

## 2.05 Built Form Pattern

Predominantly suburban (subdivision) residential developments of Long Beach and Maloneys Beach dominate the area. More established residences in the immediate vicinity of the site face Northcove Beach Road. While the residences in the recent subdivision areas include single and semi-detached homes, the more established ones along Northcove Beach Road tend to be one or two storeys high single family dwellings.

### Coastal Design Guidelines For Nsw

The five key principles that have been applied, consistent with the Coastal Guidelines for NSW are:

- Defining the footprint and boundary of the settlement. This is achieved by limiting the extent of the development and protecting the local character and visual setting and introducing natural areas/open spaces that provide a visual break between settlements.
- Connecting open spaces. The introduction of an interconnected network between developed areas and open spaces is important for urban permeability, safety and a high quality character between developed areas.
- Protecting natural edges. This includes the protection of buildings from storm / flood events, the reinforcement of active and passive recreation areas and the management of bushfire. In addition, development should not occur in environmentally sensitive areas, on land having high visual qualities and where it is likely to have an adverse impact on water resources.
- Reinforcing the street pattern. Key issues to consider include ensuring the street pattern responds to the topography, and promoting way finding and legibility. High quality landscaping is included and pedestrian connectivity is considered.
- Appropriate buildings in a coastal context by relating to the natural features of the site and recognise the importance of materials suitable for the setting.

## 2.06 Vegetation

See figure 6

The site is heavily vegetated and within a local area of rich landscape associations. To the north lies the Bendarah State Forest, to the west is Cullendulla Creek Reserve and to the east, the SEPP 14 wetland. Further east of the property is Murramarang National Park.

PMA Consulting was commissioned to undertake the Flora and Fauna Assessment for the area. Information shown on the adjacent figure was derived from their June 2004 report. The majority of the site is covered with endemic vegetation, with the exception of the quarry area. Much of the area has been previously logged, and control burn-offs and bush fires have obviously affected the vegetation association.

The vegetation associations both in and around the site are shown on figure 5 and are summarised below:

- South Coast Coastal Swamp Forest: *Casuarina glauca* located east of the site, within the SEPP14 Wetland.
- Coastal Wet Heath Swamp Forest - *Casuarina glauca/Melaleuca ericifolia*- located at the bottom of the site, close to the wetland in the eastern section of the site. Saw edge *Gahnia* occurs in the more moist areas.
- Lowland Dry Shrub Forest- *Corymbia gummifera/Syncarpia glomulifera* - in the far northeastern section of the site.
- Lowland Dry Shrub Forest-*Corymbia gummifera/Syncaropia glomulifera*
- 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. Some of the area has been burnt (in particular around the property boundaries) and the understorey is somewhat depleted. The height of the trees is approximately 30 metres and the dominant understorey species include *Allocasuarina littoralis*, *Macrozamia communis*, *Lomandra longifolia* and lower groundcovers. The *Pinus* species should be removed as they are effecting understorey composition.
- The drainage lines are shown as within them there is a moist association including *Livistona* palms.

There are a number of Pine Trees scattered throughout the site, and will need to be removed.



