

Bushfire Hazard Assessment Report

Proposed:
Subdivision

At:
**44, 61 & 67 Marana Road,
Springfield**

Reference Number: 120973

Prepared For:
Highlight Consulting

4th October 2012



Prepared By:
**Building Code & Bushfire
Hazard Solutions Pty Limited**

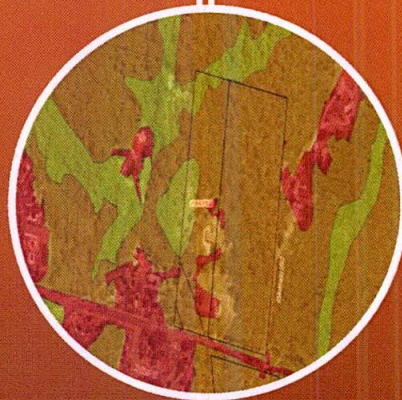
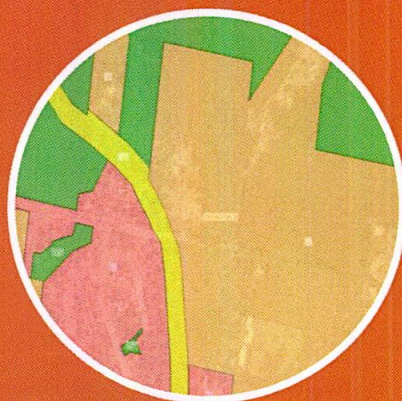
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Bushfire Planning & Design
BPD-BA-02354



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List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 – 2009 as amended.
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
Council	Gosford City Council
DA	Development Application
EP&A Act	<i>Environmental Planning and Assessment Act - 1979</i>
ESD	Ecologically Sustainable Development
FRNSW	Fire and Rescue NSW
IPA	Inner Protection Area
OPA	Outer Protection Area
PBP	<i>Planning for Bush Fire Protection – 2006</i>
ROW	Right of Way
RF Act	<i>Rural Fires Act - 1997</i>
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SWS	Static Water Supply

1.0 Introduction

The subject site consists of three (3) existing allotment known as:

Lot 140 DP 1069040 HN 44 Marana Road Springfield
Lot 3912 DP 1143985 HN 61 Marana Road Springfield
Lot 416 DP 755227 HN 67 Marana Road Springfield

An existing residential dwelling is located within Lots 3912 and 416, and Lot 140 had development approval (lapsed) for a sole occupancy residence located within the southern portion of the property, with approved access (ROW 4 metres wide) to Carrabella Avenue to the south.

The planning proposal relates to the future subdivision of the three (3) allotments to create a total of 11 allotments (eight (8) new lots and three (3) residual lots suitable for residential use. The subject site is located on both sides of Marana Road and is in a residential area comprising of a mix of small and large lot properties. A reserve adjoins the sites western and northern boundaries and an unformed road reserve (approx. width 40 metres) adjoins the western boundary of Lot 140 and bisects the southwest corner of Lot 3912.

The vegetation identified as being a potential bushfire hazard is located west within the unformed and only partly managed road reserve and to the northwest, north and east within the subject site and neighbouring large lot residential properties.

Gosford City Council's Bushfire Prone Land Map identifies that the subject site as being bushfire prone land and therefore the application of *Planning for Bush Fire Protection* 2006 (PBP) is required.

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide an independent bushfire hazard determination together of the subject site and surrounding area and to determine if the planning proposal and subsequently the future development applications will comply with the requirements of Planning for Bushfire Protection 2006.

3.0 Scope of this Report

The scope of this report is limited to providing a bushfire hazard assessment and recommendations for the subject site. Where reference has been made to the surrounding lands, this report does not purport to directly assess those lands; rather it may discuss bushfire impact and/or progression through those lands and possible bushfire impact to the subject site.

Where Council considers a bushfire risk is associated with surrounding private lands or lands owned by an authority, Council could seek to issue notice under Section 66 of the *Rural Fires Act* on any or all surrounding properties for the purposes of reducing and maintaining safe levels of vegetation and thus reducing the possibility of bushfire impact to existing assets within the subject site and any adjoining properties.

4.0 Referenced Documents and Persons

Comments provided are based on the requirements of the NSW *Environmental Planning and Assessment Act* 1979 (EP&A Act), the *Rural Fires Act* 1997, the Rural Fires Regulation 2008, the RFS document known as '*Planning for Bush Fire Protection* 2006' for the purposes of bushfire hazard determination and Australian Standard 3959 2009 titled 'Construction of buildings in bushfire-prone areas' as amended for building/structural provisions.

A company representative has made an inspection of the site and the surrounding area. The proposed subdivision plan Ref 12G1326-01 Rev A Sheet 1 has been relied upon for this report.

