Appendix 25A – Mangawhai Design Guidelines

Contents

1 Introduction

1.1 Need for design guidelines

These design guidelines have been prepared by Kaipara District Council to assist people undertaking subdivision and land use activities in realising sustainable, community focused outcomes for Mangawhai and its surrounding area. The aim of these design guidelines is to promote socially, culturally and environmentally sustainable development and to encourage the design of future settlement areas that interact positively with their local environment. Through the development of the Kaipara District Plan and the Mangawhai Structure Plan, the Kaipara District Council has identified a variety of issues facing the Mangawhai area and has prepared these design guidelines as part of its strategy to address them.

The guidelines set out to facilitate design that reflects the traditional settlement patterns characterising the Mangawhai area, building upon the values that the community and visitors to the area have come to appreciate over time. In addition, the guidelines promote sustainable subdivision and land use practices that will assist in protecting and enhancing the environment. These principles are confirmed in the Mangawhai Structure Plan that was adopted by Council in 2005.

These guidelines provide direction for Council, the community, landowners and developers on how best to achieve the Structure Plan's vision for Mangawhai (which reflects Council and community aspirations). Based around best practice design principles, the guidelines seek to build on the Council's objectives and policies within the Kaipara District Plan, and form a tool to implementing strategies outlined within the Mangawhai Structure Plan. As a guidance document, the design guidelines will assist in the planning process by providing landowners and developers with design principles developed specifically for the Mangawhai area.

1.2 Relevant documentation

In preparing these guidelines consideration has been given to the following documents:

- Resource Management Act, 1991
- Kaipara Operative District Plan, 1997
- Mangawhai Structure Plan, 2005
- Kaipara District Council Reserves and Open Space Strategy, 2006
- Mangawhai Reserves Management Plan, 2009
- Mangawhai Planning Study, 1997
- The Mangawhai Heads Community Council Catchment Management Plan, 1991
- Mangawhai Infrastructural Assets Study and the Mangawhai Ecocare Project, 1999
- New Zealand Costal Policy Statement, 1994 & Proposed 2008
- New Zealand Urban Design Protocol
- National Guidelines for Crime Prevention through Environmental Design in New Zealand

2 Mangawhai Structure Plan

2.1 Working towards a vision

This section provides a brief outline of the Mangawhai Structure Plan and the relevant issues, strategies, implementation methods and recommended actions that have assisted in the preparation of these design guidelines.

The Mangawhai Structure Plan forms part of the Mangawhai Future Project planning process involving communities, Council and other stakeholders "working together to create a better place to live, work, learn and play." It is part of an ongoing, long-term, community based management process which proposes both formal and informal processes to achieve a collective vision (Mangawhai Structure Plan, 2005, page 2). These design guidelines seek to assist in achieving this collective vision.

2.2 Key issues to be addressed

As described in the Structure Plan (page 4), Mangawhai and the surrounding hinterland comprises a pattern of coastal and rural settlement formed around the wider Mangawhai Harbour. The Structure Plan describes the Mangawhai coastal area as a unique landscape characterised by:

- *An open coastal beach and harbour system*
- *An indented coastline offering a mixture of sandy beaches and dune systems*
- *Freshwater wetlands*
- *Estuarine and salt marsh ecosystems*
- *Steep cliffs and headlands*

Within the upper Mangawhai catchment, the Structure Plan describes the landscape as being characterised by:

- *Ridges and valleys with re-generating and remnant patches of indigenous vegetation*
- *Interspersed areas of open pasture*
- *Exotic forestry and horticulture*
- *Small clusters of farm and residential buildings*

Notwithstanding its natural character value, the Mangawhai area continues to experience pressures related to growth. The areas natural qualities combined with its proximity to Auckland and continuing improvements to regional transport infrastructure make it a natural destination for holiday makers and people looking to live away from the city. As a result, the Mangawhai Structure Plan (page 6) has identified the following key issues facing the area:

- The continuing rapid rate and character of residential subdivision
- Environmental effects of continuing rural residential subdivision
- Water supply and water quality issues
- Appropriate stormwater management techniques
- Increased local traffic and roading pressures
- Increased demands for (and on) reserves and open space
- Beach and harbour access issues
- Maintaining landscape character and amenity values
- Maximising landscape and habitat conservation, protection and enhancement

2.3 Policy areas and recommended actions

Following on from the identification of issues facing the Mangawhai area, the Structure Plan identifies growth management and development principles (in the form of strategies, implementation methods and development framework scenarios) particular to eight policy areas (refer figure 1). A series of future actions is recommended in relation to each policy area. While the consideration of each policy area remains equally important, these design guidelines are a direct response to the actions outlined for policy area 2 (Rural Residential) and 3 (Mangawhai Residential):

Summary actions for individual policy areas

Policy Area 2 – Rural Residential

- *Further refine and develop rural residential subdivision design guidelines and establish pre-application processes and comprehensive development plans*

Policy Area 3 – Mangawhai Residential

- *Further refine and develop subdivision and development control guideline principles that preserve existing residential and landscape character elements as identified in the Structure Plan*

3 How to use this document

These guidelines have regard to the distinct landscape and settlement patterns that have formed what is now a significant coastal community and destination for many visitors each year. Through the use of these guidelines it is hoped that opportunities will be enabled for creative design that responds to the qualities of a given site, while ensuring that sustainable development is fostered through best practice design approaches.

This design guide is set under the following themes:

- Creating neighbourhoods – Sustainable subdivision design
- Getting around – Facilitating connectivity and access
- Sustainable drainage strategies – Low impact design

As a starting point to the design process, landowners and developers should read these guidelines (along with any other relevant documents) prior to undertaking subdivision and land use. As far as possible the principles outlined within the guidelines should be implemented throughout subdivision, to assist in ensuring Mangawhai grows sustainability into the future.

While these guidelines are applicable to the Mangawhai area in its entirety, further guidance (e.g. master plans and streetscape design) for Mangawhai Village, the Wood Street Business area and Mangawhai Industrial area is anticipated.

Rural residential (i.e. large lot subdivision of 4000m²+) and residential subdivision create inherently different typologies of land use. Notwithstanding this, many of the design principles outlined within these guidelines can be applied across the board. Where a separate approach to rural residential and residential activities is required (e.g. in relation to block and street layouts) this is stipulated.

