



Bushfire

Services

Bushfire Protection Assessment

Subdivision Stage 2
Dolphin Point / Burrill Lake
City of Shoalhaven

May 2006

Our Reference: 6116



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Prepared May 2006

for

The Turnbull Group Pty Ltd

PROJECT TEAM:

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SUMMARY

The development site is bushfire prone and has been mapped as such by Shoalhaven City Council. Bushfire protection provisions appropriate to the bushfire risk will be established, maintained and designed consistent with the NSW Rural Fire Service (2001) *Planning for Bushfire Protection, A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners* (PBP Guidelines).

Asset Protection Zones (APZs): APZs of varying dimensions (depending on slopes, development type, and vegetation) will be created and maintained in perpetuity. Dimensions comply with PBP Guideline's Table A2.2 for residential areas. Fuel loadings within the APZ will be as prescribed in PBP Guidelines.

Construction Standards: AS3959 will be applied to Class 1, 2, and 3 buildings (as defined under the Building Code of Australia) within the development. The construction standards applied will comply with Appendix 3 and Table A3.3 of PBP Guidelines and NSW RFS policies.

Access: The development will be accessed by 2 public roads with one road being a perimeter road passing through Stage 3 along the western boundary and the other an internal road linking Stage 2 with Stage 3.

Perimeter roads with an 8 m trafficable surface will be provided around all development areas. The perimeter roads will link with internal roads at frequent intervals. Two alternative access and egress roads will be provided to ensure at least one safe evacuation and access route. Access provisions comply with general specifications for access (Section 4.3.4 of PBP Guidelines) and the design criteria for public roads, fire trails, and perimeter roads.

Water supply: Reticulated mains will be available throughout the development. Hydrants will be made accessible and located such that a tanker can park within a distance serviceable by a 20 m hose and hydrants will be located such that all habitable buildings are within 70 m of a hydrant. Large water features will be accessible to fire fighting appliances (*i.e.* within 20 m).

The bushfire protection measures described above and detailed throughout the report will provide an appropriate standard of bushfire protection for the proposed development which is consistent with current state guidelines for development within bushfire prone lands.

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1. Introduction and background

The Turnbull Group Pty Ltd commissioned Bushfire and Environmental Services Pty Ltd (BES) to prepare a Bushfire Protection Assessment for a concept plan for stages 2 to 5 and a project application for Stages 2 and 3 involving the proposed subdivision of land at Burrill Lake / Dolphin Point, City of Shoalhaven.

This Bushfire Protection Assessment has been prepared to accompany an application under Part 3A of the *Environmental Planning and Assessment Act 1979* (EPA Act 1979) and addresses the Director General's Environmental Assessment requirements, included as Appendix 1. The report also addresses the key issues and assessment requirements of the NSW Rural Fire Service in their correspondence of 17 March 2006 included as Appendix 2.

Although the project will be assessed under Part 3A of the EPA Act, this bushfire assessment has been prepared using current state-wide guidelines to ensure consistent bushfire protection outcomes, that is;

- *Section 79BA of the Environment Planning and Assessment Act 1979;*
- *Section 100B of the Rural Fires Act 1997;*
- *Clause 46 of the Rural Fires Regulation 2002, and;*
- *NSW Rural Fire Service (2001) Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners" (herein called PBP Guidelines).*

1.1 Project description

A concept plan has been submitted for Stages 2, 3, 4 and 5 as well as a project application for stages 2 and 3. Stages 2 and 3 involve residential subdivision.

The residential subdivision of Stage 2 includes:

- approximately 134 residential allotments ranging from 610.4 m² to 1806 m² within the 15.22 hectare site;
- a road network designed in accordance with Council's design specifications to be accessed by a road network already constructed through Stage 1 and a newly created road to be provided in Stage 3 connecting the subdivision to the Princes Highway.

The residential subdivision of Stage 3 includes:

- approximately 25 residential allotments ranging from 658.1 m² to 4445 m² within the 4.98 hectare site;
- a road network designed in accordance with Council's design specifications.

1.2 Location and description of site

The subject land is located in Burrill Lake / Dolphin Point approximately 5 km south from Ulladulla. It is generally bounded by the Princes Highway to the north and west, Dolphin Point Road to the north and east, Barnunj State Conservation Area to the south and bushland zoned 2(c) under the Shoalhaven Local Environmental Plan (1985) to the east.

Stages 2 and 3 are mostly cleared grassland with some remnant vegetation occurring within small gullies to the north-east and north-west of Stage 2 and south of Stage 3 (see Map 1). They occupy part Lot1 DP 1045880 and are located to the south and west of the proposed development area with Stage 1 to the north and Stage 5 to the north-east. Stage 4 is located to the north of Stage 1 and Stage 5. A large dam is located near the centre of the development area.

