10. Residential Development

01 Streetscape + Public Domain Survey Analysis

Background
The purpose of the Streetscape and Public Domain Survey Analysis is to identify the overall features that contribute to the character of the area. Some of these features are identified and nominated in Section 9 Landscape Character Areas of this Plan.

To ensure new development is sensitive to the existing landscape setting and environmental surroundings of the location, a detailed analysis of the building site, adjoining properties, waterways and street setting in plan form is required.

The analysis will provide data so that contextually appropriate sustainable site planning can occur.

Note: Minor additions and alterations will not require a comprehensive analysis as outlined in this section.

Objectives
a. Preservation and enhancement of the identified streetscape features and elements that contribute to the character of the particular area.
b. Identification of the natural land and waterway features that contribute to the streetscape.
c. New development is sensitive to the landscape and waterscape setting, environmental conditions and established character of the street, and waterways and locality.
d. Identification of the built form elements that contribute to the streetscape.
e. New development that contextually fits into the identified character of the streetscape.
f. Ensure that the appearance of new developments is of high visual quality, enhances the streetscape and compliments good quality surrounding dwellings.

Standards
1. Applications for new dwellings and other new development must submit a "Streetscape Survey". The survey should include and address:
   • Lot sizes, fencing, kerbs, setbacks, spatial separation, access arrangements, street tree planting, planting in the foreshore building line, front and side fences, natural vegetation, native vegetation, private gardens as well as individual residences and buildings.
   • Scaled plan and elevational details of trees, road, kerb and other items in the street reserve;
   • Scaled plan and elevational details of all significant natural and built elements visible from the beach, the street, waterways or other public areas;
   • A cross section showing the slope of the land, significant vegetation heights and heights of adjoining structures;
   • A photographic detail illustrating the above;
   • A photographic analysis of the street setting taken from the centre line of the street approximately two lots either side of the site.

3. All applications for new buildings, major additions or works must submit a "Streetscape Analysis" showing how the proposal fits the existing context from the street or other public place including the beach or waterways.

4. On waterfront lots a photographic analysis from the water is required. The photographs should show adjacent development and vegetation within the foreshore building line.

5. Where the site for a proposal may impact on views from surrounding development or from the public domain a photographic analysis from surrounding development is also required.
02. Site Survey Analysis

Background

The purpose of the Site Survey Analysis is to identify at a more detailed level (than the Streetscape and Public Domain Survey Analysis) the existing and proposed features/elements that will contribute and impact on the site and adjoining sites, especially in terms of the character of the particular area.

A detailed site analysis of the building site, adjoining properties and street setting in plan form which would analyse the following features:-

Lot sizes, fencing, kerbs, setbacks, spatial separation, access arrangements, street trees, planting, front and side fences, native vegetation, natural drainage, drainage, topography, view/vistas, private gardens as well as individual residences and buildings and any special features worthy of consideration that could affect the design outcome on the surrounding environment (eg overshadowing and solar access).

Note: The site survey analysis and the streetscape + public domain survey analysis may be combined into one document.

Objectives

a. Preservation of the site features and elements that contribute to the character of the particular area.

b. Ensure that the site layout and building design consider the existing characteristics, opportunities and constraints of the site and its surrounds, that result in a design which is sensitive to its environment and is of high quality.

c. A detailed identification of existing natural features on the site and immediate surrounding sites.

d. New development that results in a sustainable environment in terms of water run off, soil and vegetation impacts.

e. A detailed identification of the existing built form on the site and the adjacent surrounding sites.

f. New development that physically enhances and fits in contextually to the existing residential character in terms of physical design, built form and ratio of built form to the natural environment.

g. New development that have regard to the impact of the amenity (views, privacy, solar access) of the adjoining development and surrounding properties.

Standards

1. All applications for new dwellings and other new development must submit a detailed site survey showing to scale:

   • Subject lot and adjacent lots;
   • All existing natural and built structures;
   • Contours at 1 metre intervals (limited to the development site and a rough indication on adjoining sites);
   • Water courses;
   • A tree survey showing description, locations, type of trees, height of trees and canopy width;
   • Natural drainage courses and the effect of proposed building on them;
   • Water tables and the effect of building proposals on them;
   • Geotech survey- showing soil profiles and proposals on them.