5.0 Site Zones

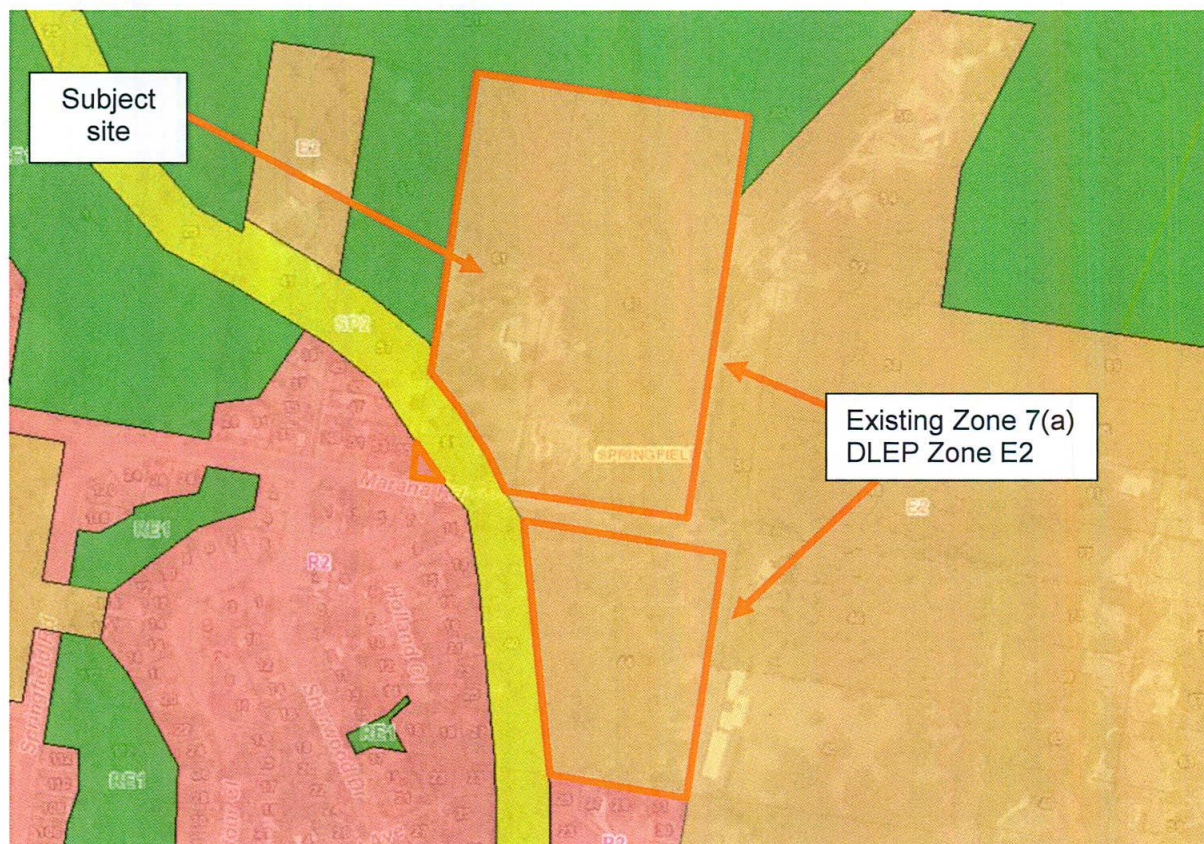


Image 01: Zone plan extract from Gosford City Council Mapping database

6.0 Aerial view of the subject allotment



Image 02: Aerial view of the subject area, extract from Gosford City Council Mapping database.

7.0 Bushfire Hazard Assessment

7.01 Preface

Properties considered to be affected by possible bushfire impact are determined from the local Bushfire Prone Land Map as prepared by Council and or the Rural Fire Service. All property development within affected areas is subject to the conditions detailed in the document '*Planning for Bush Fire Protection 2006*' (PBP). Set back distances for the purpose of creating Asset Protection Zones (APZ's) must be applied and any buildings must then conform to corresponding regulations detailed in Australian Standard 3959 'Construction of buildings in bushfire prone areas' 2009.

Planning for Bush Fire Protection 2006, (PBP) formally adopted on the 1st March 2007 and amended May 2010 (Appendix 3) provides for the protection of property and life (including fire-fighters and emergency service personnel) from bushfire impact.

The thrust of the document is to ensure that developers of new properties or sub-divisions include the constraints associated with the construction of buildings in bushfire prone areas within their proposed development sites. PBP is applicable to proposed development inside determined Category 1 or 2 areas and also inside a buffer zone radius of 100m from a Category 1 bushfire area or 30m from a Category 2 bushfire area.

The document also acknowledges 'infill' developments associated with re-development of existing properties and allows some higher levels of building safety where the increased 'set backs' (APZ's) may not be achievable.

The future development applications will relate to the subdivision of existing allotments for residential purposes. To accord with PBP the subdivision is classified as integrated development and future applications will be assessed under section 100B of the *Rural Fires Act 1997* and a Bushfire Safety Authority will be required from the Commissioner of the NSW Rural Fire Service.

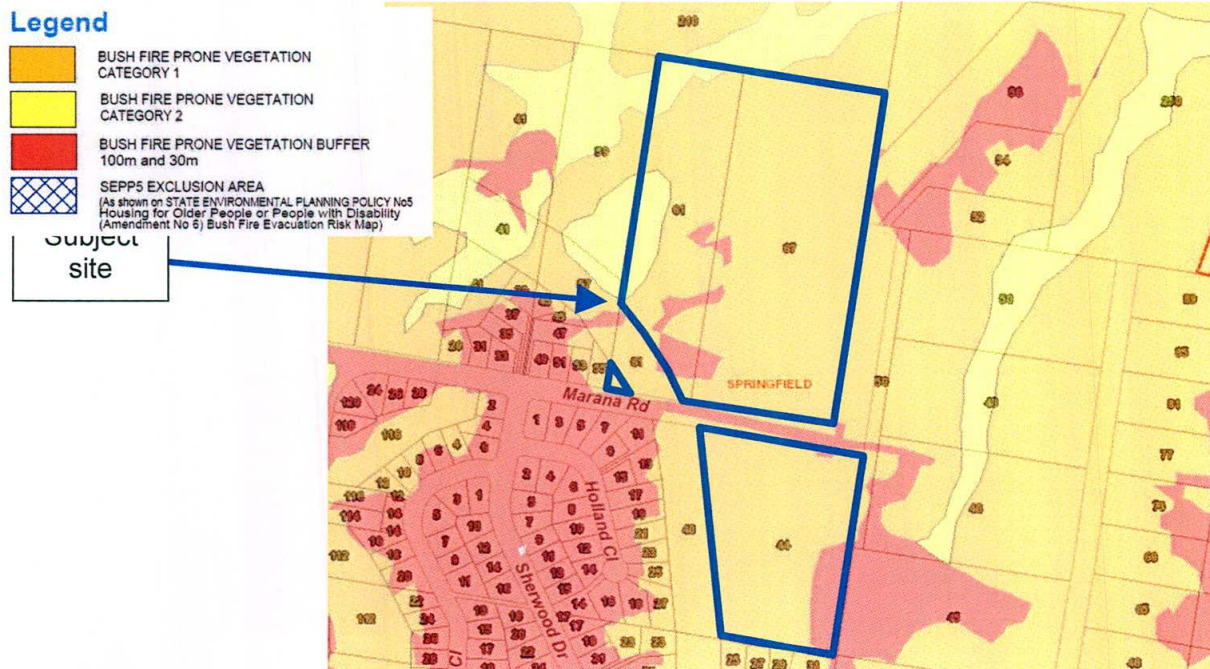


Image 02: Extract from Gosford City Council's Bushfire Prone Land Map

7.02 Location

The subject site is located on both sides of Marana Road and is in a residential area comprising of a mix of small and large lot properties. On the northern side of Marana Road a reserve adjoins the sites western and northern boundaries and an unformed road reserve (approx. width 40 metres) adjoins the western boundary of Lot 140 and bisects the southwest corner of Lot 3912.