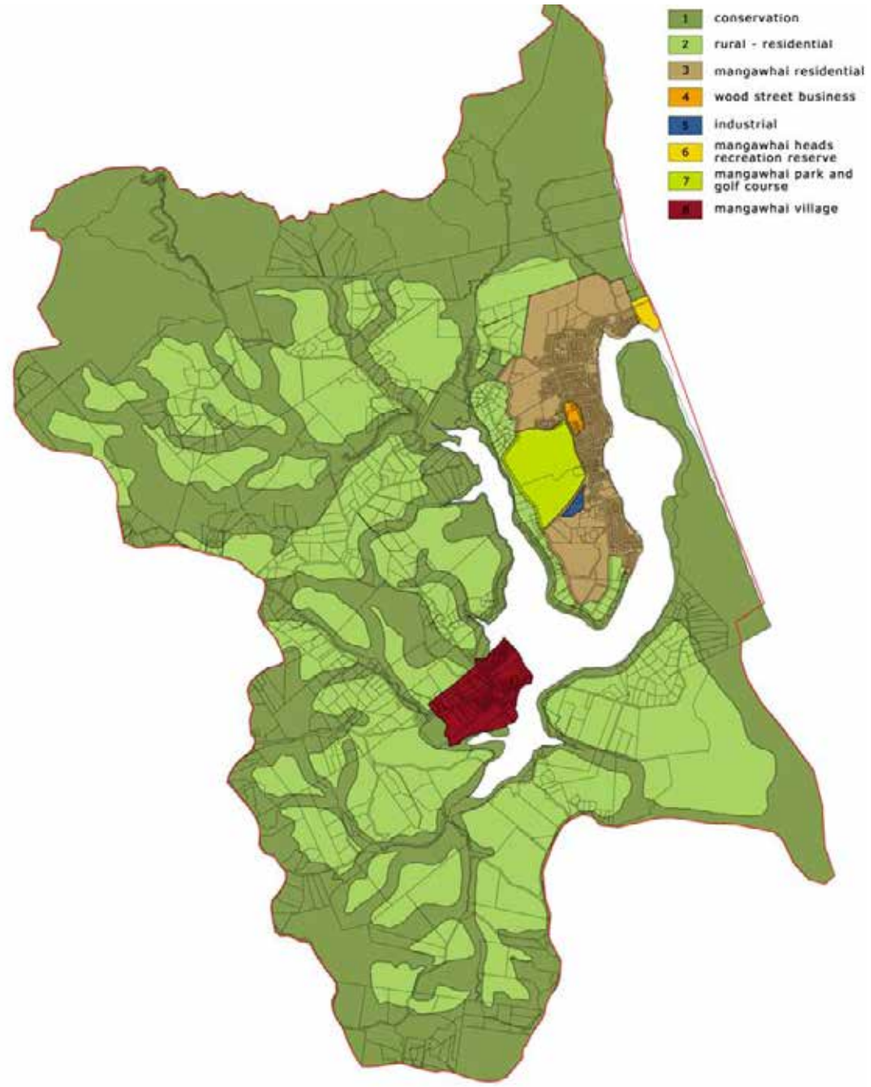

Figure 1: Mangawhai Structure Plan – Policy Areas (Source: Mangawhai Structure Plan)

4 Creating neighbourhoods – Sustainable subdivision design

Essential to the future growth of Mangawhai is the ongoing development of a living community fostered through the creation of neighbourhoods. Appropriate subdivision layout and design responses have the potential to:

- Offer people the opportunity to socialise and build relationships with one another
- Add identity and cultural value to the community
- Enhance amenity values
- Respond appropriately to environmental sustainability issues

Prior to undertaking subdivision design, an assessment (including mapping) of the following site qualities should be carried out to gain a thorough understanding of the opportunities offered by the site:

- Topography and landform
- Flora and fauna
- Soil conditions
- Open spaces, green networks and waterways
- Accessibility to coastal areas and other significant amenities
- Features of heritage and cultural significance
- Potential flood areas and other natural hazards
- Movement networks, including walkways, cycle routes and streets
- Surrounding land use and built character

4.1 Responding to and integrating the natural landscape

4.1.1 Retain and enhance areas of significant vegetation

A defining feature of the Mangawhai landscape is its indigenous flora and fauna. Much of the flora is significant in terms of the ecological and aesthetic value it brings to the area and its retention has the potential to add positively to the future character of existing and new communities.

Any significant areas of vegetation on site should be retained and enhanced. Such retention may be incorporated into boundary treatment or site features and should, wherever possible, form part of a wider green network.

Where riparian and wetland areas are present, these should be retained to protect water quality and ecosystems.

Mature trees are home to indigenous birds and other fauna and have the potential to be integrated with ecological corridors between neighbourhoods. Wherever possible, mature trees should be integrated into an overall landscape design for the site and surrounding area.

Figure 2: Existing native vegetation should be protected and incorporated into public space.

Figure 3: Existing wetland areas should be incorporated into open space areas as features.

Figure 4: Mature trees can form an instant attraction and enhance amenity within a new residential area.

4.1.2 Protect and enhance natural drainage systems.

Subdivision layout should respond to natural drainage patterns on the site. Existing and ephemeral water courses should be incorporated into site design as public open space and, where possible, integrate with wider open space and ecological networks. Riparian planting should be established along water courses and adequate space for flooding should be allowed for in potential flood areas.

4.1.3 Establish new sustainable drainage systems that reflect the natural patterns of the Mangawhai environment.

Sustainable drainage systems that replicate natural systems within the Mangawhai area should be used to manage storm water runoff from proposed development. These should include open swales and wetland planting to reduce impact on existing drainage systems. Further guidance on low impact design drainage systems is provided in section 6.

4.1.4 Provide adequate areas for retention during times of heavy rainfall.

Development often results in large areas of impermeable surfaces (e.g. roofs and parking) resulting in increased storm water runoff. Where high levels of runoff are likely, on-site retention basins and ponds should be established to reduce on-flow impacts (such as sedimentation) on natural water bodies. Retention basins and ponds should seek to replicate qualities of natural water bodies in the Mangawhai area (such as wetland areas) and should be designed to ensure public safety. Further guidance on low impact design drainage systems is provided in section 6.

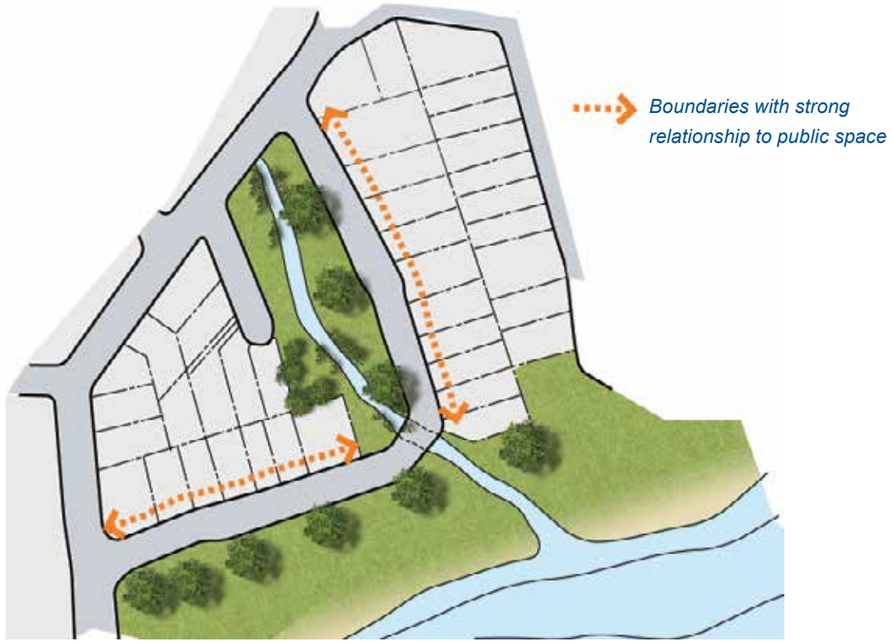

Figure 5: Indicative subdivision layout: Subdivision design should provide for the protection of existing waterways and vegetation through integration with open space and movement networks.