2. A cross section, elevation or three-dimensional view showing the slope of the land, heights of significant vegetation and adjoining structures.

3. Photographs of the site in question showing existing structures, fences and natural features and vegetation.

4. All applications for new buildings, additions or works must submit a site analysis showing how the proposal meets the objectives of this part of the plan.

5. Shadow diagrams of adjoining properties and structures of significance and proposed developments (winter 10am and 3pm), showing impacts on adjoining outdoor spaces.
03. Sustainability Index

Background
An Ecological Sustainability Index (ESI) has been developed for Residential Dwelling Design, as a way of encouraging better residential design and assessment, and for balancing cumulative impacts of individual urban developments on the natural environment. The composite effect on the environment of these individual dwellings can be large.

Many Councils have adopted energy efficiency policies and guidelines, but the ESI attempts to go beyond this and to integrate a more comprehensive range of items in the design and assessment approach. The aim is to provide a more complete assessment of the overall environmental impact of a dwelling, giving rise to environmentally efficient home design rather than just an energy efficient house.

The ESI considers the sustainability of a dwelling in four key areas: water, materials and waste, ecosystem, and energy. A carefully weighted system of index parameters is provided to rate the impact of elements of the design against the environmental benefit that may accrue from ameliorative measures. Such a system provides flexibility in the way a proponent “trades off” environmental disbenefits of a project against beneficial aspects of the proposal.

Note
A description of the terms relating to the ESI chart and guidance how to calculate scores in the ESI is located in the Appendix of this plan.

Some items appear more than once (eg bushland), as they have benefits/impacts to more than one topic area.

Objectives
a. More sustainable development that uses less energy and has less impact on the natural surroundings.
b. Maximisation of the sustainability index score of the dwelling by considering all options at the design stage.

Standards
1. A combined score of 0 or more from the Ecological Sustainability Index (ESI) opposite will be required for all new development or major additions.

Note
1. Minor alterations and additions will be exempt from the SI Index.

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10. Residential Development

04. Energy Efficiency + Building Health + Ventilation

Background

Energy Efficiency

In an attempt to address the issue of energy consumption in the building sector, the Energy Smart Homes Program (ESH) has been established in NSW.

The ESH policy requires a minimum rating of 3.5 stars (on a 5 star scale) improvements in insulation levels and dwelling unit orientation. Council has adopted the 3.5 star rating for all residential buildings.

The National Home Energy Rating Software (NatHERS), which is used as the benchmark ratings tool for ESH in NSW. A house rated in the range of 3.5 to 4 stars in NatHERS will consume approximately 70% less energy for heating and cooling than the same house rated as a 1 star design.

The design of a pleasant, comfortable and energy efficient home begins with decisions made early in the design process. For best results, the interior and the dwelling-site relationship need to be organised at the same time.

NatHERS is currently the only rating tool accepted for use by The House Energy Rating management Body (HMB). Other rating tools are likely to be accepted in the future, once they have passed the HMB validation protocol.

In NSW HMB is the accreditation body for Home Energy Assessors. Council only accepts accredited energy ratings (which must be submitted as part of a Development Application).

Solar Access and Orientation

The building interior and exterior should be well integrated with the site, to benefit from the free natural resources, which affect comfort and energy performance.

The orientation of the building for northern sun and adequate solar access will affect the relationship of internal spaces, placement of windows, the location and layout of major outdoor features, and planting for sun shading and wind screening. Sun will warm the most frequently occupied areas in winter yet be simple to control in summer.

Energy efficient appliances and systems such as solar hot water systems / heat pump technology and light fittings are an important consideration and should be encouraged.

Building Materials

Embodied energy is an area of growing concern. The embodied energy of a building is one measure of its ecological impact. Assuming the ecologically costly energy is that derived from fossil fuels, the more energy intensive a material is in its procurement, the less ecologically desirable it is to use. Embodied energy is related to the generation of greenhouse gases, carbon monoxide and CO2. For a list of embodied energy in materials refer to The Bundeena + Maianbar Environmental Study

Indoor Ventilation

Scientific research indicates the indoor environment maybe as much as 10 times more polluted than the outdoor environment, refer to Study

Heating and cooling accounts for 39% of Air movement throughout the house is needed to provide fresh air and thermal comfort for inhabitants. There are a number of ways that ventilation can be achieved.

