Figure 9: Building Setbacks and Asset Protection Zones

3.04 Landscape Design Principles And Objectives

Design a robust landscape scheme that reflects the surrounding bushland landscape and complies with necessary bush fire management.

The proposed Community Title Open space buffer has been designed to maximize retention of maintained bushland to the perimeter(ranging from 8-20 metres wide).

Maximise views from development areas to bushland setting
Blocks have been arranged to maximise the presence of the bushland setting.

Maximise retention of existing trees and vegetation
Once survey is received of major trees in the vicinity of building areas and all hollow trees of value have been surveyed, the road and block design will be amended to maximise retention of trees.

The goal will be to protect existing trees within road corridors and design around them rather than designing a completely new planting scheme.

Promote biological diversity
The planting design will reinforce the natural plant ecologies and associations within the site.

Reinforcing ecological patterns
The landscape design will reinforce the ecological associations of the area and create a sustainable, low water demand landscape.

Key elements include reinforcing natural associations where possible within the open space system and incorporating wetland filter planting around water quality control ponds .

Design for safety, sight lines, and headlight glare
The planting design will take into consideration views along the road, the need for headlight glare reduction at ends of roads, and sight line requirements.

Reflect environmental sustainability principles
The Landscape design integrates ecological principles into the design in the following areas:

- Planting design: the scheme reflects ecological diversity
- Sensitive water design
- Integrated wildlife corridors and wildlife management
- Sustainable soil management through salvaging specific areas and reusing all site soil in specific areas.
- Alternative weed management procedures.
- Retention of hollow trees where possible

Creating Meeting Places
Designing open spaces that relate well to the built form elements and are conducive to social mixing. Most open spaces relate either directly to bushland areas or new built form spaces, or serve a multi purpose drainage function along the valleys.

Minimise earthworks
The road design and block layout aims to reduce impacts of cuts and fills on the landscape.

Design cohesive open space system that integrates with the drainage design See figure 10
The integrated open space system provides a strong backdrop to the developed areas, and integrates necessary drainage elements- swales, water quality control ponds,detention areas etc.

Key Elements

Sensitive Water Design
See figure 10

Key design elements incorporated in the design include:

- use of vegetated and rock mulched swales for storm water rather than pipes, to infiltrates and slow down stormwater flows;
- use of infiltration areas to clean storm water and reduce velocities;
- integrated water quality control ponds to suit hydraulic and site conditions to improve water quality and reduce velocities of storm water. Wetland filter areas will be provided to each pond, and the design will be suited to wet or dry conditions;
- minimal use of piped drainage and maximum use of above-ground drainage principles; and
- use of permeable pavements to promote infiltration and water cleaning

