

BUSHFIRE PLANNING AND DESIGN CERTIFICATION

The following report titled and dated;

Bushfire Assessment & Recommendations, Revised Residential Subdivision Development (Amended Plan), Barlings Beach Estate Tomakin, 7th March 2011

has been prepared by;

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Bushfire Assessment & Recommendations

Revised Residential Subdivision
Development (Amended Plan)
Barlings Beach Estate Tomakin.



Introduction

The following report has been commissioned by Mr Chad Walker of President Property Group (Level 2, 12 O'Connell Street Sydney), herein '*the proponent*', to provide a bush fire assessment and recommendations for bushfire safety and design compliance for a revised residential subdivision plan of Lot 42 DP1147557 George Bass Drive Tomakin (Eurobodalla Shire Council Local Government Area), herein '*the subject property*' or '*subject development*'.

This assessment considers the subject development site on the basis of a;

- site specific inspection undertaken on the 16th November 2010,
- revised subdivision plans as prepared by the Proponent (attached Appendix 3 to this report), &
- desktop assessment using licensed or on-line spatial data resources available at the time of this report.

The subject property has been identified as being, or bounded by, bush fire prone land. In this regard, NSW legislative requirements for building or land subdivision development on bush fire prone lands is applicable.

Considering the subject development as being 'integrated development', it has been assessed against the requirements and principals (aim and objectives) as outlined in the NSW document Planning for Bushfire Protection (PBP) 2006.

PBP states;

'The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including firefighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment.'

More specifically, the objectives are to:

- afford occupants of any building adequate protection from exposure to a bush fire;*
- provide for a defendable space to be located around buildings;*
- provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*
- ensure that safe operational access and egress for emergency service personnel and residents is available;*
- provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ); and*
- ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire fighting).'*

This assessment includes an analysis of the potential (persisting) bushfire hazard extent and threat to the subject development and recommends standards and bush fire mitigation measures that should be introduced to address the objectives of PBP 2006.

Bushfire safety compliance, as purported by this report, for the subject development site comprises a package of *measures in combination* including APZ areas, building construction standards, vehicle access & fire fighting water supplies where applicable.

The above measures have been derived from provisions and requirements as outlined within the document Planning for Bushfire Protection 2006.

The following bushfire assessment has been prepared in accordance with the *NSW Rural Fires Regulation 2002, Clause 44 - Application for a Bushfire Safety Authority*.

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1.0 Description of the property

RF Reg. Clause 44 Application for bushfire safety authority (a): a description (including the address) of the property on which the development the subject of the application is to be carried out

1.1 Lot and deposited plan (DP) number of the subject property

Lot 42 Deposited Plan Number 1147557.

1.2 Street address and locality map

Reflections Barlings Beach

Lot 42 George Bass Drive Tomakin NSW 2537.

Locality map as denoted attached maps 1 & 2.

The subject development will adjoin the existing residential area of Tomakin, located approximately 18 km by public roadway NE of Moruya or 17 km south of the Batemans Bay CBD.

1.3 Zoning of the subject land and any adjoining lands

The subject property is partly zoned R10 over its western half & Rural 1a over its eastern half under the current* Eurobodalla Urban & Rural LEP respectively.

Adjoining land to the north & west of the subject property is zoned Residential 2g (existing Tomakin residential development).

Adjoining land to the north-east and south of the subject property is zoned 6a1 - Public Reserve.

Land further adjacent to the east of the subject property (opposite side of George Bass Drive is zoned Rural 1a.

** A revised Eurobodalla Shire LEP (2009) has been recently publicly exhibited and is expected to be adopted within the foreseeable future. LEP zoning for the subject property and adjacent lands are expected to change.*

1.4 Staging issues, if relevant, and description of the whole proposal

Description of the whole proposal

The area of the subject property is approximately 30 ha in area.

The subject property contains an approved (2005) residential subdivision development, comprised of 5 stages, being Stage 1/1a, 2, 3, 4 & 5. Stage 1 of the subject development is almost complete, with a number of already constructed residential buildings and public roadway sections are in place (see attached photos 19, 20, 24, 25 & 29 as example).

The subject property is approved to be subdivided into 177 new residential allotments, two larger medium density allotments for integrated housing, dedicated Conservation Areas, Aboriginal Land & Cultural Centre. The subject development is an urban extension of the existing Tomakin township area.

The residential allotments range in size between 552–1,522 sqm, to be accessed by via the existing and proposed public roadway system. The two larger medium density / integrated housing allotments (Lots 178 & 179) are approximately 1.6ha each in area. A plan of the approved subdivision design is as attached Appendix 3.

The subject development (as considered by this report) includes the additional subdivision of lots 178 & 179 into 24 new individual residential allotments and a boundary adjustment (22 allotments) between the northern residential allotments along John Penn Drive and the adjoining Conservation Area.

The purpose of the proposed boundary adjustment is to absorb a previously identified and approved APZ area (30m wide over the Conservation Area) into the residential allotments, hence placing the responsibility of APZ maintenance on the individual land owner rather than the Council. In this regard, the adjusted residential allotments will increase in area and depth.

For the purposes of this assessment and report, the adjusted allotments are denoted as;

Lot 45 – 1,522 sqm	Lot 52 – 1,050 sqm	Lot 89 – 884 sqm
Lot 46 – 1,044 sqm	Lot 53 – 1,051 sqm	Lot 90 – 875 sqm
Lot 47 – 1,045 sqm	Lot 54 – 895 sqm	Lot 130 – 901 sqm
Lot 48 – 1,046 sqm	Lot 55 – 890 sqm	Lot 131 – 899 sqm
Lot 49 – 1,047 sqm	Lot 86 – 896 sqm	Lot 132 – 896 sqm
Lot 50 – 1,048 sqm	Lot 87 – 897 sqm	Lot 133 – 894 sqm
Lot 51 – 1,049 sqm	Lot 88 – 898 sqm	Lot 134 – 891 sqm
		Lot 135 – 885 sqm

For the purposes of this assessment and report, the proposed new allotments are denoted as;

Lot 178 – 1,058 sqm	Lot 186 – 511 sqm	Lot 194 – 1,708 sqm
Lot 179 – 1,070 sqm	Lot 187 – 511 sqm	Lot 195 – 1,145 sqm
Lot 180 – 1,073 sqm	Lot 188 – 511 sqm	Lot 196 – 674 sqm
Lot 181 – 5'114 sqm	Lot 189 – 768 sqm	Lot 197 – 555 sqm
Lot 182 – 672 sqm	Lot 190 – 648 sqm	Lot 198 – 556 sqm
Lot 183 – 667 sqm	Lot 191 – 551 sqm	Lot 199 – 612 sqm
Lot 184 – 1,369 sqm	Lot 192 – 688 sqm	Lot 200 – 612 sqm
Lot 185 – 602 sqm	Lot 193 – 748 sqm	Lot 201 – 555 sqm

For the purposes of this assessment and recommendations contained herein, only the above identified allotments are considered.

All adjusted & new residential allotments will be entitled to the construction of Class 1a residential buildings as defined by the Building Code of Australia (BCA).

The indicative residential building sitings denoted / considered by this report are at least 200 sqm in area and are sited to demonstrate APZ compliance only. The indicative sitings do not necessarily indicate the only locations and size of future residential buildings which could be sited within the adjusted or proposed new allotments with regard to bushfire safety compliance

All indicative building sitings are <20m from their primary public roadway access point.

The above information is better denoted attached maps 4, 5a, 5b & 5c.

The subject development will be connected to the existing reticulated town water supply and electrical supply which currently services the Tomakin area.

All electrical power supply lines to service the subject development will be located underground.

Staging Issues (temporary and reciprocal asset protection zone easements / agreements)

The subject development is proposed to be undertaken in 5 stages, progressively releasing residential land for sale west to east.

The proposed timing of future residential building within the subject development has not been provided at the time of this report.

Considering the potential extent of coastal regrowth vegetation that may temporarily persist within the subject development site until all residential allotments are fully developed, this report recommends new residential buildings should be afforded temporary Asset Protection Zone easements where applicable.

The recommended extent of temporary APZ easement areas is as otherwise described section 8.0 of this report.

1.5 Aerial or ground photographs of the subject land including contours and existing and proposed cadastre

Available aerial photography of the subject property and approximate boundary is attached Appendix 1.

Ground / site photos (taken 16/11/10, photo reference points denoted Appendix 1) of the subject property, neighbouring lands and existing public access roadway are attached to this report - Appendix 2.

Contours as shown / considered by this report are derived from 25m grid cell Digital Elevation Model (DEM) data, as denoted attached Map 3 (2m Contour Interval).

Existing cadastral boundaries and proposed changes (new allotments) are as denoted attached Maps 4 – 5.

2.0 Classification of vegetation out to 140m from the development

RF Reg. Clause 44 Application for bushfire safety authority (b): a classification of the vegetation on and surrounding the property (out to a distance of 140 metres from the boundaries of the property) in accordance with the system for classification of vegetation contained in Planning for Bushfire Protection

2.1 Structural description consistent with the identification key in Keith D (2004) and PBP

Vegetation extent (bushfire hazard) within the study area is derived from aerial photo interpretation (api) and an inspection of the subject property on the 16th November 2010.

The subject property partly contains forest and/or shrub vegetation over its northern half and coastal dune vegetation towards its southern extent (Barlings Beach).

Within the study area, the most significant extent of unmanaged vegetation potentially affecting the subject development site is swamp forest / tall heath which is mostly restricted to land below about 8m above sea level. This report also notes the vegetation community becomes dryer and taller as the elevation increases, progressively becoming a dry forest area – dominated as Spotted Gum Eucalypt forest.

To a much lesser extent, areas of freshwater riparian vegetation are also within vicinity of the subject development site.

For the purposes of this report, the primary vegetation formation class associated with undeveloped / unmanaged forested land within the study area is identified as 'sclerophyll forest', or more specifically 'southern lowland wet sclerophyll forest' as described by Keith 2004. In this regard the potential bushfire hazard affecting the subject property is considered equivalent to a FOREST vegetation formation.

