the driveway connecting to Sydney Road, a turn-around area is required as set out in A2.5.

6.4.2 Internal Firebreaks

A design of the internal firebreaks within the Bush Forever site is shown in Figure 5 'Rural Community Internal Firebreaks' and is to be installed by the landowner to the City of Wanneroo standards. It is recommended that the internal firebreak between the Bush Forever and the community use areas be constructed to the Fire Service Access Route standards (Acceptable Solution A2.7). The remainder of the fire breaks are 4 metres wide and cleared vertically to a minimum of 4 metres. These firebreaks are intended to follow existing tracks within the Bush Forever area to reduce any impact on the vegetation. Boundary firebreaks are to be maintained to the City of Wanneroo requirements.

6.5 PUBLIC EDUCATION AND COMMUNITY AWARENESS.

Copies of *The Homeowners Bush Fire Survival Manual, Prepare Act and Survive*, *City of Wanneroo Fire Control notice* or other suitable documentation and the approved Fire Management Plan will be issued to the Community, along with a copy of this Bushfire Management Plan.

Other Public Safety and Community information on Bush Fires is available on the Fire and Emergency Services Authority web site www.fesa.wa.gov.au and the City of Wanneroo website www.wanneroo.wa.gov.au

6.6 FIRE SAFER AREAS

In the event of a bush fire, the Incident Controller of Fire Fighting operation will advise if an evacuation is necessary and, in conjunction with the City of Wanneroo, direct the residents to Safer Refuge Areas. These areas would have been previously identified in the current Local Emergency Management Arrangements for the City of Wanneroo.

A copy of the current Local Emergency Arrangements are available from the City of Wanneroo.

6.7 ASSESSMENT OF FIRE MANAGEMENT STRATEGIES

It will be the responsibility of the developer to implement the provisions of this Bushfire Management Plan, which will also be enforced by the City of Wanneroo through the development approval process. Likewise it is the responsibility of the City of Wanneroo to ensure that all standards required in this Bushfire Management Plan are maintained by the landowner.

After any major fires that may occur during or once this development has been completed, the City of Wanneroo may conduct a Post Incident Analysis of the fire, which may include identifying and implementing any changes that may be needed to improve the performance of fire prevention strategies.

With the hazard management provisions detailed in this Bushfire Management Plan any fires that occur in the site are not expected to devastate the community if the provisions of this Bushfire Management Plan are implemented initially by the landowner and maintained thereafter by owners, the City of Wanneroo and FESA (Section 6.8).

In the Foreword of AS3959-2009 it states that *“it should be borne in mind that the measures contained in this standard cannot guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the degree of vegetation management, the unpredictable nature and behavior of fire and extreme weather conditions.”*

6.8 IMPLEMENTATION OF THE FIRE MANAGEMENT PLAN.

This Bushfire Management Plan becomes operational through the Gngangara Rural Community Local Structure Plan and as a condition of development approval. In implementing this Bushfire Management Plan, the following responsibilities have been determined:

6.8.1 Community Responsibilities

To maintain the reduced level of risk and threat of fire, the owners/occupiers will be responsible for undertaking, complying and implementing measures protecting their own assets from the threat and risk of bush fire, as follows:

- Maintaining the property in good order to minimize potential bushfire fuels to mitigate the risk of fire on the property;
- Maintaining internal driveway system to the private driveway standards as defined in Planning for Bush Fire Protection Guidelines Acceptable Solution A2.5;
- Maintaining firebreaks within the rural community zone in accordance with Section 6.4.2;
- Ensuring that the lot complies with the City of Wanneroo Fire Control Notice;
- Maintaining a 20m Building Protection Zone in perpetuity around all proposed dwellings and as a dwelling exclusion area adjacent to the Bush Forever area;
- Ensuring that proposed dwellings are constructed to AS3959 BAL 19 rating;
- Complying with the instructions of FESA Fire Services, the City of Wanneroo and/or volunteer fire services in maintaining the property or during the event of a bushfire;
- Ensuring that in the event an evaporative air conditioner is installed in any dwelling, that suitable external ember screens are installed to roof mounted units and that comply with AS3959; and

- Supply a copy of this Bushfire Management Plan and *The Homeowners Bush Fire Survival Manual, Prepare Act Survive (or similar suitable documentation)* and the City of Wanneroo Fire Break Notice to the Community management committee.

6.8.3 City of Wanneroo

The responsibility for compliance with the law rests with individual property owners and occupiers and the following conditions are not intended to unnecessarily transfer these responsibilities to the City of Wanneroo. The City of Wanneroo shall be responsible for:

- Ensuring compliance with the current adopted AS3959 for BAL 19 increased construction standards at the time of building license approval as detailed in Section 7.3;
- Enforcing the City of Wanneroo Fire Control Notice;
- Monitoring bush fire fuel loads in the adjoining Lots and liaise with relevant landowners to maintain safe levels;
- Ensure that the Community manage the fuel loadings and firebreaks within the lot; and
- Providing fire prevention and preparedness advice to landowners upon request.