Figures 6: Culverts offer no ecological value and should be avoided.

Figures 7: Drainage patterns should replicate natural water courses.

Figure 8: Existing retention pond at Mangawhai Village, integrated with marginal planting around the edges.

4.1.5 Provide new roads and driveways that respond to local topography and minimise earthworks.

In addition to retaining the natural form and character of the site, designing with the slope helps prevent the loss of soil and the possibility of undermining adjacent structures, land and trees. Soil and its biological community take many years to develop and should be retained in place as far as possible to preserve biological values.

Over sloping sites, roads should be designed to follow natural contours. This has the potential to reduce the need for large cut and fill, reducing sediment runoff and impacts on visual amenity and site stability.

Wherever possible, construction of roads and driveways should avoid the use of retaining structures, and a graded slope of less than 1:2 should be used. Where this is not possible, alternative routes should be considered. Retaining should follow the natural contours of the slope, be stepped to avoid large retaining structures, and integrated with planting to reduce visual impacts. Unstable slopes and slopes that may be affected by increased water runoff should be planted as early as possible to assist in stability.

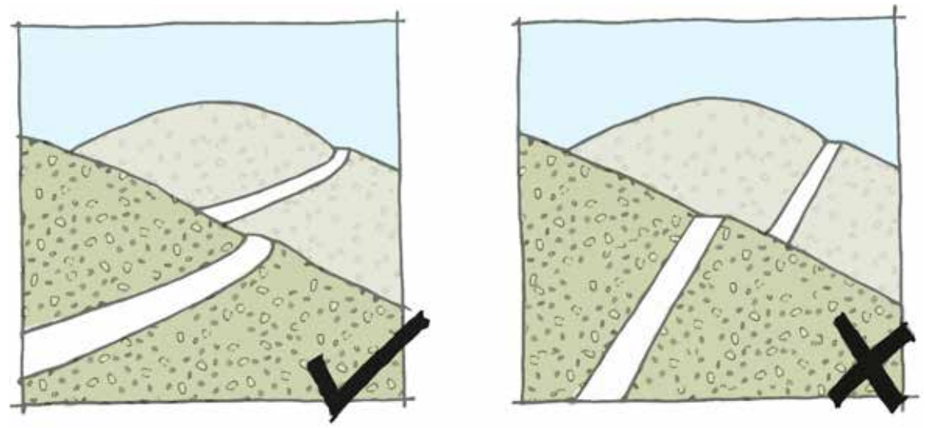

Figure 9: Roads should follow the natural contour of the landscape and avoid running straight over hills.

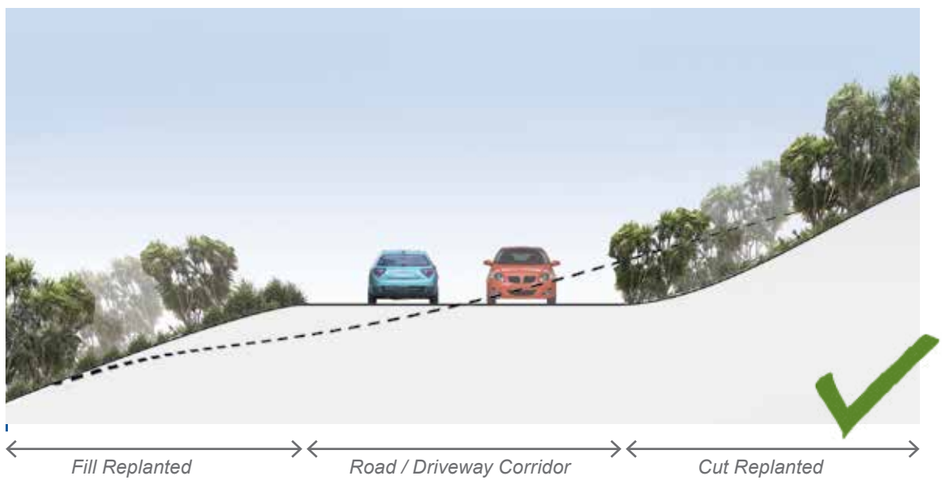

Figure 10: Indicative section: Slopes should be cut and filled so as to retain natural character and minimise environmental and visual effects.

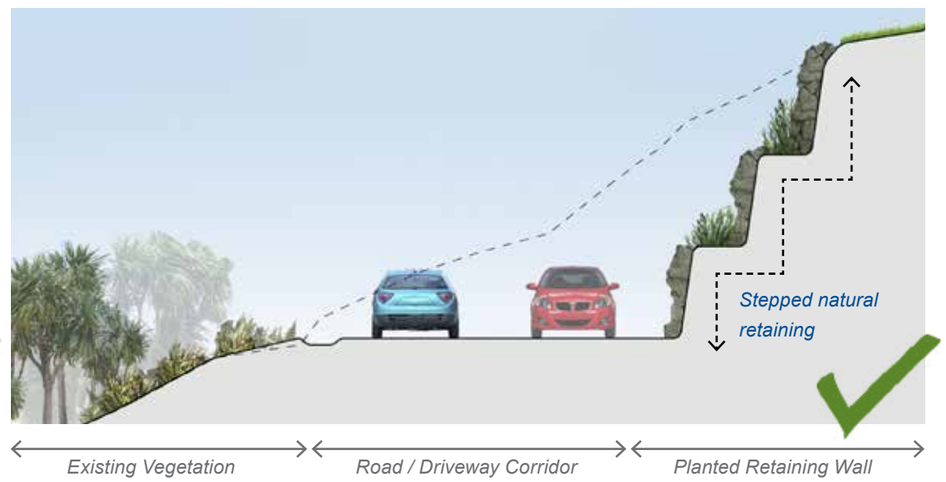

Figure 11: Indicative section: Stepped retaining (using local natural materials) should be used over steep slopes to reduce visual impact and assist in minimising storm water runoff.