Coastal wet heath swamp forest



Coastal lowlands Cycad dry shrub dry forest



Livistona palms



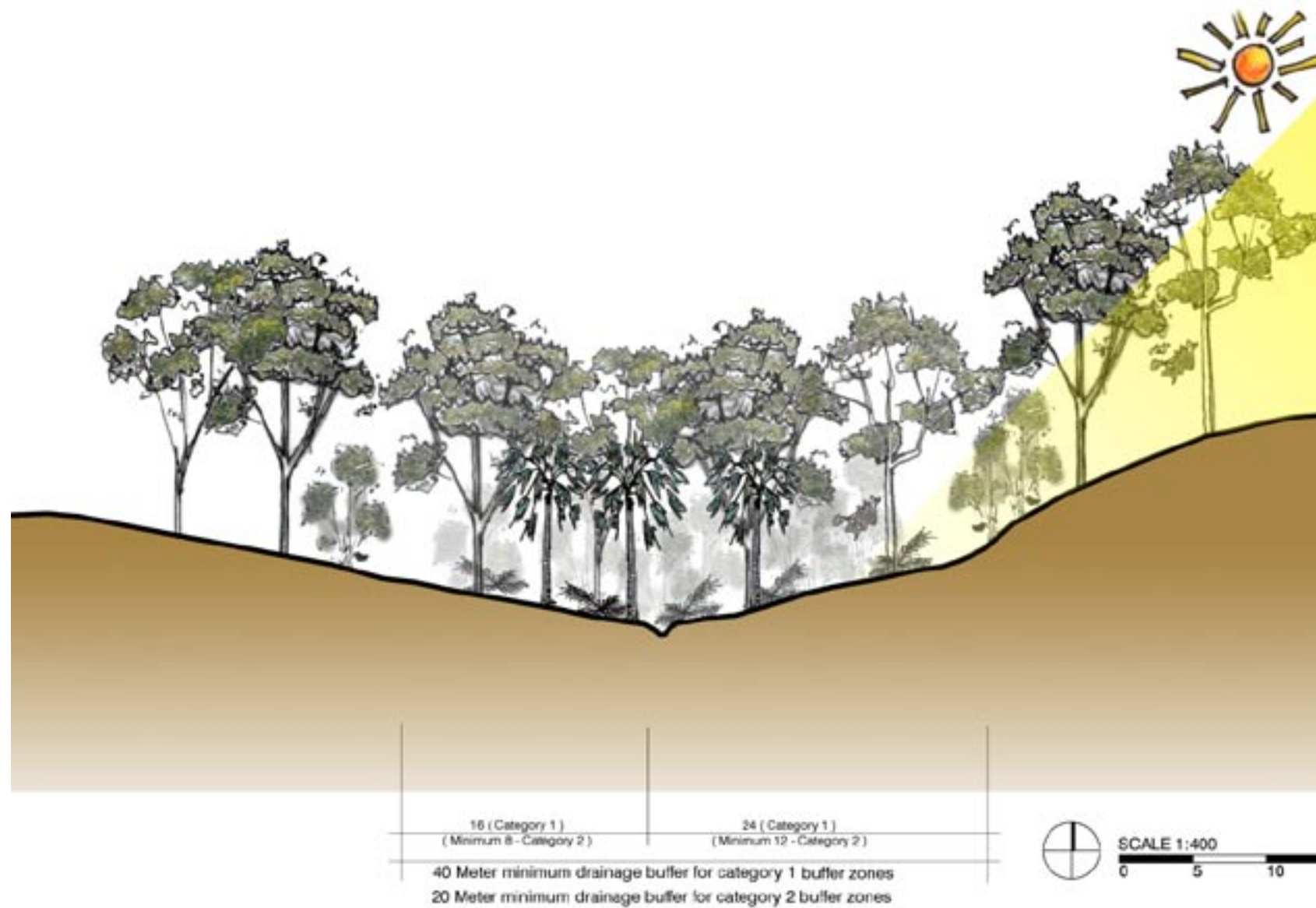


Figure 5: Reserve buffers along drainage lines

## Significant Trees & Reserve Buffers

See figure 6

Significant trees for habitat, hollow trunks etc. are shown as an overlay. A more detail description is within the PMA Consulting Report. Care will be taken to maximise retention of hollow trees within the subdivision, and road alignments will be amended to suit final survey results. The aim will be to create a character of gently winding roads within the overall road corridor to maximise tree retention.

Figure 5 illustrates the desirable minimum reserve buffers along the drainage lines.

Impact of clearing with solar access to existing vegetation in the creek/drainage lines requires careful consideration.

Drainage buffers should be more generous to the north side to reduce adverse impact due to sun exposure on existing vegetation. The buffer zones shown in the concept plan are consistent with the Eurobodalla Strategic Plan DNR Riparian Corridor Controls.