6.8.4 Fire and Emergency Services Authority.

The Fire and Emergency Services Authority shall be responsible for:

- Developing and Maintaining District Fire Fighting Facilities under its control.

7.0 APPENDICES

7.1 MAPS AND FIGURES

Figure 1: Location Plan

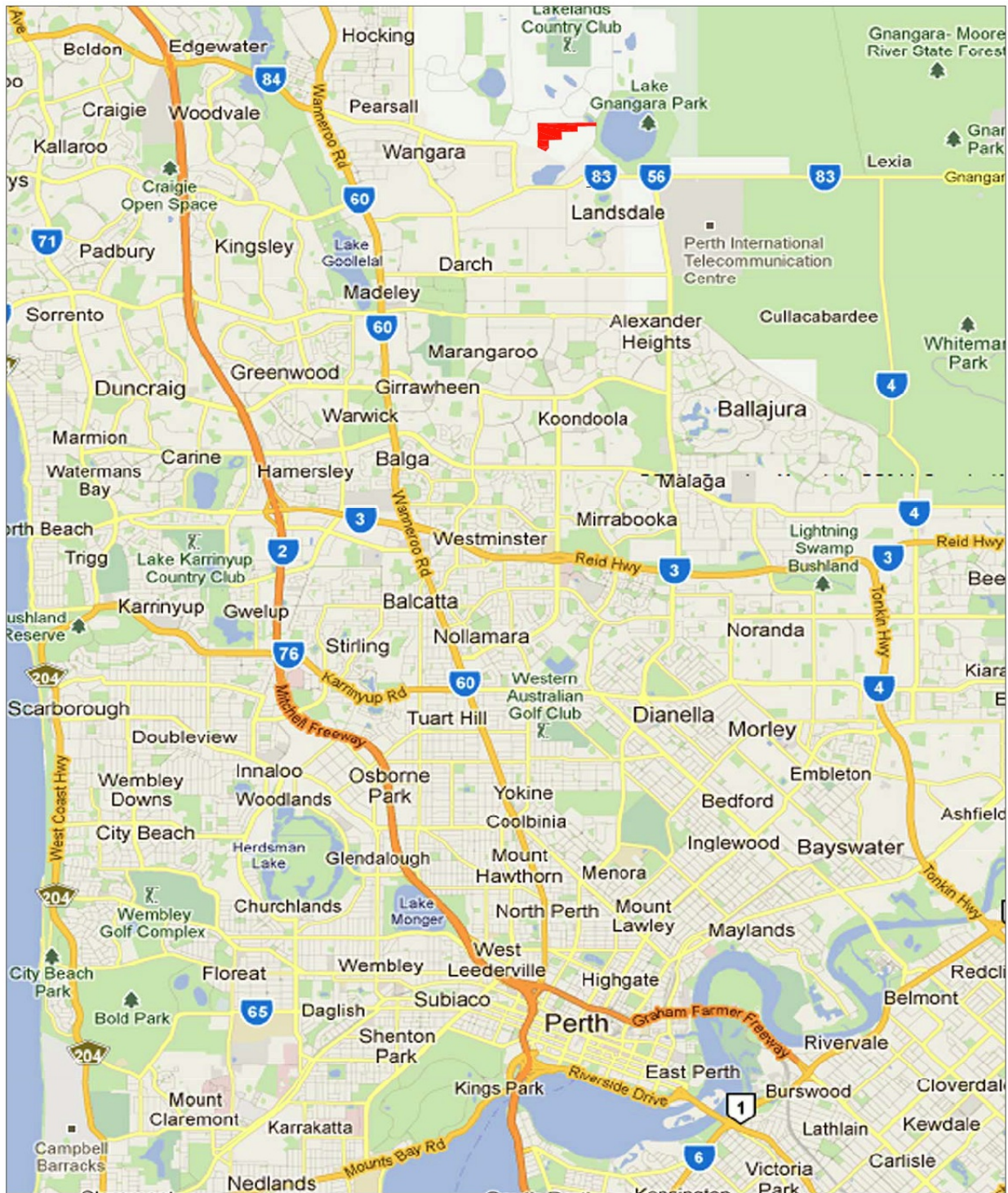
Figure 2: Rezoning Area

Figure 3: Gngangara Rural Community – Proposed Structure Plan

Figure 4: Bush Fire Hazard Assessment

Figure 5: Rural Community Internal Firebreaks

Figure 1: Location Plan



SITE LOCATION



Lot 6 and portion Lot 10 and 50, Sydney Road, Gngangara
City of Wanneroo

REGULATED AREA SUBJECT TO APPROVAL. COMPASSIONATE QUARANTINE ONLY. ALL AREAS ARE CONSIDERED AS APPROXIMATE ONLY AND ARE SUBJECT TO FURTHER SURVEY INFORMATION AND OTHER DATA.

