BRIDGEWATER BAY FORESHORE MASTER PLAN

Written By Phillip Loone
Edited by Project Working Group

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Author
Phillip Loone: Master of Town Planning; BA Recreation.
Loone Town Planning
Edited by Project Working Group

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EXECUTIVE SUMMARY

The purpose of the Bridgewater Master Plan and associated works (the Master Plan) is to provide direction on the development of the Bridgewater foreshore areas under management by Council. The Master Plan has been developed in line with current Coastal Management Plan guidelines to attain Coastal Management Act consent (See Master Plan Page 23).

The coastal values relate to the coastal setting, the beach environs, wildlife, coastal vegetation, leisure, recreation and tourism, facilities and the opportunities and experiences that lie there-in. However, some of these values are being impacted upon, evidenced by dune and foreshore erosion, loss of native plants, weed invasion and possible ground water contamination. The fragmented structure, lack of formal paths and connectivity create risks associated with an unsafe mix of cars and pedestrians. The foreshore reserve presentation and urban design elements need to be improved.

The vision is that Bridgewater Bay Foreshore Reserve will continue to support a range of sustainable recreational activities in a tranquil and natural setting. Visitors will be attracted by the largely undeveloped nature of the reserve, with modern, well-maintained public facilities and beach patrols provided by the Portland Surf Life Saving Club Inc. (SLSC at Bridgewater). The Master Plan seeks to strike a balance between the protection of the environmental values and to ensure that the use of coastal resources occur in a sustainable way for future generations to enjoy. The intent is to ensure that the coastal character, water quality, the beach environs, wildlife habitat and recreational values of the beach environs are protected.

The foreshore reserve consists of three main linear elements; the beach environs, the foreshore reserve and Bridgewater Road. Each of these linear elements contains different opportunities and constraints to movement and activities.

The principles contained in the Master Plan are intended to improve the connections between the related linear elements including the beach, roads, car parks and people places and spaces. It proposes to make Bridgewater Road and the foreshore reserve a more pedestrian friendly environment and safer for all users including pedestrians, bicycles, cars, buses and recreational vehicles. The Master Plan embraces the need to adopt soft engineering finishes in keeping with the natural and unspoilt environment.

The reserve is located at the bottom of a local catchment surrounded by hills. The proximity of water bores in the area creates the potential for ground water contamination. A waste water treatment system is required to treat grey water from the SLSC, the Bridgewater Café and amenities block. A proposed waste water treatment system would need to provide adequate separation distances between ground water flows and bores in the area. Intercepting stormwater from Bridgewater Road and the use of swales and rain gardens is proposed to assist with maintaining drainage outfall water quality.

The foreshore reserve is narrow with active foreshore erosion occurring to the central area of the beach. Beach erosion is being accelerated by informal beach access paths that have resulted in the loss of vegetation and the destabilisation of the dunes. Reinstating the foreshore reserve is necessary to halt erosion, improve the buffers to coastal buildings and to prevent the continued erosion of the foreshore. Climatic change on the reserve, specifically in relation to the potential increase in storm surges and king tides threatens infrastructure and buildings currently located on or near the primary sand dune and also the future developments recommended in the master plan.

The wide sandy stable beach presents an opportunity to reclaim the eroded foreshore and to reinstate the dunes to their approximate historic profiles. Foreshore reclamation will increase the width of the reserve and provide the necessary room to incorporate elements such as an improved coastal buffer, a foreshore promenade, beach access ramps and improvements to the layout of car parks located behind the beach.

The proposed foreshore promenade would provide formal connections linking beach ramps, car parks, green space and the facilities. The foreshore promenade would improve movement along the beach and to the overall structure of the foreshore reserve.

Beach access ramps are proposed to be located at regular intervals to the beach. Access ramps for all abilities will be located in front of the Café connecting to the adjacent car parks and incorporated as part of the design of the boat ramp in front of the SLSC. These ramps will have associated disabled car park spaces located in close proximity to the beach ramps. Steps should be improved in areas where quick access to the beach is required. Steps to the North East car park should be retained and steps to the South West car park and lookouts need to be improved to address issues that relate to access and safety.