1.3 General comment on fire risk

The development site has been mapped as bushfire prone land by Shoalhaven City Council.

The Shoalhaven area has one of the highest incidences of bushfires in NSW, accounting for approximately half of the unplanned fires in the southern region. The subject land is cleared grassland however surrounding vegetation poses some threat to the proposed development.

Areas of unmanaged bushland occur to the south, west and east. Bushland to the south and west form part of Barnunj State Conservation Area. To the east is private land zoned as Residential 2(c) under Shoalhaven Council's LEP, 1985. Bushfire protection provisions appropriate to the bushfire risk described above will be established and maintained. These are outlined in Section 3.

Bushfire Assessment

2. Classification of predominant vegetation and slope

In accordance with the PBP Guidelines (Section A2.3.2), vegetation classes and slopes have been determined within and adjacent to the subject land. The predominant vegetation within the subject land is grassland with some patches of trees and shrubs associated with the gully lines north-east and north-west of Stage 2 and south of Stage 3.

Slopes are predominantly within the 0 – 5 degree slope class.

The vegetation and slope assessment have been used to determine Asset Protection Zone setbacks for the development as shown in Table 1 and Map 1 and explained in Section 3 of this report.

3. Provision of Asset Protection Zones and setbacks from bushfire hazard

BES carried out a preliminary constraints analysis in December 2005 and the following points are relevant to bushfire protection for proposed dwellings on the subject land:

- The neighbouring properties to the west, south and east have unmanaged vegetation adjoining the common boundaries. The constraints map (Map 2) identifies the minimum APZ distances required from this adjoining vegetation to the edge of future dwellings;
- A perimeter road or trail is required between all development and vegetation that is considered bushfire prone. The perimeter road should have a minimum reserve width of 20 m;
- A vegetated gully runs down to the existing dam from the western boundary. As the gully is narrow, is less than 1 ha and will be separated from the vegetation to the west by a perimeter road it can be described as remnant vegetation. 20 m APZs are required from the edge of the remnant vegetation within the gully to the edge of future dwellings; and
- An area of vegetation is to remain on the property southeast of the existing dam. A 30 m APZ is required from the edge of this vegetation to the edge of future dwellings.