However, it should be noted that the category of forest bushfire vegetation has been reasonably over estimated - a category of swamp forest or tall heath more representative of the actual bushfire hazard affecting the subject development. Forest vegetation as considered by this report is to demonstrate absolute APZ compliance only. A more detailed site specific assessment of each individual allotment should reasonably identify a lesser category of bushfire vegetation.

The above denoted attached Map 2.

2.2 Past disturbance factors and any future intended land uses that could alter the vegetation classification in the future

The subject property is generally bounded by existing residential and tourist park developments. Vegetated lands adjoining or adjacent to the subject property are generally public reserve lands or inundated wetland areas.

Existing vegetated areas within the bounds of the subject property will be entirely retained within dedicated Conservation Areas. All other cleared areas within the subject property form part of the future proposed residential building areas.

In this regard, it would be reasonable to assume that the potential extent of bushfire vegetation adjacent to the subject development site is unlikely to significantly change during the life of the subject development.

3.0 Assessment of the effective slope to a distance of 100m

RF Reg. Clause 44 Application for bushfire safety authority (c): an assessment of the slope of the land on and surrounding the property (out to a distance of 100 metres from the boundaries of the property)

Slope analysis (used by this assessment) is derived from 25m grid digital elevation model (DEM) and a general inspection of the subject development site. This includes deriving contours for each 2m change in elevation and the approximate areas of slope / gradient based on PBP slope classes.

This assessment notes only minor areas of steeper slope >18 degrees within the study area, but these areas are well separated from any future building development or required APZ areas within the subject development site.

Based on the indicative building sitings denoted by this report, the effective slope* surrounding or affecting the subject development site, has been reasonably assessed as somewhere between;

- Up-slope or flat land.

* *effective slope being the average slope estimated over 100m between a proposed building siting and potential bushfire vegetation likely to impact upon the site (or else bushfire hazard).*

The slope on and surrounding the subject development site is more accurately denoted attached Map 3.

4.0 Identification of any significant environmental features

RF Reg. Clause 44 Application for bushfire safety authority (d): identification of any significant environmental features on the property

For the purposes of bushfire safety compliance, this assessment notes that the subject property is partly forested, containing a relatively intact and healthy areas of swamp forest, tall heath and dry forest vegetation communities.

It is also noted that a well defined riparian / water course area runs through the subject property.

Both the intact forest / shrub vegetation and riparian area should not be further affected by any recommendations as stated by this report. APZ areas as recommended by this report will be entirely contained within the bounds of the individual allotments or proposed roadway areas.

Apart from the above, the proponent has not advised of any other constraint, restriction or burden over the subject property limiting the reduction or removal of native vegetation for the purposes of lawful land development and associated asset protection zone maintenance.

Apart from the above, no other known significant environmental features have been noted, recorded or advised of as part of this assessment.

5.0 Details of threatened species, populations, endangered ecological communities and critical habitat known to the applicant

RF Reg. Clause 44 Application for bushfire safety authority (e): the details of any threatened species, population or ecological community identified under the Threatened Species Conservation Act 1995 that is known to the applicant to exist on the property

This report notes that Coastal Swamp vegetation within the main Conservation Area and within lot 179 (as currently approved, 2005) has been identified as an Ecologically Endangered Community (EEC).

The extent of EEC vegetation within the subject property should not be further affected by any recommendations as stated by this report. APZ areas as recommended by this report will be entirely contained within the bounds of the individual allotments or proposed roadway areas.

Apart from the above, no other known threatened species, populations or ecological communities identified under the NSW Threatened Species Conservation Act 1995 have been noted, recorded or advised of as part of this assessment.

For the purposes of this assessment, the proponent has not provided nor indicated there to be any other threatened species issues or occurrences affecting the subject property or potentially limiting its development.

Likewise, this assessment has not considered in detail any past studies, surveys for the area or any documentation supplied to council in relation to any threatened species issues or occurrence potentially affecting the subject property / development.

6.0 Details of Aboriginal heritage known to the applicant

RF Reg. Clause 44 Application for bushfire safety authority (f): the details and location of any Aboriginal relic (being a relic within the meaning of the National Parks and Wildlife Act 1974) or Aboriginal place (within the meaning of that Act) that is known to the applicant to be situated on the property

This report notes the small portion of land between proposed lots 192, 193, 198-201 which will be dedicated as an 'Aboriginal Conservation Area' or else 'Zone 3 Conservation Area' (see attached Map 4 and Appendix 4).

As advised by the proponent, this particular portion has been identified in a vegetation management plan as an area that would be continually maintained by,

- the removal of weeds and surface rubble debris, with minimal disturbance of soil
- not using fill
- light planting of grass seed to stabilise soils
- Retention of existing mature trees
- limited planting of tube-stock trees provided work is carried out and monitored by sites officer (tube-stock planting to involve disturbance of soil to no more than 300mm deep)
- Mowing or slashing to minimise fire hazard

The natural vegetation within the conservation area is proposed to be generally be retained, however will be managed on an ongoing basis as an APZ. Some trees will be removed or pruned to ensure that the canopy is open (i.e. 5m spacing between canopies of adjacent trees). The understory will be slashed or mowed regularly to maintain a height of less than

100mm. Some shrubs will be retained as isolated pockets, but only where they do not provide a path to buildings or into the canopy.

Apart from the above, no other known Aboriginal relics (being a relic within the meaning of the NSW National Parks and Wildlife Act 1974) or Aboriginal place (within the meaning of that Act) have been noted, recorded or advised of as part of this assessment.

For the purposes of this assessment, the proponent has not provided nor indicated there to be any other items or issues of Aboriginal heritage potentially affecting the subject property or potentially limiting its development.

Likewise, this assessment has not considered in detail any past studies, surveys for the area or any documentation supplied to council in relation to any items or issues of Aboriginal heritage potentially affecting the subject property / development.

7.0 Bush fire assessment (including methodology)

RF Reg. Clause 44 Application for bushfire safety authority (g): a bush fire assessment for the proposed development (including the methodology used in the assessment) that addresses the following matters [sub clauses i – viii]

Methodology for this site assessment for bushfire attack and recommended mitigation measures (setback distances and construction standards) are based on PBP 2006 (Appendix 2) & AS3959.

Minimum required asset protection zones and other recommended setback measures for bushfire protection are derived from distances outlined by PBP for a residential subdivision development within an FDI 100 Fire Area (PBP Appendices 2 – A2.4 & A2.7).

The Eurobodalla LGA is designated as potentially having an FDI of 100 as a 1:50 year event (PBP Appendices 2 – Table A2.3).

8.0 Asset protection zones (including any management arrangements or easements including those contained on adjoining lands)

RF Reg. Clause 44 Application for bushfire safety authority (g)(i): the extent to which the development is to provide for setbacks, including asset protection zones

The minimum specified APZ / setback required for the above parameters of slope and vegetation as determined from PBP 2006 (for a Residential Subdivision Development) would be a minimum of 20m (10m IPA* + 10m OPA**) for the indicative building sitings from any persisting and available¹ forest bushfire vegetation (hazard) within the study area.

* IPA - Inner Protection Area as defined Appendix 2 A2.2(vi) PBP 2006

** OPA - Outer Protection Area (allowable) as defined Appendix 2 A2.2(vi) PBP 2006

¹ Note: available bushfire vegetation being dead or dry material less than 6mm in width or diameter and easily ignited during a passing bushfire event

PBP 2006 acceptable solutions for APZ compliance requires that;

- an APZ is provided in accordance with the relevant tables / figures [within PBP 2006],
- the APZ is wholly within the boundaries of the development site (exceptional circumstances* otherwise permitting), &
- the APZ is located on lands with a slope less than 18 degrees.

* As an acceptable exceptional circumstance, PBP states an APZ may be located on adjoining land;

- where it can be demonstrated that there is a strong likelihood of the adjoining land being developed for future residential or other compatible purposes (e.g. staged development or Urban Development Program or Strategies with supporting development control plans), or
- where easements are also required on adjoining land for the purposes of providing access for utilities, right of way, as fire trails, and drainage. These are to be kept clear of free standing vegetation.

Considering the above, the subject development easily facilitates the specified minimum APZ / setback. In this regard, each individual new residential building can be separated away from potentially unmanaged and persisting bushfire vegetation within or adjacent to the subject development site (see attached Maps 5a, 5b & 5c).

The minimum specified APZ area to any adjacent bushfire hazard is easily contained within the bounds of the subject development site. Where the minimum specified extends beyond the boundary of the individual allotments (i.e. Lots 190-201, based on the indicative building sitings), the adjoining land is either existing or proposed public roadway area or else managed Aboriginal Land.

APZ areas as identified by this report would only be located on land <5 degrees slope.

8.1 Staged Development – Temporary APZ Easements

Considering APZ compliance between the proposed new allotments, this report recommends that a temporary and reciprocal easement (or similar agreement) for APZ maintenance be placed over allotments located within 100m of a forest or shrub hazard.

In this regard, any new residential building development that will be located directly adjacent to coastal forest or shrub vegetation (i.e. <100m from temporarily persisting vegetation on any of the neighbouring residential allotments within the subject development) will require a temporary easement to permit the removal or reduction of bushfire vegetation on the neighbouring land.

The temporary / reciprocal APZ easement area should ensure that at least the minimum required APZ area for a proposed building development (as otherwise determined for residential building development under 79BA EP&A Act) can be extended beyond the boundary of the allotment and over undeveloped or unmanaged land within any other of the adjoining new allotments.

The APZ easement should remain in place over each individual allotment until such time as each individual allotment becomes developed and maintained to a standard that ensures any neighbouring residential building will not be exposed to direct flame contact or radiant heat levels from a bushfire event which may damage or ignite the external building elements. Where the individual allotment becomes fully developed and maintained, the APZ easement over that allotment can be extinguished.

APZ recommendations are as listed section 17.0 (Bushfire Safety & Compliance Recommendations).

Note: APZ areas / distances as recommended / identified within each individual allotment should be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EP&A Act. APZ recommendations (within each individual allotment) stated by this report are generic and may be reasonably altered or adjusted on the basis of a site (building) specific and performance based assessment.

