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Natural environments >

Introduction

Auckland is defined by a range of natural landforms and environments. Our mountain ranges and coastlines, our areas of dense native bush and our wide pastoral plains all help make Auckland unique.

All development brings with it a responsibility to respond carefully to the attributes of a site and its surrounds, ensuring that development enhances the characteristics of the site and contributes to Auckland's celebrated natural environment. The topics in this element provide guidance on working with the different environments found across Auckland.

Site contents

The contents list and design outcomes for the whole of this section are listed below. Each subheading highlights a separate webpage that can be accessed by clicking on the menu located to the left of this introduction.

Landform features and topography

Design Outcome

Subdivisions respond to the landform and its features, and minimise any changes needed.

Ecology and habitat

Design Outcome

Subdivisions protect and enhance the rich ecology and habitat of the natural environment.

Vegetation and landscaping

Design Outcome

Subdivisions provide for vegetation that enhances habitat and ecology and complements the built form.

Stormwater and hazards

Design Outcome

Subdivisions manage stormwater and hazards by carefully locating structures, building-platforms, and density away from vulnerable land.

Coastal environments

Design Outcome

Development along the coast is very carefully planned, to ensure that the natural character values of the coast are maintained or enhanced.

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Landform features and topography

Design Outcome

Subdivisions respond to the landform and its features, and minimise any changes needed.



Auckland has a unique and internationally significant natural environment that is a result of many interacting geological processes.

This has resulted in a wide choice of living options for Aucklanders, from flat and well connected, to elevated and outlook-based. Subdivisions should celebrate and reflect these differences instead of hiding or removing them. The most important features of a site should influence the subdivision design. This means that very sloping land will not suit a flat-site-based development, and a development that wants to capitalise on views will not suit a flat plain. For both landform scenarios the designer/developer should anticipate different residential amenities and design accordingly.

Better Design Practice

- Integrate excavations or retained fills in the land into the building platform.

- Undertake all earthworks at one time, instead of leaving lots that need further earthworks before they can be developed.
- Undertake significant environmental changes only when necessary to protect human health and safety, or when focusing works and activity into one part of a site will be better for the environment overall.

Rules of Thumb

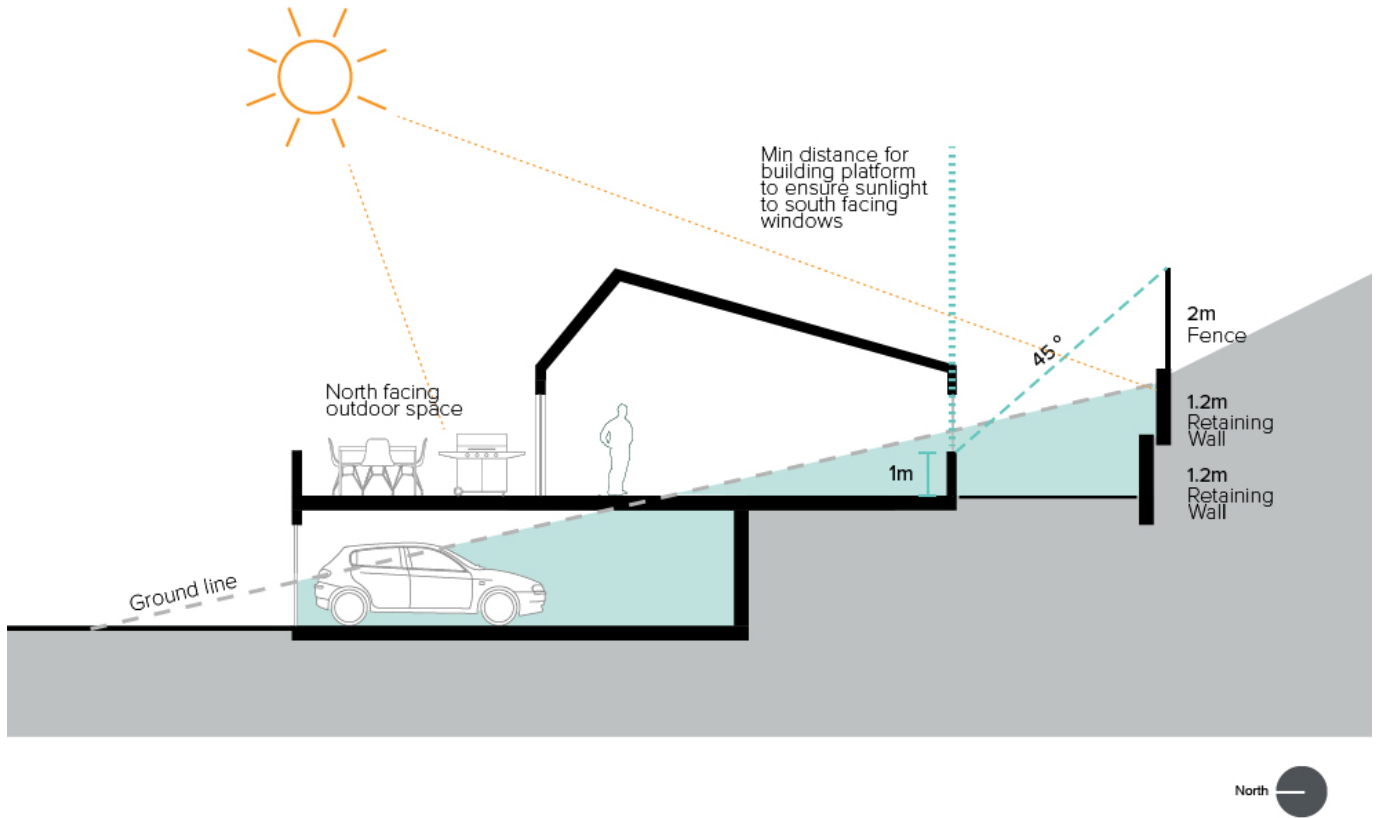
1. Aim for changes to sloping land to appear as 'natural' as possible:

- try not to create straight vertical or horizontal planes that stand out when looking at the site
- include space for planting and vegetation to soften the view of retaining walls
- try to balance cuts into the land with fills, instead of only using cuts or fills alone
- make stormwater ponds appear like natural bodies of water, not as artificial-looking 'boxes' with straight sides.

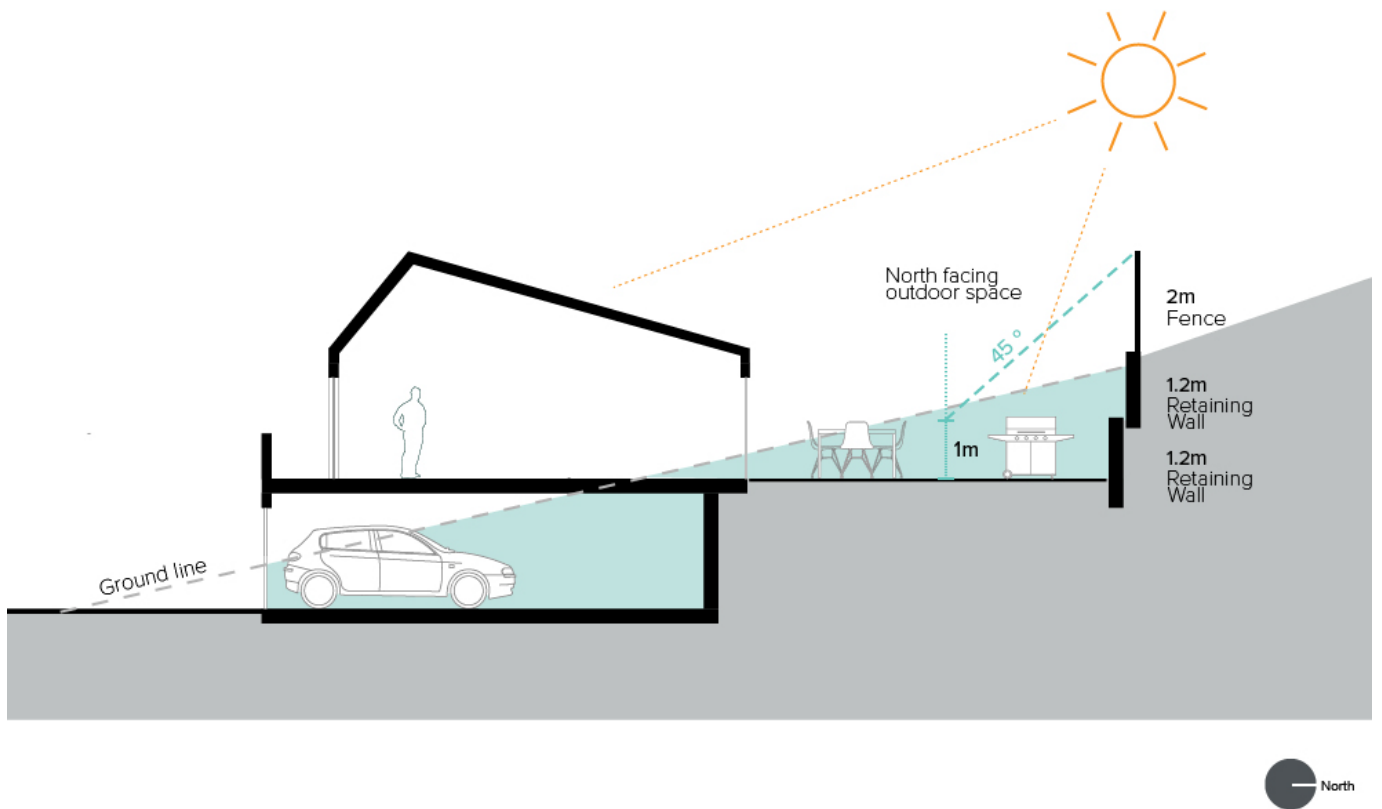
2. Distribute small retaining walls and sloped batters across a site rather than using very large individual structures.