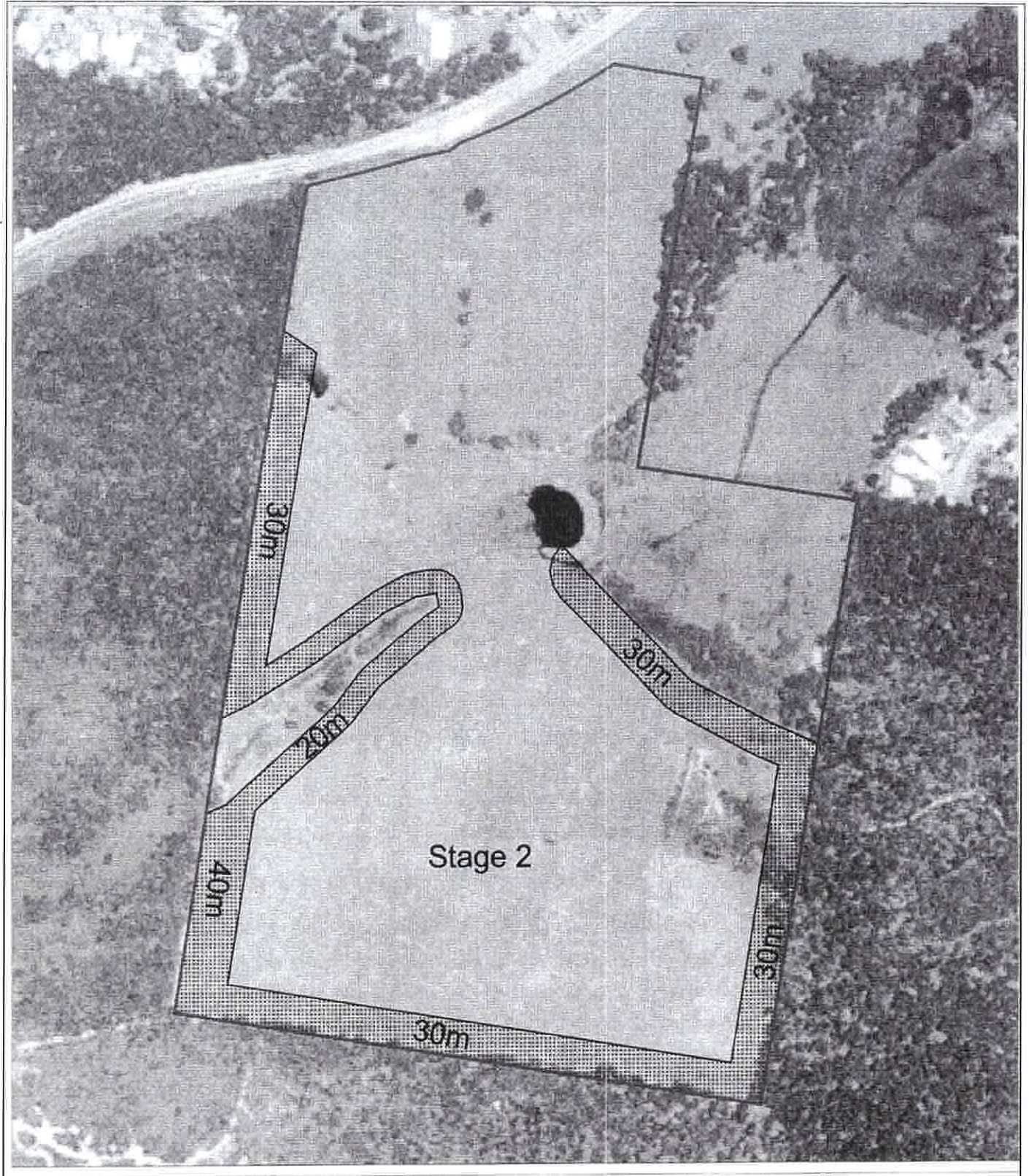
3.1 APZ dimensions

Dimensions of APZs for the development have been determined using consistent methodology identified in Appendix 2 of the PBP Guidelines. Broadly, the procedure used for determining APZ dimensions was as follows;

1. Vegetation distance, type and class were determined.
2. The effective slope of the land between the predominant vegetation class and the site were determined.
3. Appropriate tables within the PBP Guidelines were consulted and the appropriate APZ setback for the assessed land use, vegetation group and effective slopes were determined.

The results of this procedure are shown in Table 1 and on Map 2.

Map 1: Subdivision layout and APZ locations




 Asset protection zones

Table 1: Threat assessment, APZ and category of bushfire attack

Direction from envelope	Slope ¹	Vegetation ²	PBP required APZ ³	Proposed APZ	Bushfire attack ⁴	Construction Standard under AS3959	Comment
west (Stage 3)	5-0° upslope	Blackbutt tall forest (Group 1)	30 m	>30 m	high	Level 2	APZ will be predominantly a sealed perimeter road and road verge and residential front yards maintained to APZ standard.
south west	>0-5° downslope	Silvertop Ash/ Bloodwood Forest (Group 1)	40 m	>40 m	high	Level 2	As above
south	5-0° upslope	Silvertop Ash/ Bloodwood/ Bangalay Forest (Group 1)	30 m	>30 m	high	Level 2	As above
east	5-0° upslope	Bangalay Forest/Blood wood Woodland (Group 1)	30 m	>30 m	high	Level 2	As above

Direction from envelope	Slope ¹	Vegetation ²	PBP required APZ ³	Proposed APZ	Bushfire attack ⁴	Construction Standard under AS3959	Comment
north - western gully	>0-5° downslope	Remnant Blackbutt Tall Forest (Group 3)	20 m	>20 m	predicted medium	Level 1	The gully contains only a few trees hence is a low bushfire risk. The northern perimeter road of Stage 2 will run along the southern side of the creek gully. This combined with residential front yards maintained to APZ standard will create over 30 m separation from the bushfire hazard to any dwelling. To the north of the gully a >20 m strip along the southern perimeter of Stage 3 will be maintained to APZ standard as curtilage and is continuous with the 20 m APZ to the south of the gully. For these reasons it is predicted that the bushfire attack category would be medium and a Level 1 construction standard is appropriate.
north	APZs exist as cleared pasture						

¹ Slope most significantly influencing the fire behaviour of the site having regard to vegetation found. Slope classes are according to Section A.2.3.3 of PBP guidelines.
² Predominant vegetation is identified according to PBP guidelines Section A.2.3.2 and "Where a mix of vegetation types exist the type providing the greater hazard is said to be predominate".
³ Assessment according to Table A2.3 in PBP guidelines
⁴ Assessment according to Table A3.3 in PBP guideline

3.2 Fuel management within the APZs

Vegetated areas of Asset Protection Zones (APZs) at the interface between all fire-prone vegetation and built assets vulnerable to bushfire damage will be maintained in perpetuity as residential footpaths that will be mown on a regular basis by the residents. Their purpose is to ensure that the presence of fuels, which could be involved in a fire, are minimised close to the development. Therefore, the impact of direct flame contact and radiant heat is minimised (NSW RFS 2001). There will be no substantial revegetation of APZ areas and fuel management within the APZ will be as follows:

- Existing larger trees (at least 150 mm in diameter measured at chest height) will remain within the APZ provided that;
 - no part of their crown occurs within 5 m of any building (significant habitat trees can remain 2 m out from the building line);
 - canopies are discontinuous, *i.e.*, canopies are separated by at least 2 m;
 - they are smooth barked species or, if rough barked, are maintained free of hanging bark and other ladder fuels; and
 - low branches holding fine fuel (*i.e.* leaves and twigs of <6mm in diameter) are pruned to 2 m from the ground;
- Smaller trees (*i.e.* less than 150 mm in diameter), shrubs, fallen trees and tree-limbs and stumps are to be removed and continually suppressed;
- Any landscaping or plantings should preferably be local endemic mesic species or other low flammability species. The presence of a few shrubs, vegetable gardens or fruit trees is also acceptable provided that all plantings and residual vegetation are well spread out, do not form a contiguous pathway to the dwelling and do not constitute more than 5% of the total APZ area;
- A minimal ground fuel is to be maintained to include either mown grass, paving, concrete, bare ground, or less than 3 tonnes per hectare of fine fuel (*i.e.* material of <6 mm in diameter);
- Any structures (*e.g.* fences, garden sheds, decks, pergolas etc) within the APZ are to be non-combustible (*i.e.* non-combustible under Australian Standard 1530.1 and not deemed combustible pursuant to clause C1.12 of volume 1 of the Building Code of Australia);
- Any structures storing combustible materials such as firewood (*e.g.* sheds) must be sealed to prevent entry of burning debris; and
- Gutters, roofs and roof gullies shall be kept free of leaves and other debris.

4. Building construction standards (Building Code of Australia and AS3959 – 1999)

The Building Code of Australia (BCA) is a performance based code which obtains its statutory power through the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *EP&A Regulation 2000*. The *EP&A Regulation 2000* (clause 145 (1)(b)) requires a certifying authority to be satisfied that the relevant requirements of the BCA will be met prior to the issuing a construction certificate (or a complying development certificate under clause 136A of the Regulation). Clause 98(1)(a) of the Regulations also states that it is a *prescribed condition of development consent* (s.80A(11) of the EP&A Act) that building work must comply with the BCA. The BCA contains both Performance Requirements and Deemed-to-satisfy Provisions relating to the construction of buildings in bushfire prone areas. These provisions apply to class 1, 2, and 3 buildings that are proposed for construction in "designated bushfire prone areas".

The construction requirements of *AS 3959 – 1999 Construction of buildings in bushfire-prone areas* are recognised by PBP Guidelines as the Deemed-to-Satisfy construction standard for buildings in designated bushfire prone areas. The BCA has been amended with a NSW variation such that Appendix 3 of PBP Guidelines provides the appropriate site assessment methodology and replaces Section 2 of the *AS 3959 – 1999* when determining bushfire attack and the construction levels required to comply with the BCA.

Through the provisions of the EP&A Act, class 1, 2, and 3 buildings (BCA) within the development will comply with the *AS 3959 - 1999 - Construction of buildings in bushfire-prone areas*; the BCA, and Appendix 3 of PBP 2001 in regard to construction standards for bushfire protection.

Table 1 shows the required level of construction required for dwellings to be located on perimeter lots. Dwellings located on lots along the north western perimeter of Stage 2 and the south eastern perimeter of Stage 3 will require a Level 1 construction standard under AS3959 while dwellings on the southern, eastern and western perimeters of Stage 2 and the western perimeter of Stage 3 require a Level 2 construction.

5. Roads and access

Stages 2 and 3 are to be accessed by 2 public roads with one road being a perimeter road passing through Stage 3 along the western boundary and the other an internal road linking Stage 2 with Stage 3 – see Map 1 for road layout.

Perimeter roads with an 8 m trafficable surface will be provided around Stage 2 and along the western perimeter of Stage 3. Access provisions comply with general specifications (Section 4.3.4 of PBP Guidelines) for access and the design criteria for public and perimeter roads.

Additional features of the road system specific to this development include (refer to Map 1);

- a lack of cul-de-sacs,
- alternative access and egress roads, and

- perimeter roads that link into the internal road network at frequent intervals.

These features will increase bushfire protection for the proposed development, increase firefighter safety and allow rapid access to critical locations within the development (i.e. the bushland interfaces and hydrants).

5.1 Capacity of public roads

Stages 2 and 3 will generate additional traffic for the local road network. The capacity of the public roads to handle traffic has been undertaken by *Colston, Budd Hunt and Caffes Pty. Ltd.* The findings of this report were that:

- the proposed road network (for Stages 1-5) will be able to cater for the additional traffic from the proposed development and future development, and
- the proposed access arrangements satisfy the intent of Shoalhaven City Council's Development Control Plan 52 (Burrill Lake /Dolphin Point detailed Traffic Control Plan) and are considered appropriate.