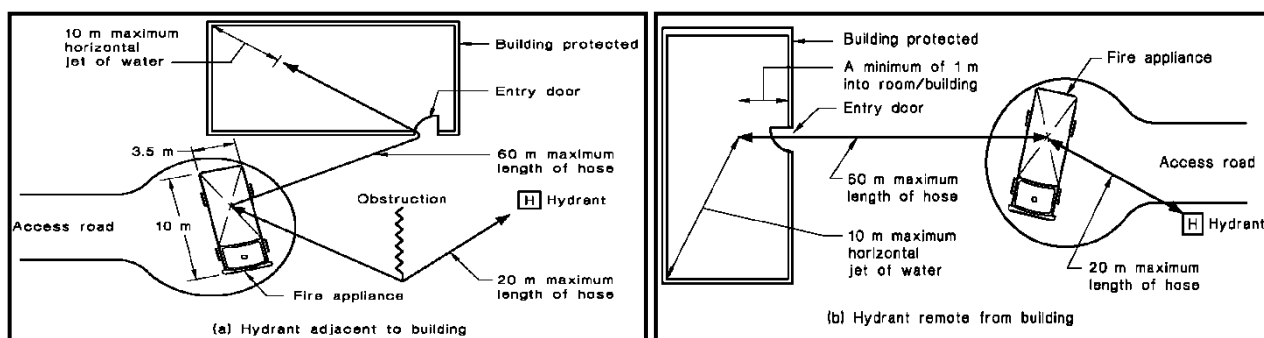
9.0 Siting & adequacy of water (in relation to reticulation rates or where dedicated water storage will be required)

RF Reg. Clause 44 Application for bushfire safety authority (g)(ii): the siting and adequacy of water supplies for fire fighting

As advised by the proponent, the subject development site will be connected to the existing reticulated town water supply which currently services the Tomakin area and existing residential development.

For the purposes of this assessment, the proponent has not provided any advice or evidence to suggest the existing reticulated water supply would be guaranteed and remain reliable during a significant bushfire emergency.

A PBP acceptable solution for a reticulated water supply states that *fire hydrant spacing, sizing and pressures comply with AS2419.1-2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles.*



(source: AS2419.1- External Fire Hydrant Location)

This report notes numerous existing hydrant connection points located along Red Hill Parade, directly adjacent to the subject development site. The hydrant points are not located on the road carriageway and are spaced approximately 50m. As advised by the proponent, all reticulated water supply & hydrant connection points are to be located and installed throughout the subject development in accordance with AS2419 and any other standard Eurobodalla Shire Council requirement.

PBP also states, '*in rural areas and areas not serviced by reticulated water supplies, the provision of dedicated static water supply is essential. The amount of water is determined on the basis of lot sizes and density of development.*'

Other PBP acceptable solutions for water supply within a reticulated area (and non-reticulated if applicable) considered relevant to the subject development site requires that:

- *hydrants are not located within any road carriageway*
- *all above ground water pipes external to the building are metal including and up to any taps.*
- *the provisions of parking on public roads are met.*
- *the minimum dedicated water supply required for firefighting purposes for each occupied building excluding drenching systems, is provided in accordance with Table 4.2.*

- 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.
- water pumps are shielded.

PBP water supply requirements (acceptable solutions) for fire fighting (*Table 4.2 – Dedicated water supply requirements for various non reticulated subdivision developments*) require;

- 5,000L/lot for Residential Lots (<1,000m²)
- 10,000L/lot for Rural-residential Lots (1,000 – 10,000m²)

Fire fighting water supply recommendations are as listed section 17.0 (Bushfire Safety & Compliance Recommendations).

Note: Fire fighting water supply recommendations for static / non-reticulated supplies should be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act. Fire fighting water supply recommendations stated by this report are generic and may be reasonably altered or adjusted on the basis of a site (building) specific and performance based assessment.

10.0 Capacity of public roads (especially perimeter roads and traffic management treatments)

RF Reg. Clause 44 Application for bushfire safety authority (g)(iii): the capacity of public roads in the vicinity to handle increased volumes of traffic in the event of a bush fire emergency

The subject development site will be accessed from a network of internal public roads, approximately 2.4km total length. The main internal roadway network is already approved and has been partly constructed. As advised by the proponent, all main internal roadway access is for two way access and will have carriageway width of at least 6.5m along all main sections, and be fully sealed, kerbed / guttered and drained in accordance with standard Eurobodalla Shire Council requirements.

The proposed (and some existing) internal roads include Beachside Boulevard, Oceanview Way, Dawarra Street, John Penn Drive & Bada Lane. All these roadway sections provide through access (no dead-ends) between George Bass Drive & the existing Tomakin urban area.

10.1 Proposed new public roadway

The subject development proposes two new roadway (laneway / property access) sections to service proposed lots 178-184 & 190-194. This includes approximately 225m of new roadway sections located within 15m wide road reserve / dedicated laneway areas. Both proposed new laneway sections will be <200m in total length (80m & 145m) and will terminate by at a cul-de-sac of at least 12.5m radius. All future residential buildings within the allotments are located within

200m or less of the main public roadway (Oceanview Way / John Penn Drive). For reference, the indicative building site within Lot 194 is estimated to be approximately 190m from Oceanview Way via the proposed laneway access.

Property access recommendations are as listed section 17.0 (Bushfire Safety & Compliance Recommendations).

10.2 Existing public roadway

George Bass Drive, which directly services the subject development site from the east, is of at least 8-9m wide carriageway, fully formed, drained and sealed.

Redhill Parade (including linked sections of Yarralumla Crescent, Barton & Ainslie Parade), which directly services the subject development site from the west, is of at least 5m wide carriageway, fully formed, drained and sealed.

All existing public roadway access servicing the subject development site is clearly sign posted.

All sections of existing public access roadway (directly servicing the subject development site within the study area) do not exceed 5 degrees slope.

As a considered opinion, the existing public roadways servicing the subject development site should easily have the capacity to handle an increase in traffic associated with the subject development and a potential bushfire emergency. George Bass Drive and all public roadway areas within the Tomakin urban area would easily facilitate the safe passage and passing of larger fire fighting vehicles in either direction (i.e. Category 1 tankers) and further provide ample opportunity for fire fighters to safely work about a fire fighting vehicle parked along any of these roads (see attached photos).

11.0 Public roads link to fire trails and have two-way access

RF Reg. Clause 44 Application for bushfire safety authority (g)(iv): whether or not public roads in the vicinity that link with the fire trail network have two-way access

Public roadway links to fire trails and two-way access are not considered applicable to the subject development.

12.0 Adequacy of access and egress for emergency response

RF Reg. Clause 44 Application for bushfire safety authority (g)(v): the adequacy of arrangements for access to and egress from the development site for the purposes of an emergency response

Based the proximity of the indicative building sitings to existing and proposed public roadway to service the subject development site, most future residential buildings constructed within the subject development site would be <70m from their primary public roadway access point.

PBP states that for property access; *no specific access requirements apply in a urban area where a 70 metres unobstructed path can be demonstrated between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency fire fighting vehicles (i.e. a hydrant or water supply).*

However, this report notes that building development within proposed lots 181, 184, 192 & 193 would be reasonably located >70m from John Penn Drive or Oceanview Way. In this regard, this report recommends PBP vehicle access and property access standards should be incorporated for access to these lots.

Property access recommendations are as listed section 17.0 (Bushfire Safety & Compliance Recommendations).

13.0 Adequacy of maintenance plans and emergency procedures

RF Reg. Clause 44 Application for bushfire safety authority (g)(vi): the adequacy of bush fire maintenance plans and fire emergency procedures for the development site

No additional advice or information regarding bushfire maintenance plans & fire emergency procedures has been provided by the proponent.

Should a bushfire emergency impact upon this area, the implementation of the existing Eurobodalla Sect. 52 Operations & Risk Plan should be adequate for bushfire suppression, hazard management and maintenance.

The implementation, and on-going future maintenance, of building construction standards, APZ areas and roadway access standards described / recommended by this report should reasonably facilitate bushfire maintenance for the subject development site.

14.0 Construction standards to be used

RF Reg. Clause 44 Application for bushfire safety authority (g)(vii): the construction standards to be used for building elements in the development

Based on the above assessment and APZ recommendations stated by this report, the subject development site will collectively provide sufficient separation for all future sitings / residential dwellings to comply with BCA DTS provisions or otherwise the application of AS3959.

Considering the indicative building sitings and the minimum specified APZ / setback denoted by this report (see Map 5), and given the reasonable distances future residential buildings can be separated from unmanaged and persisting bushfire vegetation, future proposed residential buildings within the subject new allotments would technically be considered to be within a 'BAL-40' or lower category for potential bushfire attack.

Based on this reports assessment of vegetation and slope and the location of indicative building sitings, all proposed building development within the subject development (as considered by this report) would technically require at least AS3959 BAL-12.5 (up to but not exceeding BAL-40) design and construction.

Construction standard recommendations are as listed section 17.0 (Bushfire Safety & Compliance Recommendations).

Note: Construction standard recommendations for new residential buildings should be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act. Construction standard recommendations / compliance stated by this report are generic and may be reasonably altered or adjusted on the basis of a site (building) specific and performance based assessment.

15.0 Adequacy of sprinkler systems & other fire protection systems

RF Reg. Clause 44 Application for bushfire safety authority (g)(viii): the adequacy of sprinkler systems and other fire protection measures to be incorporated into the development

Sprinkler systems are neither recommended nor necessarily required for the subject development site (based on the recommended building safety designs and sitings as considered by this report).

Likewise, no other or alternate fire protection measures are recommended by this report (over and above AS3959 DTS & PBP requirements).