- The first is by infiltration of air through the building structure itself, this is why it is important not to apply sealants so that there is still air change occurring.
- The second way of is referred to as cross ventilation and this is achieved by positioning windows on opposing sides of the house to allow movement of air through the house. Cross ventilation is the most prevalent method, however it has been proven to be ineffective.
- The most successful method of ventilation is ‘stack ventilation’. This method is based on the principle that warm air has a natural tendency to rise and to escape through openings high up in the building and is then replaced by fresh, cooler air which enters through lower openings.

Objectives

a. Improvement to the energy efficiency of buildings
b. Encouragement of alternative renewable energy sources
c. Reduction in the embodied energy of the construction of buildings
d. Improvement to indoor air quality.
e. Improvement to building ventilation.
f. Minimise sources of indoor air pollution.
g. Improvement to indoor comfort without relying on air conditioning or mechanical ventilation.

Standards

1. A NatHERS report by a HMB certified practitioner that a minimum 3.5 star rating has been achieved for the building envelope
2. A minimum 3.5 star hot water system using SEDA greenhouse score for hot water heaters
3. AAA rated showers, wash basins, kitchen sinks and toilet cisterns must be installed
4. A minimum 3.5 star clothes dryer where they are being installed
5. All new development shall employ where practical construction systems with low embodied energy (see list Bundeena + Maianbar Environmental Study)

Guidelines

1. Avoid air-conditioning.
2. Choose floor or radiant heating rather than air heaters.
3. Minimise toxic building materials and finishes.
4. Where practical all new development shall employ where practical construction systems with low embodied energy.
5. Improvement to building ventilation.
6. Minimise sources of indoor air pollution.
7. Improvement to indoor comfort without relying on air-conditioning or mechanical ventilation.

Stock Ventilation

Depends on natural internal temperature gradient to work. External wind pressure not necessary.

Larger northeasting windows for solar access.

Cross Ventilation

Depends on natural internal temperature gradient to work. External wind pressure not necessary.

Larger south facing windows minimising heat loss.

Building Layout and Orientation

Smaller south facing windows minimising heat loss.

Living Zone

Lounge, living, rumpus, dining kitchen

Sleeping/Service Zone

Bedrooms, study, bathrooms, laundry

Natural Ventilation Indications

Positive air pressure

Depends on natural internal temperature gradient to work. External wind pressure not necessary.
10. Residential Development

05. Building Form

Background

Setbacks, articulation and height essentially control the massing/bulk of the built form. Also controlling how and where the residential building footprint is positioned on the site, together with appropriate footings will ensure maximum protection for canopy trees, natural drainage through the site and minimum disturbance to the subsoil.

The controls contained in this section (together with the elements identified in the landscape character areas and site survey analysis), aim to minimise impact on site conditions, minimise bulk and conserve canopy trees. The resultant should be residential development that respects, sustains and enhances the built and natural environment, which contributes to give Bundeena and Maianbar its special character.

Advantages Associated with Maximised Setbacks and Minimised Cut and Fill

- Maximise setbacks between dwellings to allow natural drainage flow and permit new tree growth and open outdoor areas.
- Buildings to be raised off the ground to maximise natural water flow and minimise impacts on the site.
- Minor cut and fill will be permitted to enable either separate garage or garage under the dwelling to effect a level garage floor.
- Note: That some swimming pools will need to carry out some cut and fill on site.

Advantages Associated with Retention of Natural Drainage

- By minimising the disturbance to natural drainage patterns and flows, tree roots, water table and fungal growth, existing vegetation will be less stressed and vegetation on the lower side of the dwelling has a better chance of survival.
- Maintain existing natural underground and overland drainage flows by appropriate foundations (eg pier and beam footings rather than raft or strip footings) and raising the dwelling off the ground on steep sites.
- The principle of raising the building off the ground and creating no cut and fill will result in minimal disturbance to the existing soil, vegetation, trees and existing drainage patterns which in turn reduces stress on the existing vegetation and landscape.
- The principle of breaking up the elevations in the horizontal plane by setbacks and the vertical plane by the height table results in an articulated building which has a reduced visual impact (bulk and scale) on the site and surrounding area.