4.1.6 Building platforms

Subdivision layout and the siting of building platforms must reduce the visual impact of structures within the landscape. This is particularly important within rural areas to ensure retention of amenity values associated with natural and cultural landscapes. Prior to undertaking rural subdivision, an assessment of the site should be carried out to determine those areas of the site that have the greatest potential to absorb development. Regard should be given to:

- The protection of ridgelines and significant land forms (e.g. hill tops)
- Protecting and enhancing the visual amenity values of the site
- Ensuring that development does not visually dominate or detract from public views (such as from roads and opens space frequented by the public)
- Ensuring that development does not require the removal of any indigenous ecosystems including vegetation, wildlife habitats, wetlands, or significant geological features
- Enabling the ongoing agricultural use of the lands

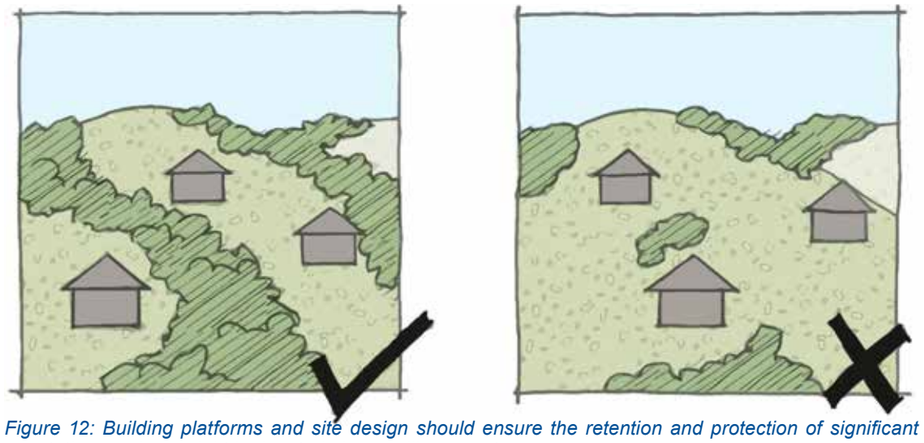

Figure 12: Building platforms and site design should ensure the retention and protection of significant vegetation, such as might be located along gullies or water courses..

Having regard to the above matters, building platforms should be sited to minimise impacts on landform, vegetation and water courses. Within rural subdivisions clustering of residential building platforms (refer section 4.2 below) within appropriate areas will reduce the need to undertake large amounts of earthworks and allow vegetation and water courses to be retained untouched. Subsequently the proposed development is less likely to affect environmental and visual amenity values.

On all sites, building platforms should be located so as to minimise earthworks. Earthworks associated with raising the natural building platform of the site should be avoided. Where building platforms require significant earthworks, alternative locations should be found.

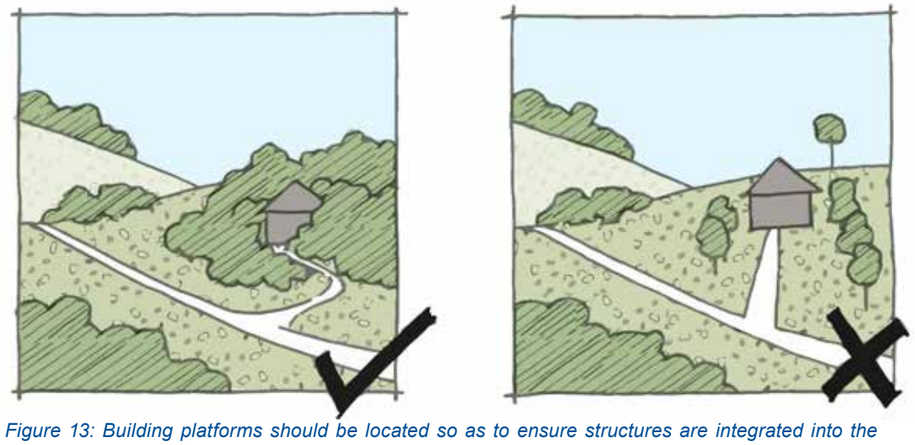

Figure 13: Building platforms should be located so as to ensure structures are integrated into the landscape.

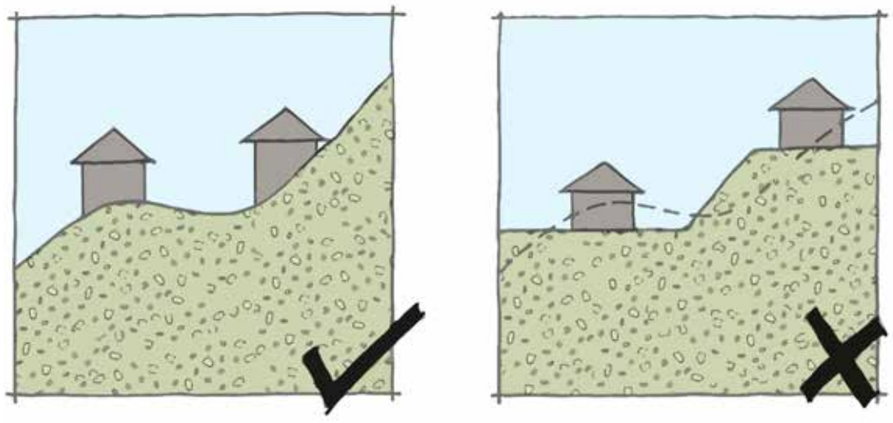

Figure 14: Structures should minimise earthworks and integrate with the natural contours of the site.

On all sites, including within residential areas, structures should be sited so as to ensure that they do not break prominent ridgelines or otherwise adversely affect the visual amenity values associated with significant natural features or landscapes.

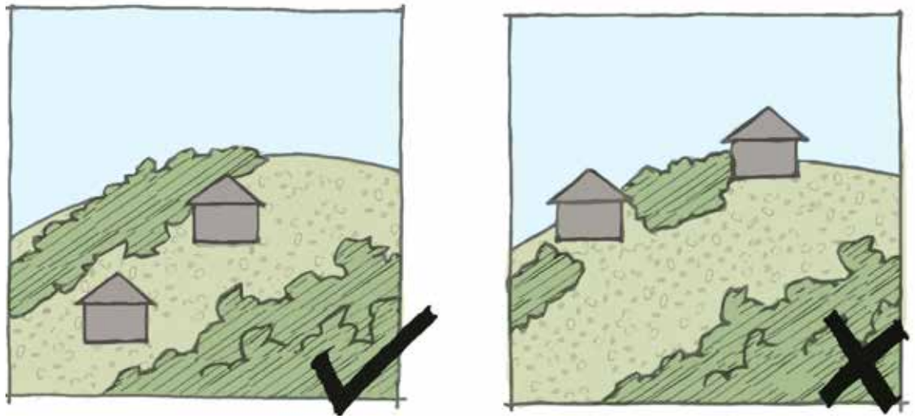

Figure 15: Building platforms and structures should avoid dominating ridgelines.

4.1.7 Retain historic features on site

Sites are inherently made up of layers of history, landscape, geology and cultural significance. In some areas remnants of these layers may be apparent. Such features may include historic boundary lines, drainage patterns, stone walls, fences or Maori place names. These should be incorporated into contemporary subdivision design either as distinct, discreet features that enhance the cultural value of the site. Use of the historic features in their present or alternative forms is encouraged, so long as the approach is innovative yet respectful to local values. Where historic features of Maori origin exist, consultation with local iwi, Te Uri o Hau, should take place to ensure that these are appropriately protected.