16.0 An assessment of how the development complies with the acceptable solutions, performance requirements and relevant specific objectives within Chapter 4 of PBP

RF Reg. Clause 44 Application for bushfire safety authority (h): an assessment of the extent to which the proposed development conforms with or deviates from the standards, specific objectives and performance criteria set out in Chapter 4 (Performance Based Controls) of Planning for Bush Fire Protection

16.1 Performance criteria / acceptable solution compliance

The following table outlines how the subject development complies with PBP provisions for a residential or rural residential subdivision. Compliance is stated as;

- **YES** – the subject development currently or will facilitate the acceptable solution for bushfire safety,
- **REASONABLY ASSUMED** – the subject development can reasonably facilitate the acceptable solution for bushfire safety, predicated on the recommendations as stated by this report or assumptions of future design and activities likely to occur within and surrounding the subject development,
- **NOT APPLICABLE (N/A)** – the acceptable solution is not applicable to the design or construction of the subject development,
- **NOT CONSIDERED** – the acceptable solution for bushfire safety is considered unnecessary or otherwise overly exceeds the relative risk associated with a bushfire event affecting the subject development. Bushfire safety compliance is based on performance criteria,
- **NO** – the subject development will not facilitate the acceptable solution for bushfire safety compliance. Bushfire safety compliance is based on performance criteria or alternate solution.

Derived from PBP Chapter 4; 4.1.3 – Standards for Bush Fire Protection Measures for Residential and Rural Residential Subdivision

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
Radiant heat levels at any point on a proposed building will not exceed 29 kW/m²	<i>an APZ is provided in accordance with the relevant tables and figures in PBP</i>	Reasonably Assumed	Compliance as per recommendations No. 1, 2 & 4 of this report.
	<i>the APZ is wholly within the boundaries of the development site</i>	Yes	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
APZs are managed and maintained to prevent the spread of a fire towards the building	<i>in accordance with the requirements of 'Standards for Asset Protection Zones (RFS 2005)</i> <i>(Note - a Monitoring and Fuel Management Program should be required as a condition of development consent)</i>	Reasonably Assumed	Compliance as per recommendations No. 1, 2 & 4 of this report, and a reasonable assumption that future property maintenance and landscaping would ensure APZ areas remained managed / fuel reduced for the life of any future residential building development.
Applicants demonstrate that issues relating to slope are addressed: maintenance is practical, soil stability is not compromised and the potential for crown fires is negated	<i>the APZ is not located on lands with a slope exceeding 18 degrees</i>	Yes	The subject development is located on level ground.
Fire fighters are provided with safe all weather access to structures (thus allowing more efficient use of fire fighting resources)	<i>public roads are two-wheel drive, all weather roads</i>	Yes	All existing and future proposed roadway access within the subject development will easily and safely facilitate the passage of two-wheel drive vehicles on a fully sealed surface.
Public road widths and design that allow safe access for fire fighters while residents are evacuating an area	<i>urban perimeter roads are two-way, that is, at least two traffic lane widths (carriageway 8 metres minimum kerb to kerb), allowing traffic to pass in opposite directions</i>	Not Considered	All existing and future proposed roadway access within the subject development is designed to carry normal urban traffic and vehicle capacities. All main access roads are at least 6.5m wide with cleared verge areas over level ground. Fire fighting vehicles should easily access the subject development whilst occupants may leaving the area.
	<i>Non perimeter roads comply with Table 4.1 – Road widths for Category 1 Tanker (Medium Rigid Vehicle)</i>	Not Considered	
	<i>the perimeter road is linked to the internal road system at an interval of no greater than 500 metres in urban areas</i>	N/A	
	<i>roads are through roads. Dead end roads are not more than 200 metres in length from a through road, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end</i>	Yes	
	<i>traffic management devices are constructed to facilitate access by emergency services vehicles</i>	Not Considered	
	<i>there is a minimum vertical clearance to a height of four metres above the road at all times</i>	Not Considered	
	<i>curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress</i>	Not Considered	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	<i>the minimum distance between inner and outer curves is six metres</i>	Not Considered	
	<i>maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.</i>	Yes	
	<i>Public roads have a cross fall not exceeding 3 degrees</i>	Yes	
	<i>the internal road surfaces and bridges have a capacity to carry fully-loaded firefighting vehicles (15 tonnes)</i>	Reasonably Assumed	
The capacity of public road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles Roads that are clearly sign- posted (with easily distinguishable names) and buildings/properties that are clearly numbered	<i>the capacity of road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes or 9 tonnes per axle for all other areas). Bridges clearly indicate load rating</i>	Not Considered	The public roadway system to service the subject development is already approved for construction and partly completed.
There is clear access to reticulated water supply	<i>public roads greater than 6.5 metres wide to locate hydrants outside of parking reserves to ensure accessibility to reticulated water for fire suppression</i>	Not Considered	Water supply & hydrant connection points to service the subject development are already approved for installation and partly completed. As advised by the proponent, reticulated water supply & hydrant connection point access is designed and located in accordance with AS2419 and normal Eurobodalla Shire Council requirements.
	<i>public roads between 6.5 metres and 8 metres wide are No Parking on one side with the services (hydrants) located on this side to ensure accessibility to reticulated water for fire suppression</i>	Not Considered	
	<i>public roads up to 6.5 metres wide provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression</i>	Not Considered	
	<i>one way only public access roads are no less than 3.5 metres wide and provide parking within parking bays and locate services outside of the parking bays to ensure accessibility to reticulated water for fire suppression</i>	N/A	
Parking does not obstruct the minimum paved width	<i>parking bays are a minimum of 2.6 metres wide from kerb edge to road pavement. No services or hydrants are located within the parking bays</i>	Not Considered	The public roadway system to service the subject development is already approved for construction and partly completed.
	<i>public roads directly interfacing the bush fire hazard vegetation provide roll top kerbing to the hazard side of the road</i>	Not Considered	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
Access to properties is provided in recognition of the risk to fire fighters and/ or evacuating occupants	<i>at least one alternative property access road is provided for individual dwellings (or groups of dwellings) that are located more than 200 metres from a public through road</i>	N/A	Based on the indicative building sitings denoted by this report, future proposed residential buildings would be <100m from their primary property access point off the proposed public roadway system.
The capacity of property access road surfaces and bridges is sufficient to carry fully loaded fire fighting vehicles All weather access is provided	<i>bridges clearly indicate load rating and pavements and bridges are capable of carrying a load of 15 tonnes</i>	Reasonably Assumed	Compliance as per recommendation No. 3 of this report.
	<i>roads do not traverse a wetland or other land potentially subject to periodic inundation (other than a flood or storm surge)</i>	Reasonably Assumed	
Property road widths and design enable safe access for vehicles	<i>a minimum carriageway width of four metres for rural-residential areas, rural landholdings or urban areas with a distance of greater than 70 metres from the nearest hydrant point to the most external part of a proposed building (or footprint)</i> <i>Note: No specific access requirements apply in a urban area where a 70 metres unobstructed path can be demonstrated between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency fire fighting vehicles (i.e. a hydrant or water supply)</i>	Reasonably Assumed	Compliance as per recommendation No. 3 of this report.
	<i>in forest, woodland and heath situations, rural property access roads have passing bays every 200 metres that are 20 metres long by two metres wide, making a minimum trafficable width of six metres at the passing bay</i>	N/A	
	<i>a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches</i>	Reasonably Assumed	
	<i>internal roads for rural properties provide a loop road around any dwelling or incorporate a turning circle with a minimum 12 metre outer radius</i>	N/A	
	<i>curves have a minimum inner radius of six metres and are minimal in number to allow for rapid access and egress</i>	Reasonably Assumed	
	<i>the minimum distance between inner and outer curves is six metres</i>	Reasonably Assumed	
	<i>the cross-fall is not more than 10 degrees</i>	Yes	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	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	Yes	
	access to a development comprising more than three dwellings have formalised access by dedication of a road and not by right of way	Yes	
The width and design of the fire trails enables safe and ready access for fire fighting vehicles	a minimum carriageway width of four metres with an additional one metre wide strip on each side of the trail (clear of bushes and long grass) is provided	N/A	The subject development does not include nor require any additional fire trail access for bushfire safety compliance.
	the trail is a maximum grade of 15 degrees if sealed and not more than 10 degrees if unsealed	N/A	
	a minimum vertical clearance of four metres to any overhanging obstructions, including tree branches is provided	N/A	
	the cross-fall of the trail is not more than 10 degrees	N/A	
	the trail has the capacity for passing by: - reversing bays using the access to properties to reverse fire tankers, which are six metres wide and eight metres deep to any gates, with an inner minimum turning radius of six metres and outer minimum radius of 12 metres; and/or - a passing bay every 200 metres, 20 metres long by three metres wide, making a minimum trafficable width of seven metres at the passing bay	N/A	
Fire trails are trafficable under all weather conditions. Where the fire trail joins a public road, access shall be controlled to prevent use by non authorised persons	the fire trail is accessible to fire fighters and maintained in a serviceable condition by the owner of the land	N/A	The subject development does not include nor require any additional fire trail access for bushfire safety compliance.
	appropriate drainage and erosion controls are provided	N/A	
	the fire trail system is connected to the property access road and/or to the through road system at frequent intervals of 200 metres or less	N/A	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	fire trails do not traverse a wetlands or other land potentially subject to periodic inundation (other than a flood or storm surge)	N/A	
	gates for fire trails are provided and locked with a key/lock system authorised by the local RFS	N/A	
Fire trails designed to prevent weed infestation, soil erosion and other land degradation	fire trail design does not adversely impact on natural hydrological flows	N/A	The subject development does not include nor require any additional fire trail access for bushfire safety compliance.
	fire trail design acts as an effective barrier to the spread of weeds and nutrients	N/A	
	fire trail construction does not expose acid-sulphate soils	N/A	
(Reticulated water supplies) Water supplies are easily accessible and located at regular intervals	reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads	Reasonably Assumed	Compliance as per recommendation No. 5 of this report. Water supply & hydrant connection points to service the subject development are already approved for installation and partly completed. As advised by the proponent, reticulated water supply & hydrant connection point access is designed and located in accordance with AS2419 and normal Eurobodalla Shire Council requirements.
	fire hydrant spacing, sizing and pressures comply with AS 2419.1 – 2005. Where this cannot be met, the RFS will require a test report of the water pressures anticipated by the relevant water supply authority. In such cases, the location, number and sizing of hydrants shall be determined using fire engineering principles	Reasonably Assumed	
	hydrants are not located within any road carriageway	Reasonably Assumed	
	all above ground water and gas service pipes external to the building are metal, including and up to any taps	Reasonably Assumed	
	the provisions of parking on public roads are met	Not Considered	
(Non-reticulated water supply areas) For rural-residential and rural developments (or settlements) in bush fire prone areas, a water supply reserve dedicated to fire fighting purposes is installed and maintained. The supply of water can be an amalgam of minimum quantities for each lot in the subdivision (community titled subdivisions), or held individually on each lot	the minimum dedicated water supply required for fire fighting purposes for each occupied building excluding drenching systems, is provided in accordance with [PBP] Table 4.2	Reasonably Assumed	Compliance as per recommendations No. 6-13 of this report. Independent water supplies for fire fighting purposes would be considered under s79BA EPA Act for future proposed building development within each individual new allotment.
	a suitable connection for fire fighting 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	Reasonably Assumed	
	Gate or Ball valve and pipes are adequate for water flow and are metal rather than plastic	Reasonably Assumed	