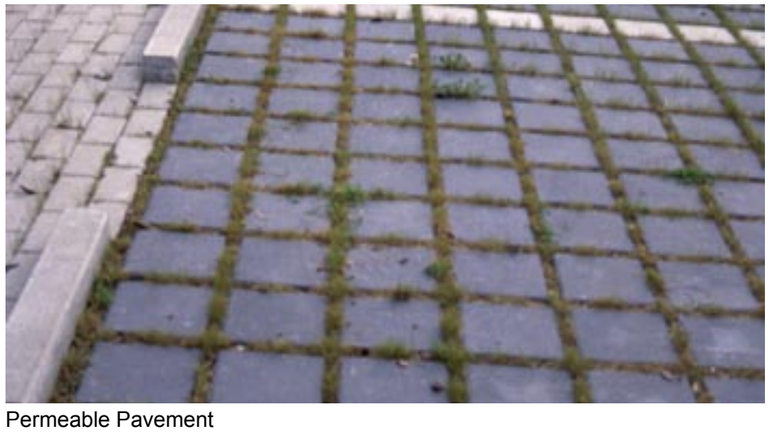

Rock Mulched Swale


Detention Area


Wetland Filter Planting Beside Pond

Wetland Filters Around Pond

Integrating Water Quality With Design

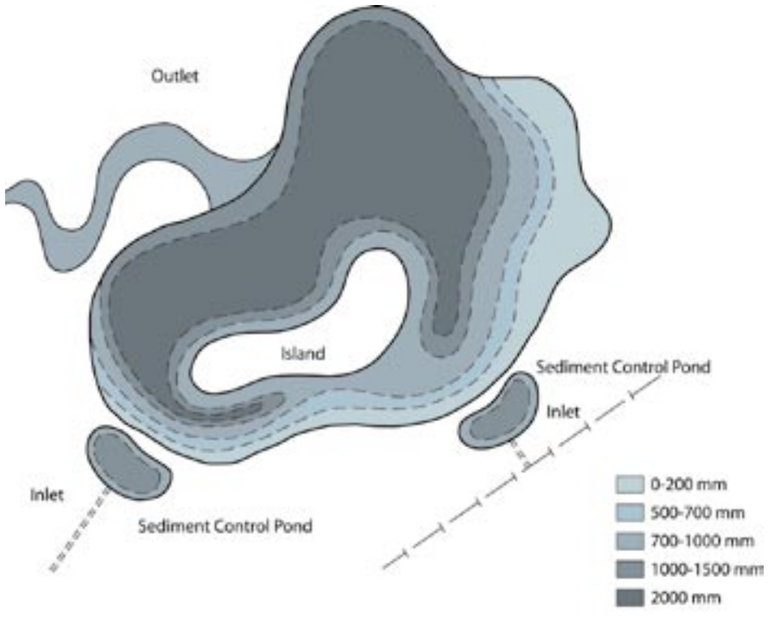


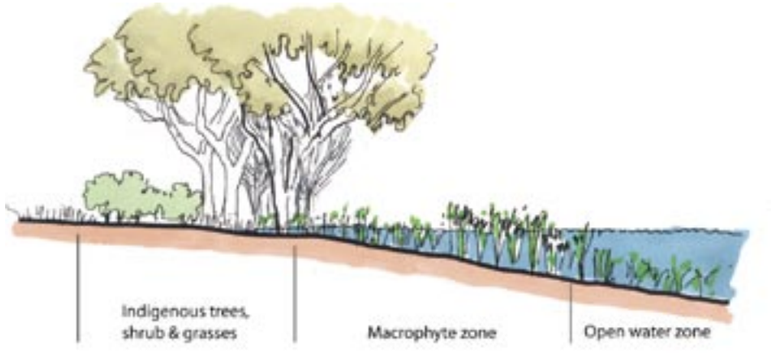
Permeable Pavement

Water Quality Ponds

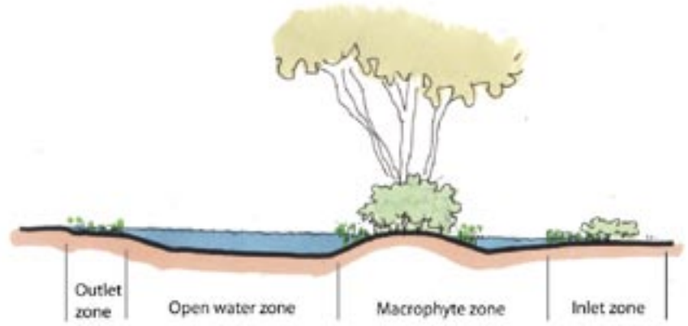
The images below show typical designs for ponds that have varying water depths to provide ideal fish and water plant habitats, and organic shapes to integrate with the adjoining topography. These principles will be applied to the design of the water quality control ponds.

Proposed water quality control ponds will provide essential water supply that can be used in time of fire. There will not be reticulated water supply but as the emphasis is on sustainable development; hence all dwellings will have water tanks provided.





ISLANDS PROVIDE HABITAT REFUGE



WATER EDGE SECTION WITH GRADATON OF WATER LEVELS AND SLOPES

LEGEND

DRAINAGE

- Existing drainage lines
- Vegetated swale
- Drainage covenant
- Water quality ponds

OPEN SPACE

- Open space
- Possible community title open space (multi purpose trail OPZ within)
- Community title formal landscape to allow for APZ
- Road reserve

- Property boundary

SCALE 1:4000

0 50 100 150 200m

Figure 10: Lot layout with integrated open space and drainage network

Planting Design Principles

The planting design should reflect a modified version of the natural vegetation communities as shown in figure 12. The approach to planting design needs to balance the bushfire requirements, with the desire to maintain and reflect the natural bush setting as much as possible . Key vegetation groups will include:

The natural vegetation associations should be reflected in the new landscape design. They are summarised below:

- Coastal Wet Heath Swamp Forest - Casuarina glauca/Melaleuca ericifolia- in the low lying areas of the site, close to the wetland in the eastern section of the site.