In the long term only one facility on the foreshore is needed to house all of the coastal dependant uses. The individual facilities alone struggle to provide all of the services demanded. Consolidating the buildings would increase the capacity to deliver uses under one roof and to maximise the use of limited space on the foreshore reserve. The SLSC has a need for additional change rooms now and this should be considered anticipating the long term future consolidation of facilities. Amalgamation of buildings would allow better design of the car parks and entrances.

Pedestrian and bicycle movement should be separated from cars to create a safe environment for all users. Dedicated bicycle lanes and pedestrian paths are proposed for Bridgewater Road. Separation of vehicle, bicycle and pedestrian movement is also proposed at the entrances, car parks and around the curtilage of buildings. Well maintained car parks will provide a pedestrian friendly environment.

There are few comfortable natural/green spaces and day visitor facilities. Amenities such as shade, seats and tables should be provided in green spaces. Aboriginal design themes could be interwoven into the natural/green spaces to add visual and cultural richness. There should be opportunities for Aboriginal involvement in the implementation of the Master plan.

Council is currently the Committee of Management. If Council is seeking local assistance with the management of the reserve, it is proposed that the concept of forming a coast care group be put to the community or users of the reserve to consider the benefits to the locality that may be gained by having such a group. There needs to be an annual program of maintenance works funded by external grants, council funding and other additional potential sources of funding or income. Development must be themed, consistent and creative.

MAJOR RECOMMENDATIONS

The Bridgewater Master Plan and Associated Design works make the following recommendations:

1. Installation of a waste water treatment system to service the SLSC, the Bridgewater Café and public amenities

2. Improve stormwater management in the area by intercepting stormwater from Bridgewater Road and any sealed areas and use soft engineering solutions such as swales and rain water gardens on the foreshore reserve

3. Reinstatement of the dunes to their historic profiles and to improve the effectiveness of the dunes as a buffer to storm surges and king tides damaging coastal assets. Undertake a geomorphological study before there is a commitment to restore dunes.

4. Improve beach access by providing access ramps over dunes to the beach, quick access steps and access for all abilities ramps

5. Develop an ongoing program of weed management and replanting using indigenous coastal vegetation

6. Reclaim the eroded foreshore reserve to provide room for a foreshore promenade, fences, improved boat ramp, access for all abilities and improved layout of car parks

7. Refurbish the western steps to improve access and the safety at this structure

8. Improve the existing horse and the general beach access in this location

9. Install lighting in high use areas as markers along the foreshore promenade and at the convergence of paths

10. Upgrade the public amenities block including the change room facilities to a modern standard including internal fit out update, modern toilets, natural light, solar hot water and other improvements deemed necessary

11. Consider the long term amalgamation of buildings into the SLSC that could be triggered by major renovations, significant infrastructure upgrades, and loss of buildings due to unforeseeable circumstance, end of lease agreements or the availability of funding

12. Investigate the possible amalgamation of the SLSC to incorporate new storage areas, public toilets with change rooms and a Bridgewater Café in the future. Extensions should not increase the total floor area of buildings on the foreshore once amalgamated

13. Pedestrian refuges and shared space around buildings should be designed with barriers and landscaping

14. Design buildings, utilities and infrastructure that complements the coastal setting

15. Improve the existing boat ramp to meet current standards, seek to include access for all abilities and a shared space with pedestrian priority between the SLSC and the boat ramp

16. Develop green space west of the SLSC with shade trees, drinking water and with possible aboriginal cultural elements and interpretation

17. Develop a consistent palette of park furniture including seating, tables and screened rubbish bins and drinking water located sparingly along the foreshore reserve

18. Organise Bridgewater Road foreshore area to be more pedestrian friendly with natural paths, bike lanes and pedestrian crossing points