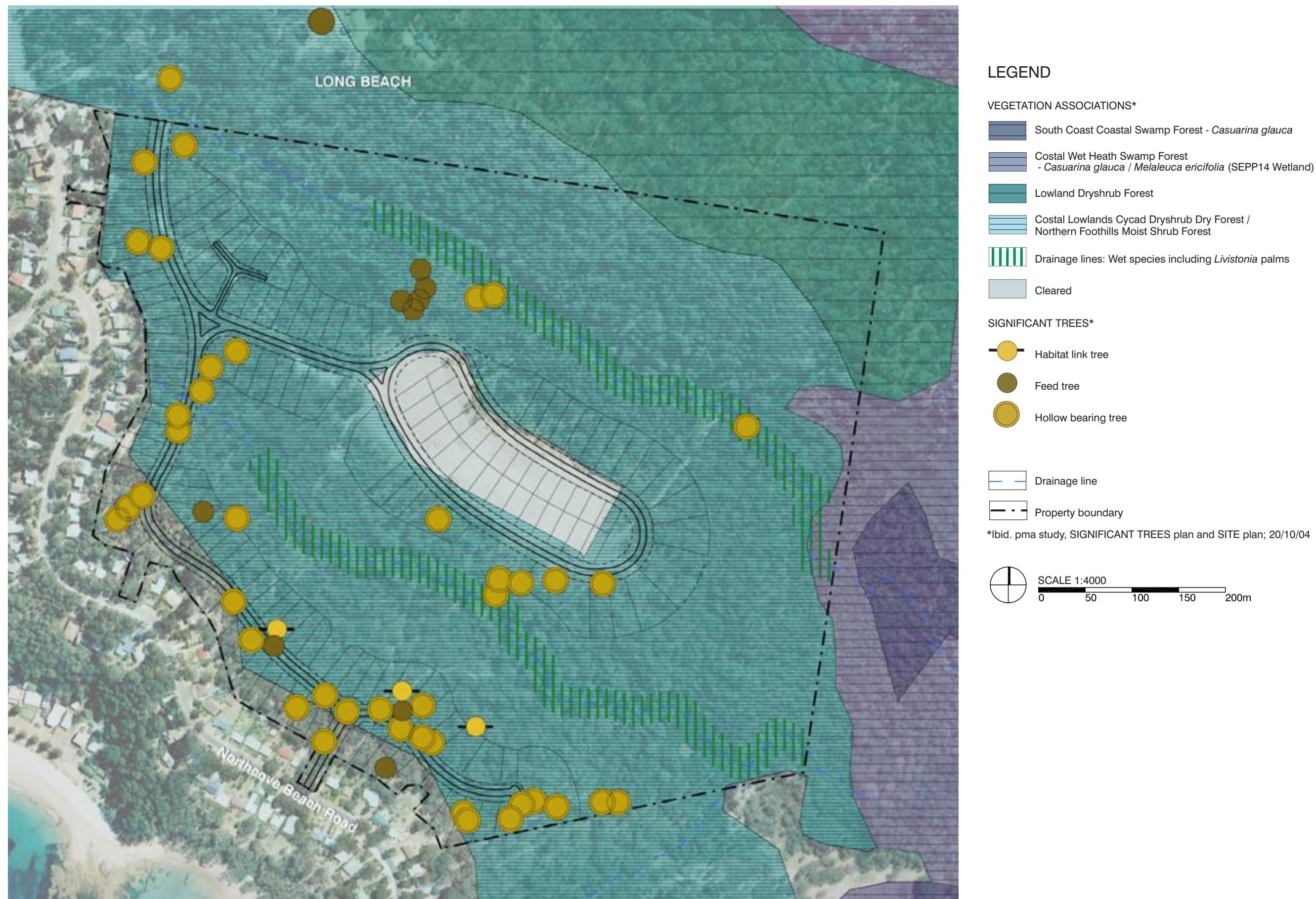


Figure 6: Vegetation associations and identification of significant trees





### 3.0 THE DESIGN CHALLENGE

Introducing a high quality residential development that responds to the site’s constraints and demonstrates environmentally sensitive design.

To achieve this, the following design principles are proposed:

- Maintain the bushland setting along creek lines and gullies to provide a sustainable ecology within the site.
- Maximise the utilisation of flat areas for development purposes in order to minimise clearing of the site’s bushland.
- Minimise the extent of infrastructure elements such as access roads.
- Minimise disturbances to existing drainage lines.
- Minimise clearance of vegetation.
- Integrate the bushland setting with the development to develop a unique residential area of high visual quality and interaction with its environment.

The design is governed by both the rugged topography with limited relatively flat areas and the two gullies.

The areas of development concentrate on the upper, more gentle slopes to minimise disturbances to the two gullies. As a result most properties will have direct views to the surrounding bushland setting.

#### 3.01 Road Infrastructure

The design avoids developments along the northern perimeter of the site to maintain a consolidated character of the bushland, minimise infrastructure such as road components while focusing the development more to the southern edge adjacent to existing built areas and the already disturbed quarry site.