3. Limit the vertical rise across a building platform to avoid the need for excessive retaining structure.

4. Ensure retaining walls and fences (including the likely provision of future fences) arising from the subdivision allow adequate sunlight to reach the building platform and outdoor living areas on each lot.



Cross section illustrating dwelling set away from retaining wall, with outdoor space to the front



Cross section illustrating dwelling set away from retaining wall, with outdoor space to the rear

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Ecology and habitat

Design Outcome

Subdivisions protect and enhance the rich ecology and habitat of the natural environment.

Part of the unique appeal of urban Auckland is its highly valued views of the natural environment and the wide variety of native and exotic species.

While people accept that allocating rural land for urban development will bring change, this change should not lead to a permanent loss of ecosystems or habitat.

Better Design Practice

- Protect important habitats by using legal mechanisms such as land covenants, encumbrances, consent notices and ongoing landscaping, weed and pest control, or maintenance responsibilities.
- Distribute densities and lot sizes carefully to protect important habitats. When required, subdivisions can be designed to limit people accessing areas of sensitive habitat or areas requiring protection.
- Ensure natural features can be easily accessed by residents and the wider community, including visitors.
- Consider how your subdivision can help to connect areas of unbroken habitat across urban Auckland, on both public and private land. These do not need to be made publicly accessible, but can be when doing so improves habitats and pedestrian safety.

- Try to improve the ecology and habitat quality of a site as a key objective of a subdivision. This could include:
 - riparian and other planting, including street trees
 - treating land that has been contaminated
 - reducing stormwater amounts and improving stormwater quality
 - changing exotic plant cover to native plant cover (eco-sourced if possible), when relevant to the overall landscape strategy
 - pest and weed management

- Ensure that enough space is provided on each parcel of land (public or private) for a large tree (or trees) to grow.
- An ecological assessment can assist in supporting plant and animal species that are the most at risk in the part of Auckland where the site is located.

Rules of Thumb

1. The best outcome occurs when areas set aside for planting are designed to connect with planting areas on neighbouring lots, creating space for clusters of vegetation to grow over time.

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Vegetation and landscaping

Design Outcome

Subdivisions provide for vegetation that enhances habitat and ecology and complements the built form.

Vegetation and landscaping contribute to habitat and ecology. Trees and greenery complement built form and soften what can otherwise be bland views of large-scale development.

They can contribute to a sense of character and new amenity that significantly improves the liveability of subdivisions. Trees are also very effective at promoting legibility and way-finding. If used consistently to strengthen the road hierarchy, people can find main roads and maintain a sense of where they are.