19. Improve the entrances, layout, and edge definition to car parks suitable for cars, buses, long vehicles and disabled parking

20. Re-profile and shape the western car park using appropriate paving and retain well-maintained limestone car parks in other areas

21. Support the development of the Great South West Walk track and associated visitor information and signage

22. Further investigate using the foreshore reserve as a Neighbourhood Safe Place (NSP) in the event of fire emergencies and design to reduce the flammability of infrastructure

23. Investigate the operation of food vans in the area on a limited basis during peak times

24. Develop policies that will permit dogs and horse owners to use the beach all year round restricting use of appropriate areas to before 8AM and after 6PM during the summer

25. Develop policies that relate to motorised and non-motorised forms of recreation

26. Invite the Community to be part of the Committee of Management and or a Coast Care Group to assist with the implementation of the improvements to the foreshore reserve.

INTRODUCTION

The purpose of the Bridgewater Bay Coastal Management Plan and design works (the Master Plan) is to set clear directions for the future management and improvements to the Bridgewater Foreshore Reserve (the foreshore reserve). The plan serves as a guide for the Committee of Management as the organisation responsible for the management of the Foreshore Reserve, and to the various individuals, groups and organisations that use the reserve in some way.

Description of the study area

Bridgwater Bay Foreshore Reserve is located approximately 20km west of Portland at the western end of Bridgewater Bay. The foreshore reserve is an integral part of Bridgewater Bay and has many unique natural features and attractions within the bay. The area is one of the most popular recreational beaches in the Shire.

The topography provides a sense of enclosure and remoteness to the beach environs and there are views to close and distant landmarks. Bridgewater Road provides an edge to the foreshore reserve and is the main access to Cape Bridgewater. Residential dwellings and tourist accommodation overlook the beach.

The Reserve is approximately 1km long and ranges between 20 and 120 metres wide. It extends from the high water mark to Bridgewater Road and has a total area of about 1.7ha. The key physical elements of the foreshore reserve include: (Figure 1 opposite shows the boundaries of the reserve).

- The beach environs
- The (Bridgwater) Portland Surf Life Saving Club
- The Bridgewater Cafe
- Public change rooms, showers and toilets
- Boat ramp; Beach access paths
- Car parks and service areas.

Management principles

The Master Plan seeks to strike a balance between the protection of environmental values and to ensure that the use of coastal resources occur in a sustainable way for future generations to enjoy. Some of the guiding principles relate to the following matters.

- Maintain the beach and water quality
- Protection of coastal assets (infrastructure)
- Retain the coastal character
- A well connected foreshore
- Safe vehicle and pedestrian movement
- Dune and foreshore protection
- Sustainable use of the natural assets
- Protect wildlife habitat
- Responsive day visitor facilities
- Coastal dependant uses
- Well maintained amenities.

Management responsibility

The Master Plan boundaries include Crown Land areas, the adjoining Bridgewater Road and car park areas. The reserve is managed by the Glenelg Shire Council; a Committee of Management is responsible for the day to day management of the foreshore reserve as well as longer term planning and is responsible to the Minister for the Department of Environment and Primary Industries.

The planning process

A Project Steering Group that included Department of Environment and Primary Industries representation managed the project with the consultants. The steps in the process to develop the Master Plan are listed below:

- Initial concepts Master Plan
- Consultation Bridgewater Master Plan
- Draft Bridgewater Master Plan
- Final Bridgewater Master Plan.

Previous plans

Bridgewater Foreshore Reserve Management Plan was completed in 1995. This plan recommended that council complete a Master Plan for the Foreshore Reserve which was completed in 1996. These plans are now out of date and would not meet DEPI's current legislative and policy requirements. The previous plans have been reviewed and the relevant information considered in this management plan.

Figure 1 – The boundaries of the Bridgewater Foreshore Reserve.