4.2 Block layout and street pattern

4.2.1 Use a regular grid for flat terrain

Traditional beach settlement patterns throughout New Zealand have often incorporated grid patterns, the defining feature a series of crossroad junctions which enable easy access to the coastline and other amenities. These patterns enable excellent permeability and potential for residential lots to have road frontage. Often the grid layout also assists in establishing long views which contribute to a sense of place and local identity. The flow-on effects result in safer, more accessible neighbourhoods, with high amenity and character value. Use of a grid layout in the Mangawhai area has the potential to increase connectivity with the coastline, particularly where walkways and streets join up with the existing street pattern. Strong connectivity at a neighbourhood scale encourages walking and reduces reliance on motor vehicles.

Having regard to the above, subdivision design over flat sites should, at least in part, seek to establish a regular (or near-regular) grid pattern that provides strong connections to existing movement networks (including walkways, cycle routes and streets). Where streets are unable to form continuous routes, walkways should be used to complete the grid patterns and retain permeability.

Within residential areas grid patterns should establish blocks of between 100 – 200 metres in depth and width, facilitating walkable, permeable neighbourhoods and avoiding internal lots. The use of cul-de-sacs should be avoided wherever possible.

Rectangular sites make up a large proportion of the existing lots within the Mangawhai beach settlement and village areas. As well as being characteristic of the existing settlement, rectangular sites allow for good road frontage (enhancing the relationship between public and private space), quality usable outdoor living space and the ability to ensure dwellings can be sited to maximize solar gain. As much as possible, rectangular sites should be provided for throughout subdivision design. The use of irregular (e.g. triangular) shaped sites should be minimised throughout subdivision design.

Subdivision design should avoid the use of 'rear lots' (refer Figure 17). Such lots add little value to the wider community and can result in safety issues, particularly where access ways are narrow and have little visual connection with the street.

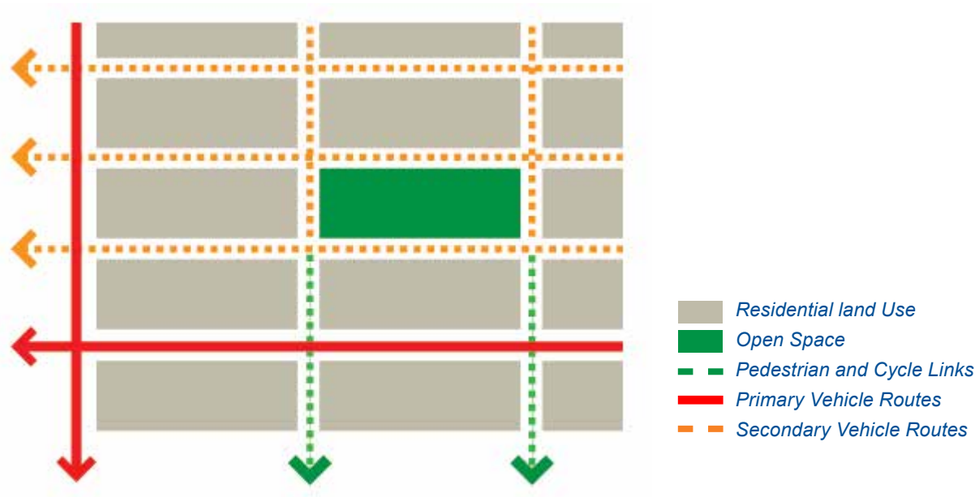

Figure 16: A formal grid creates excellent opportunities for connectivity for pedestrians, cyclists and motor vehicles.

4.2.2 Use an informal grid for sloping terrain or adjacent to water ways

An informal grid refers to a grid pattern that will be defined by the topography, local water ways or other site features. The permeability of the site and strong connections are maintained over a street pattern that sits naturally within the landscape. Informal grids often provide interesting and distinctive routes and can be well adapted to integrate with sloping terrain or existing water ways and vegetation.

Wherever a regular grid pattern is unachievable or not appropriate, an informal grid pattern needs to be established. The pattern should provide strong connections to existing movement networks and include walkways and cycle routes.

As with regular grid patterns, informal grid patterns within residential areas should establish blocks of between 100 – 200 metres in depth and width, and avoid the use of cul-de-sacs wherever possible.

Figure 17: Lots with no active frontage do not contribute to developing a safe and interactive community.

Figure 18: A formal or informal grid should provide for both pedestrian and motor vehicle links and should be designed so as to provide for connections with future development proposals.

4.2.3 Clustering rural residential and residential development

Clustering of development can lead to a range of benefits, particularly within sensitive environments. Clustering should be used when undertaking residential development in rural areas (unless alternative approaches can clearly demonstrate a more beneficial environmental outcome).

Clustering dwellings and associated accessory buildings allows significant amounts of the site to remain undisturbed and has the potential to reduce cumulative effects often associated with rural development. In proposing clustered development, subdivision design should seek to maximise:

- Protection and enhancement of wetlands, indigenous vegetation or significant habitats
- Ongoing agricultural viability of lands
- Protection of visual amenity values associated with the site and wider landscape
- Reduction of impermeable surfaces associated with development
- Shared use of wastewater and stormwater infrastructure
- Establishing a community and decreasing isolation

Where clustered rural residential development is proposed in conjunction with a comprehensive long term management plan, the Council may consider supporting marginal increases in the overall density to provide developers and landowners with a number of additional units. However, developers and landowners must demonstrate real benefits to the environment and the community. Such benefits may include:

- Protection of significant tracts of land containing wetlands, indigenous vegetation and/or significant habitats
- The continued and sustained use of land for agricultural purposes
- Provision of meaningful and usable public open space

In residential areas, clustering should be considered when the subject site:

- Contains large areas of wetlands, indigenous vegetation or significant habitats
- Is subject to flooding issues (which may impact upon wastewater and storm water disposal)
- Is located in close proximity to local amenities such as a supermarket or village centre and clustering will allow for an appropriate increase in densities

Where clustering occurs within residential areas, open space should be made available for community use and/or access with an aim to providing for local community needs.

Figure 19: Clustering dwellings and associated accessory buildings allows significant amounts of the site to remain undisturbed.

Figure 20: Good siting of building platforms and appropriate design controls will ensure that dwellings do not dominate the landscape.

4.2.4 Connect with existing routes and connections

Subdivision that makes strong connections with existing routes and anticipates future routes and connections is highly encouraged. In particular, new routes should be established to enhance existing walkways and cycle routes that connect with the coast line, such that walking and cycling remains viable for residents and visitors to the area.

Wherever possible, walkways, cycle routes and streets should form part of a wider movement network, facilitating strong connections to the coastline, local amenities and other attractions. A basis for pedestrian and cycle connections has been provided within the Mangawhai Structure Plan Reserves/Open Space/Linkages Plans for Mangawhai Heads, Molesworth Peninsula and Mangawhai Village. While these plans form a starting point for the protection and enhancement of existing and future routes, as these areas continue to grow inland future routes must continue to build on and integrate with these to ensure sustainable movement opportunities (particularly between new living areas and the coastline) are retained in the future.