Resultant Form

Objective

a. Dwellings and ancillary buildings designed to minimise impacts (physically and visually) on the landform, water flow and the general biodiversity of the locality.

b. All healthy canopy trees to be conserved.

c. Residential structures that respect the features of the natural environment including waterways.

d. Maximise effective landscaping area by open form undercots.

e. Outdoor living on decks and balconies provided neighbouring amenity is not impaired.

f. The bulk and scale of proposed works that protects neighbourhood amenity and maintains an appropriate residential character.

- Adequate daylight, sunlight and ventilation to living areas and private open spaces of new dwellings.

- Buildings that blend into the natural surroundings.

- Roofs that do not unduly increase the bulk of the building and have a minimum impact on existing views of surrounding dwellings.

Standards

1. Healthy canopy trees on development sites must be conserved. All setbacks except the foreshore building line may be varied to achieve this.

2. Cut and fill is not permitted excepting for some garage structures and other minor portions of buildings on the high side of the road on sloping sites (maximum area of cut and/or fill is 50m² on any site).

3. Building line to the street is generally 7.5 metres. In conjunction with the Site Analysis, the building line can be varied depending upon:
   - Respecting the existing streetscape
   - Topography and avoidance of cut and fill
   - Need to preserve existing healthy native trees and vegetation

4. Setbacks to side streets on corner lots shall be a minimum side setbacks of 3 metres from the street boundary. Alternative setbacks may be approved to ensure retention of existing trees and avoidance of cut and fill.

5. Setbacks to side boundaries shall be a minimum of 1500 mm.

6. Buildings and swimming pools on lots affected by a foreshore building line are to be located behind the building line.

7. Dwellings with frontage to the foreshore must be single storey facing the foreshore (minimum of 9 metres in length) stepping up to 2 storeys at the rear if required.

8. No development shall be permitted in the 10 metre foreshore building line. This includes pools, fences and outbuildings.
05. Building Form

Setbacks-Standards

**Street Frontage**
- Variable Setback to Street (Minimum of 7.5 metres for closed form)
- Setback determined by the foreshore building line or a minimum of 7.5 off the rear boundary.

**Rear Boundary or Foreshore**

**Front and Rear Setbacks**
- Minimum 1500 to walls

**Side Setbacks**
- Maximum facade width to be 2/3 width. This applies to all sides of the dwelling

Facade Setbacks/Articulation

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**Building Height - Standards**

1. Maximum building height shall be two storeys
2. Minimum height from natural ground to underside of habitable floors to be 600mm unobstructed. (The minimal use of foundation walls is acceptable providing the foundations permit uninterrupted drainage of the site)
3. Maximum understorey height on sloping sites from the natural ground level to underside of lower ground floor level is 3.3 metres.
4. Maximum building height on a sloping natural ground level to be 9.9 m from natural ground level to underside of second floor ceiling.
5. Compliance with the building height diagrams.
6. Maximum width of balconies/decks 2.5 metres. However widths can be increased to a maximum of 3.6 metres for lower level balconies/decks (see Building Height Diagrams) to assist outdoor living, providing:
   - The height does not exceed 4.2 metres above ground level on sites with slopes greater than 5 degrees
   - The height does not exceed 1.5 metres above ground level on sites with slopes 5 degrees or less
   - There are no impacts on privacy
   - The floor to the balcony will allow water and light penetration
   - No structure (e.g. handrail) to be higher than 1.2 metres above the deck.
7. Understorey space must be landscaped, it is not to be calculated as floor space or landscaped area.
8. Infill of the understorey space is not permitted.

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**Building Height -Diagrams**

**Level Site**
- Less than 5° Slope

**Sloping Site**
- Greater than 5° Slope
06. Visual Appearance

Background
To date, residential form has generally been softened by the existing canopy and understory species. Developments have generally been less than the maximum floorspace permitted excepting for a few recent foreshore sites. The resultant building form dominated by the natural environment has greatly attributed to the unique sought after character of Bundeena + Maianbar.