The Victorian Coastal Strategy 2014

This plan has been developed in accordance with the principles contained in The Victorian Coastal Strategy 2014 and prepared within the context of the relevant legislation, being Sections 30 and 31 of the Coastal Management Act 1995. Coastal resources are to be used in ways that protect environmental and cultural values, undertake integrated planning, that provides clear direction for the future and to ensure the sustainable use of natural coastal resources.

Glenelg Shire Planning Scheme

Glenelg Shire Council's Planning Scheme has zones and overlays that apply to the area. The primary purpose of these planning controls are summarised below:

- Rural Conservation Zone (RCZ)
- Public Parks and Recreation Zone (PPRZ)
- Environmental Significance Overlay (ESO)
- Bushfire Management Overlay (BMO)
- Airport Environs (AO).

Community consultation

The Master Plan was developed and honed through community consultation involving the key stakeholders workshops, individual submissions, meetings with community groups and residents are summarised in Figure 2 opposite. The key stakeholders are to include:

- Senior Management Team & Councillors
- Department of Environment and Primary Industries
- Regional Development Victoria
- Department of Planning and Community Development and local Disability networks
- Aboriginal Communities
- Business and Commerce Sector Representatives
- Tourism operators & business associations
- Local Committees & Community members
- Cape Bridgwater Cafe Management
- (Bridgwater) Portland Surf Life Saving Club
- Bridgewater Surf Riders
- Sport and Recreation Clubs in Cape Bridgewater and relevant Service Clubs.

Initial Issues and opportunities as identified by stakeholders and the Community

Land use
Widen foreshore reserve
Better maintenance of amenities
Improve waste management
Active foreshore Committee of Management
Ongoing adequate maintenance budget
Expand café/catering, food vans etc.
More tourist accommodation needed
Provide wildlife/interpretive signs etc.
Limit further residential development
Green spaces for families
Manage camping on the reserve
Built form
Natural soft engineering solutions over any hard engineering structures
Amalgamate buildings (One mixed use surf club)
Better definition of boundaries, car parks & space
Life span & possible relocation or amalgamation of buildings/uses
Upper storey to Café
Underground power lines/water tanks
Boat ramp needs improving
Better jetty for seal cruises
More change room & storage space for the Surf Club
Social and cultural
Aboriginal appreciation (revegetation, interactive family/play area, interpretation of the creation story, display of cultural materials etc.)
A bus service that comes out to Cape Bridgewater on weekends or during summer holidays.
Better accessibity to amenities for all abilities
Improve cleanliness of toilets and change rooms
Clarify management (more local involvement/responsibility needed)
Fire escape route/management
Manage motorised activities (jet ski's)
More green space, BBQs, shelter, dog bag dispensers etc.
A picnic / playground / BBQ area on the other side of the Surf Club.

Movement
A walk way along the fore shore linked to the Portland to Bridgewater Bay path and the Great SW track.
Separation of cars & pedestrians
Prevent parking in front of the Surf Club
Pedestrian links to surrounding areas & links to car parks & beach access
Better designed & appropriately located beach access for all ages
Shared footpath & pedestrian crossing point along Bridgewater Road
Crash rail protection needed
Lowered speed limit for beach section (40ks per hour).
Optimise car parking spaces
Boat, caravan, bus & trailer parking
Better traffic management/interpretative signage around the bay
Environmental
Sewerage system that incorporates all buildings
Soft engineering finishes
Create natural barriers to stop erosion
Leave relatively undeveloped natural feel
Manage coastal areas better
Sand trapping to extend foreshore
Negate impacts of climate change
Removal of weeds and use of native plants
Reinstate Norfolk Island pines
Better stormwater management
Protect bird & wildlife habitat
Don't develop the Cape/ protect views
Use of solar power on all buildings/services where possible

Figure 2 – Issues and opportunities identified during the planning process.

COASTAL VALUES

The values associated with the foreshore reserve are described below.