Subdivision design should anticipate future development beyond its own boundaries and provide walkways, cycle routes and streets that can be connected to in the future. Cul-de-sacs should generally be avoided within subdivision design.

Integration of walkways and cycling routes is encouraged within subdivision design for rural residential areas. Reliance on motor vehicles must be reduced at all densities of residential development and provision made for public routes which can be maintained should densities be increased in the future.

Figure 21: Pedestrian paths and roads can be designed to lead to the edge of the site, providing a cue for future landowners and developers to work from.

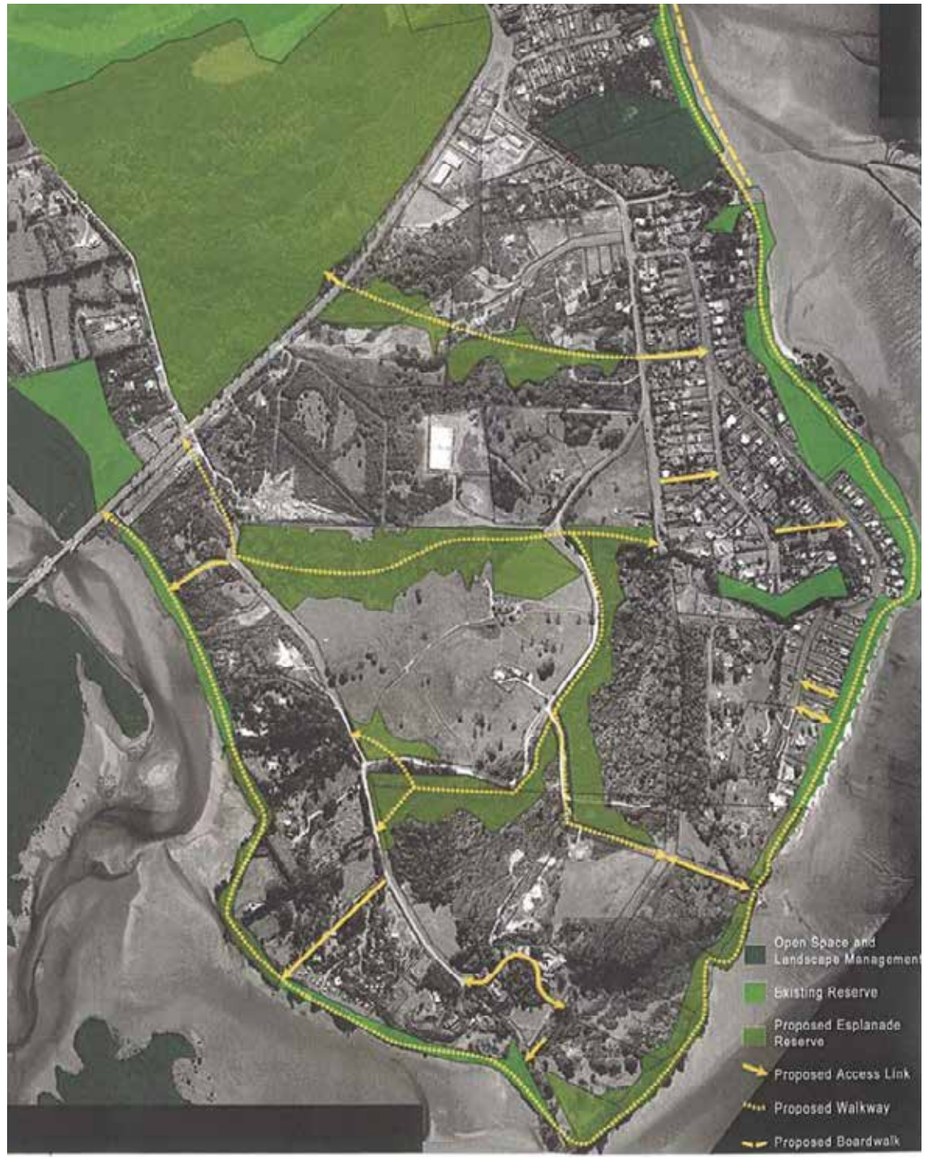

Figure 22: Molesworth Peninsula Open Space Plan (Source: Mangawhai Structure Plan).

5 Getting around – Facilitating connectivity and Access

Fundamental to the continued growth of Mangawhai as a living community will be the continued facilitation of strong connections and access. The purpose of this section is to outline design guidance for subdivision in relation to movement, connectivity and accessibility. In particular, this section outlines design guidance in regard to:

- Coastal access
- Protection of existing reserve access and open space
- Green networks – Pedestrian and cycle routes
- Parking
- Street design

With regard to open space and reserve development the Council, through the Mangawhai Structure Plan, has noted that *reserve contributions should be taken where they are an extension to an existing reserve; provide linkages to other open space, including the coast; increase or enhance ecological habitat; or provide for a functional / 'usable' neighbourhood reserves* (page 42).

In addition to the matters outlined in this section, open space design should always seek to offer the following qualities:

- Be usable and functional, allowing for a variety of passive and/or active recreational activity, including children's play, sports, and social gatherings
- Provide for seating and, where appropriate, toilet and changing facilities
- Be of ecological value, by connecting to and extending adjoining habitat areas and green spaces; preserving habitat areas on site (e.g. mature trees, wetlands and water courses) and incorporating ecological planting of native species
- Where appropiate, assist in the implementation of sustainable drainage strategies
- Be centrally located, as opposed to peripheral
- Be integrated with walkways and cycle routes, particular those routes identified within the Mangawhai Structure Plan
- Be overlooked and positively addressed by adjacent streets and/or walkways
- Be designed so as to be physically accessible to all residents
- Be visible from adjoining streets and residential development, so as to enhance safety

Figure 23: Playgrounds and other public facilities offer opportunity for adults and children to meet with one another.

Figure 24: Provision of toilets and changing rooms in public places allows for a greater range of people to use these areas.

Figure 25: Signs are useful and can enhance the amenity value of an area.

5.1 Coastal access

The coastline is a unique landscape that adds value to the Mangawhai community at a variety of levels, providing the community with a unique identity and quality of living associated with a highly natural environment. Many of the residents and visitors to Mangawhai have chosen the area as their destination because of the opportunities offered by its location. Access to beaches and the waters edge enables people to enjoy a variety of activities within what is still a largely natural environment.

The Mangawhai coastline is equally important in terms of conserving and enhancing New Zealand's indigenous flora and fauna. The Mangawhai coastline provides and connects with a variety of ecosystems, many of which provide habitats for vulnerable and significant species (such as the Fairy Tern, New Zealand's rarest endemic bird). Inappropriate development within or around these areas has the potential to destroy or seriously harm such habitats and must be avoided unless it can show very real benefits for the natural environment.