The vegetation identified as being a potential bushfire hazard is located west within the unformed and only partly managed road reserve and to the northwest, north and east within the subject site and neighbouring large lot residential properties.



Photograph 01: View west along Marana Road taken south of HN 61 & 67

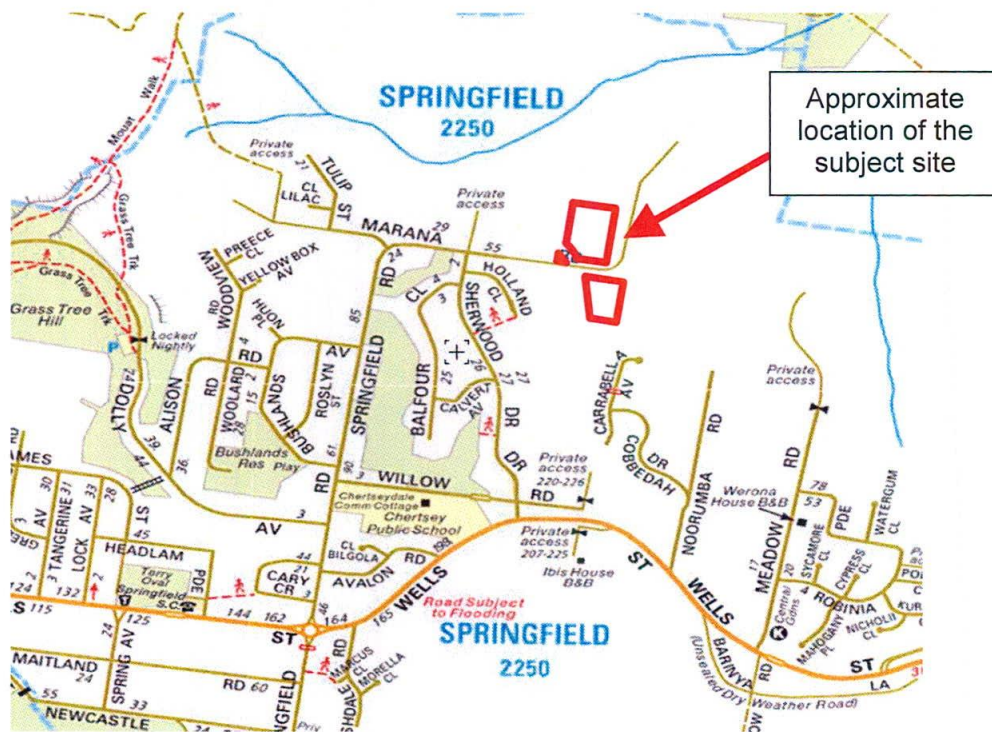


Image 03: Extract from street-directory.com.au

7.03 Vegetation

Lot 140 on the southern side of Marana Road is currently vacant and the vegetation onsite consists of maintained and slashed grasses below an over storey of mature trees comprising of Blackbutt, Ironbark, Sydney Red Gum, Rough-barked Apple and Turpentine trees. There is a lack of a shrubby understorey over the whole site.

Small lot residential development adjoins the sites southern boundary and a well-managed large rural residential allotment adjoins the eastern side. Forest is present north and northeast of Lot 140 within Lot 416 and within a neighbouring private rural allotment northeast of Marana Road (Lot 2 section 3 DP 977284).

A vegetated reserve (residual road reserve approx. 40 metres wide and not formed) forms the sites entire eastern boundary). The road reserve is only partly managed along the western side and contains an overstorey canopy above weeds and shrubs. This vegetation does not provide a greater than 50 metre fire path towards the site and this area will be treated as a remnant hazard under the terms of section A2.3 (a) of PBP 2006. To the northeast and east of Lot 140 is forest present within private allotments. This vegetation was found to be located between 20 and greater than 70 metres from the subject site.

Lot 3912 on the northern side of Marana Road contains well maintained land around the existing dwelling and retained native vegetation within the northern portion of the site. The retained vegetation is reported as being a remnant of Coastal Moist Narrabeen Forest and also being within a "Rainforest Gully" on or near the northern boundary of the site. The northern portion of the site will be assessed as a forest hazard which was determined by site inspection to be the highest hazard to this aspect. As part of the proposed future development the land will continue to be managed to the existing tree line and a small weedy depression within the southern portion of the site will require to be managed (understorey removal of all weeds and other vegetation as necessary to achieve a 20% or less shrub layer).

The road reserve is currently well maintained however allowances have been included for this area to be revegetated and, as again it provides a less than 50 metre fire path towards the subject site will be treated as a remnant hazard.

Lot 416 is bordered by Marana Road for the entire northern and part of the eastern boundary. Marana Road is well maintained land around the existing dwelling and retained native vegetation within the northern and eastern portion of the site. As part of the future proposed development it is assumed that the land will continue to be managed to the existing tree line to the north and no new additional clearing will occur on the upslopes within the eastern portion of the site. The retained vegetation is reported as being a remnant of Coastal Narrabeen Shrub Forest and being within a "Rainforest Gully" on or near the northern boundary of the site. The northern and eastern portion of the site will be assessed as a forest hazard which was determined by site inspection to be the highest hazard to this aspect.