The landscape setting

Cape Bridgewater, the coastal cliffs and the surrounding hills combine to create an enclosed foreshore. The unique attractiveness, close and distant views to landmarks and the sweeping bay contributes to the experience of being in this spectacular coastal setting. The beach environs provide reflective space and places to relax in a largely unmodified and remote coastal landscape.

The beach environs

Clean clear water provides an environment that supports an abundance of wildlife. The wide flat sandy beach provides a natural asset that supports a variety of outdoor and water based recreation activities. The dunes covering volcanic rock outcrops with tapering & converging ridgelines is geomorphologically significant in the geology of the area. The local indigenous coastal vegetation contributes to the image and identity that is associated with the beach environs.

Wildlife

The foreshore area is the breeding grounds for sea birds including the endangered Hooded Plover. The Hooded Plover tends to nest in exposed locations along the beach and generally above the high tide levels in depressions in the primary dunes. Cape Bridgewater is home to a colony of fur seals and seal by the sea walks that start from the Cafe, ending at the Seal Viewing Platform. There are whales, wallabies and an abundance of marine life. Bridgewater Bay provides resourceful fishing grounds for local fishermen who often access the sea from the boat ramp.

Coastal vegetation

The reserve vegetation consists of Spray –zone Coastal Shrubland (EVC 876). This vegetation typically consists of a wind-pruned salt-affected open shrubland usually less than 1 metre tall (with occasional emergent taller shrubs) that occurs on the most exposed coastal areas subject to salt-spray and run-off at the crest of sea cliffs. Coastal Shrubland occurs in association with taller Coastal Headland Scrub (EVC 161).

Leisure and recreation

The foreshore reserve provides the main public access point to the beach. The beach is partially sheltered by Cape Bridgewater and is a popular destination for water based recreation activities such as kayaking, boating, swimming, fishing and beach activities. The Bay is a surfing destination as the beach produces a surf zone with average wave heights of 1.4 meters. The Surf Life Saving Club (SLSC), Bridgewater Cafe, amenities building including the showers and toilets, boat ramp and car parks all of which support the recreational use of the beach. The current public toilets with amenities were upgraded about 10 years ago by the Council. The Great South West Walk and other nature based tourism are major attractions to the area.

Aboriginal cultural heritage

The Gunditji Mirring people are the traditional owners of the Bridgewater Bay area. The Gunditji Mirring habitation of Bridgewater Bay is culturally embedded in the landscape. The Creation story is in the land and it is written is those sacred spaces. There are many camping places, middens and ceremonial grounds that are scattered through Bridgewater Bay. The legislation and plans that apply to the area are listed below.

- Aboriginal Heritage Act 2006 VIC
- Gundijmara Native Title Consent 2007
- Draft Ngootyoong Gunditj Ngootyoong Mara South West Plan 2014.

Figure 3 – Historic beach profile and geology.

Figure 4 – Environmental and recreational values.

KEY PLANNING ISSUES

This section of the Master Plan identifies the key issues that impact on the coastal environs. There are accompanying photographs that show the historic origins of the current issues to be addressed in the Master Plan (See Figures 5, 6, 7, 8, 9, 10 & 11).

Ground water

The Surf Life Saving Club, Public toilets and Bridgewater Cafe buildings have septic systems. Ground water sourced from a bore could become contaminated if the septic systems fail in this location. Algal plumes appear on the beach and are evidence of nutrient loading in the sand. The plumes that appear on the beach can cause algal discoloration and smell.

Beach access

There are many informal paths to the beach opposite the car parks. People who arrive at the beach car parks often find direct access to the beach at the nearest point by informal paths. The use of the informal paths is causing loss of vegetation, dune instability and lowering of the dune profiles. The narrow wooden beach steps are not easily accessible and as a consequence infrequently used i.e. especially if you are carrying a surf board or supplies.