The controls in this section together with the character areas and site analysis contribute to ensure the appearance of the residential setting maintains a positive balance with the natural environment.

Healthy native canopy trees (softening existing and future developments) particularly when viewed from the street, the waterway and adjacent beaches, the blending of colours and textures and materials (including roofing materials) with the natural environment is essential for this locality to maintain its special visual appeal.

Further improvements to the visual appearance (eg reduction to the bulk of the built form apart from setbacks -see previous section), can be achieved by architectural articulation of the elevations.

Objectives
a. A visual residential setting that blends harmoniously with the natural environment.
b. Residential development that minimises visual impact on foreshore sites and streetscapes.
c. Materials and textures that respect and enhance the identified context of character area.
d. Residential development that incorporates architectural relief and modulation of facades to avoid a bulky appearance.

Standards
1. A palette of building materials and colours shall be submitted with the Development Application.
2. Retention of all healthy canopy trees.
3. Minimal change to on-site natural features including drainage.
4. Use of elements such as verandahs, pergolas and variations in elevations to provide architectural relief.

Guidelines
1. Building materials consistent with building materials in the general context and streetscape.
2. Lightweight materials including timber, weatherboards, corrugated iron and sheeting with colours that blend into the natural surrounding are preferred.
3. If brick is used as a wall, a pier and beam footing system must be employed.
4. Building colours to blend with the natural vegetation and earth form surrounds (eg sandstone, eucalypt greens, greys and browns)

07. Neighbour Amenity

Background
The privacy and security of adjoining neighbours is an important element to be respected by new residential development.

The location of any new development should also take into account the impact of the proposal on existing primary and secondary views. These impacts should be identified in the site analysis.

Directly overlooking main internal living areas and private open space of neighbouring dwellings is to be minimised by building layout including offsetting of fenestration to main living rooms and screening by use of appropriate plantings.

Another impact that can effect adjoining neighbours is the impact of overshadowing on adjoining open spaces and solar panels. Appropriate siting, articulation and building height can minimise overshadowing to adjoining neighbours and loss of existing views.

Objectives
• Dwellings and ancillary buildings that maintain and augment neighbour privacy.
• Building sites to maximise visual and acoustic privacy for residents and neighbours.
• Dwellings and private open space to enjoy adequate sunlight and daylight.

Standards
1. Maintenance and enhancement of neighbour privacy (visual and acoustic), security, views and solar access standards by:
   • Setbacks to elevations (refer to Residential Development sub Section 05 Building Form);
   • Balcony orientation and location to avoid direct neighbour interface;
   • Appropriate native screen plantings;
   • Windows to main rooms offset to neighbouring properties;
   • Buildings separated by adequate distance;
   • Maintaining natural vegetation to enhance privacy.
08. Fencing

Background
Front fences as identified in the character areas are a critical aspect in determining the appearance of the street. Therefore, front fences should be designed and located so as to maintain the streetscape character and be consistent with the established pattern of fences.

Front fences should also follow the principles of Environmentally Sustainable development by not restricting the flow of ground water, allow private gardens to merge with neighbours’ and support the landscape character of the area, and ensure adequate amount of useable private open space.

Side fences on corner allotments should be designed and located so as to maintain the street character. They should be consistent with the established pattern of fences and ensure adequate amount of useable private open space.

Fences should provide adequate enclosure for domestic animals and in some cases to provide security from people and animals.

Objectives
a. No fencing or minimal visual impact fencing.

b. Fencing that does not disturb natural drainage.

c. Trees to be preserved by taking precedence over fences.

Standards
1. Minimal or no fencing is the preferred outcome for street frontage and front boundary setback (7.5 m).

2. Low key fencing where required for companion animal control and to keep out deer.

3. Fencing not to impede overland water flows (no solid fencing).

4. Where fencing is required and permitted it must be:
   • Low key open form
   • A maximum of 1,200mm in height adjacent to public areas or 1500mm otherwise;
   • Colours that blend into the background such as black, dark green and weathered timber.