5.2 Access and egress

The road network (see Map 1) has been designed in such a way to;

- ensure frequent access from the perimeter road to the internal road and therefore potential refuge areas,
- avoid the use of cul-de-sacs and dead-ends,
- provide alternative access and egress roads that will ensure at least one safe evacuation and access route is provided at all times, and
- provide short access roads from residential areas to the public through-road systems to facilitate easier and safer evacuation if required.

The proposed road system therefore provides access and egress at a standard that complies with the general road design guidelines outlined in PBP Guidelines (NSW RFS 2001 p.21).

5.3 Perimeter and public roads

Perimeter roads will surround Stage 2 and run along the western perimeter of Stage 3 (Map 1). Table 2 demonstrates that all perimeter and internal public roads comply with the design criteria outlined within PBP Guidelines (NSW RFS 2001 p.19 – 20).

Table 2: Perimeter and public road design criteria

PBP guidelines (RFS 2001, page 19 – 21)		Assessment of compliance
section 4.3.1 (b)	Design criteria	
dot point 1	Roads two-wheel drive, all weather.	Yes
dot point 2	Roads two-way, that are at least two traffic lane widths (8m minimum) with shoulders on each side allowing traffic to pass in opposite directions.	Yes
dot point 3	The perimeter road should be linked to the internal road system at an interval of no greater than 500 m in urban areas	Yes
dot point 4	Restricted use of speed humps and chicanes to control traffic	Yes
dot point 5	Roads should be through roads. Dead end roads are not recommended, but if unavoidable, dead ends should be not more than 200 m in length, incorporate a minimum 12m radius turning circle, and should be clearly sign posted as dead ends.	Yes - no dead-end roads are proposed.
dot point 6	The capacity of road surfaces and bridges should be sufficient to carry fully loaded firefighting vehicles (approximately 28 tonnes or 9 tonnes per axle).	Yes
dot point 7	Curves should have a minimum inner radius of 6 m and be minimal in number to allow for rapid access and escape.	Yes
dot point 8	The minimum distance between inner and outer curves should be 6m.	Yes
dot point 9	Maximum grades should not exceed 15° and preferably not more than 10° or gradient specified by road design standards, whichever is the lesser gradient.	Yes
dot point 10	There must be a minimum vertical clearance to a height of 6 m above the road at all times.	Yes – this will be established during the construction phase.
dot point 11	Roads should provide sufficient width to allow firefighting vehicle crews to work with firefighting equipment about the vehicle.	Yes – the proposal will allow off street parking for firefighting appliances.
dot point 12	Roads clearly sign-posted (easily distinguished names) and buildings clearly numbered. Bridges should clearly indicate load rating.	Yes – this will occur during the construction stage.

6. Adequacy of fire emergency procedures for the development site

Although no formal bushfire emergency procedures have been developed, the development proposal provides a design that will facilitate an appropriate response to a bushfire emergency.

7. Service supply

PBP Guidelines specifies criteria for the provision of electricity, gas and water supplies in bushfire prone land. The supply of services to the habitable buildings within the proposal will take these criteria into account.

7.1 Water supply

Reticulated mains will be available throughout the development.

Hydrants will be installed in accordance with Section 6.4 of PBP Guidelines, *i.e.*;

- The water supply will be supplied to all perimeter roads via a ring main system.
- Hydrants will be made accessible and located such that a tanker can park within a distance serviceable by a 20 m hose.
- Hydrants will be located such that all habitable buildings are within 70 m of a hydrant.

The proposed water supply for firefighting purposes, as described above, is consistent with PBP Guidelines.

7.2 Electricity

Electricity supply throughout the proposed development area will be underground as far as practicable. Where overhead electrical transmission lines are installed, lines will be installed with short pole spacing, unless crossing gullies or riparian areas.

8. Assessment of Environmental Issues

8.1 Aboriginal relics and places

The Aboriginal heritage impacts of the proposed residential development within Stages 2 and 3 have been addressed by Kuskie, P (2005). According to this report, there are no specific aspects of the Stage 2 and 3 evidence that are rare or unusual or not replicated within the region. However the report states that development of 'The Dairy' Stages 2-4 may cause impacts to the identified Aboriginal Heritage sites Dolphin Point 1, 2, 3 and 4 and the proponent should seek and obtain from DEC a Section 90 Consent with Salvage permit for the development impact area in consultation with the local Aboriginal community.

The proposed Asset Protection Zone areas will be sealed roads and verges and any fuel management will be by mowing or slashing of the verges. This method of fuel management will not break the soil surface and disturb

artefacts below the soil surface in areas that are not already disturbed as part of the road works or residential development.

8.2 Threatened Species

Separate report/s will be prepared to assess the impacts of the proposed development on threatened species listed in schedules of the *Threatened Species Conservation Act 1995* in accordance with the requirements of the *Environmental Planning and Assessment Act 1979*. These assessments will consider the bushfire protection provisions outlined in this report.