Dune and foreshore erosion

The historic profile of the dunes is being lowered by the destabilisation of vegetation and loss of sand from the crest of the dunes. The lower dune profile reduces the effectiveness of dunes as a natural coastal buffer and as a first line of defence against storm events and inundation. Dune instability in front of the Cafe may cause damage to this property with continued foreshore recession. Dune reinstatement works and controlled linkages may improve conditions to assist with wildlife reestablishment in the area.

Sea level rise

Monitoring stations at Lorne and Stony Point in Victoria have recorded sea level rises of 2.8mm per year and 2.4mm per year respectively since 1991 (National Tidal Centre, BoM, 2006). Sea level rise and storm events are likely to accelerate erosion and more frequent inundation of coastal structures. The reinstatement of dunes to their historic profiles would improve the dunes as a first line of defence mitigating the impacts of sea level rise. The longer term protection of the immediate coastal area may require artificial submerged reefs to dissipate storm event wave energy, these structures can be designed to also improve surfing wave breaks.

Layout

The layout of the reserve is fragmented and disjointed because of inadequate definition of the boundaries of the reserve, the car parks, buildings and spaces. Many of the existing fences are insufficient to guide pedestrian traffic. The lack of connections contributes to a perception that the reserve lacks a coherent structure, which results in ad hoc movement and informal movement between destinations.

Formal paths

The foreshore reserve has limited formal paths and there are weak connections to the surrounding residential areas and to the regional paths network. The absence of a foreshore promenade to link car parks, beach access and connections with the facilities results in informal movement throughout the reserve and to the beach. Pedestrians currently are forced to weave in between the cars along the reserve. The Bridgwater Cafe straddles the foreshore reserve and restricts public access through this part of the reserve. The design of the western track (leading to the upper car park) is not easy to use and is Impractical for disabled access.

Cars and pedestrians

There is a mix of pedestrians and vehicular traffic during busy periods especially at the entrances to the reserve, car parks and in front of the SLSC. This increases the likelihood of accidents occurring at these access points. Pedestrian and bicycle movement should be appropriately separated for ease of movement and safety. There is limited bus, long vehicle and disabled parking.

Facilities

There are three separate coastal buildings in close proximity to one another. The facilities are inadequate to service times of peak usage. Each building has limited capacity to service the users. The Surf Club and Bridgewater Cafe have inadequate change rooms and toilets respectively to meet current needs. Buildings collectively occupy limited space and the uses are separated by the car parks. Movement between buildings and the car park contributes to an undesirable mix of vehicle and pedestrian movement.

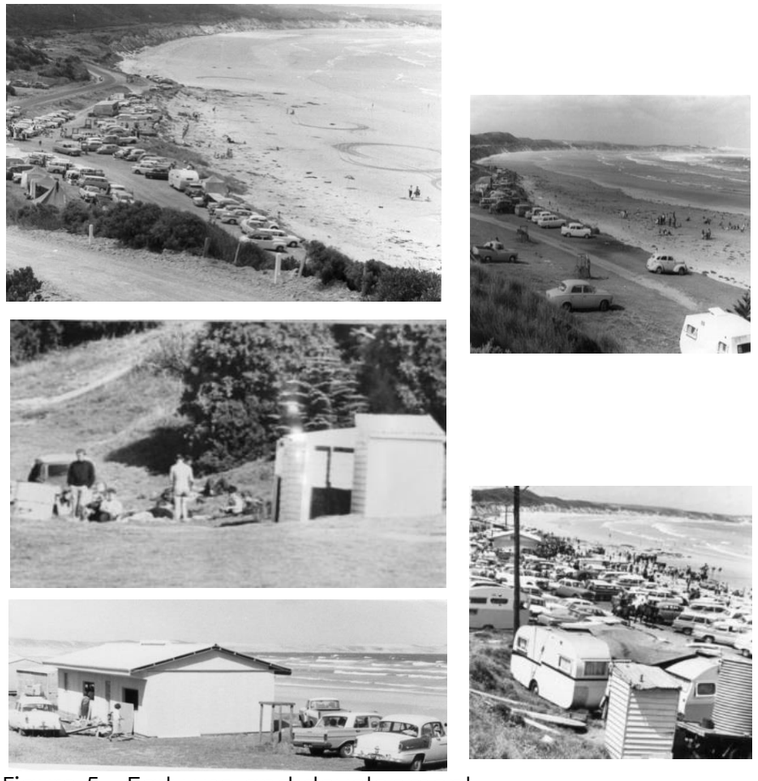


Figure 5 – Early use and development.