date 17/02/11 | scale at A4 | ref. LSA CO#01 Bufal | revised 26/2/11



www.masterplanwa.com

Figure 2: Rezoning Area

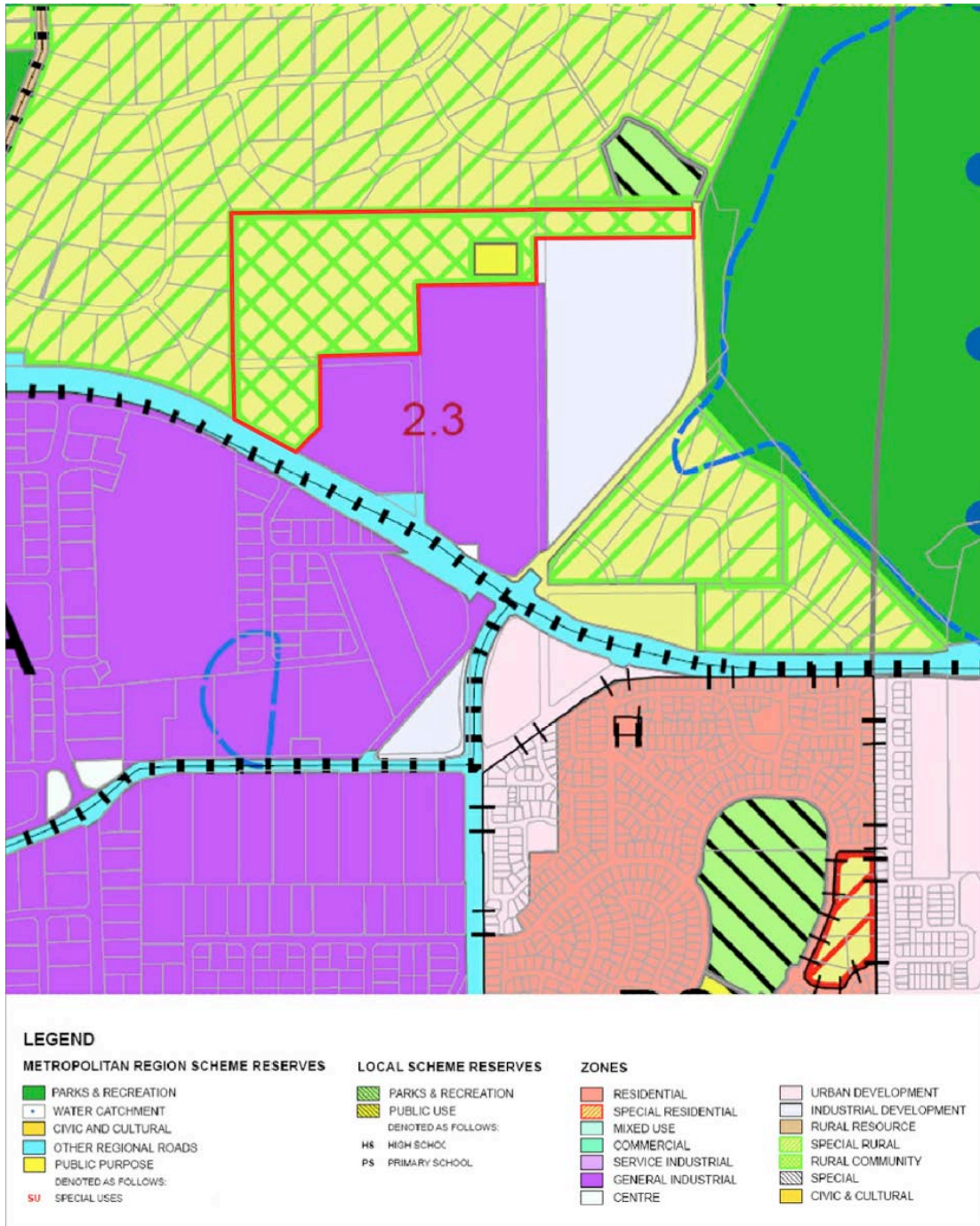


Figure 3: Gngangara Rural Community – Proposed Structure Plan.