5. Fencing to Royal National Park boundary must be visually low key and be domestic animal resistant.

6. No fencing is permitted within the foreshore building line setback.

7. Side fences must not come closer to the street than the building line of either dwelling.

8. No trees to be removed to allow for fencing.

9. Any fencing to be erected within the 1 in 20 year ARI floodway is to be of an open type to allow the free flow of flood waters through the fence during periods of intense rainfall Where practical no fencing is preferred within the flood prone areas.

Open Form Front Fencing

Natural Form Front Fencing
09. Car Parking and Site Access

Background
Car parking facilities, including garages, car ports and hardstands must use sensitive designs that ensure minimal impact to the natural features of the site. Driveways should allow some stormwater penetration to minimise the run-off of stormwater from the site.

Allowance will be made for garage structures attached to the dwelling (where the site is on the high side of the road) to carry out minor cut and fill for the garage structure only.

Objectives
a. Carparking that minimises impact on the site characteristics.
b. Minimal driveway to service motor vehicles.
c. Appropriate landscaping to soften carparking facilities.
d. Carparking facilities/structures to be designed in a manner sympathetic to the local character.

Standards
1. No excavation for carparking facilities except for garage structures attached to dwellings on sloping sites on the high side of the frontage road. (maximum 50 sq metres of excavation and fill)
2. Parking forward of the building line shall be open form style of construction. E.g.Carport.
3. Driveways to service vehicular access and hardstands for carports shall enable soak up of stormwater via ecopave or similar paving products.
4. Carparking provision:
   • Minimum provision 1 space per dwelling;
   • Maximum provision 2 spaces per dwelling except where the road width does not allow on street parking, this can be increased to 3 car spaces
   • Wherever possible car spaces must be provided without site excavation and without loss of trees.
   • Parking in excess of 1 space per dwelling must not cause loss of trees or excavation.
   • In addition to the above, storage space for trailers, boats etc up to 20 sq metres maximum can be provided.
5. Garages or car ports on sloping sites on the low side of the street shall use pole or pier supports. No excavation is permitted.
6. Garages and carports separate from the dwelling shall use roof forms consistent with the residential dwelling.
7. The colour of garage and parking structures to blend with dwelling colours and be in harmony with natural landscape environment.
10. Ancillary Structures

Background

The construction of swimming pools generally requires significant site excavation. Pool surrounds should look to construction techniques employing raised decking to minimise sub soil disturbance and as far as possible these construction techniques should produce sympathetic environmental designs.

Ancillary structures that are exempt or complying development under Sutherland Shire Local Environmental Plan 2000 must be designed and located to have a minimum impact on the natural features of the site.

Objectives

a. Swimming pools are to be sited to avoid impact as much as possible on the natural landform rock outcrops natural drainage. Excavation and fill is to be minimised and must not exceed an area of 50 sq metres
b. Siting should also consider solar access, access from the principal indoor living areas of the proposed dwelling and any loss of amenity for the adjoining residence. The style and materials used for the pool should be sympathetic to the natural surrounds.

c. Excavation for the pool and paving around the pool should be minimised. The screening of the undercroft and the treatment of the edge beam need to be carefully considered to reduce visual impact if pool is greater than 600mm above the existing ground level.

d. Minimum impact on the natural features of the site from ancillary structures.

Standards

1. Swimming pools will not be permitted forward of the foreshore building line.
2. Impervious paved areas are to be minimised. Where paving is required it must be designed to provide stormwater and pool flow infiltration.
3. In circumstances where a pool adjoins an existing tree, timber decks are preferred as the pool surrounds to minimise damage to any adjacent tree root system.
4. Pool water discharges must not in any circumstances be directed through bushland areas located on private or public land.
5. Pumps are to be housed or located to avoid undue noise to neighbouring properties.
6. Pools must not exceed 1 metre above ground.
7. Pools must not result in retaining walls or excavated banks higher than 0.5 metres.

11 Landscaping

Background

Local native plantings from mature canopy trees to understorey and groundcover species collectively are a significant part of the character and associated ambience that attracts so many visitors to the area and is the main attraction for most of the residents living in this area.