9. Summary of protection provisions and assessment of conformity with PBP Guidelines

As demonstrated in Table 3 bushfire protection provisions proposed for the development comply with all bushfire protection specifications outlined within PBP Guidelines.

Table 3: Assessment of conformity with PBP Guidelines

Bushfire protection provision	Proposal	Assessment of PBP conformity
Asset Protection Zones	APZs of varying dimensions (depending on slopes, development type, and vegetation) will be created and maintained in perpetuity. APZ will include the perimeter road system and front yard of affected allotments maintained to APZ standards – see Section 3.1.	Dimensions comply with Tables A2.2 for residential areas APZ specifications will be consistent with fuel loadings as prescribed by PBP Guidelines (NSWRFS 2001 p.16).
Construction Standards	AS 3959 will be applied to all habitable buildings within the development during the construction stage.	The construction standards that will be applied (see Table 1 and Section 4) comply with Appendix 3 and Table A3.3 of PBP Guidelines.
Access	Stages 2 and 3 will be accessed by 2 public roads. Perimeter roads with an 8 m trafficable surface have been provided around all of Stage 2 and along the western perimeter of Stage 3. The perimeter roads will link with internal roads at frequent intervals.	Access provisions comply with general specifications (Section 4.3.4 of PBP) for access and the design criteria for; 1. public roads (Section

Bushfire protection provision	Proposal	Assessment of PBP conformity
	<p>No cul-de-sac roads will be constructed.</p> <p>Numerous alternative access and egress roads will be provided to ensure at least one safe evacuation and access route.</p>	<p>4.3.1 of PBP)</p> <p>2. perimeter roads (Section 4.3.2),</p>
Water supply	<p>Reticulated mains will be available throughout the development.</p> <p>The water supply will be supplied to all perimeter roads via a ring main system.</p> <p>Hydrants will be made accessible and located such that a tanker can park within a distance serviceable by a 20 m hose.</p> <p>Hydrants will be located such that all habitable buildings are within 70 m of a hydrant.</p> <p>Large water features and settling ponds will be accessible to fire fighting appliances (<i>i.e.</i> within 20 m).</p>	<p>Water supplies will exceed recommendations outlined in Section 6.4 of PBP Guidelines.</p>
Electricity	<p>Electricity supply will be underground as far as practicable.</p>	<p>Complies with Section 6.4.1 of the PBP Guidelines.</p>

10. Conclusion

It is the authors' opinion that the recommendations within this report will provide an appropriate standard of bushfire protection which is at a standard consistent with current state guidelines for development within bushfire prone lands.

The development of stages 2 and 3 will have minimal impact in regard to bushfire to Stages 4 and 5. It may be argued that the development will have positive benefit to Stage 4 as it reduces the bushfire hazard to the south and sets up an interface control along the southern and western boundaries of the development area. However any development within Stage 4 will need to comply with Planning for Bushfire Protection guidelines as this area is currently mapped by Shoalhaven City Council and the NSW Rural Fire Service as bushfire prone land. The development of Stages 2 and 3 will neither eliminate or exacerbate this requirement.



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References

Turnbull Group Pty. Ltd. 2005. *Environmental Assessment. Proposed staged development to permit mixed uses at Dolphin Point comprising residential and commercial development.*

NSW Rural Fire Service (RFS). 2001. *Planning for Bushfire Protection: A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.* Australian Government Publishing Service, Canberra.

Standards Australia 2000, *Construction of buildings in bushfire-prone areas, AS 3959, Second edition 1999 and Amendment 1, 2000*, Standards Australia International Ltd, Sydney.

Shoalhaven City Council, 1985. *Shoalhaven Local Environmental Plan.*

Kuskie, P. (2005) Sub surface Archaeological Investigation of Stages 2-4 of "The Dairy", a Proposed Residential Development at Dolphin Point, near Burrill Lake , on the south coast of New South Wales: Summary Report in Relation to Stage 3. South East Archaeology Pty. Ltd.

Appendix 1: Director General's Requirements.