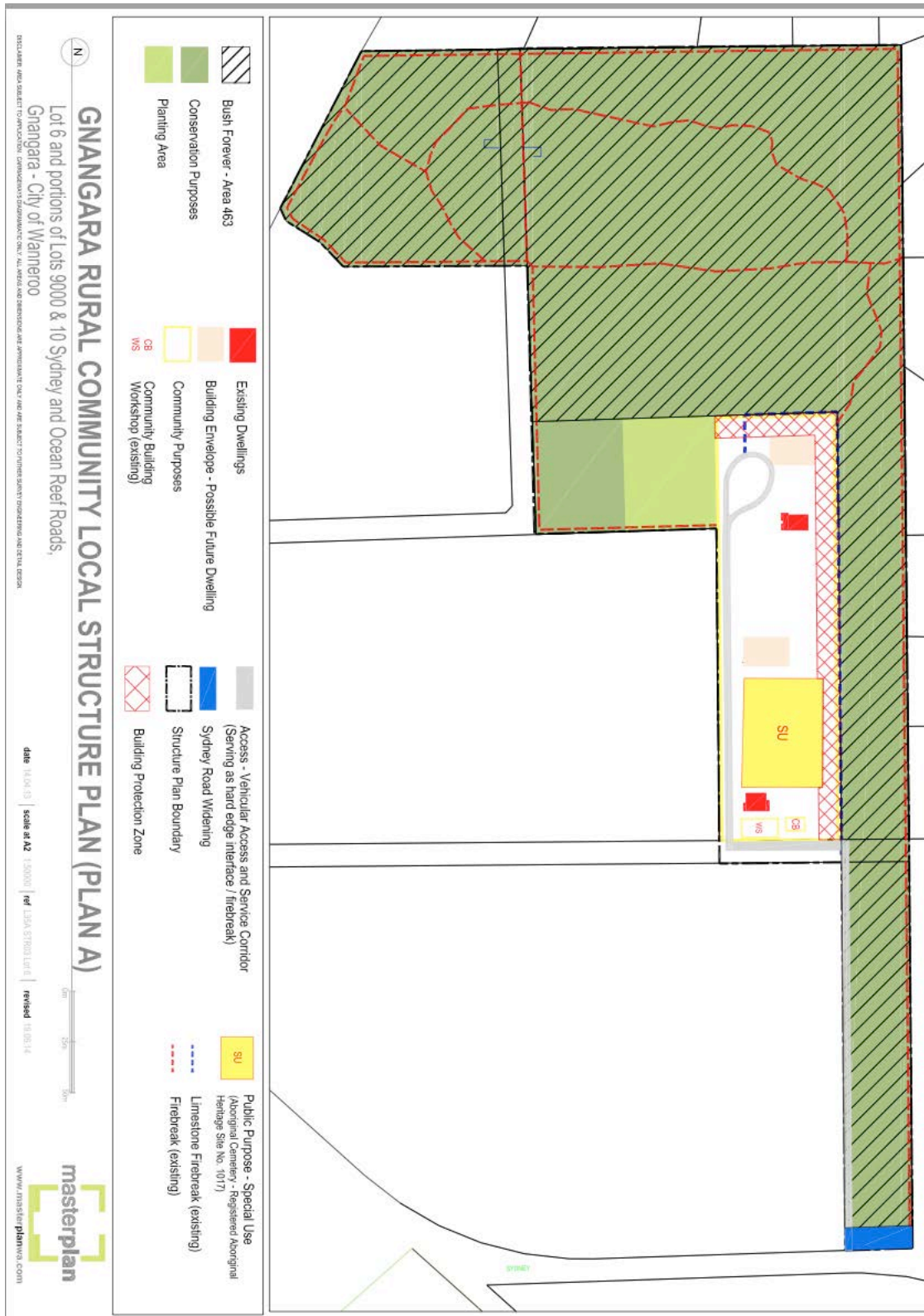


Figure 4: Bush Fire Hazard Assessment



Figure 5: Rural Community Internal Firebreaks.



7.2 WORKS PROGRAM

The management actions identified in this Bushfire Management Plan are to be implemented by the landowner to support the occupations of dwellings on the site and will also be required as a condition of development/building licence approval. Landowners will be responsible for the annual maintenance required in the City of Wanneroo Firebreak Notice.

7.3 GUIDELINES SPECIFICATIONS AND MINIMUM STANDARDS

The following section outlines the required specifications and minimum development standards that are required under this Bushfire Management Plan.

7.3.1 Building Protection Zone

The aim of the Building Protection Zones (BPZ) is to reduce bush fire intensity close to dwellings, and to minimise the likelihood of flame contact with buildings.

The Building Protection Zone is a low fuel area immediately surrounding a dwelling complying with *Planning for Bush Fire Protection* Acceptable Solution A4.3.