Both of the two road entries into the subdivision branch from the existing Northcove Beach Road. One road runs parallel to the alignment of the existing Northcove Beach Road, and the other road develops into a “loop” road around the quarry site.

One small “battle-axe”/ cul-de-sac road runs into the north part of the site. This cul-de-sac configuration enhances safety and noise environs by not allowing through traffic, making it more attractive for residential purposes.

#### Road Network

Figure 7 indicates the street network

Three types of roads are proposed within the development:

- local street designated as a bus route; this route stretches along the northern portion of the development including where the existing quarry is;
- local street which spans along the southern area of the development; and
- access street located at the central north-western area of the site.

#### Local Streets Designated as a Bus Route

This type of street has a road reserve of 22.5 metres and pedestrian paths are designated on both sides of the street both to ensure safety and because they occur along areas of higher density. The street pavement is 7 metres and pedestrian paths are 1.5 metres wide.

#### Local Streets

This type of street has a designated road reserve of 18.5 metres. Pedestrian paths are located only on one side of the street to maximise a green streetscape in character with the setting. The street pavement is 7 metres and pedestrian paths are 1.5 metres wide.

#### Single Access Lane

The road reserve for this street is 10 metres and the pavement width is 3.5 metres. No pedestrian paths are located within this type of street due to the limited access/traffic volume.

#### Cul-de-sacs

The length of dead end roads has been minimised wherever possible to minimise a confusing street pattern where the end of the street is not visible.

#### Street Parking

Visitor’s parking has been integrated at key locations within the development in a consolidated manner (blocks) to maintain a minimum street width. The street widths are proposed at 4.5 to 5.0 metres as a slow speed zone.

Visitor parking is conceived as indented parking bays. The number of consecutive bays is not to exceed 4. Bays are to be located in close proximity to the houses (not to exceed 60 metres). 0.25 spaces are to be allocated per lot.

#### Pedestrian/Cycle Connectivity

Figure 7 illustrates the pedestrian and cycle network and relationship to open spaces, multi-purpose fire trail/recreational trails, and board walks through valley areas. Footpaths and bush trails will provide convenient access to bus routes along Northcove Beach Road.

The goal is to provide a well integrated system of paths, trails, and board walks that promote permeability through the site. The different materials and characters proposed will directly relate to the type of environment through which one passes.

A network of board walks has been integrated into the design that connect the residential areas to the two gullies, the lowlands and to promote the interaction between residents and the bushland setting. These boardwalks provide the opportunity to create a pedestrian link between the development, the SEPP 14 Wetlands and a convenient link to Maloneys Beach.