Tree preservation is regulated by Sutherland Shire Council's Tree Preservation Order which prohibits the felling of native trees with a circumference in excess of 300mm.

Tree replanting is encouraged and should follow the standards contained in Section 9 Landscape Character Areas of this development control plan.

Additional guidelines are available in Sutherland Shire Council Landscape Development Control Plan, Edition 2.

Objectives

a. Maintain and enhance the existing landscape character areas of Bundeena and Maianbar.

b. Retain as far as possible the natural landform, rock outcrops and natural drainage lines.

c. Encourage low water usage and maintenance through the use of native plants and by directing stormwater to garden areas.

d. Ensure that the proposed landscaping works are in scale and complement the design of the proposed residence and to provide privacy between adjoining dwellings and improve microclimate.

e. Provide solar access to the main indoor and outdoor living areas of a residence through the selection of appropriate species.

Design Guidelines

All significant trees are to be retained and protected.

Retain as many other trees as possible, particularly near the front of the site. An important part of the character of Bundeena and Maianbar is the tree canopy.

Any new planting of trees and shrubs should be native or indigenous, and of a similar species to that existing in the street or immediate character area. (refer Landscaping DCP and Section 9 Landscaping Character in this Plan)

Landscape treatment to street frontages should be designed to reduce the scale of building elements and to create a landscape theme to the street which is consistent with Council's street tree strategy.

Street tree planting will be required along street frontages within the footpath area.

Standards

1. Waterfront and beachfront proposals must include a foreshore landscape restoration plan in accordance with the objectives of the Character Area. This should cover the area between the Foreshore Building Line and Mean High Water Mark or the boundary nearest to the beach/water.

2. Maintain and enhance street verge landscaped area and tree canopy and minimise hard surfaces.

3. A site survey is to be provided to show the location, height, diameter, spread, botanical and common name and spot levels at the base of existing trees. 100mm or over in diameter.

4. Housing on the ridgeline, as viewed from the water, should retain a backdrop of trees to ensure the skyline is vegetated. Where existing vegetation on the ridgeline has been a lost, additional trees are to be provided to reinstate the ‘tree’ skyline.

5. Landscaping in the front setback is to complement or to use the same species as recommended for the street tree planting within the designated character zone.

6. Street tree planting is to be provided within the road reserve at the rate of one tree per 5 lineal metre frontage.
12. Environmental Management

Background
To assist in meeting the NSW State Government target of reducing waste to landfill by 60% by the year 2005, it is suggested that any person who is considering building, erecting, demolishing, refurbishing or developing a property in Bundeena + Maianbar should think about steps to reduce waste minimisation.

Early consideration of waste management issues in the design phase promotes the principles of ecologically sustainable development. Consultations with the community have highlighted the community desire to move toward a low waste management hierarchy based on avoidance, reuse, recycling and reprocessing with disposal a last resort.

Construction
Research has demonstrated that up to 10% of the timber delivered for residential construction is wasted, while 30% of plasterboard is also wasted. The following are examples of construction wastes that are 100% recyclable if properly sourced and kept uncontaminated: steel, non-ferrous metals, glass, paper, concrete, plasterboard and cardboard packaging materials.

Demolition
Developers should consider whether it is possible to re-use existing buildings, or parts of buildings for the proposed new use.

With careful on site sorting and storage and by staging work programs, it is possible to reuse many materials either on-site or off-site. A local recycling directory can be obtained from Council’s Customer Service Centre.

Stormwater
Another important consideration is to implement measures to prevent stormwater pollution and information in respect of this can be obtained from Council’s Site Management Concept Plan Brochure.

12. Environmental Management

TCM
Total Catchment Management (TCM) is about managing the local environment on a water catchment basis. As water flows through a catchment it collects many substances such as sediment, soil and litter, and pollutants such as nutrients, chemicals and grease and deposits them further downstream. The quality of water along a river, creek or estuary can be a good indicator of the overall health of the catchment.

Plan
Completion of a waste management plan will help determine what materials are on the site and how and when they will be stored, reused and eventually disposed of. Refer to Council’s Waste Minimisation Plan for Construction and Demolition.