A 20 metre Building Protection Zone is to apply around proposed dwellings and must fulfil the following conditions:

- Bush fire fuels must be maintained at or below 2 tonnes per hectare and dry grass must be maintained below a height of 50mm;
- All leaves, twigs, logs, branches must be removed from within the building protection zone. Annual falls of leaf litter must be raked up and removed or burnt;
- The first 5m at the front of the building is to be cleared of all flammable material. Reticulated gardens may be located in this zone;
- The spacing of tree trunks should be 15-20 metres apart to provide for a separation of 10 metres between crowns when trees mature;
- Trees are to be progressively low pruned at least to a height of 2 metres;
- No tall shrubs or trees are to be planted within 2 metres of a building including windows;
- There are no tree crowns over hanging the building;
- Branches, must be removed at least 2 metres back from the eaves of all buildings;
- Shrubs within the Building Protection Zone have no dead material within the plant;
- Trees in the Building Protection Zone have no dead material within the plant's crown or on the bole (tree trunk);
- Fences within the Building Protection Zone are to be constructed using non combustible materials (e.g. colour bond iron, brick, limestone);

- The Building Protection Zone along the Bush Forever interface is to function as a dwelling exclusion zone to ensure vegetation modification within the Bush Forever area will not be required. The trafficable firebreak is to be maintained as part of the Building Protection Zone.

7.3.2 Building Construction

Individual Buildings on designated lots shall be designed and built to conform with:

- The Building Code of Australia; and
- AS 3959 *Construction of Buildings in a Bushfire Prone Area*;

The minimum distance of 100 metres (from vegetation rated ‘Moderate’ or ‘Extreme’) may be reduced in compliance with AS3959. Under AS3959 as the distance from the vegetation is reduced, the construction standard must be increased. Table 2.4.3 AS 3959 sets out this relationship and Section 2 of AS 3959 details the methodology of determining the Bushfire Attack Level (BAL).

A 20m wide Building Protection Zone is proposed to separate the Dwellings from the Bush Forever Site.

BAL (Bushfire Attack Level) determination using methodology from Section 2.2.1 of current adopted AS 3959- 2009 and Table 2.4.3 which applies to proposed dwellings is summarised as follows:

Table 1 Summary of Determination of BAL using Fire Danger Index 80

Vegetation Class	Setback from Vegetation (meters)	Slope	BAL	Construction Standard AS 3959-2009	BPZ (metres)	HSZ (metres)
B	20-29	0° - 5°	19	S. 3 & 6	20	0

All dwellings have been identified as requiring an increased construction standard in accordance with AS3959 this will be a statutory planning provision incorporated within the Gngangara Rural Community structure plan. Compliance with these construction standards will be a condition of development approval and assessed at the time of Building License by the City of Wanneroo.

As a result of ember attack, evaporative air conditioners can be the cause of a fire starting in a building. It is a requirement that the roof unit of an evaporative air conditioner is enclosed in a suitable external ember protection screen. More information is available at www.fesa.wa.gov.au and in AS3959.

7.4 GLOSSARY

Acceptable Solution

A statement describing an acceptable means of complying with the requirements of corresponding performance criteria.

Appliance or Fire Appliance

A fire fighting appliance (vehicle) with structural, grass and bush fire fighting capabilities, with either a 2000 litres water capacity (2.4 appliance) or a 3000 litre water capacity (3.4 appliance) and four (4) wheel drive.

BAL – (abb) Bushfire Attack Level.

Bushfire Attack Level – an assessed rating of a site’s risk to a bushfire, based on vegetation type, slope of the land and its proximity to buildings.

Building Protection Zone (BPZ)

Low fuel area immediately surrounding buildings. Minimum width 20 metres, increasing with slope. Maintained by the landowner.

Bush

Under the Bush Fires Act 1954 the term bush is defined to include trees, bushes, plants, stubble, scrub and undergrowth of a kind whatsoever whether dead or alive and whether standing or not standing.

Bush Fire or Wildfire

A general term used to describe fire in vegetation that is not under control.

Bush Fire Hazard.

The flammability, arrangement and quantity of vegetation, dead or alive, that can be burnt in a bush fire. Development is to be avoided in extreme bush fire hazard designated areas.

Bushfire Management Plan

Ongoing, dynamic document that sets out the medium to long term mitigation strategies for fire hazards and risks in particular developments within local government areas.

Bush fire prone area - for the purposes of this fire management plan, a bush fire prone area is an area that has been declared as such by the relevant local government responsible for an area. Once an area is declared bush fire prone, then AS3959 applies to new residential development in it.

Bush Fire Risk

The chance of a bush fire starting that will have harmful consequences on life and property. It is measured in terms of consequences and likelihood and arises from the interaction of hazards, communities and the environment.

Development Application

An application for approval to carry out a development under either a local planning scheme or regional planning scheme.

Dwelling setback – the horizontal distance between a wall of the dwelling at any point, and an adjacent lot boundary, measured at right angles (90 degrees) to the boundary.

FESA

The Fire and Emergency Services Authority of Western Australia.