Better Design Practice

- Provide street trees and landscaping in public spaces as early as possible, to maintain continuous habitat, establish long-term amenity and character features.
- Use vegetation and landscaping to enhance the positive parts of the site and important future land uses, rather than to hide the negative effects of poor design decisions.
- Try to use eco-sourced native vegetation, if it fits with the overall landscape design strategy and helps to create low-maintenance and successful planting. This will lead to the most ecologically appropriate and climate-resistant landscaping outcome possible, as well as contributing to local identity.
- Plant trees in places where they will not block high-amenity views and can grow in a balanced and healthy shape instead of needing to be shaped into an unnatural form. For example, avoid planting trees where they will need to be pruned back from overhead power lines.
- Use frangible (breakable) street tree species to reduce safety risks to vehicle occupants in the event of a crash. However, consider using non-frangible street trees in areas where very high pedestrian volumes are anticipated, to protect pedestrians from out-of-control vehicles.
- Plant vegetation as early as possible in the development of a subdivision's roads and blocks, and ensure the vegetation is protected while engineering and construction works are taking place.
- Consider concentrating street trees at the entrances to local roads in combination with measures that lower vehicle speeds, such as narrowed carriageways. Use vegetation and planting to signal to drivers that there is a change from a busier road (which vehicles can

move through quickly and easily), to quieter roads (which are pedestrian-focused and require vehicles to slow down).

- Plant street trees in the berm between the vehicle lane and the footpath. Consider planting trees within the parking lane in formed islands at regular intervals, especially on local roads. This helps to make trees easy to see, creates buffer or refuge spaces and can help to slow down vehicles close to pedestrians by making the carriageway appear narrower.
- Where road space is limited or too narrow to accommodate trees, provide street trees in the front yard of lots and protect them with legal mechanisms such as protective covenants or consent notices.

Rules of Thumb

1. Consider Crime Prevention Through Environmental Design (CPTED) principles when planning the location, density, and plant species used within a subdivision.

- Use good street lighting that will not be obscured by foliage.
- Avoid creating places where people could be trapped or taken by surprise (such as behind a cluster of bushes).
- Pedestrians should be able to see where they are going and assess the risks they may face (make sure low tree foliage does not block views).
- Plant trees that have one main stem, unless there are already many trees that have multiple stems in the area, such as coastal pōhutukawa.
- Plant street trees with narrow trunks that will not make it difficult for drivers or pedestrians to see past, or that would create a place where people could be trapped.

2. Very large trees are appropriate for planting along major arterial routes and public open spaces.

They help people find their way by having a high prominence in the neighbourhood and being visible from adjacent streets. Small trees are better for local roads.

3. Aim to plant large trees early in the development process, as this can enhance the character of a new subdivision and provide a sense of scale.

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Stormwater and hazards

Design Outcome

Subdivisions manage stormwater and hazards by carefully locating structures, building-platforms, and density away from vulnerable land.

Auckland is subject to a number of hazards. Some are natural and some are strongly influenced by human activity.

Hazards include landslides, erosion, contaminated land, tsunami and tidal or storm surges, flooding, volcanic activity, earthquakes, sea-level rise and subsidence. All of these can create serious human health and safety risks that must be managed. As Auckland continues to

urbanise, the risk of impervious surface-based flash flooding (where water cannot soak into the ground and is channelled by constructed barriers) is also likely to increase.

Better Design Practice

- Locate building platforms away from 100-year flood plains and overland water-flow paths.
- Avoid areas that are susceptible to natural hazards, even if this means creating higher building densities and smaller lots in other places on the development site.
- Use engineering tools, such as rain gardens, tree pits, swales, detention tanks and piped networks, to manage the speed and amount of stormwater.
- Slow down the flow of stormwater and clean it on site, rather than piping it away at high speed, which can cause big disruption to stream habitats and coastal erosion.
- Use water-sensitive design and 'soft' engineering (i.e. minimise large-scale engineering structures). Where large structures are necessary, they should add amenity to the subdivision and be cost effective. Such infrastructure must be supported by education and communication regarding their ongoing maintenance needs and must be able to be maintained in a straightforward manner that does not place an inappropriate burden on future residents.
- Use hazard-prone and other environmentally sensitive areas to add value and outlook space to the development, rather than fencing it off, which can lower the value of adjoining sections.
- Land that has a high tsunami risk should be subdivided to allow for a clear and straightforward evacuation route to high ground, with risks made clear to purchasers by the developer or sales representative.

Rules of Thumb

1. Base your decisions on life-cycle costs, not just short-term capital costs, particularly when planning infrastructure and considering stormwater management.