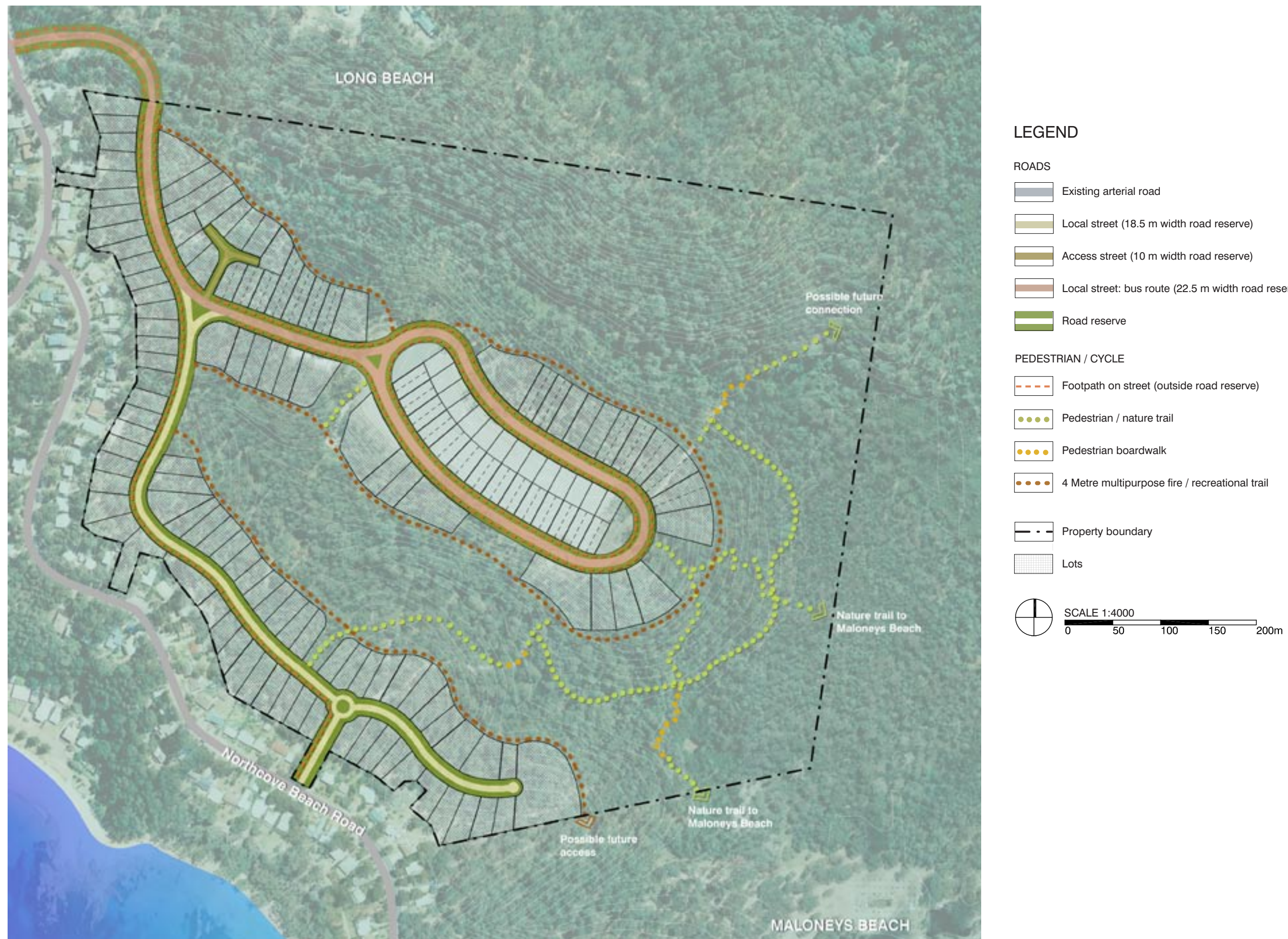


Figure 7: Road hierarchy and Site Connectivity



3.02 Built Form

See figure 9

Building Clusters

The layout of properties within the site has been configured in clusters, separated by ‘green zones’ which not only respond to the site’s drainage lines but also provide permeability between developed areas and bushland. In addition, the clusters provide a stronger sense of individuality for residents and ensure that the site does not appear ‘overdeveloped’.

Overall 144 lots are proposed from which 18 lots are configured as semi-detached; the rest are configured as single freestanding residences.

Lot Orientation

Most lots (95 out of 144) are north or east facing that provide for a good orientation opportunity for solar access. Lots facing east and south tend to be larger to accommodate proper orientation.

The overall concept for the built form is to maximise lots facing the bushland while providing a less dense development along the perimeter as much as possible and introducing denser housing at the existing quarry site. The denser housing lots are all oriented north for maximum solar access.

The use of overhangs for shading during summer months should be carefully considered for north, east and west facing facades.

Interaction with Bushland Setting

It is envisaged that the built form compliments the bush setting and that it visually interacts and compliments it. The use of natural materials and a palette of subdued colours that compliment the natural attributes of the site are important.

Building Heights

Building heights will be constricted to a maximum 8.5 metres above ground level and two storeys. As the sections indicate, split levels are preferred for sloping sites.

Set Backs

See figure 9

Set backs from the street are determined at 5.5m. Up to 50% of the front façade of dwellings (excluding garages or carports) may be setback 4.5m from the front boundary. For two storey dwellings, the setback of the upper storey to the front boundary would be a minimum of 7.5m. This is in order to minimise impacts on the bush setting and retain as much vegetation as possible and to comply with Eurobodalla Shire Council’s Residential Design Code.

Building Forms

It is recommended to use simple building forms with clear and crisp lines, including roof forms, to contrast with the bushland. This approach will create a better visual integration by using simple elements against the complex forms and shapes of the bush, thereby creating a more serene effect.

Building Materials

The use of glass is strongly recommended both for passive solar use to the north facades and to create a seamless visual flow between outer and inner spaces while creating a visually lighter architecture. Open courtyards should also be encouraged to promote natural ventilation.