- Lowland Dry Shrub Forest- Corymbia gummifera/Syncarpia glomulifera in the far northeastern section of the site.

- Coastal Lowlands Cycad Dry Shrub Dry Forest- Corymbia maculata/ Macrozamia communities with Northern Foothills Moist Shrub Forest- Corymbia maculata/Eucalyptus pilularis-over the majority of the site. Dominant understorey species to include Allocasuarina littoralis, Macrozamia communis, Lomandra longifolia and lower groundcovers.

- Along the the drainage lines where there are moist conditions, Livistona palms. should dominate with Lomandras and Dianellas.

In addition areas around buildings:planting mixes should reflect fire retardant species as well as some appropriate indigenous species.e.g.*Banksia spinulosa,Grevillea species, Lomandra and Dianella species,Macrozamia, Callistemon and Melaleuca species.*

The following list of species were found on the site (PMA report) and would be suitable for revegetation works.

Trees
Allocasuarina littoralis Black She Oak
Casuarina glauca Swamp Oak
Corymbia gummifera Red Bloodwood
Corymbia maculata Spotted Gum
Elaeocarpus reticulatus Blueberry Ash
Eucalyptus beyeriana Beyer's Ironbark
Eucalyptus botryoides Southern Mahogany
Eucalyptus globoidea White Stringybark
Eucalyptus muelleriana Yellow Stringybark
Eucalyptus paniculata Grey Ironbark
Eucalyptus pilularis Blackbutt
Eucalyptus piperita subsp.piperita Sydney Peppermint
Eucalytpus saligna x botryoides Blue Gum
Eucalyptus sieberi Silver-top Ash
Exocarpus cupressiformis Cherry Ballart
Glochidion ferdinandi Cheese Tree
Livistona australis Cabbage Tree Palm
Syncarpia glomulifera Turpentine

Shrubs
Acacia decurrens Sydney Green Wattle
Acacia implexa Hickory Wattle
Acacia irrorata Green Wattle
Acacia longifolia Golden Wattle
Scientific Name Common Name
Acacia mearnsii Black Wattle
Acacia stricta Hop Wattle
Acacia terminalis Sunshine Wattle
Acacia ulicifolia Prickly Moses
Acmena smithii Lilly Pilly
Backhousia myrtifolia Grey Myrtle
Banksia serrata Old Man Banksia
Banksia spinulosa Hairpin Banksia
Baumea actua Pale Twig-rush
Billarderia scandens Appleberry
Bossiaea obcordata Spiny Bossiaea
Breynia oblongifolia Breynia
Exocarpos cupressiformis Cherry Ballart SANTALACEAE
Exocarpos strictus Dwarf Cherry
Ficus coronata Sandpaper Fig
Goodenia ovata Hop Goodenia
Hibbertia aspera Rough Guinea Flower
Hibbertia diffusa -
Hibbertia empetrifolia Trailing Guinea Flower
Hibbertia obtusifolia Grey Guinea Flower
Hibbertia scandens Golden Guinea Flower
Leucopogon lanceolatus Lance Beard Heath
Macrozamia communis Burrawang
Ozothamnus diosmifolius White Dogwood
Persoonia linearis Narrow leaved Geebung
Pimela linifolia Rice Flower
Podolobium ilicifolium Prickly Shaggy Pea
Pittosporum revolutum Yellow Pittosporum
Pittosporum undulatum Sweet Pittosporum
Pultenaea daphnoides Large-leaf Bush Pea
Pultenaea dentata -
Pultenaea hispidula -
Pultenaea retusa -
Xanthorrhoea resinosa -

Ferns,Wildflowers,
Adiantum aethiopicum Maidenhair Fern
Blechnum cartelagenium Gristle Fern
Chrysanthemoides monilifera
Doodia aspera Rasp Fern
Helichrysum sp. Everlasting Daisy
Pellaea falcata Sickle Fern
Wahlenbergia gracilis Australian Bluebell

Climbers & Groundcovers
Clematis aristata Clematis
Glycine tabacina Love Creeper
Hardenbergia violacea False Sarsparilla
Parsonsia straminea Common Silkpod
Pellaea falcata Sickle Fern
Scaevola ramosissima Snake Flower
Solanum prinophyllum Forest Nightshade
Tylophora barbata Bearded Tylophora
Viola hederacea Ivy Leaf Violet