2. Consider evacuation or escape needs if undertaking development on flood plains, overland flow paths, or tsunami-risk land.

3. Consider all hazards on the basis of a once-per-100-year occurrence, notably for flood plains and overland flows, erosion, tsunami, and sea-level rise.

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Coastal environments

Design Outcome

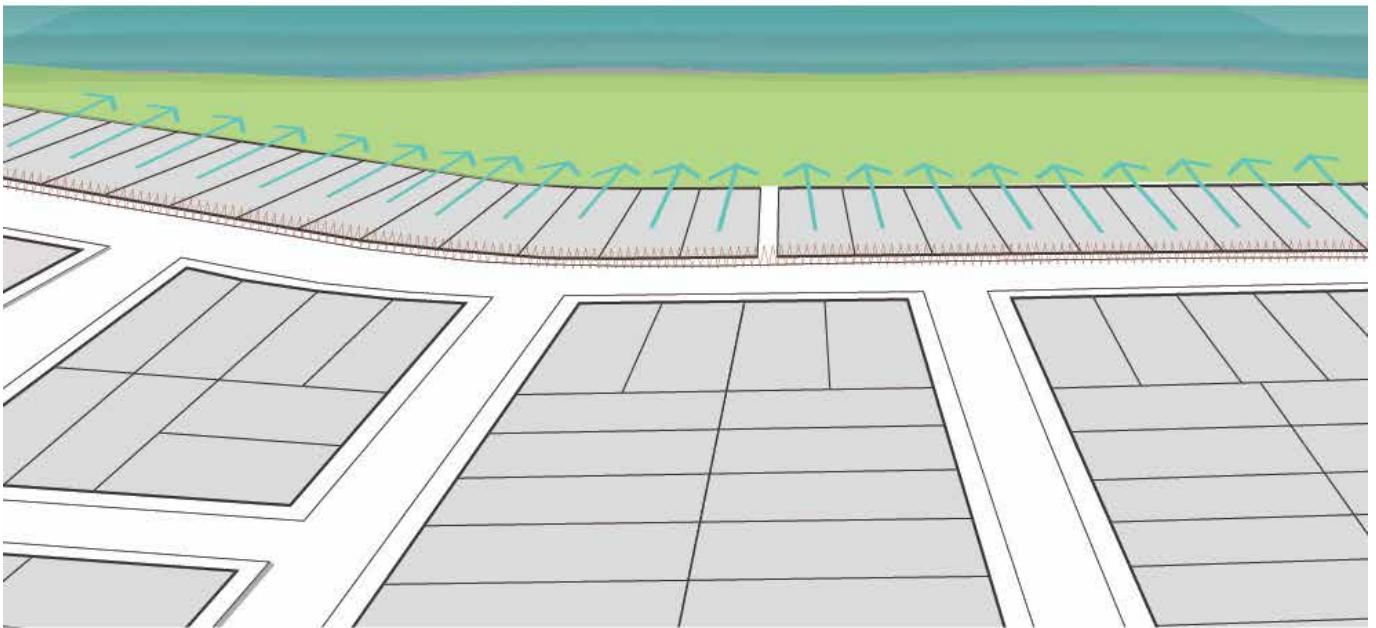
Development along the coast is very carefully planned, to ensure that the natural character values of the coast are maintained or enhanced.