Appropriately designed access has the potential to provide residents and visitors to the Mangawhai area with a quality environment to live, work and play in while also ensuring that the natural environment is appropriately protected.

5.1.1 Provide for accessible public open space along the coastline

Where coastal subdivision is provided for, an assessment of the potential to provide for usable public open space should be made prior to subdivision design being carried out. In particular, the assessment should take account of:

- Existing public connections and open spaces
- Potential to access public open space and the coastline
- Areas of natural habitat that may require protection
- Where coastal open space already exists consideration should be given to whether an increase in this open space will result in further benefits for the community and the environment.

Figure 26: Design should always seek to enhance existing connections, particularly with the coastline.

Figure 27: Quality connections with the coastal environment attract users to the area.

Figure 28: Mangawhai Heads' designed beach access also protects the environment.

Figure 29: Public space should be designed to feel welcoming.

Where existing connections and public open space exist within the vicinity of the proposed subdivision, the proposed subdivision design should provide for connections with these areas or, where this is not possible, build towards the provision of such connections in the future.

Areas of significant natural habitat should be protected from human interference through appropriate design. This may include the use of boardwalks and other such paths or providing non-accessible areas within a wider open space environment.

5.2 Protection of existing reserve access and open space

The protection of existing public reserves and open spaces is essential to the healthy growth of the Mangawhai community. As the community continues to grow, existing public reserves and open spaces will become more important as a means of providing connections to the surrounding environment, maintaining and enhancing ecological values, and providing local amenities for the local community and visitors to the area.

The Mangawhai Structure Plan (page 43) outlines the following guidelines to ensure existing public reserves and open spaces are integrated with future development proposals:

- *Address the character and use of such public reserve areas through providing development designs that recognise and utilise complementary private open space areas*
- *Avoid 'claiming' or 'privatisation' of those reserve areas by residents gardens or overflow uses from abutting dwellings*
- *Enhance 'surveillance' of urban open space by fronting new developments on to such areas while not dominating them*
- *Reinforce existing private open space patterns within the context of the existing character of neighbourhoods*
- *Provide clear and explicit walkway and open space access points*

5.3 Green networks – Pedestrian and cycling routes

Walkways and cycle routes are not only channels for circulation, they are also an integral part of green open-space network. As Mangawhai continues to grow the need for these low impact networks increases. Well designed walkways and cycle routes will reduce the need for motor vehicles in a community with a growing population by providing safe alternatives to people wanting to move around the Mangawhai.

Figure 30: Indicative section: Subdivision design should provide for a strong relationship between public and private space - barriers between private and public space should be minimised and should allow for passive surveillance to occur.

The width and positioning of walking and cycle routes should not adhere to a rigid standard, but rather should respond to their particular location and function. Notwithstanding this, the following principles should be adhered to during the design process:

- Passive surveillance should be facilitated through subdivision design that provides for dwellings overlooking streets, pedestrian and cycle networks
- Low and/or see through fences should be provided for along property boundaries
- All walkways and cycling routes should be attractively designed so as to attract users
- Routes along high fences or to the rear of buildings should be avoided
- Provide for clear signs along the length of all routes
- Wherever possible, new paths should be designed so as provide adequate width for pedestrians and cyclist to pass one another safely and comfortably
- Provide for the design of 'shared surface' roads where appropriate

Wherever possible, walkways and cycle routes should form part of the wider green network and promote enhanced opportunities for biodiversity and support sustainable urban drainage systems.

As described in section 4.2.4 above, design should always promote strong connections with existing routes. Walkways and cycling routes should form part of the wider movement network outlined on the Mangawhai Structure Plan Reserves/Open Space/Linkages Plans for Mangawhai Heads, Molesworth Peninsula and Mangawhai Village.

5.4 Vehicle parking

While vehicle parking is essential, it should be provided in such a manner that it does not diminish local amenity.

Car parking in Mangawhai's residential areas should be provided off street to the side or rear of buildings, allowing an appropriate scale and character of the street to be maintained. Garages or parking in front of the building line has the potential to undermine the relationship between dwellings and the street and therefore should be avoided.

Appropriately designed on-street parking at public amenities (such as Wood Street Business area and Mangawhai Heads) or parking in courtyards/clustered parking can improve the visual and recreational quality of the surroundings. All such communal parking areas should be well-lit, overlooked by adjacent buildings or streets, and have obvious pedestrian routes.

Car parking surfaces need to be permeable to reduce runoff. A range of materials can be utilised to increase permeability and should be chose over such surfaces as solid concrete platforms. Whether for private or public use, car parks should be designed in conjunction with sustainable drainage principles, as outlined in section 6 below.

Figure 31: Many of the existing dwellings in Mangawhai have established a strong relationship with their streets. Avoiding parking at the front of dwellings and maintaining an open front yard increases the relationship between private and public space.

Figure 32: Tall fences lead to seclusion in both public and private property and therefore should be avoided.

5.5 Street design

While the population and physical size of Mangawhai continues to grow over time, it nevertheless remains a small township (less than 2000 people) and popular destination to many visitors during the holiday season. As such, people have remained more 'casual' in the use of streets, often choosing to walk on streets and maintaining an equal standing with motor vehicles. The nature of street use requires careful consideration at the time of subdivision, and must provide for a hierarchy that continues to recognise the importance of a pedestrian and cycle friendly environment.

Building a hierarchy of street types over a grid network will provide pedestrians, cyclists and drivers with options as to the safest routes available to avoid conflict with one another. Subdivision design should provide for alternative routes (e.g. pedestrian routes, shared surface roads and local collector roads) while remaining sympathetic to an overall notion of a pedestrian and cycle friendly environment.

Subdivision design should seek to replicate the qualities of existing streets within the Mangawhai area while also bringing to the fore low impact design, such as swales and other sustainable drainage systems. Figures 33 to 35 provide examples of well designed streets in the Mangawhai area. The qualities of these streets (large open grass verges, wide carriage ways, use of swales, low fence lines, and a strong relationship between dwellings and the street) should be replicated in the design of future subdivisions in the area.

Figure 33: Typical collector road in Mangawhai Heads

Figure 34: Typical shared surface road in Mangawhai Heads

Figure 35: A new local collector road with shallow swales to provide for street water runoff.

6 Sustainable drainage strategies – Low impact design

Low impact urban design and development includes the promotion of sustainable drainage strategies to reduce the impacts on the environment. Sustainable drainage strategies within the Mangawhai area will reduce pressure on infrastructure and on flow effects such as sediment and road runoff discharges to waterways. Two primary approaches are considered necessary within the Mangawhai area: minimising water runoff and the use of swales to capture and transport runoff. In large subdivisions or where large amounts of runoff are anticipated, retention ponds or basins should be incorporated into site design.