Fire Break or Firebreak

Any natural or constructed discontinuity in a fuel bed used to segregate, stop and control the spread of a bush fire or to provide a fire line from which to suppress a bush fire. This is an area cleared to reduce the risk of bush fire damage.

FDI- Fire Danger Index

The chance of a fire starting, its rate of spread, its intensity and the difficulty of its suppression, according to various combinations of air temperature, relative humidity, wind speed and both the long and short- term drought effects.

Fire Protection

A generic term used to describe the range of services and systems used to mitigate the impact of fire on the community. It encompasses both fire prevention and emergency response.

Fire Services Access Route

Accessible by heavy four wheel drive fire fighting vehicles.

Fuel Reduction also Hazard Reduction

Removal and modification of bush fire fuel, or increase in building construction standards or a combination of the two.

Performance Criteria.

Statement which specifies the outcomes required for the protection of life and property from bush fires.

Structural Fire

A fire in a building.

8.0 FIRE MANAGEMENT PLAN COMPLIANCE CHECKLIST FOR PERFORMANCE CRITERIA AND ACCEPTABLE SOLUTIONS

PROPERTY DETAILS: Lot 6 and portion of Lots 10 and 50 Sydney Road

Gnangara

Local Government: City of Wanneroo

Element 1: Location

Does the proposal comply with the performance criteria by applying acceptable solution A1.1?

Yes No

Increased building construction and appropriate BPZ

Element 2: Vehicular Access

Does the proposal comply with the performance criteria by applying acceptable solution A2.1?

Yes No

Ring Road within community housing area provides alternative points of egress

Does the proposal comply with performance criteria by applying acceptable solution A2.2?

Yes No

N/A (refer A2.5)

Does the proposal comply with the performance criteria by applying acceptable solution A2.3?

Yes No

N/A

Does the proposal comply with the performance criteria by applying acceptable solution A2.4?

Yes No

N/A

Does the proposal comply with the performance criteria by applying acceptable solution A2.5?

Yes No

All access with Community Housing to comply with A2.5.
Linked to limestone firebreak

Does the proposal comply with the performance criteria by applying acceptable solution A2.6?

Yes No

N/A

Does the proposal comply with the performance criteria by applying acceptable solution A2.7?

Yes No

N/A

Does the proposal comply with the performance criteria by applying acceptable solution A2.8?

Yes No

N/A

Does the proposal comply with the performance criteria by applying acceptable solution A2.9?

Yes No

Complying with City of Wanneroo Fire Control notice.

Does the proposal comply with the performance criteria by applying acceptable solution A2.10?

Yes No

N/A

Element 3: Water

Does the proposal comply with the performance criteria by applying acceptable solution A3.1?

Yes No

Development will have reticulated water, fire hydrants accessible in adjacent development

Does the proposal comply with the performance criteria by applying acceptable solution A3.2?

Yes No

N/A

Does the proposal comply with the performance criteria by applying acceptable solution A3.3?

Yes No

N/A

Element 4: Siting of Development

Does the proposal comply with the performance criteria by applying acceptable solution A4.1?

Yes No

BPZ and increased dwelling construction

Does the proposal comply with the performance criteria by applying acceptable solution A4.2?

Yes No

N/A

Does the proposal comply with the performance criteria by applying acceptable solution A4.3?

Yes No

Does the proposal comply with the performance criteria by applying acceptable solution A4.4?

Yes No

N/A

Does the proposal comply with the performance criteria by applying acceptable solution A4.5?

Yes No

N/A

Element 5: Design of Development

Does the proposal comply with the performance criteria by applying acceptable solution A5.1?

Yes No

The development uses acceptable solutions as appropriate to meet the requirements under performance criterion P5.

Does the proposal comply with the performance criteria by applying acceptable solution A5.2?

Yes No

Applicant Declaration:

I declare that the information provided is true and correct to the best of my knowledge.

Name of Person Preparing the Fire Management Plan:

Full Name: *B.W. Harris* for FirePlan WA

Date: 13/9/2011

9.0 FUEL ASSESSMENT AND HAZARD REDUCTION PROGRAM



FirePlan WA

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Email

firepla@bigpond.net.au

ABN 44 116 937 762

9th May 2013

Linc Property Group
Suite 23/ Level 2 22 Railway Parade
Subiaco WA 6008

Attention: Steve Robertson.

Fuel Assessment and proposed Hazard Reduction Burning Program Gnangara and Sydney Roads Gnangara

Dear Steve,

On the 1st March 2013 I carried out a Fuel assessment of the proposed Bush Forever Site on Lots 6 and 50 Ocean Reef Road and Lot 10 Sydney Road Gnangara.