West facing glass walls are strongly discouraged.

Natural building materials such as wood, stone, and gravel are strongly encouraged in combination with the contemporary use of highly processed materials such as glass, steel, concrete, etc. However, the use of wood should be carefully considered in relation to bushfire considerations.



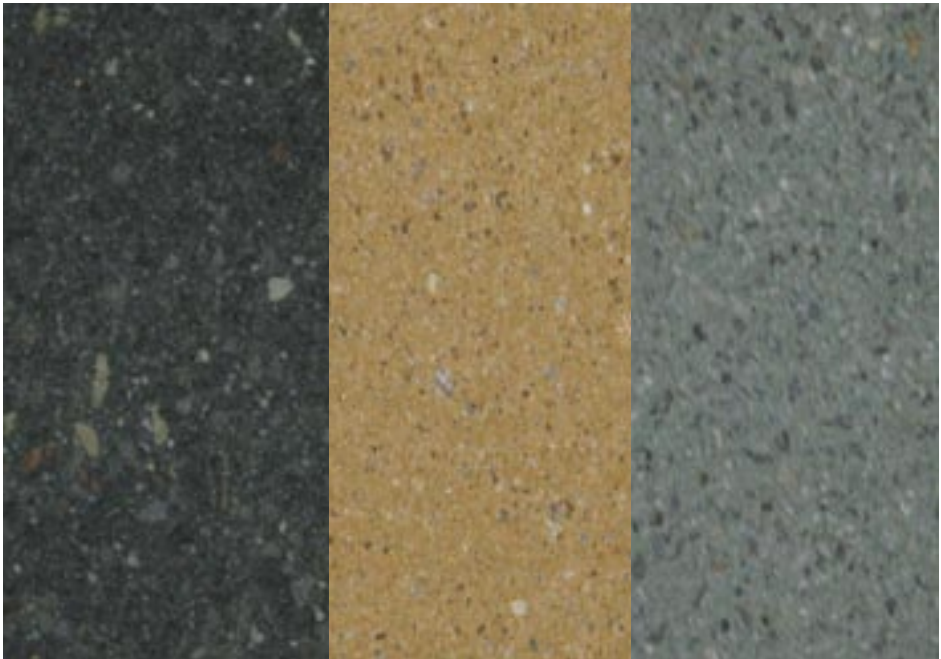


**Fire Protection**

See figure 9

Where buildings are constructed on sloping land facing the bushland, they should be built in cut benches rather than elevated or above fill.

Non combustible materials such as concrete, pavers etc. should be used for floors and outdoor terraces.



**Garages**

To ensure that garages do not dominate the streetscape, they should be located behind the building line or their openings well recessed (minimum 30cm). Alternatively, avoid garage doors facing the street.

**Landscaping for Shade and Cooling**

While solar access is important, consideration should be given to planting to the west and east elevations of the building to provide cooling during summer months.



**Fencing**

Fences should be built out of non-combustible materials and fences with an open character are encouraged for lots along the perimeter of the bushland to create visually a stronger integration between built form and the bushland.

**Materials & Finishes**

Examples of materials, textures, colors for use on paving, walls and fencing are shown below



Palette of materials and colours illustrated to compliment the character of the setting.