Performance Criteria	Acceptable Solution	Compliance	Assessment / Comment
	<i>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</i>	Reasonably Assumed	
	<i>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</i>	Reasonably Assumed	
	<i>all above ground water pipes external to the building are metal including and up to any taps. Pumps are shielded</i>	Reasonably Assumed	
(Electricity Services) <i>Location of electricity services limits the possibility of ignition of surrounding bushland or the fabric of buildings</i> <i>Regular inspection of lines is undertaken to ensure they are not fouled by branches.</i>	<i>where practicable, electrical transmission lines are underground</i>	Yes	All existing and future proposed electrical connections are to be located underground.
	<i>where overhead electrical transmission lines are proposed:</i> <i>- lines are installed with short pole spacing (30 metres), unless crossing gullies, gorges or riparian areas; and</i> <i>- no part of a tree is closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearances' issued by Energy Australia (NS179, April 2002)</i>		
(Gas Services) <i>Location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings</i>	<i>reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities. Metal piping is to be used</i>	Reasonably Assumed	Compliance as per recommendation No. 15 of this report. Gas installation, connection and storage would be considered under s79BA EPA Act for future proposed building development within each individual new allotment.
	<i>all fixed gas cylinders are kept clear of all flammable materials to a distance of 10 metres and shielded on the hazard side of the installation</i>	Reasonably Assumed	
	<i>if gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion. Connections to and from gas cylinders are metal</i>	Reasonably Assumed	
	<i>polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used</i>	Reasonably Assumed	

PBP 2006 Specific Objective	Assessment / Comment
<i>minimise perimeters of the subdivision exposed to the bush fire hazard. Hourglass shapes, which maximise perimeters and create bottlenecks, should be avoided.</i>	The subject development does not unnecessarily create additional boundary or perimeter areas directly exposed to adjoining bushfire vegetation on neighbouring lands. All perimeter areas of proposed or adjusted residential allotments exposed to an adjacent / neighbouring bushfire hazard will have the benefit of sufficient separation for APZ area by either the depth of the lot perimeter roadway construction.
<i>minimise bushland corridors that permit the passage of bush fire</i>	The subject development does not create any additional bush land or vegetation corridors. The existing riparian and vegetated areas to be retained within the subject development site will be well separated (approx 20 or greater) away from future proposed residential building development.
<i>provide for the siting of future dwellings away from ridge-tops and steep slopes - particularly up-slopes, within saddles and narrow ridge crests.</i>	The subject development area is flat.
<i>ensure that separation distances (APZ) between a bush fire hazard and future dwellings enable conformity with the deemed- to-satisfy requirements of the BCA. In a staged development, the APZ may be absorbed by future stages</i>	Predicated upon an undertaking of APZ and associated easement arrangement as stated by this report, all future residential building development within the subject development will be well separated from any adjacent bushfire hazard to the extent required to enable conformity with AS3959 construction standards. APZ areas (easement or otherwise) as recommended by this report would ensure the minimum specified APZ for BCA DTS conformity can be absorbed by delayed or future staged residential building or further subdivision development.
<i>provide and locate, where the scale of development permits, open space and public recreation areas as accessible public refuge areas or buffers (APZs)</i>	The subject development is adjacent to an existing cleared and managed residential subdivision (Tomakin). This area would easily and reasonably be accessible for public refuge during a bushfire event, and further provide a significant APZ buffers to the bushfire hazard within and surrounding the study area.
<i>ensure the ongoing maintenance of asset protection zones</i>	Predicated upon an undertaking of APZ and temporary APZ easement as recommended by this report, it would be reasonable to assume future Council hazard reduction works and regular residential property maintenance should ensure the ongoing maintenance of an asset protection zone in favour of future residential building development within the subject development site.
<i>provide clear and ready access from all properties to the public road system for residents and emergency services</i>	All future residential building development within the subject development site would reasonably be located not greater than 100m from the proposed & existing public roadway system (Oceanview Way & John Penn Drive). The subject development should reasonably have clear and unrestricted access to these adjacent public roadway areas at all times.
<i>ensure the provision of and adequate supply of water and other services to facilitate effective fire fighting</i>	The subject development site will be serviced by existing reticulated water and electrical supplies which currently service the Tomakin area. Where all recommendations relating to fire fighting water supplies as stated by this report are reasonably and adequately incorporated, both emergency services personnel and others assisting in bush fire fighting should safely be able to draw on a water supply for property protection purposes. Similarly, where the installation or connection to gas and electrical services incorporates the associated recommendations as stated by this report, both emergency services personnel and others assisting in bush fire fighting should safely be able to manage gas or electrical hazards associated during a bushfire event.

17.0 Bushfire Safety & Compliance Recommendations

The following recommendations are to facilitate bushfire safety & protection measures for the proposed (revised) 24 lot residential subdivision and boundary adjustment (22 lots) of Lot 42 DP1147557 George Bass Drive Tomakin NSW 2537 (Barlings Beach Estate).

These recommendations are based upon the relevant provisions (acceptable solutions or performance criteria where considered applicable and appropriate) for future residential building in bushfire prone areas and the NSW Rural Fire Service guideline entitled *Planning for Bushfire Protection 2006*.

No.	PBP Standard	Recommendation
1	Asset Protection Zone (General)	<i>Apart from proposed 181, the entire area of each proposed or adjusted allotment should be entirely managed as an APZ area. The extent of APZ area recommended is predicated upon residential buildings being constructed to AS3959 BAL-40 and lower.</i> <i>The APZ should be managed as an IPA (with allowable OPA standards if applicable) as described by PBP.</i> <i>The extent of APZ area within proposed lot 181 should be determined based on location and extent of future building development within that allotment.</i> <i>(to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).</i>
2	Asset Protection Zone (Easement)	<i>A temporary and reciprocal easement for APZ maintenance shall be placed over the entire area of the subject development site (i.e. the developable area of each new residential allotment).</i> <i>The temporary / reciprocal APZ easement area shall ensure that at least the minimum required APZ area for a proposed building development constructed to AS3959 BAL-40 or less (as otherwise determined for residential building development under 79BA EP&A Act) can be extended beyond the boundary of the allotment and over undeveloped or unmanaged land within any of the adjoining residential allotments.</i> <i>The APZ easement shall remain in place over the subject development site until such time as each of the proposed new or adjusted allotments are fully developed and maintained to a standard that ensures each residential building will not be exposed to direct flame contact or radiant heat levels from a bushfire event which may damage or ignite the external building elements. Where a proposed new or adjusted allotment becomes fully developed and maintained, or reasonably thereabouts, the APZ easement over that allotment can be extinguished.</i>

No.	PBP Standard	Recommendation
3	Vehicle Access	The proposed roadway / laneway access to service proposed lots 178-184 & 190-195 shall comply with section 4.1.3 (2) of Planning for Bush Fire Protection 2006, including; • Pavements and bridges are capable of carrying a load of at least 15 tonnes. • Roads do not traverse a wetland or other land potentially subject to periodic inundation (other than a flood or storm surge). • A minimum carriageway width of 4 metres). • A minimum vertical clearance of 4 metres to any overhanging obstruction, including tree branches. • Curves have a minimum inner radius of 6m. • The minimum distance between the inner and outer curves is 6m.
4	Vehicle Access	The proposed roadway / laneway access to service proposed lots 178-184 & 190-195 should be designed and constructed to ensure the carriageway area is located closer to outer side of the road reserve area or else ensure the entire road reserve area is utilised as formed carriageway and cleared / hard verge areas. The purpose of the above to ensure the adjacent bushfire hazard does not encroach or regenerate over the road / laneway reserve area and reduce the potential extent of APZ area in favour of any adjacent building development.
5	Water Supply (Hydrants)	Additional hydrant connection points should be located in vicinity of proposed lots 190-201 to ensure that the furthest most points of future residential buildings constructed within those allotments are not greater than 90m from a hydrant connection point.
6	Water Supply (5,000L Static / Tank)	Future proposed residential building development within proposed allotments 54, 55, 86-90, 182, 183, 185-193, 196-201 should incorporate a static water supply (tank), dedicated or otherwise reasonably available for firefighting purposes, with a reserve capacity of at least 5,000L. (to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).
7	Water Supply (10,000L Static / Tank)	Future proposed residential building development within proposed or adjusted allotments 45-53, 178-181, 184 & 194 should incorporate a static water supply (tank), dedicated or otherwise reasonably available for firefighting purposes, with a reserve capacity of at least 10,000L. (to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).
8	Water Supply (20,000L Static / Tank)	Nil

No.	PBP Standard	Recommendation
9	Water Supply (Static / Tank – General)	Each firefighting water supply tank within the subject development site should incorporate a suitable firefighting connection point (from the static / fire fighting water supply). A 38/65mm Storz outlet with a gate or ball valve be provided on the connection point and be clearly identified as a fire fighting water supply. The firefighting water supply tank or connection point should be located within the APZ (IPA) and away from the building structure. (to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).
10	Water Supply (Static / Tank – General)	All gate or ball valves and pipes to be used for fire fighting purposes must be adequate for water flow and are of metal design / manufacture rather than plastic (to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).
11	Water Supply (Static / Tank – General)	Where the static / fire fighting water supply is to be located underground, it must have an access hole of 200mm to allow tankers to refill direct from the tank. A hardened ground surface for truck / heavy vehicle access must also be constructed / supplied within 4 metres of the access hole (to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).
12	Water Supply (Static / Tank – General)	Where the fire fighting water supply is to be located above ground, it should be preferably manufactured of concrete or metal and, where raised by stands, have their stands protected from radiant heat. Plastic tanks should not be used. Tanks located towards or close to the bushfire hazard be provided with adequate shielding (from radiant heat) for the protection of the tank and fire fighters / occupants accessing the tank. (to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).
13	Water Supply (Pipes & Pumps)	All above ground water pipes external to the buildings should be metal including and up to any taps. Fixed water pumps servicing the future proposed residential building should be shielded and protected from potential damage caused by a bushfire event. (to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).