Fuel Loads

The method of fuel sampling used to calculate fuels loads was based on a 1 m representative fuel load sample of the Site. A one metre square was placed over an area of vegetation that is representative of the vegetation within the sample site. All vegetation from within the sample plot square that is less than 10mm in diameter is removed oven dried to determine the dry weight of the sample. The dried weight of the vegetation is then calculated to tonnes per hectare (t/ha)

Each sample site was selected to be representative of the site. Samples 1, 2 and 3 are located on the upper slopes and Sites 3 and 4 located on the mid to lower slopes.

Sample	Net Weight (g)	Tonnes per Hectare (t/ha)	Vegetation
1	1250	12.5	Banksia , Sheoak & Jarrah aerated scrub (400mm)
2	478	4.78	Banksia, Sheoak aerated scrub (400mm)
3	812	8.12	Banksia, Sheoak, scattered Jarrah trees & aerated scrub (400mm)
4	584	5.48	Banksia, Sheoak, Scattered Jarrah trees, grass trees & aerated scrub (400mm)
5	554	5.54	Banksia, Sheoak (denser than other sites) grass trees & aerated scrub (350mm)

Photographs of each site are shown in Attachment 3.

The Fuel Loads for each compartment within the site are shown in Figure 1.

Hazard Reduction Burning.

Due to the Fuel Loads within the site, the closeness of dwellings in adjoining Lots to the north and west of the site, the proposed dwelling construction in the north eastern portion of the Site and following discussions with the City of Wanneroo and the Department of Fire and Emergency Services hazard reduction burning within the site is required.

A fuel reduction burning program was prepared in consultation with the City of Wanneroo Fire Officers and is attached as Figure 2.

Also discussed with the City of Wanneroo was the involvement of the City of Wanneroo Bush Fire Brigade in carrying out the hazard reduction burns within the site. It is intended that Year 1 areas would be burnt in winter/spring 2013 and Year 2 areas burnt in winter/spring of 2014.

Yours faithfully



B W HARRIS

Attachments: Figure 1 Fuel Load Assessments
Figure 2 Hazard Reduction Program
Photographs of each fuel Sample site.



Figure 1 : Fuel Hazard Assessment Sites and Calculated Fuel Loads by Area

Lots 6 and 50 Ocean Reef Road and 10 Sydney Road, Gnangara City of Wanneroo



N

0m 50m 100m

DECLARATION: AREA SUBJECT TO APPLICATION. CORRIDORWAYS OR GRAPHIC ONLY. ALL AREAS AND DIMENSIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO FURTHER SURVEY ENGINEERING AND DETAIL DESIGN.

date 29.03.13 | scale at A3 1:5000 | ref Bushy Forester | revised 08.03.13

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Figure 2 : Proposed Controlled Fuel Reduction Burn Program

Lots 6 and 50 Ocean Reef Road and 10 Sydney Road, Gngalara
City of Wanneroo

0m 50m 100m



DISCLAIMER: AREA SUBJECT TO APPLICATION. CARRIAGEWAYS DIAGRAMATIC ONLY. ALL AREAS AND DIMENSIONS ARE APPROXIMATE ONLY AND ARE SUBJECT TO FURTHER SURVEY ENGINEERING AND DETAIL DESIGN.