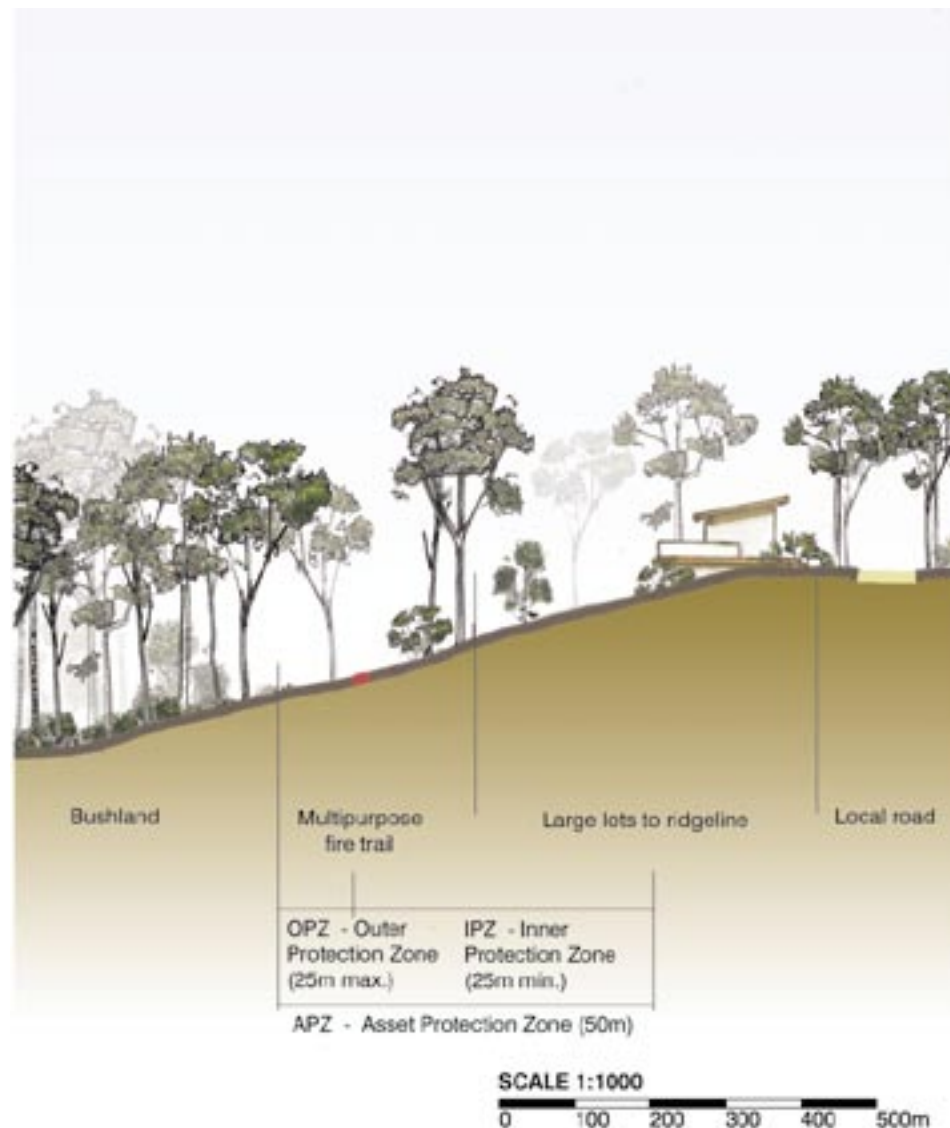


Figure 8: Principle Asset Protection Zone

### 3.03 Bush Fire Management

The main constraint to the development of the site is bushfire risk. The requirements of bushfire management work against the principles and ideologies of “living in the bush.” This Draft Subdivision Concept Plan respects the need for bush fire management and integrates the requirements in a sympathetic way that responds to the site constraints as well as opportunities.

A preliminary meeting with NSW Rural Bush Fire Service was held in 2003. The site's high bushfire risk was noted and necessary controls discussed. The Draft Subdivision Concept Plan complies with the latest standards and provides for a four metre wide multi purpose fire trail/recreational trail around all areas of risk.

The APZs are nominated on Figure 8 and the sub consultant report summarises the bushfire management in more detail. Key elements include:

Development of a multi-purpose fire trail/recreational track within a zone of possible Community Title Open space. This zone varies in width from 8 metres to 34 metres wide (in most situations) and accommodates the fire trail, adjacent low fire risk landscaping and the rear buffers to the developments. The goal is to create an area that is sympathetic to the adjacent bushland setting and to create a multi-purpose trail that also offers recreational cycling/walking routes. It is also the intent to retain some of the existing trees in this area, and to manage leaf litter etc. as required (see figure 9).

To successfully manage this zone, it is proposed as Community Title. Close collaboration with NSW Rural Fire Service and Eurobodalla Council will be essential.

Consequently Asset Protection Zones (APZs) will be required between the development, the two gullies and the northern portion of the site. The Asset Protection Areas are determined by the type of vegetation and the steepness of the slopes surrounding the residences.

#### Fire Egress

Two main exists/entrances connected by an internal road have been provided for the site. There is a separate road entry into the loop road at the quarry site.

A maintenance/fire trail is proposed along the immediate perimeters of all of the development areas facing the bushland setting to provide sufficient egress during a fire.