Existing dwellings



Adjoining reserve

Photograph 02: View into the road reserve from within Lot 140

Forest



Photograph 03: View north from within the southern portion of Lot 3912

Forest



Maintained grounds

Photograph 04: View east of the native vegetation within the eastern portion of Lot 416

7.04 Slope and Topography

The slope that would most significantly affect bushfire behaviour within the hazard must be assessed for at least 100 metres from the available building footprints to determine the required Asset Protection Zones. The slope that would most significantly influence bushfire behaviour was determined onsite and verified from topographic mapping to be:

- 6 degrees downslope within the hazard west of Lot 3912
- 3 degrees downslope within the hazard in the northern portion of Lot 3912
- 5 degrees downslope within the road reserve traversing Lot 3912
- 0 degrees across slope within the hazard in the northern portion of Lot 416
- 10 degrees upslope within the hazard in the eastern portion of Lot 416
- 10 degrees downslope (to the south and north) within the road reserve west of Lot 140
- 0 degrees or upslope within the hazard northeast and east of Lot 140

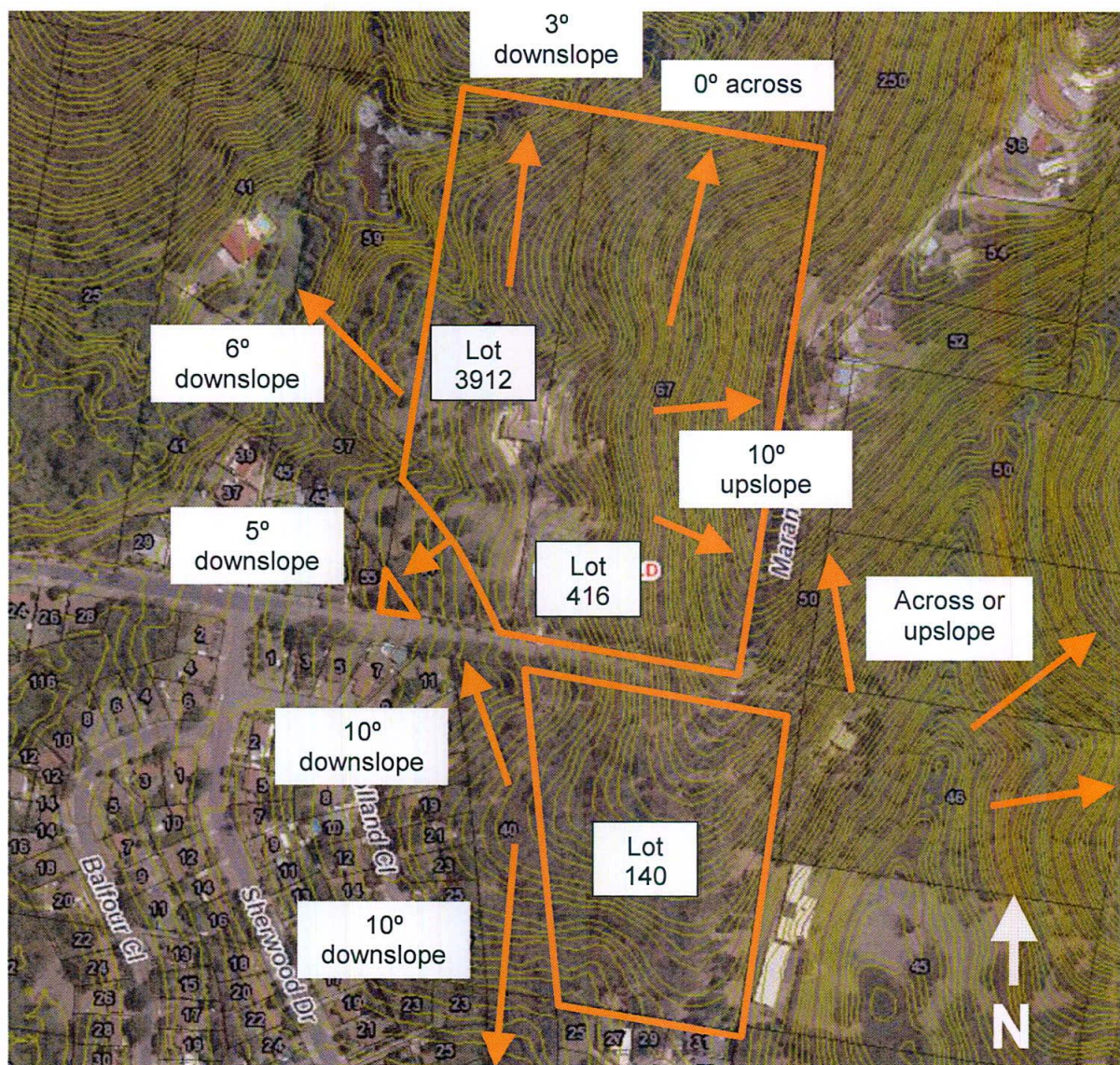


Image 04: Extract from Gosford City Council Mapping database

7.05 Asset Protection Zones

Asset Protection Zones for residential development are determined from Table A2.4 of PBP or bushfire design modelling achieving a radiant heat impact of no more than 29 kW/m². The required APZ's were determined to be;

- 28 metres from the hazard west of Lot 3912
- 24 metres from within the hazard in the northern portion of Lot 3912
- 10 metres from the potential hazard within the road reserve traversing Lot 3912
- 20 metres from the hazard in the northern portion of Lot 416
- 15 metres from the hazard in the eastern portion of Lot 416
- 15 metres from the road reserve west of Lot 140
- 20 metres from the hazard northeast and east of Lot 140

These minimum APZ's are shown on Attachment 01 to this report. The APZ to the northeast of Lot 140 is available using land external that is considered "equivalent to an APZ" being the maintained and formed area of the ROW to the neighbouring allotments. Therefore there is no minimum setback required within Lot 140 from this hazard.

Within the APZ's roads, swimming pools, play areas, and non habitable structures such as detached garages and work sheds are permitted.

All grounds within the area shown as 'development area' and the APZ's will be maintained in accordance with the requirements for an Inner Protection Area as described in the NSW Rural Fire Service's document 'Standards for Asset Protection Zones'.