PROPOSED RESIDENTIAL SUBDIVISION AT LOT 1 DP 1045590, PRINCES HIGHWAY,
DOLPHIN POINT (STAGE 2)ENVIRONMENTAL ASSESSMENT REQUIREMENTS UNDER PART 3A OF THE
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Project	<ul style="list-style-type: none"> The subject proposal is for a 130 lot residential subdivision. The proposal is Stage 2 of a 5-stage development. Stage 1 was approved prior to SEPP 71. Stages 3 to 5 are at early stages of planning.
Site	Princess Highway, Dolphin Point; Lot 1 DP 1045590
Proponent	Eiderslie Property Investments Pty Ltd
Date of Issue	15 February 2006
Date of Expiration	15 February 2008
General Requirements	<p>The Environmental Assessment must be prepared to a high technical and scientific standard and must include:</p> <ul style="list-style-type: none"> an executive summary; a description of the proposal, including construction, operation, and staging. The scope of the concept approval must be clearly detailed and should not include any works beyond Stage 2 of the development. an assessment of the environmental impacts of the project, with particular focus on the key assessment requirements specified below; justification for undertaking the project with consideration of the benefits and impacts of the proposal; a draft Statement of Commitments detailing measures for environmental mitigation, management and monitoring for the project; and certification by the author of the Environment Assessment that the information contained in the Assessment is neither false nor misleading.
Key Assessment Requirements	<p>The Environmental Assessment must address the following key issues:</p> <ul style="list-style-type: none"> Statutory and Other Requirements – All relevant legislation and planning provisions applying to the site; nature, extent and justification for any non-compliance. Where non-compliance results in environmental impacts, consideration of alternative/compensatory works to address the impacts. Traffic Impacts (Construction and Operational) – Demonstrate compliance with relevant Council and RTA traffic and car parking codes; prepare a detailed Traffic Impact Study in accordance with Table 2.1 of the RTA Guide to Traffic Generating Developments including intersection modelling at the junction of the Princes Highway and Wallaroy Drive and the junction of the Princes Highway and Dolphin Point Road. The aaSIDRA program must be used for the modelling and shall consider: AM and PM peak volumes; holiday peak volumes; existing traffic volumes with and without development; 10 year projected volumes with and without the development; and identify suitable treatments to ameliorate any traffic and safety impacts associated with the development, such as identification of pedestrian movements and appropriate treatments. Urban Design, Visual Impact and Sustainability – The concept plan for the development shall be prepared in collaboration with an adjoining proposed subdivision at Lot 171 DP 1081810 Highview Drive, Dolphin Point. The plan should address Coastal Design Guidelines for NSW, SEPP 71 and SEPP65 in particular: aesthetics; built form; energy and water efficiency; safer by design principles; relationship to surrounding areas; visual impacts from public locations; provision of public precinct, open space and recreational areas; pedestrian and bicycle movement to, within and through the site; and public access to the coast. Visual aids such as scale model and photomontage must be used to demonstrate visual impacts. Amelioration of visual impacts through design, use of appropriate colours and building materials, landscaping and buffer areas must be addressed. Impact on Infrastructure (Sewerage and Water) – Demonstrate the capacity of existing sewerage and water reticulation systems to support the development. Applicant will need to ensure that any proposal submitted integrates with Shoalhaven City Council's Development Servicing Plan for Water Supply Services and for Sewerage Services. Demonstrate the existing sewerage

system's capability to support the development taking into account Ulladulla Sewage Treatment System Environment Protection Licence (No 446) and Licensing Guidelines for Sewage Treatment Systems (EPA, 2003).

- **Drainage, Hydrological Regime and Flooding** – The Environmental Assessment must include a Stormwater/Hydraulics report addressing drainage issues in accordance with Shoalhaven Planning Policy No.1 Development Guidelines – For Certain Residential 2c Zoned Land (Milton-Ulladulla). Consideration should be given to the natural drainage lines of the site with respect to the subdivision layout. Consult Shoalhaven City Council to develop suitable Flood Planning Levels for the development. Address issues associated with changes in the hydrological regime of the catchment as a result of the development.
- **Impacts on Water Quality and Sedimentation Control** – Address potential impacts on quality of surface and groundwater; relevant Statement of Joint Intent established by the Healthy Rivers Commission; demonstrate an acceptable level of water quality protection with respect to Water Quality and River Flow Interim Environmental Objectives detailed in Clyde River and Jarvis Bay Catchments. Conduct an assessment of the accumulative impact on Burrill Lake from both a public health (impact on oyster leases) and environmental health perspective. Details of pollution controls to be provided for both during and after construction.
- **Impacts on Waterways and Estuary Management** – Demonstrate consistency with objectives of the *Rivers and Foreshores Improvements Act 1948*, *NSW State Rivers and Estuaries Policy*, *NSW Estuary Management Policy* and the *Burrill Lake Estuary and Catchment Management Plan*. This shall include provision of native vegetation riparian zones adjacent to watercourses or wetlands; development of management strategies and actions including the use of water sensitive urban design, assessment of the capacity of the existing sediment basin to service the proposed subdivision, implementation of best practice erosion and sedimentation controls, use of suitable stormwater management provisions to protect the Dolphin Point wetland and maintenance of vegetative buffers and sensitive habitats.
- **Impacts on Threatened Species and Corridors** – Provide a Flora and Fauna study to address the indirect impacts of the development on threatened species and their habitats, such as the threatened orchid (*Cryptostylis hunteriana*).
- **Contaminated Land and Acid Sulfate Soils** – The Environmental Assessment must include a Site Contamination report in accordance with the provisions of SEPP 55. Address the presence of land contamination. Prepare an Acid Sulfate Soil Management Plan in accordance with the *Acid Sulfate Soil Manual* by ASSMAC.
- **Aboriginal Cultural Heritage Values** – An Independent Archaeology report must be included in the Environmental Assessment. Address and document information requirements set out in the draft *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*, which involves surveys and consultation with Aboriginal community; identification of nature and extent of impacts on cultural heritage values; assessment of extent and significance of each site; formulation of actions to mitigate impacts on Aboriginal cultural heritage values in with the Aboriginal communities; and developing options and making recommendations.
- **General Environmental Risk Analysis** – Undertake an environmental risk analysis to identify potential environmental impacts associated with the project (construction and operation); proposed mitigation measures and potential