Objectives
a. Encourage recycling and reuse within Bundeena + Maianbar
b. Promote sustainable on-site waste management, maximise reuse and recycling of materials, minimise the potential for creating environmental pollution.
c. Maximise the separation, reuse and recycling of household generated wastes.
d. Encourage buildings designs and construction techniques, which will minimise waste generation.
e. A 60% reduction in waste (based on 1990 figures) leaving Bundeena and Maianbar to landfill.
f. Promote the sustainable use of natural resources.
g. Provide stable and productive soil, high quality water and productive and protective native vegetative cover within the water catchment.
h. Reduce stormwater pollution run off.
i. Co-ordinate and promote policies, programs education and activities as they relate to Total Catchment Management.
j. Promote community participation in natural resource management.
k. Identify and rectify natural resource degradation.

Standards
1. All development to be managed in accordance with best practice for minimising construction and demolition wastes as contained in Council’s Waste Minimisation Guidelines.
2. All development to incorporate storage areas for waste and source separated recyclables.
3. All development must include facilities for composting of garden and kitchen waste.
4. Where demolition is proposed, on site reuse or materials is to be maximised in accordance with best practice methods.
5. Minimise sediment loss from all construction and demolition activities.
6. Design road carriageways and footpath reserves to be supportive of Total Catchment Management principles, where practical. Minimise impervious surface areas and providing stable soil, and filter areas.
7. Provide updated guidelines on Total Catchment Management principles for all developments and the local community in general.
8. Stabilise all natural creek lines with appropriate native vegetation.
9. Stormwater detention is to be provided to all multi-dwelling sites.
10. Detention ponds are to be integrated into the overall natural environment including water tolerant plants and trees.
11. Compliance with erosion and sediment controls contained in Council’s Environmental Site Management Development Control Plan.

Guidelines
When considering a plan to minimise the level of waste developed while building works are being carried out the following measures should be considered.

- Careful source separation of off cuts to facilitate reuse, resale or efficient recycling
- Reusing formwork
- Prefabrication of materials where possible
- Coordinating sequencing of various trades
- Minimising site disturbance by avoiding unnecessary excavation.

Before construction begins the usage of resources can be optimised when the applicant and the working party to

Action
1. Council and the working party to investigate a Recycling facility on an appropriate site eg (9a) zone, the old sullage site or site adjacent to the bowling club), within a timeframe of 5 years.
Principles for Managing Stormwater, Erosion and Sediment Control

**Construction Notes**
1. Construct sediment fence as close as possible to the contours of the site.
2. Drive 1.5 metre long stake pairs into ground, 3 metres apart.
3. Dig a 150 mm deep trench along the up-slope line of the fence for the bottom of the fence to be entrenched.
4. Embed trench over base of fence.
5. Fix self-supporting geotextile to up-slope side of post with wire ties or as recommended by geotextile manufacturer.
6. Join sections of fabric at a support post with a 150 mm overlap.

**SEDIMENT FENCE**

**Construction Notes**
1. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the insert.
2. Fill the sleeve with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 100 mm high x 400 mm wide.
4. Place the filter at the bottom of the slope and against the toe of the slope to act as an erosion control layer.
5. Maintain the opening with spacer blocks.
6. Form a seal with the backing and prevent sediment bypassing the filter.
7. Fit to all mesh sleeves at gap points.

**MESH AND GRAVEL INLET FILTER**

**Construction Notes**
1. Strip topsoil and level site.
2. Compact subgrade.
3. Cover area with needle-punched geotextile.
4. Construct 200 mm thick pad over geotextile using roadbase or sand aggregate. Minimum length 15 metres or to building alignment. Minimum width 3 metres.
5. Construct a small pond to divert water to a sediment fence or other sediment trap.

**STABILISED SITE ACCESS**

**Construction Notes**
1. Install min. 400 mm wide roll of turf on the footpath adjacent to the kerb and at the same level as the top of the kerb.
2. Lay 1.5 metre long turf strip parallel to the kerb every 10 metres.
3. Rehabilitate disturbed soil behind the turf strip in accordance with the SWMP/ESCP.

**KERBSIDE TURF STRIP**

**Reference:**
New South Wales Department of Housing