date 25.03.13 | scale at A3 1:5000 | ref Burn Program | revised 14.04.13

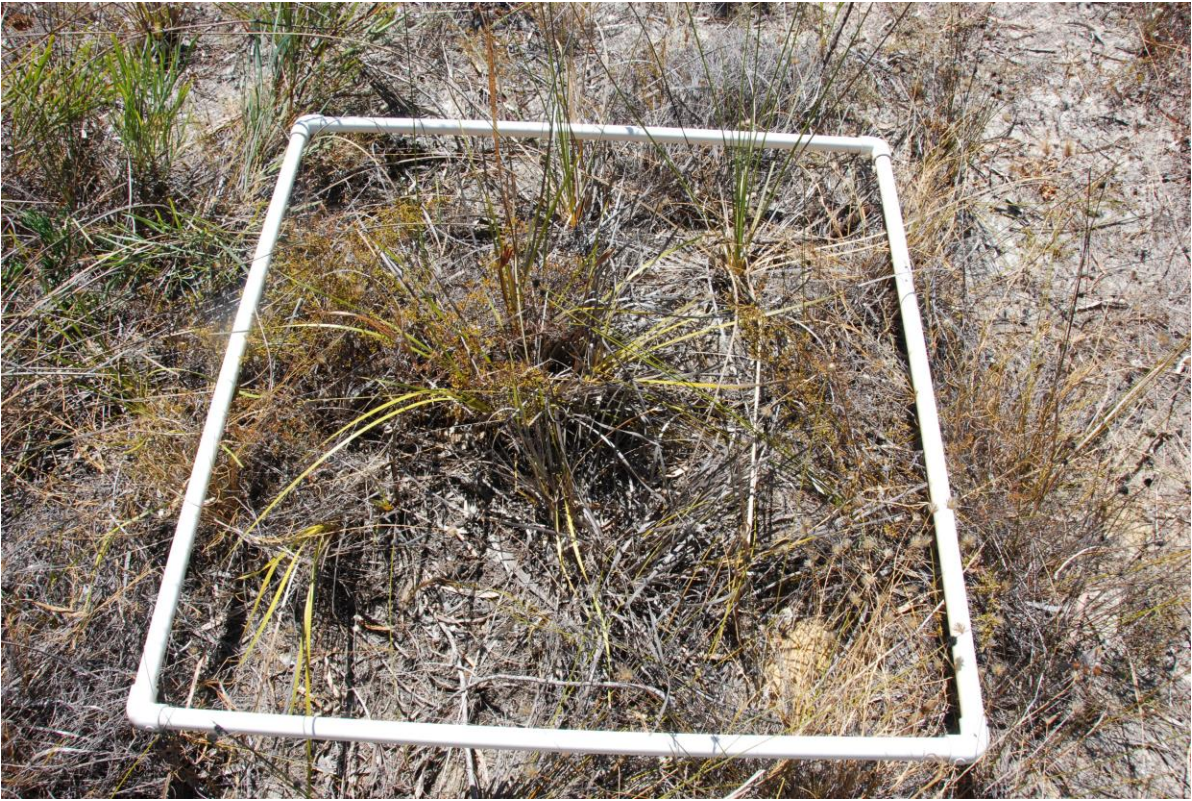
www.masterplanwa.com

Photographs of Fuel Sampling sites taken by FirePlan WA

Sample 1



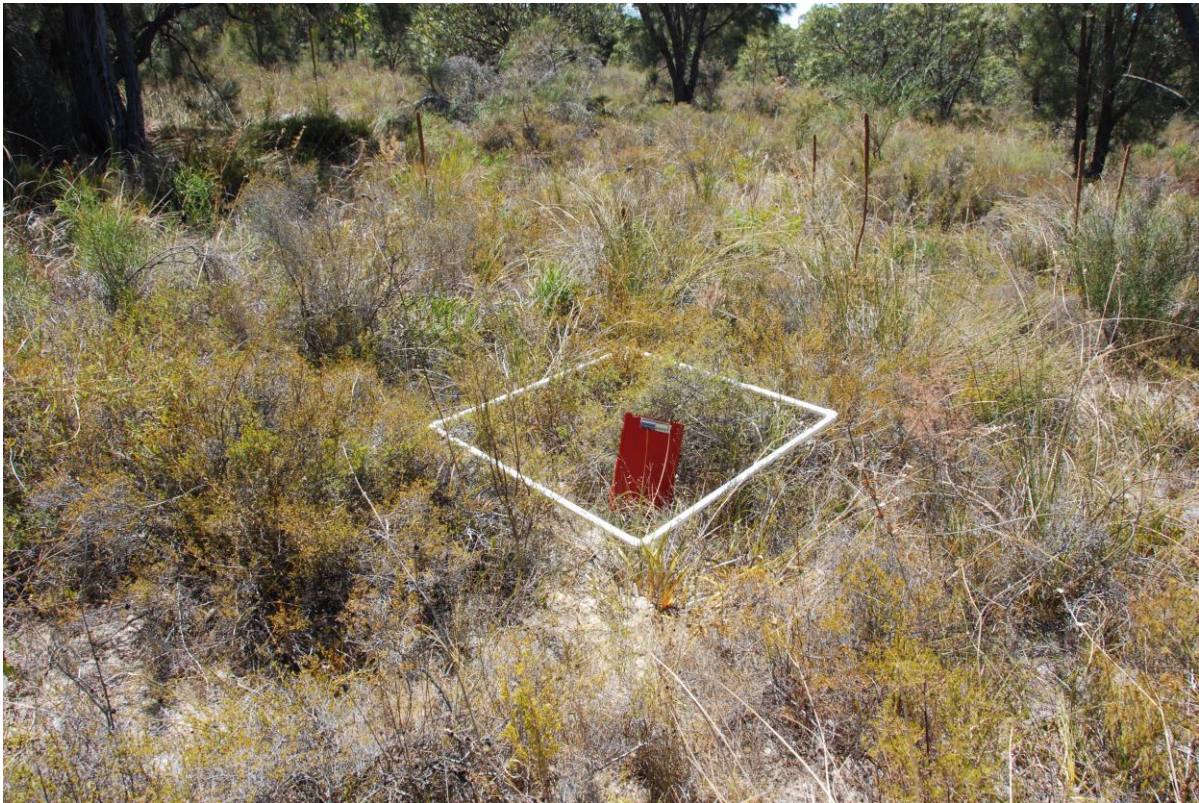
Sample 2



Sample 3



Sample 4



Sample 5