The planning proposal relates to the future subdivision of the three (3) allotments to create a total of 11 allotments (eight (8) new lots and three (3) residual lots suitable for residential use). The site can achieve this density and provide complying setbacks and as such the proposed subdivision plan Ref 12G1326-01 (Attachment 02 to this report) shows footprints achieving compliance with PBP 2006.

7.06 Fire Fighting Water Supply

Hydrants are located throughout Marana Road and surrounding streets for the replenishment of attending fire services. With the exclusion of proposed Lot 125 and 4162 (Lot 4161 retains the existing dwelling) the most distant external point of the building footprints will be greater than 70 metres from a hydrant and therefore either the extension of the hydrant network or a Static Water Supply (SWS) of 10,000 litres (for Lots 1401, 1402, 1403, 1404, 122, 123, 124 & 125 which are 1,000 – 10,000 m²) and 20,000 litres (for Lot 121, & 4161 which are 10,000 m²) will be required to be provided with these allotments.

A water supply is required within the allotment containing the existing dwelling (proposed Lot 121) at the time of registration of the linen plan for subdivision however is not required to be provided within the vacant new allotments until construction of the future dwellings. The required static water supply can be a swimming pool provided suitable access is available. A assessment of the existing SWS within Lot 121 as it is at the time of the future development application for subdivision and recommendations of any upgrade necessary will be provided at future development application stage.

The proposed future subdivision has the capability of complying with the requirements of PBP 2006.

7.07 Property Access – Fire Services & Evacuation

The subject site has street access from Marana Road. With the exclusion of proposed Lot 125 the most distant external point of the available building footprints within the proposed new allotments will be located greater than 70 metres from Marana Road.

The proposed access drive into Lot 3912 will provide access to more than three dwellings (including the new rear Lot excised from Lot 416) and will comply need to with the Public Road requirements as detailed in section 4.1.3 (1) of PBP 2006 for non perimeter roads inclusive of a 6.5 metre width to allow for two way traffic. Turning provisions are available at the northern end of proposed Lot 124 where the driveway splits to provide access to proposed Lot 4161 as well and the Public Road provisions (6.5 metre trafficable width) are only applicable up to this point.

Where the ROW provides access to 3 or less dwelling (i.e. as it continues to proposed Lots 122 & 123) the requirements of section 4.1.3 (2) for property access of PBP 2006 are applicable. This includes a 4 metre wide access handle, which can narrow to 3.5 metres wide for a distance of no more than 30 metres.

Access from Marana Road into the proposed new lots 1401, 1402, 1403 & 1404 provides access to individual dwellings with the most distant external point located greater than 70 metres from a public through road. In accordance with section 4.1.3(2) of PBP 2006 the access drive must comply with the requirements for section 4.1.3 (2) of PBP 2006. Again this includes a 4 metre wide access drive, which can narrow to 3.5 metres wide for a distance of no more than 30 metres.

Fire Services must have free pedestrian access around the building footprints and access to the hazard interface for hazard reduction or fire suppression activities. Attending fire crews can access the hazard via the ROW and through proposed Lot 121. Access for fire services and opportunities for occupant evacuation will be considered adequate for this property and can comply with the requirements of PBP 2006.

8.0 Site & Bushfire Hazard Determination

8.01 Planning for Bush Fire Protection - 2006

'Planning for Bush Fire Protection – 2006' (PBP) is applicable to those lands determined as being within a 'bushfire prone area' in accordance with a local Bushfire Prone Land Map as provided by the Rural Fire Service and Council.

The most appropriate method of determining site bushfire hazard under the terms of PBP is to consider the site in a singular form.

Bushfire prone areas are defined as those areas;

- *within or within 100m of high or medium bushfire hazards; or*
- *within or within 30m of low bushfire hazards.*

In this instance the subject site has been identified as being bushfire prone land therefore it is appropriate to apply PBP and AS3959 – 2009 (for any dwelling construction).

8.02 Australian Standard AS 3959 – 2009 'Construction of buildings in bushfire –prone areas'

Australian Standard 3959 – 2009 'Construction of buildings in bushfire-prone areas' provides for six (6) levels of building construction these being BAL - Low, BAL - 12.5, BAL - 19, BAL - 29, BAL - 40 and BAL - FZ. The Australian Standard 3959 specifies construction standards for buildings within various Bushfire Attack Levels as determined by the *Planning for Bush Fire Protection – 2006* document. The NSW Rural Fire Service will not accept deemed to satisfy provisions for BAL Flame Zone and therefore have a NSW variation to the listed standard provisions of BAL FZ under AS3959 - 2009.

8.03 Correlation between bushfire impact and AS3959

Bushfire Attack Level	Maximum radiant heat impact (kW/m ²)	Level of construction under AS3959-2009
Low		No special construction requirements
12.5	≤12.5	BAL - 12.5
19	12.6 to 19.0	BAL - 19
29	19.1 to 29.0	BAL - 29
40	29.1 to 40.0	BAL - 40
Flame Zone	>40.0	BAL FZ No deemed to satisfy provisions

8.04 Site Specific Bushfire Hazard Determination

All property development must be assessed on an individual basis as broad-brush approaches of documents such as PBP may not be applicable in every instance. The proposed development located at Marana Road Springfield was assessed against the requirements of *Planning for Bush Fire Protection* 2006 noting the following:

- The building footprints can meet or exceed the minimum required Asset Protection Zones.
- Recommendations to maintain the Asset Protection Zones within the subject property can be included in future development consent.
- Future water supply can satisfy the requirements for Services as detailed in section 4.1.3 of PBP.
- The proposed access drives and ROW can satisfy the requirements for Property Access as detailed in section 4.1.3 (1 & 2) of PBP.

8.05 Viable Construction Method

The objectives of *Planning for Bush Fire Protection* – 2006 are for the protection of life including fire fighters. Provided these objectives can be met the construction of buildings is feasible and both the Rural Fire Service and Council should be in a position to consider such applications.

No new dwellings are proposed as part of this application. An independent assessment will be required under s79BA of the *Environmental Planning and Assessment Act* 1997 at the time of any future application for the construction of a dwelling within the proposed allotments. The proposed subdivision layout is such that no building footprint will be located in an area determined to be greater than BAL 40 calculated using Method 2 Appendix B of AS3959 – 2009. All future dwellings will be outside a BAL Flame Zone and therefore comply with the principles of PBP 2006.