No.	PBP Standard	Recommendation
14	Building Construction Standard (Future Residential Building)	<i>Predicated upon recommendations No. 1 & 2 of this report, future proposed residential buildings within the subject development site be designed & constructed in accordance with AS3959.</i> <i>(to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).</i>
15	Gas Connection	<i>All gas supply connections to service future proposed residential building and infrastructure within the subject development shall be designed & located in accordance with PBP, including;</i> <i>reticulated or bottled gas is installed and maintained in accordance with AS 1596 and the requirements of relevant authorities,</i> <i>all exposed / external gas service piping / plumbing be metal,</i> <i>all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side of the installation,</i> <i>if gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion, &</i> <i>polymer sheathed flexible gas supply lines to gas meters adjacent to buildings are not used.</i> <i>(to be determined by a site specific assessment for bush fire safety for a single dwelling – s.79BA EPA Act).</i>

18.0 Conclusion

Provided that the future proposed residential building development, APZ areas and water supply facilities within the subject development site are designed, constructed & maintained in accordance with the recommendations as described by this report, it is a considered opinion that the subject development satisfies the aims, objectives and performance requirements of PBP 2006 that are considered relevant to the development under Section 100B of the NSW Rural Fires Act.

Bushfire safety compliance and mitigation (as recommended and/or purported by this report) for the subject development site comprises a package of '*measures in combination*' primarily including asset protection zoning, vehicle access for buildings >70m from the main public roadway sections, residential building construction standards & adequate water supply for fire fighting purposes.

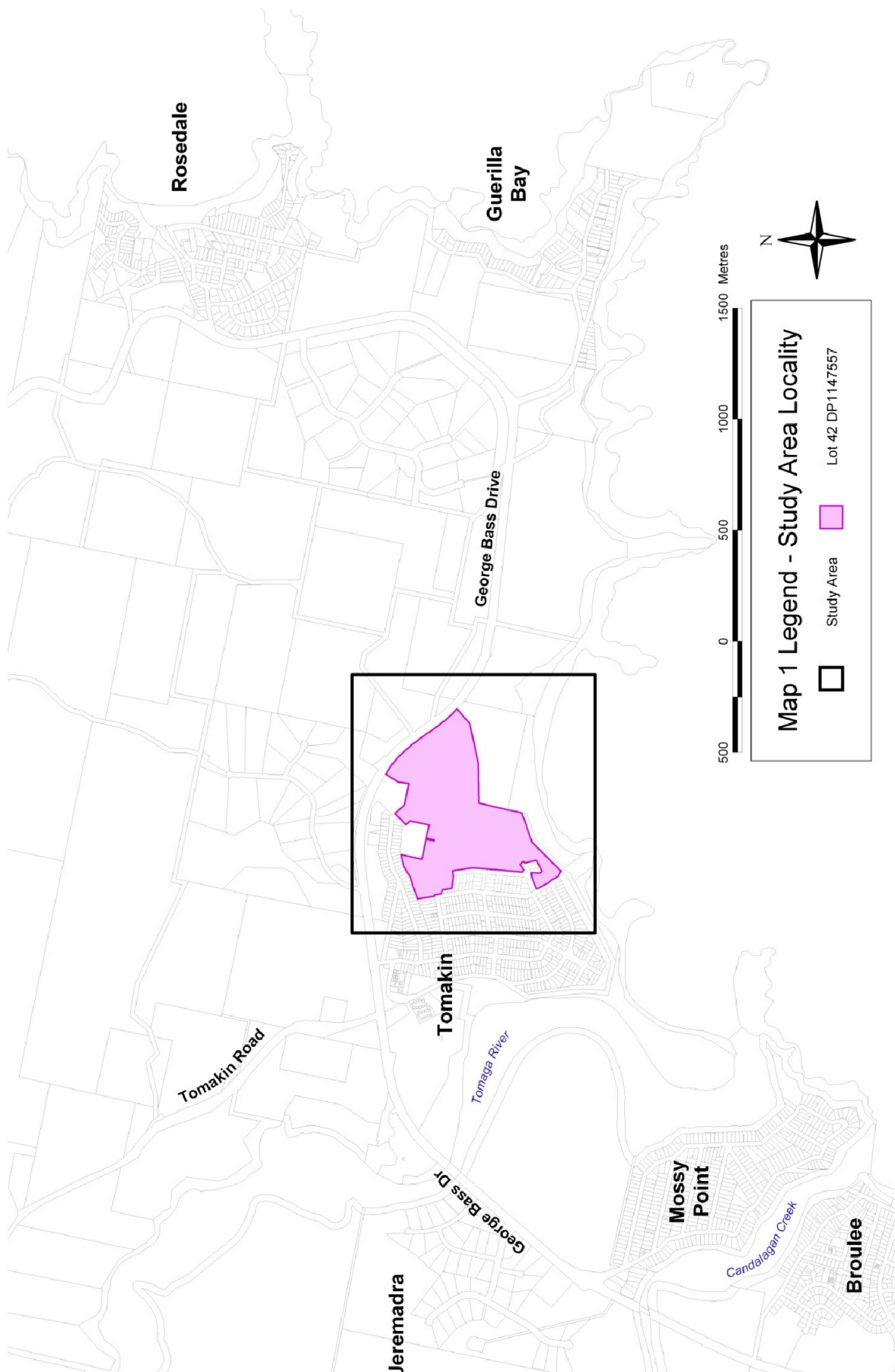
The above measures have been derived from provisions and recommendations as outlined within the document Planning for Bushfire Protection Guidelines 2006, engineered judgment and expert opinion, and previous advice from the NSW Rural Fire Service Development Control Unit.

Based on the above assessment and 15 recommendations for bushfire safety and fire protection compliance, the Consent Authority should be satisfied that the proposed (revised) 24 lot residential subdivision and boundary adjustment (22 lots) of Lot 42 DP1147557 George Bass Drive Tomakin NSW 2537 (Barlings Beach Estate) can reasonably conform with the performance criteria and specific objectives of Planning for Bushfire Protection 2006 that are considered relevant to the development under Section 100B of the NSW Rural Fires Act.

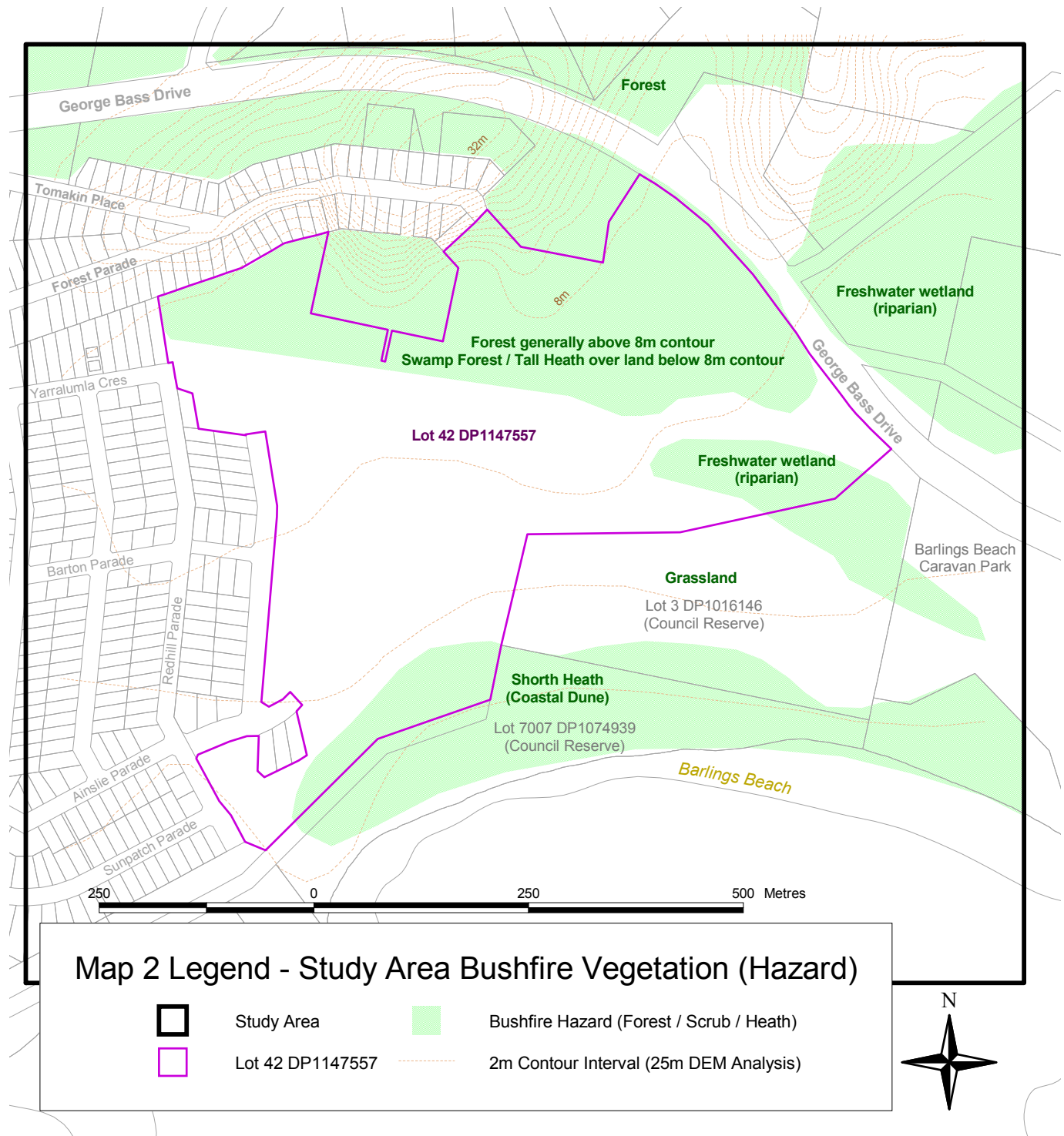
19.0 References

- *Australian Standard 2419 -1994, Incorporating amendment Nos. 1 & 2, Fire Hydrant Installations.*
- *Australian Standard 3959 -1990, Incorporating amendment Nos. 1 & 2, Construction of buildings in bushfire-prone areas.*
- *Keith, D (2004) Ocean Shores to Desert Dunes, The native vegetation of New South Wales and the ACT – NSW National Parks & Wildlife Service.*
- *Planning for Bushfire Protection. A guide for councils, planners, fire authorities & developers (2006) – NSW Rural Fire Service.*