	significant residual environmental impacts after application of proposed mitigation measures.
Consultation Requirements	<p>You must undertake an appropriate and justified level of consultation with the following parties:</p> <ul style="list-style-type: none"> • NSW Department of Planning – South Coast Regional Office; • NSW Department of Natural Resources; • NSW Natural Resource Commission; • NSW Roads and Traffic Authority; • NSW Rural Fire Service; • NSW Department of Environment and Conservation; • Country Energy; • Shoalhaven City Council; • Shoalhaven Water; • Local Aboriginal Land Council; and • the local community <p>The Environmental Assessment must clearly indicate issues raised by stakeholders during consultation, and how those matters have been addressed in the Environmental Assessment.</p>
Deemed refusal period:	Under clause 8E(2) of the <i>Environmental Planning and Assessment Regulation 2000</i> , the applicable deemed refusal period is 60 days from the end of the proponent's environmental assessment period.

Appendix 2: NSW Rural Fire Service Issues and Assessment Requirements

All communications to be addressed to:

Head Office
NSW Rural Fire Service
Locked Mail Bag 17
Granville NSW 2142

Telephone: (02) 8741 5555

Head Office
NSW Rural Fire Service
15 Carter Street
Homebush Bay NSW 2127

Facsimile: (02) 8741 5550



The Turnbull Group
Suite 1, 1 Ridge Street
North Sydney NSW 2060

Attention: Peter Le Bas

Your Ref:

Our Ref: S05/0007
G06/0681

17 March 2006

Dear Sir/Madam,

RE: Concept Development Plan for Land at Dolphin Point

I refer to your letter dated 9 March 2006 seeking our key issues and assessment requirements under Part 3A of the *Environmental Planning and Assessment Act 1979*.

The NSW Rural Fire Service (RFS) notes that the subject site has significant bush fire issues and is identified as bush fire prone. Future residential or Special Fire Protection Purpose developments are likely to be subject to the requirements of Section 100B of the *Rural Fires Act 1997* and Section 79BA of the *Environmental Planning and Assessment Act 1979*.

Based on the above the RFS advises that the following key issues and assessment requirements in relation to bushfire matters apply to Part 3A developments:

1. Controlling the type of developments permissible in bushfire prone areas
2. Minimising the impact of radiant heat and direct flame contact by separating the development from the bushfire hazard by identifying the extent to which future development can provide for asset protection zones in accordance with *Planning for Bushfire Protection 2001*. Setbacks will depend on proximity to vegetation, vegetation type and slope. It should be noted that for the NSW Rural Fire Service to accept a Group 3 (remnant vegetation) classification, the requirements of *Planning for Bushfire Protection 2001* in relation to remnant vegetation must be clearly demonstrated.
3. Reducing the rate of heat output (intensity) of a bushfire close to a development through control of fuel levels.
4. The ability to provide for adequate egress/access to the proposed development as outlined within Section 4.3 of *Planning for Bushfire Protection 2001*

♦ Rural Fire Service Advisory Council

♦ Bush Fire Co-ordinating Committee

5. The ability to site and provide for adequate future water supplies for bushfire suppression operations.

6. Minimising the vulnerability of buildings to ignition from radiation and ember attack by addressing the construction of assets in accordance with *Australian Standard 3959 Building in Bush Fire Prone Areas*.

7. The future management regimes for any areas of hazard remaining within the subject area. This should focus on the level of hazard posed to future development by the land or adjacent land and how the hazard may change as a result of development.

8. Substantial revegetation of the subject site may increase bush fire risk to the proposed development. Any proposed revegetation should be undertaken in such a way that limits the spread and occurrence of fire.

9. A Plan of Management will need to include fuel management within the development and maintenance of asset protection zones in accordance with *Planning for Bushfire Protection 2001*.

For any enquiries regarding this correspondence, please contact Danielle Meggos.

Yours sincerely


Lew Short
Manager, Development Control Services