6.1 Minimising water runoff

Each development area should minimise the volume of storm water to be discharged to the main storm water system. Permeable surfaces such as gravel, gobi-blocks or other permeable paving systems can be used on driveways, parking places and pathways to allow storm water to percolate directly into the underlying sub-soil. Having regard to the above, all parking areas, paths and walkways, and garden areas should be designed to maximise water soaking into the ground. Where hard paving and roofed areas exist, these should drain to unpaved areas, including road side swales.

Collection of rainwater from roofs (whether for drinking, washing or garden use) also has the benefit of reducing water runoff and should therefore be maximised as much as possible.

6.2 Swales

The use of swales for local attenuation of storm water is an effective means of reducing the storm water load to the main drainage system. In addition, appropriately design swales will add to the amenity and ecological values of an area and assist in retaining the distinct character of Mangawhai.

Swales are drainage channels which are designed to locally attenuate storm water run-off from impervious surfaces such as the roads and parking areas. Swales typically form part of the road corridor. As a means of storing and conveying water, water velocity and quantity is decreased and pollutants are removed through infiltration.

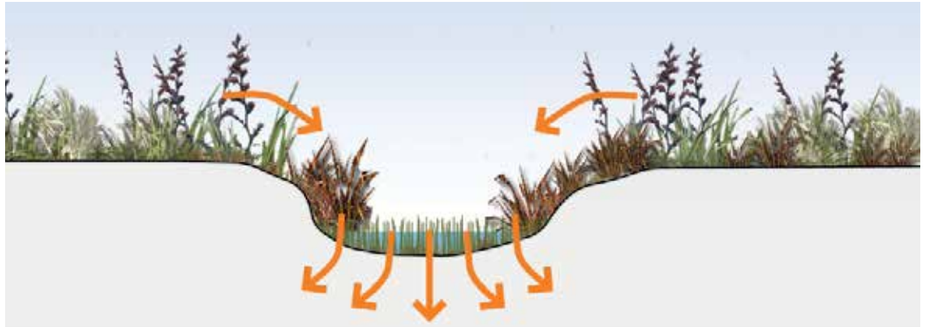

Figure 39: Water passes through vegetation before reaching the swale where it is given time to infiltrate into the ground.

Figure 36: Gobi-blocks can provide a good alternative to less permeable paving.

Figure 37: This gravel car park surrounded by swales provides for excellent drainage.

Figure 38: A lack of sustainable drainage systems has the potential to lead to temporary flooding.

The undulating nature of the topography of the Mangawhai area affords the opportunity to use swales to effect by locating them alongside shared surface and local roads. Where topography is sloping, smaller swales will be adequate to convey water. Where topography is flat, larger swales that have the ability to retain water need to be incorporated.

Swales should also be integrated with walkways and cycle routes and form part of the wider natural drainage networks existing in the Mangawhai area.

To increase their functionality, swales should be planted with local grasses and wetland planting. Where swales are not appropriate, filter drains should be provided to store and filter water.

6.3 Retention basins and ponds

Retention basins and ponds are areas for storage for surface runoff. During heavy rain fall, these areas will retain water which is then released slowly over time. As with swales, basins and ponds reduce the pressure on the main drainage systems and can have positive effects in terms of amenity and ecology. During times of low rain fall, basins and ponds can be free of water or retain a low level of water to support local biodiversity.

Basins and ponds can be mixed, including both a permanently wet area for wildlife or treatment of the runoff and an area that is usually dry to cater for flood attenuation. Basins and ponds tend to be found towards the end of the surface water management system (i.e. at the end of a systems of swales).

Basins and ponds should be designed to control flow rates by storing floodwater and releasing it slowly once the risk of flooding has passed. The stored water will change the water level, and basins and ponds should be designed to function in both dry and wet weather. Professional advice will be required to determine the size of the basin or pond required based on likely inflow and source of storm water.

Basins and ponds should be designed in a naturalistic manner to replicate natural wetland systems. As far as possible, they should also be integrated with open spaces and form part of the wider natural drainage networks existing in the Mangawhai area.

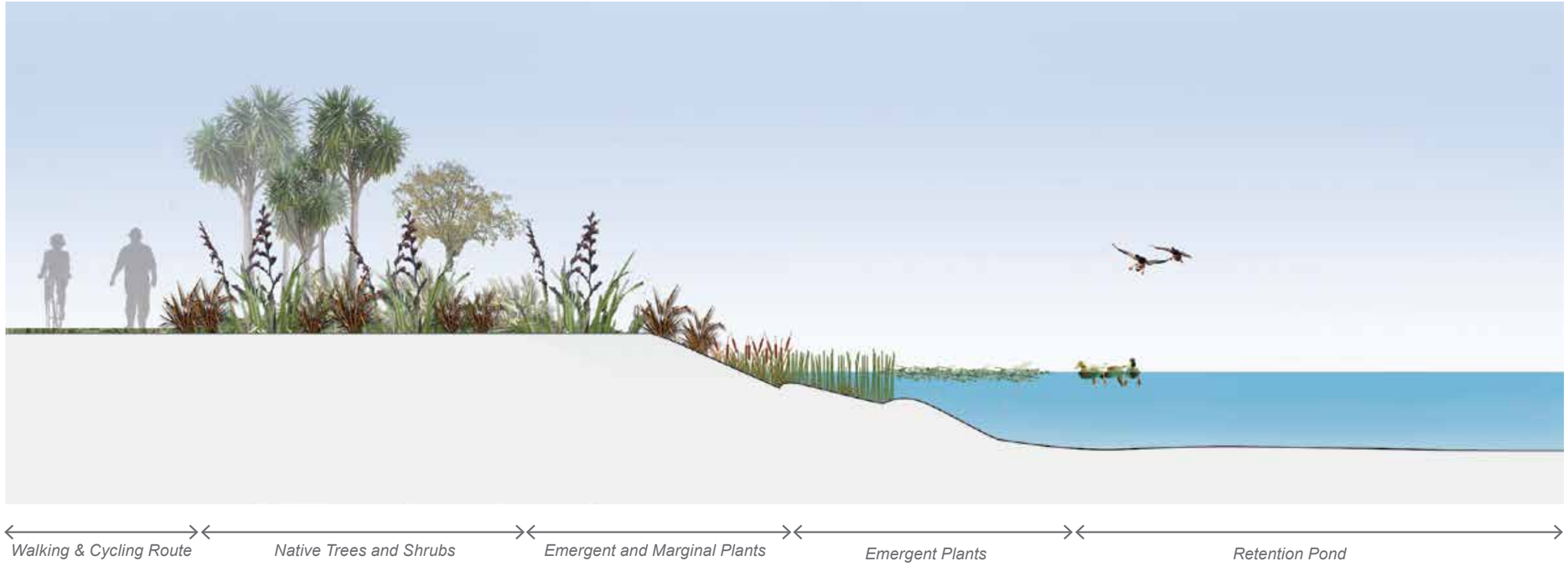

Figure 40: Indicative retention pond planting: Retention ponds should be well vegetated with native planting to assist in filtering water and attracting local wildlife.