Grasses
Agrostis avenaceus Blown Grass
Cymbopogon refractus Barbed Wire Grass
Dianella caerulea Paroo Lilly
Dianella revoluta Spreading Flax Lily
Echinopogon ovatus Forest Hedgehog Grass
Entolasia stricta Wiry Panic
Imperata cylindrica Bladey Grass
Lomandra confertifolia -
Lomandra longifolia Spiny Headed Mat Rush
Lomandra obliqua Fishbones
Lomandra multiflora Many Flowered Mat Rush
Microlaena stipoides Weeping Grass
Pratia purpurascens White Root
Themeda australis Kangaroo Grass

Sedges
Carex sp. Sedge
Gahnia clarkei Tall Saw-sedge
Gahnia radula -
Juncus usitatus Common Rush
Lepidosperma laterale Sword Sedge

Flammability of Plant Material
In areas close to buildings, care will have to be taken to select low flammable species. Many of the above are suitable; at the development stage a more detailed list will be compiled for certain areas.

No plant is completely fire resistant and given the right conditions all plants will burn, but some plants are more flammable than others. Around the housing areas, there is a need to avoid planting species that accumulate large amounts of dead branches, needles, leaves or bark. It is for this reason that some Australian plants and conifers are unsuitable in firewise gardens.

Plants that are resistant to fire have:
Leaves broad, fleshy, low oil or resin content, salt in their foliage
Bark smooth
Growth Habit compact, dense foliage
Plants to avoid (more likely to burn) have:
Leaves fine, hard, high oil or resin content
Bark sheds and hangs in ribbons or highly fissured
Growth Habit an open airy crown

Many plants are able to live through the intense heat and wind of fires and will recover after fire. Soil moisture is required for recovery ; many Australian plants are adapted to fire and are both flammable and will recover after fire, re-shooting even if they look 'dead.'

Sympathetic Built Form Character in similar environment

3.05 THE SUBDIVISION CONCEPT

See figure 11

Figure 11 illustrates the integrated subdivision concept showing key aspects of the design.

These are:

- Protecting vegetation along major drainage lines and developing building envelopes and setbacks that respond to environmental constraints.
- Maximising north facing blocks for the development and consolidating higher densities towards the more exposed areas.
- Introducing drainage covenant reserves within private properties to protect natural drainage lines.
- Minimising impacts to the bushland within the overall property by maintaining a consolidated and limited area of development.
- Emphasising the bushland through the introduction of building clusters rather than a continuous built environment. This provides also for better urban permeability.
- Allocating larger lots on steeper slopes where there is more flexibility with the building footprint.

LEGEND

LOTS

- Large single lots: > 1000 m²
- Single lots: > 700m²
- Small single lots: 550m²
- Single lots with small building footprint: > 700m²
- Attached double lots: ≥ 700m²

OPEN SPACE, CIRCULATION & DRAINAGE

- Open space
- Possible community title open space (multi purpose trail OPZ)
- Road reserve
- Road
- Pedestrian / nature trail
- Pedestrian boardwalk
- 4 Metre multipurpose fire / recreational trail
- Water quality ponds and drainage covenant
- Exiting drainage lines
- Vegetated swale
- Property boundary

SCALE 1:4000

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Figure 11: Subdivision Concept for the site