Retrofitting recommendations may be necessary to be made to prevent the entry of smoke and embers on the existing dwellings retained within the proposed Lots 121 & 4161.

8.06 Risk Rating

In assessing the bushfire threat to the site and its structures it is important to have a holistic approach and assess the risk of a bushfire occurring and impacting the subject site. It is also important to include the risk the site poses to neighbouring properties.

Image 06 is an overview of risk to any future dwellings. This model takes a holistic approach and assesses the risk of a bushfire occurring and impacting the site. This risk level can be reduced by either an increase in preparedness by the owners/occupants of the dwellings (e.g. good house keeping, maintained lawns & bushfire awareness) and/or hazard reduction activities by local fire agencies. Alternatively this risk level can increase if the preparedness level decreases and/or hazard reduction activities are neglected for the area.

The below matrix is for risk only, it does not reflect the Bushfire Attack Level determined within PBP 2006.

Consequence \ Likelihood	Minor	Moderate	Major	Catastrophic
Almost certain	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	Extreme
Possible	Insignificant	Low	Medium	High
Unlikely	Insignificant	Insignificant	Low	Medium

Image 06: Risk Matrix

9.0 Recommendations

The following recommendations are provided as the minimum necessary for compliance with *Planning for Bush Fire Protection* – 2006 and Australian Standard 3959 'Construction of buildings in bushfire-prone areas' - 2009. Additional recommendations are provided to supplement these minimum requirements where considered necessary.

Asset Protection Zones

1. That all grounds shown as the APZ setback (unshaded) on Attachment 2 (Plan Ref 12G1326-01) are to be maintained as an Asset Protection Zone (Inner Protection Area) as detailed in the NSW Rural Fire Service's document 'Standards for Asset Protection Zones'. This area should be shown as a restriction as to user on any future subdivision application.
2. That all grounds shown as the development area (shaded pink) on Attachment 2 (Plan Ref 12G1326-01) are to be maintained as an Asset Protection Zone (Inner Protection Area) as detailed in the NSW Rural Fire Service's document 'Standards for Asset Protection Zones'.
3. That all future landscaping is to comply with Appendix 5 'Landscaping and Property Maintenance' under Planning for Bushfire Protection 2006. Any landscape plans should include both the APZ and shaded area and be certified by a suitably qualified bushfire consultant that they comply with the NSW Rural Fire Service requirements.

Water supply

4. A SWS will be required within each Lot and can be included in the future DA consent for the construction of the dwellings. It is only required within the residual allotment containing the existing dwellings at subdivision stage.
5. A 20,000 litres SWS is required within proposed Lot 121 & 4162. The water supply shall be included in the future subdivision proposal and shall include:
 - ❖ A suitable connection for firefighting purposes is made available and located within the IPA and away from the structure. A 65mm Storz outlet with a gate or Ball valve is provided.
 - ❖ Gate or Ball valve and pipes are adequate for water flow and are metal rather than plastic.
 - ❖ Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck access is supplied within 4 metres of the access hole.
 - ❖ Above ground tanks are manufactured of concrete or metal and raised tanks have their stands protected. Plastic tanks are not used. Tanks on the hazard side of a building are provided with adequate shielding for the protection of fire fighters.
 - ❖ All above ground water pipes external to the building are metal including and up to any taps. Pumps are shielded.

Construction – existing dwellings only

6. That all openable windows on the existing dwellings be screened with aluminium, steel or bronze metal mesh having an aperture size of ≤ 2.0 mm in such a way that the entire opening remains screened when in the opened position.
7. That all vents and weepholes on the existing dwellings be screened with aluminium, steel or bronze metal mesh having an aperture size of ≤ 2.0 mm in such a way that the entire opening is screened.
8. That all external hinged doors on the existing dwellings have a draught excluder fitted having a flammability index of not more than 5.
9. That the existing garage doors have brush seals or similar fitted to the top and sides and a rubber seal fitted to the bottom panel or threshold.

Access

10. That the ROW from Marana Road through to Lot 4161 shall comply with the requirements for Public Road as detailed in section 4.1.3 (1) of *Planning for Bush Fire Protection 2006*, in particular:
 - Access roads are minimum 6.5 metre wide and are two way and two-wheel drives, all weather drives.
 - Traffic management devices are constructed to facilitate access by emergency services vehicles.
 - The access road shall have a cross fall not exceeding 3 degrees.
 - The access is clearly sign posted as a dead end.
 - There is a minimum vertical clearance to a height of four metres above the access at all times.
 - The capacity of surface is sufficient to carry fully loaded firefighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas).
11. That the ROW and any property access within proposed Lots 123, 122, 4162, 1401, 1402, 1403 and 1404 complies with the requirements for Property Access as detailed in section 4.1.3 (2) of *Planning for Bush Fire Protection 2006*, in particular:
 - A minimum carriageway width of four metres.
 - A minimum vertical clearance of four metres to any overhanging obstructions, including tree branches.
 - Curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress.
 - The minimum distance between inner and outer curves is six metres.
 - The crossfall is not more than 10 degrees.
 - Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.

Note: Some short constrictions in the access may be accepted where they are not less than the minimum (3.5m), extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.

10.0 Conclusion

Given that the property is deemed bushfire prone under Gosford City Council's Bushfire Prone Land Map any future development would need to meet the requirements of *Planning for Bush Fire Protection* 2006 and of the construction requirements of Australian Standard 3959 'Construction of buildings in bushfire-prone areas' 2009 if any are applicable. The determination of any bushfire hazard must be made on a site-specific basis that includes an assessment of the local bushland area and its possible impact to the subject site.

The subject site comprises of 3 large rural residential allotments within a mixed area containing residual road corridors (unformed), large Reserves and small and large lot private properties. Compliance with *Planning for Bushfire Protection* 2006 must be achieved for any future subdivision to be approvable and as such site constraints should be determined at this planning proposal stage and the sites capacity to comply with these requirements should be demonstrated.