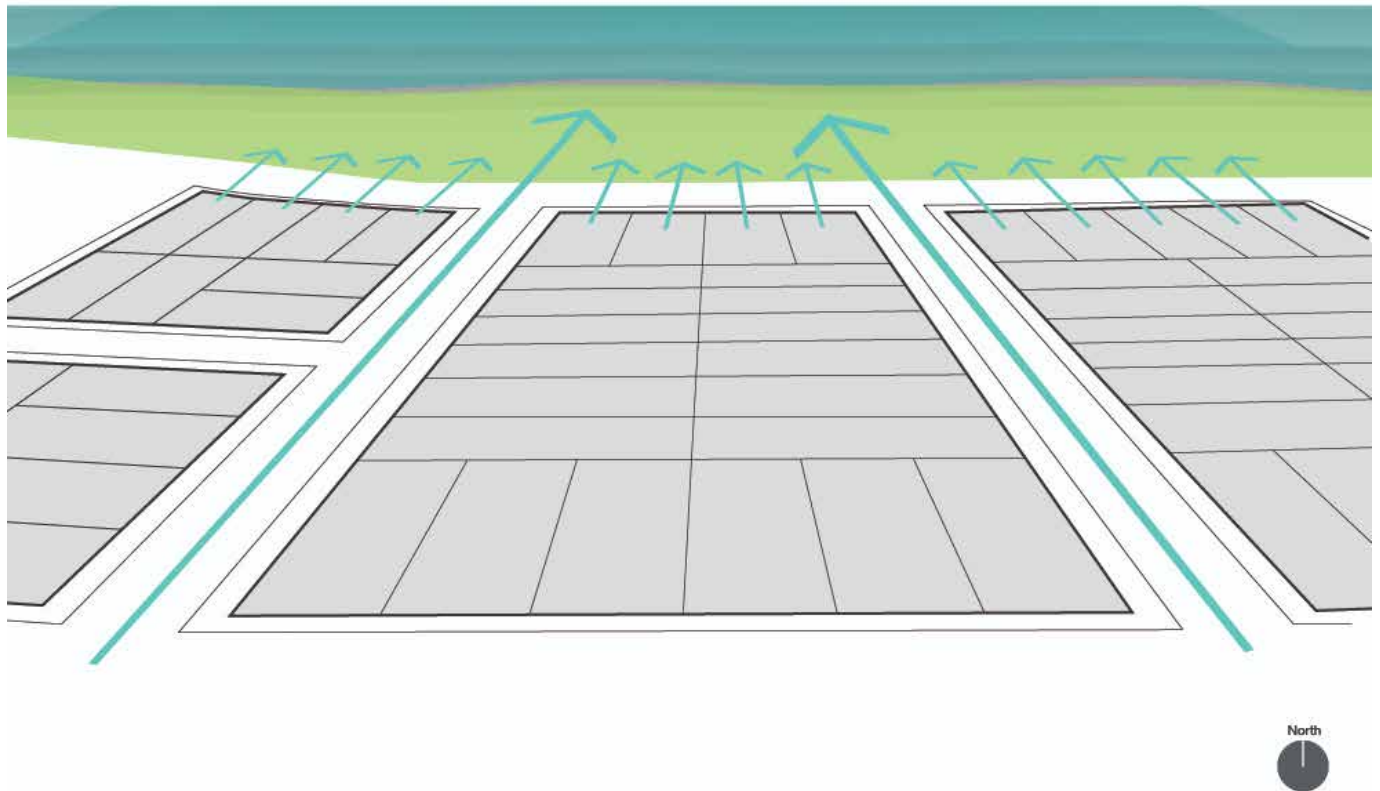
Many elevated coastal developments in Auckland originate from unregulated bach developments that, over time, have been extended into complete family homes.

Larger coastal buildings, coupled with ongoing coastal erosion, mean that visible developments along Auckland's coastline are increasing. However, with the exception of major commercial waterfront areas, most of Auckland's developed coastline still retains a dense canopy of plants that softens, and sometimes completely screens, development. Any new subdivision along Auckland's coastline must be planned carefully, and consider any erosion and coastal characteristics. Extensive landscaping and building setbacks should be incorporated in almost every instance.

Better Design Practice

- Emphasise public edges along the coast that protect coastal character and ensure that everyone can enjoy access.
- Maximise views and access to the coast in the design and direction of streets and open spaces, so that everyone can enjoy access and views. For example, have blocks that run away from the coast instead of alongside the coastal edge.
- Do not allow the coastal character to be taken over by land development, especially along cliff edges. Consider using covenants, consent notices or other methods to keep the coastal edge clear of structures. Alternatively, design narrower and deeper sections so that houses can be set further back from the coastal edge.





Rules of Thumb

1. Locate building platforms sufficiently back from the coastal edge so that a buffer of vegetation can maintain the coastal character and screen views of buildings.

Structures should be no closer than 23m to the coastal edge, allowing 20m of esplanade reserve space and three metres for a typical rear or front yard. Decks or platforms extending beyond this should be planned very carefully to avoid creating shadow beneath the surface and to withstand coastal conditions.

2. Limit retaining walls that can be seen from the coast.

3. Use palisade walls carefully by:

- setting walls back from the coastal edge so that they are not uncovered by erosion soon after construction
- using a colour that matches the ground and is not a smooth texture so that the wall will not be obvious when exposed.