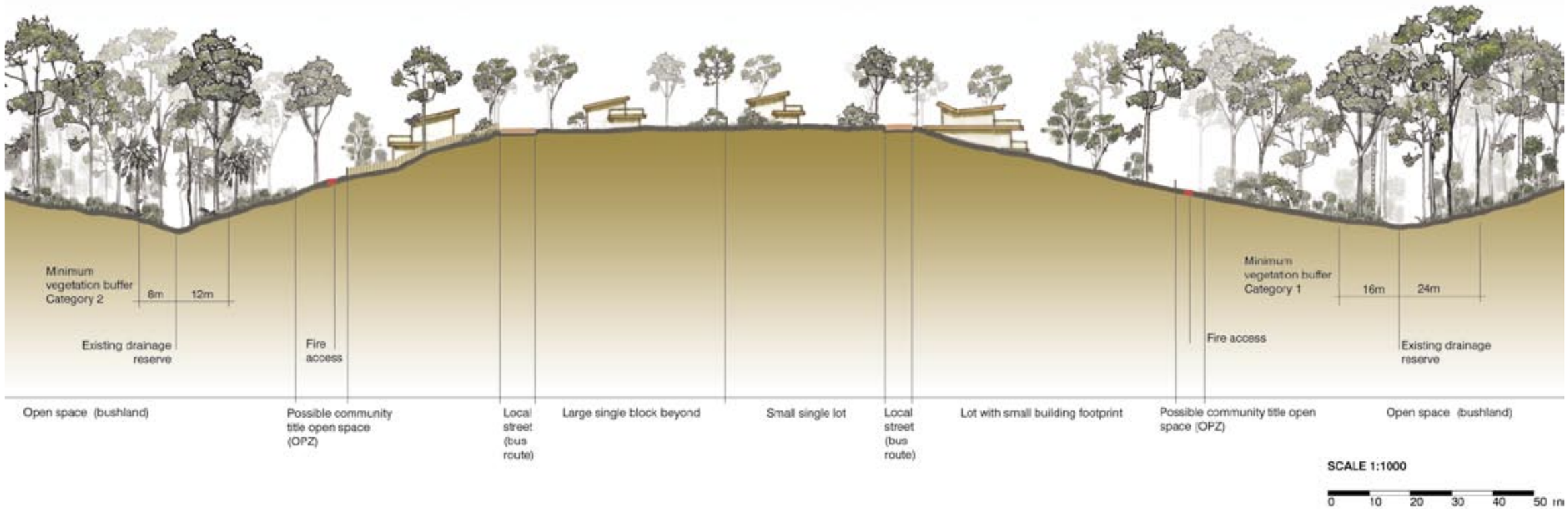

Figure 12: Section A-A of the site across the existing quarry

Figure 13: Partial plan showing different lot groups and the interaction between open spaces and asset protection zones

Following consultation with various authorities, the subdivision concept was further refined as an optional scheme. Changes include minor redesign of the lots and relocation of the attached double lots.

Refer to figure 14 for Optional Subdivision Concept.

4.0 PLANNING PROVISIONS

The land is zoned 10 (Urban Expansion Zone) under the Eurobodalla Rural Local Environmental Plan 1987. The proposed subdivision concept is permitted under the zoning with consent. Eurobodalla Shire Council's Residential Design Code Development Control Plan is applicable and has been taken into account in the formulation of the subdivision concept. A Settlement Strategy has been adopted by Council that reinforces the land at Long Beach is to be utilized for urban purposes. The Draft Greater Batemans Bay Structure Plan reinforces the Settlement Strategy concept and the thrust of the subdivision concept is in accordance with the Draft Structure Plan.

NSW's Coastal Policy 1997, SEPP 71-Coastal Protection, SEPP 2005-Major Projects, and the South Coast Regional Strategy all apply to the site. The subdivision concept is in keeping with the aims, objectives and principles espoused in these documents. The Independent Panel recommendations in the South Coast Regional Strategy suggest that the timing of development at Long Beach should be put in abeyance until investigation of land at North Batemans Bay for urban suitability has been completed. The consensus appears to be that this recommendation should not apply and the development of the subject land should proceed.

5.0 KEY ISSUES

Meetings have been held with Government Departments and Eurobodalla Shire Council on a number of occasions. The first was with the then Department of Infrastructure, Planning and Natural Resources (DIPNR); Rural Fire Service and Eurobodalla Shire Council on 20 November 2003. A separate meeting was held with The NSW Rural Fire Service on 19 December 2003 A follow up meeting was held on 18 March 2004 with DIPNR and Eurobodalla Shire Council. At a further meeting with DIPNR on 2 September 2005 the Long Beach proposal was discussed. The Long Beach site was also assessed by the Independent Panel commissioned by the NSW Government as part of the development of the South Coast Regional Strategy.

Key issues arising from the consultations include:

- Appropriate approaches to reducing bushfire hazard
- Use of edge roads
- Clearing for asset protection zones on land steeper than 25%
- Use of community title over asset protection zones and fire trails
- Dedication of land for public reserves
- Riparian buffers
- Potential lot yields as Eurobodalla Shire Council anticipated a higher yield for the land than is proposed to be achieved
- Water quality of the adjoining wetland

Figure 14: Optional Subdivision Concept