The required Asset Protection Zones (APZ) for the future subdivision were determined from Appendix 2 of *Planning for Bush Fire Protection* 2006. The available building footprints within the proposed new allotments can comply with or exceed the minimum requirements of PBP 2006. The proposed access design and the provisions of future services (water, gas and electricity) can also meet the requirements of section 4.1.3 of PBP 2006.

No new dwellings are proposed as part of this application. An independent assessment will be required under s79BA of the *Environmental Planning and Assessment Act* 1997 at the time of any future application for the construction of a dwelling within the proposed allotments. Retrofitting recommendations can be made to improve the resilience of the existing dwellings at the time of subdivision by including simple measures to prevent the entry of smoke and embers into the existing dwellings.

In accordance with the bushfire safety measures contained in this report, and consideration of the site specific bushfire risk assessment it is my opinion that the site and the proposed subdivision provided as part of this planning proposal has the capacity to comply with the requirements of PBP 2006. By applying this guideline it will provide a reasonable and satisfactory level of bushfire protection to the subject development and also satisfy both the Rural Fire Service's requirements and those of Council in this area.

Should you have any enquiries regarding this project please contact our office.

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Disclaimer:

Quote from *Planning for Bush Fire Protection* 2006, 'Any representation, statement opinion, or advice expressed or implied in this publication is made in good faith on the basis that the State of New South Wales, the NSW Rural Fire Service, its agents and employees are not liable (whether by reason of negligence, lack of care or otherwise) to any person for any damage or loss whatsoever which has occurred or may occur in relation to that person taking or not taking (as the case may be) action in respect of any representation, statement or advice referred to above.'

Similarly the interpretations and opinions provided by Building Code and Bushfire Hazard Solutions in regard to bushfire protection are also given in the same good faith.

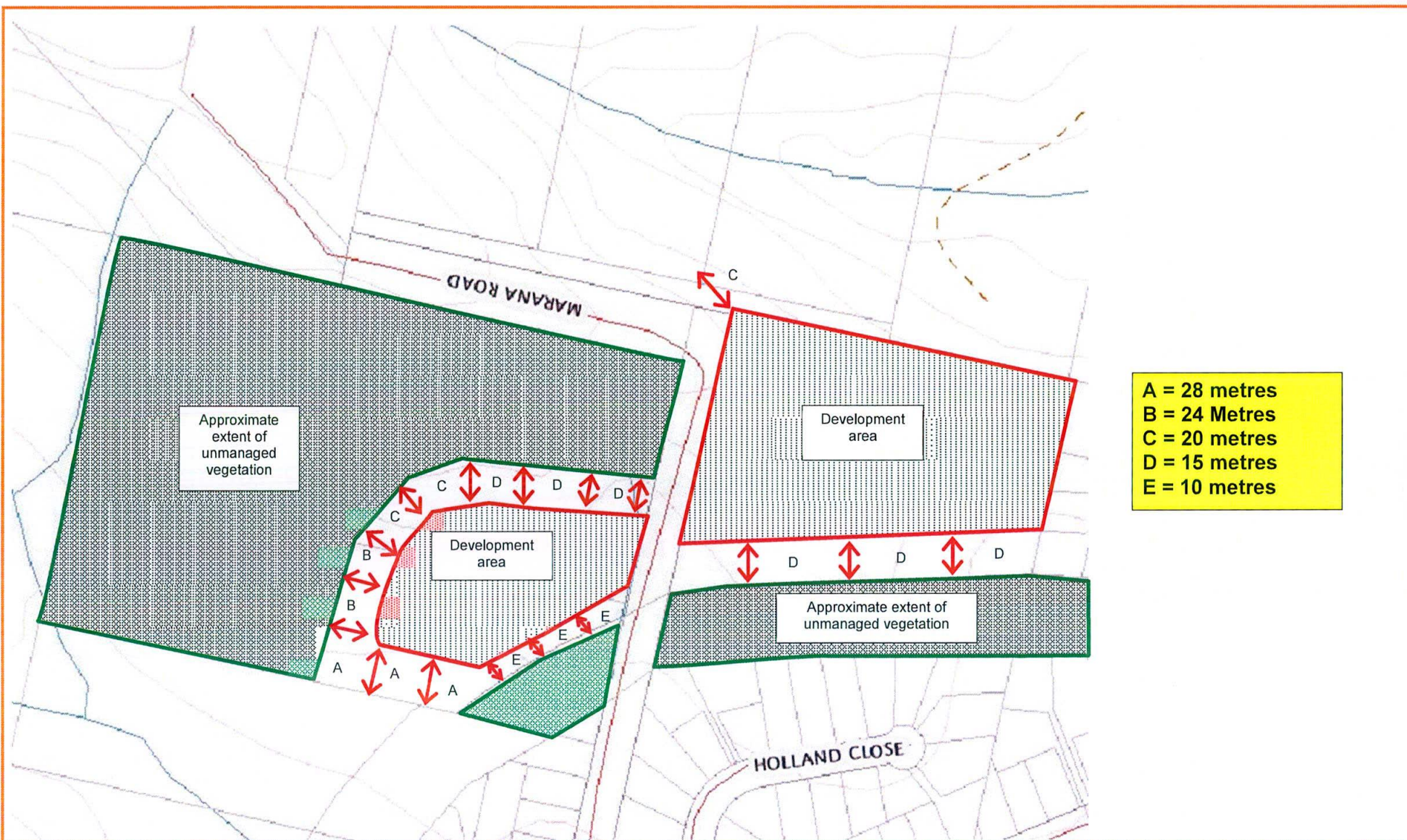
11.0 Annexure 01

List of Referenced Documents

- a) *Environmental Planning and Assessment Act* 1979
- b) *Rural Fires Act* 1997 as amended
- c) 'Planning for Bush Fire Protection' 2006 - NSW Rural Fire Services & Planning NSW
- d) 'Construction of buildings in bushfire prone areas' - AS 3959 – 2009 (as amended) – Standards Australia
- e) 'Gosford City Council's Bushfire Prone Land Map'
- f) Acknowledgements to:
 - UBD Directories
 - NSW Department of Lands – SixViewer
 - Street-directory.com.au