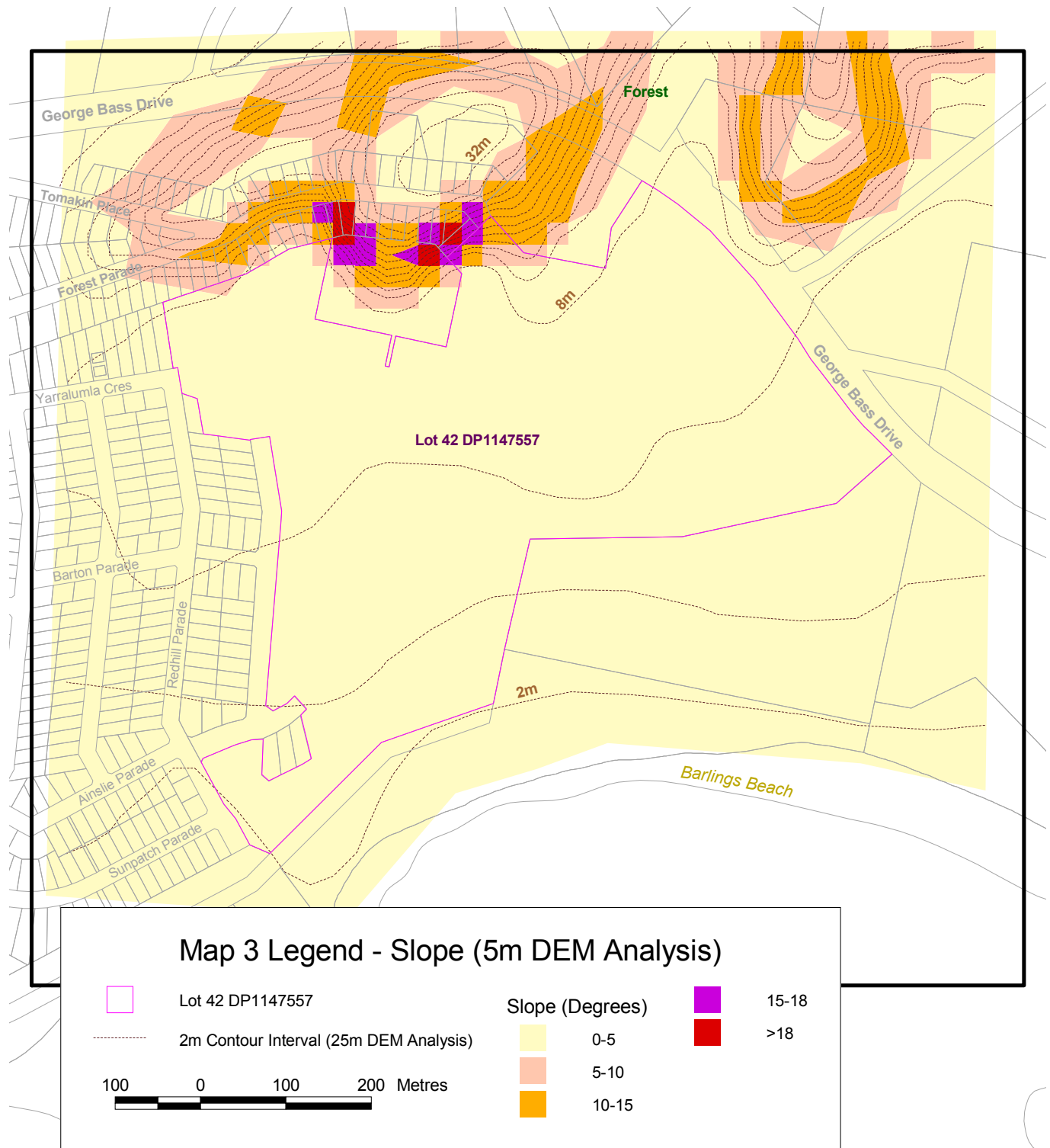
Map 1



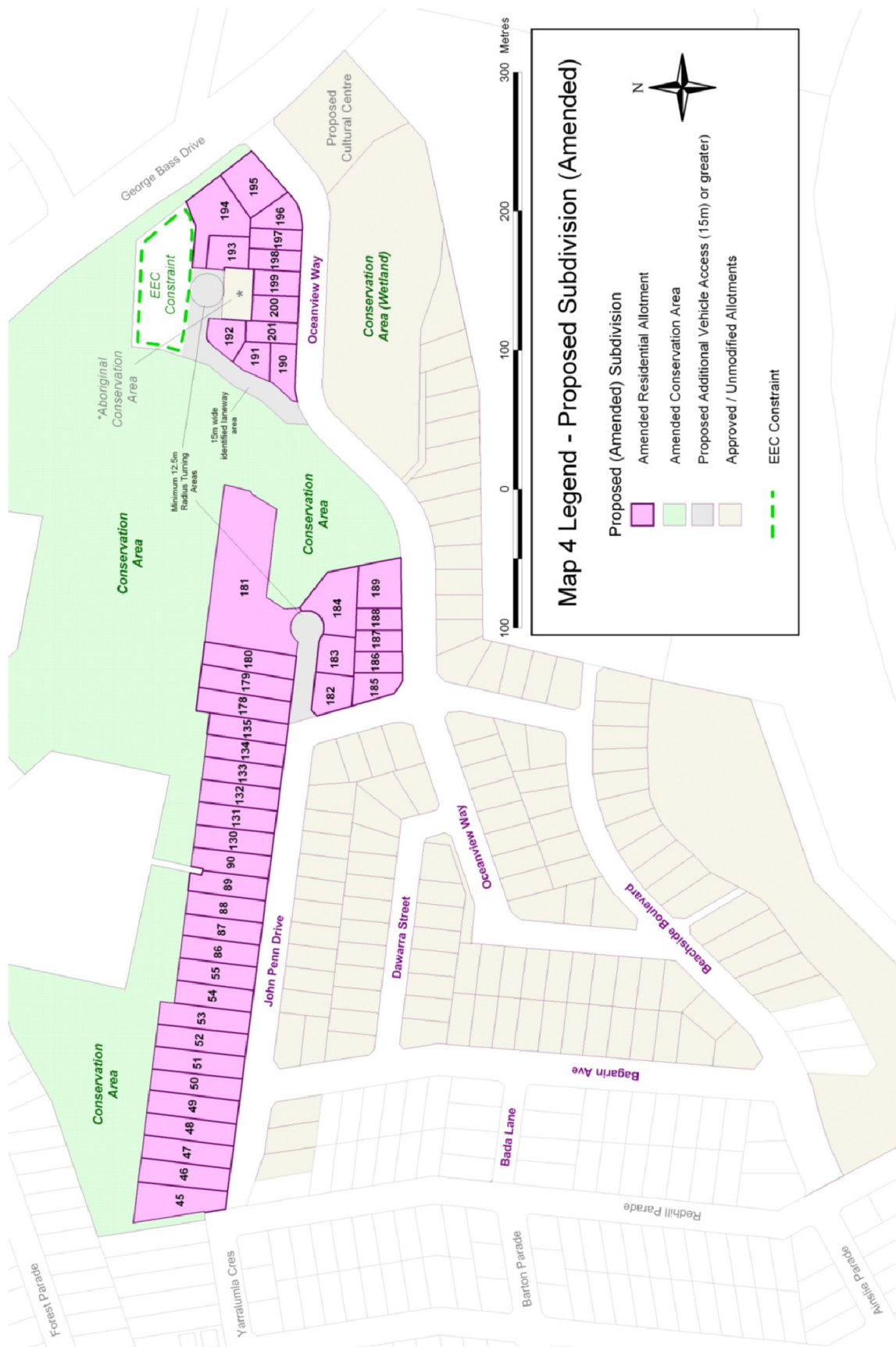
Map 2



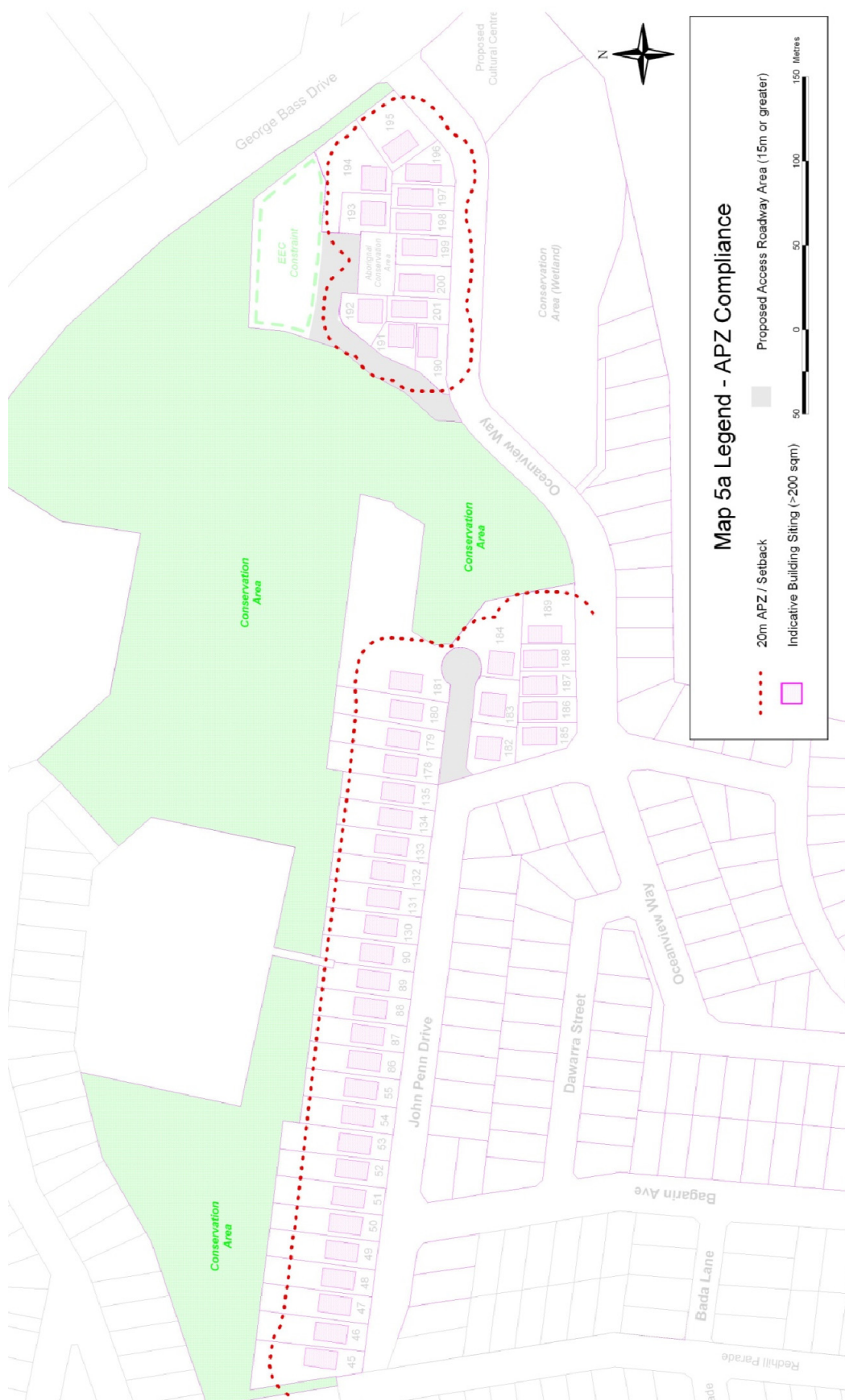
Map 3



Map 4



Map 5a



Map 5b Legend - APZ Compliance

- 20m APZ / Setback
- Indicative Building String (>200 sqm)
- Proposed Access Roadway Area (15m wide or greater)

Scale: 0 30 60 90 Metres

North Arrow

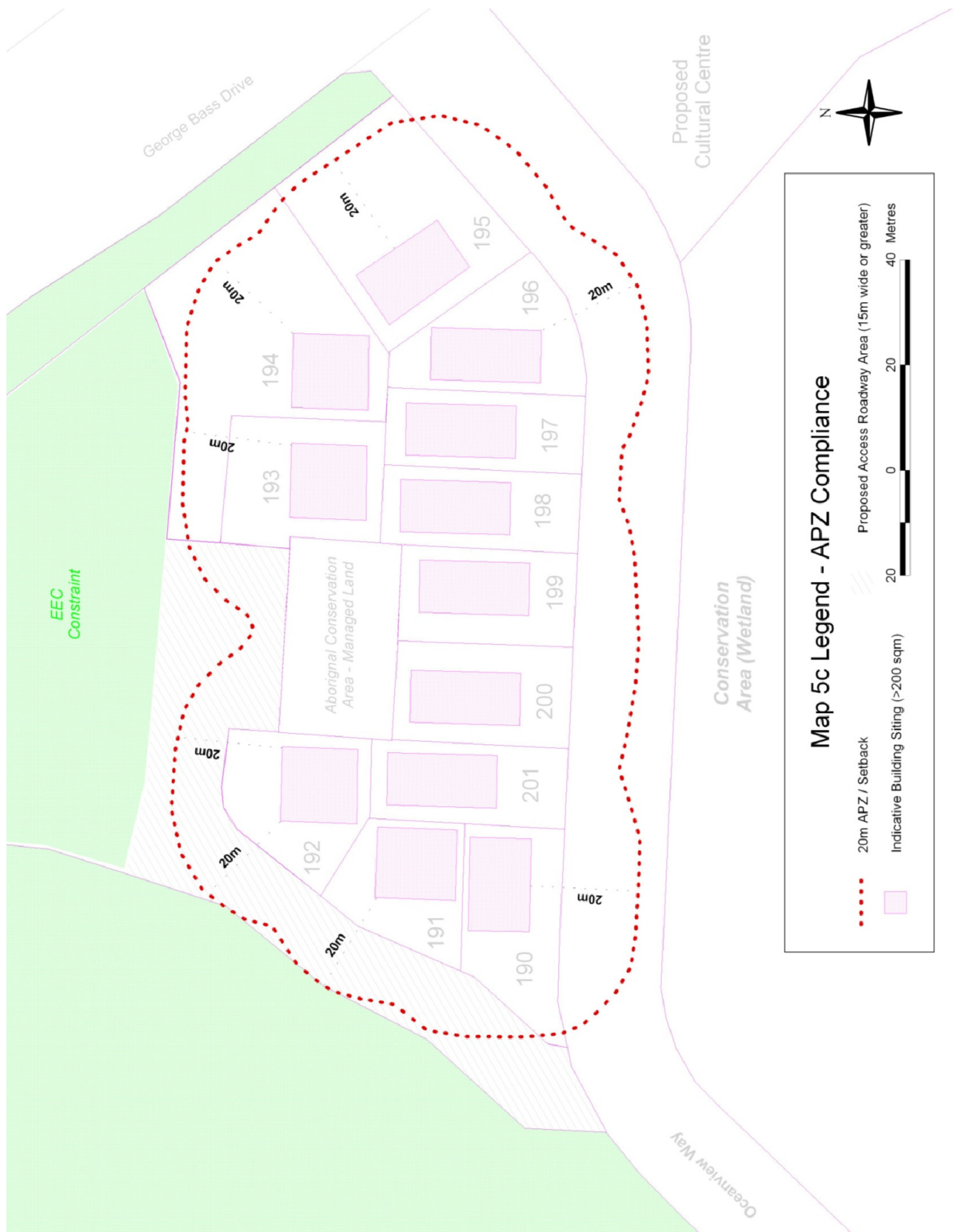
John Penn Drive

Oceanview Way

Conservation Area

Access handle to conservation area

Map 5c



Appendix 1– Ortho-photo / Boundary Overlay (Photo Reference Points)



Appendix 2– Site Photos (16/11/10)



Photo 1

Photo Reference Point: 1
(intersection of Oceanview Way & George Bass Dr)

Looking SE along George Bass Drive.



Photo 2

Photo Reference Point: 1

Looking towards Barlings Beach Estate entrance point from George Bass Drive.



Photo 3

Photo Reference Point: 1

Looking NW along George Bass Drive.



Photo 4

Photo Reference Point: 2
(Oceanview Way frontage to proposed Lots 190-201)

Looking W along Oceanview Way.



Photo 5

Photo Reference Point: 2

Looking N towards proposed Lots 199, 200 & Aboriginal Conservation Area.



Photo 6

Photo Reference Point: 2

Looking W along Oceanview Way.



Photo 7

Photo Reference Point: 3
(Oceanview Way / Water Course Crossing)

Looking SW along Oceanview Way.



Photo 8

Photo Reference Point: 3

Looking W.



Photo 9

Photo Reference Point: 3

Looking NE along
Oceanview Way.



Photo 10

Photo Reference Point: 3

Looking SE.



Photo 11

Photo Reference Point: 3

Looking S.



Photo 12

Photo Reference Point: 4
(Intersection of Oceanview
Way & Beachside
Boulevard)

Looking SW.



Photo 13

Photo Reference Point: 4

Looking W.



Photo 14

Photo Reference Point: 4

Looking N (along future section of Oceanview Way).



Photo 15

Photo Reference Point: 4

Looking SE.



Photo 16

Photo Reference Point: 4

Looking S.



Photo 17

Photo Reference Point: 5
(Intersection of Ainslie & Redhill Parade & Beachside Boulevard)

Looking W.



Photo 18

Photo Reference Point: 5

Looking N along Redhill Parade.



Photo 19

Photo Reference Point: 5

Looking NE towards new residential building construction within Stage 1 of Barlings Beach.



Photo 20

Photo Reference Point: 5

Looking E along Boulevard Drive.



Photo 21

Photo Reference Point: 5

Looking WSW along Ainslie Parade.



Photo 22

Photo Reference Point: 5

Looking SSE along Redhill Parade.



Photo 23

Photo Reference Point: 6
(Intersection of Redhill & Barton Parade & Bada Lane)

Looking SW along Barton Parade.



Photo 24

Photo Reference Point: 6

Looking N along Redhill Parade.



Photo 25

Photo Reference Point: 6

Looking E along Bada Lane.



Photo 26

Photo Reference Point: 6

Looking S along Redhill Parade.



Photo 27

Photo Reference Point: 7
(Intersection of Redhill Parade, Yarralumla Crescent & John Penn Drive)

Looking NW towards subject development site (proposed Lots 45-47).



Photo 28

Photo Reference Point: 7

Looking E along John Penn Drive.



Photo 29

Photo Reference Point: 6

Looking S along Redhill Parade.

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Appendix 4 – Proposed Plans