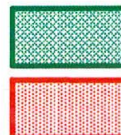
Attachments

- Attachment 01: APZ and site constraints overlay
- Attachment 02: Proposed Subdivision Plan Dwg 12G1326-01



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Areas where environmental or other constraints will inhibit vegetation modification or management

Areas that can be built on and must be managed as an Asset Protection Zone / Inner Protection Area

NOT TO SCALE

Subject Property: Marana Road Springfield

Date 24.09.2012

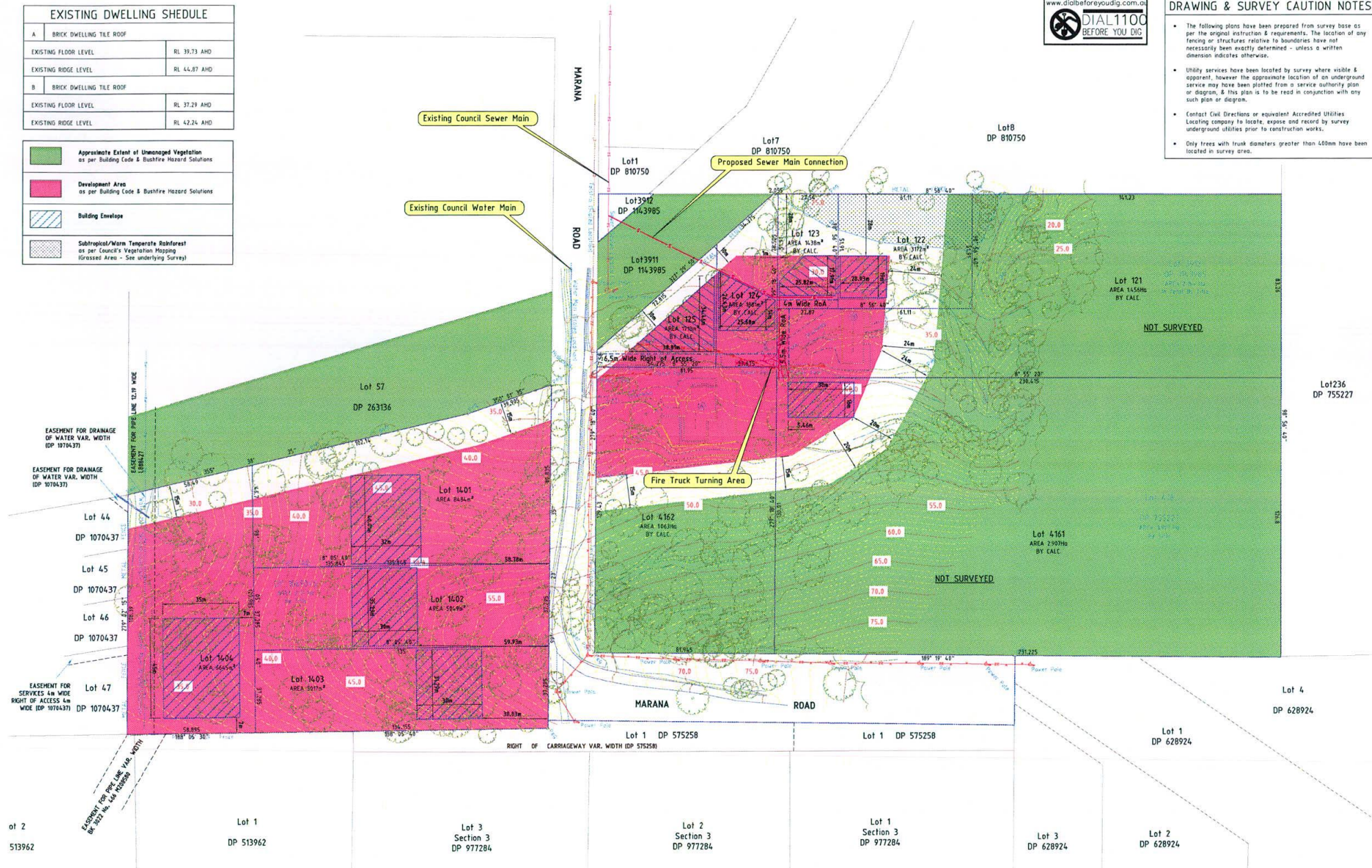
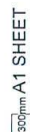
Job Ref: 120973

Site Determination

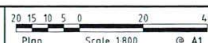
	Approximate Extent of Unmanaged Vegetation as per Building Code & Bushfire Hazard Solutions
	Development Area as per Building Code & Bushfire Hazard Solutions
	Building Envelope
	Subtropical/Warm Temperate Rainforest as per Council's Vegetation Mapping (Grassland Area - See underlying Survey)

DRAWING & SURVEY CAUTION NOTES

- The following plans have been prepared from survey base as per the original instruction & requirements. The location of any fencing or structures relative to boundaries have not necessarily been exactly determined – unless a written dimension indicates otherwise.
- Utility services have been located by survey where visible & apparent, however the approximate location of an underground supply may have been plotted from a service authority plan or diagram, & this plan is to be read in conjunction with any such plan or diagram.
- Contact Civil Directions or equivalent Accredited Utilities. Locating company to locate, expose and record by survey underground utilities prior to construction works.
- Only trees with trunk diameter's greater than 100mm have been located in survey area.



FOR DEVELOPMENT APPLICATION APPROVAL

[illegible]

CIVIL DIRECTIONS PTY LTD
THE SUBDIVISION SPECIALISTS
REGISTERED SURVEYORS AND
CIVIL ENGINEERS

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Project	DETAIL AND CONTOUR SURVEY 3912/1143985, 416/755227, 140/1069040 MARANA ROAD, SPRINGFIELD
Client	HIGHLIGHT CONSULTING Architect/Project Manager HIGHLIGHT CONSULTING

Drawing Title
KEY PROPOSED SUBDIVISION PLAN

Drawing No.	Sheet	Rev
12G1326-01	01 Of 01	A