Need for - day visitor facilities

The beach provides a wonderful setting but it is exposed to the natural elements. There is a need for comfortable natural spaces for visitors to more deeply appreciate and enjoy the area. Improvements may include park furniture, day visitor facilities, shade, lighting and bicycle facilities for visitors. These spaces could be used by families and groups to recreate and enjoy the outlook on the coastal setting.

Amenities

Amenity of the reserve including eroded dunes, basic fences, basic car parks, above ground power lines, old narrow wooden steps to the beach, various signs and the use of non-coastal colours on buildings, as well as weeds and dilapidated edges greatly detract from the coastal character of the area. Above ground water tanks and plumbing also impact on the visual aesthetics.

Maintenance

Council have overall management responsibility for the foreshore reserve including the lease of buildings. Some consideration needs to be given to strengthening the communities input into the maintenance and management of the foreshore reserve. This would provide the community with a sense of ownership, encouraging a high level of pride and responsibility in the management of the foreshore reserve.

Aboriginal interpretation

The area is the aboriginal spiritual and cultural homelands of *Gunditj Mirring*. Aboriginal connections extend back over a thousand generations. These appropriate connections can be recognised in creating an authentic sense of place by using cultural interpretation as a part of environmental design.

Figure 6 – Beach erosion.

Figure 7 – Movement between buildings.

Figure 8 - Car parks.

Figure 9– Bicycle parking.

Figure 10 – Dune erosion.

Figure 11 - Weeds.

STRUCTURE AND LAYOUT

The foreshore reserve has a fragmented layout due to the existing boundaries to roads, car parks and the curtilage around buildings. The definition of the boundaries and the individual spaces will enable visitors to better understand the layout of the foreshore reserve and move from one space to the next (Figure 12 shows the existing layout of the foreshore reserve).

Well-defined edges are needed to reinforce the boundaries of the reserve, separate pedestrians from vehicles, limit access to natural areas and to communicate the different spaces within the reserve. The spaces should be well-defined but should also provide a natural transition between spaces with a focus on safety and connectivity.

Fences, ground level changes, roads, trees, vegetation and paths should be used to define edges and reinforce the boundaries of the different types of space. The consistent use of materials, landscape themes and tree species would provide a unifying theme that binds the foreshore reserve together as a whole.

Objectives

- To improve the overall layout of the reserve
- To improve legibility and movement along the foreshore and to beach
- To clearly separate the pedestrians from vehicles
- To protect the natural assets.

Strategies

- Prevent encroachment onto the dunes and other natural areas.
- Create pedestrian friendly space around buildings that could be also be used for special events.
- Where appropriate use fencing as a consistent and unifying theme that binds the spaces together as a whole
- Strengthen the boundaries to the foreshore reserve
- Improve the layout of car parks to maximise their car parking capacity.

Management actions

- Design the entrances to improve their functionality and a sense of arrival to the beach
- Strengthen the boundaries along Bridgewater Road i.e. options may include a swale drain, crash rail protection, a fence, landscaping or trees
- Improve the layout of car parks and edge treatments
- Provide a pedestrian area that separates vehicles from pedestrians from the fronts and sides of buildings and car parks
- Where required install heavy duty timber bollards to define the edges of the car parks
- Construct flexible spaces, use timber edging/wheel stops to separate the car park areas from the proposed foreshore promenade
- Plant a selection of indigenous coastal trees to provide shade and edge definition.

Figure 12 – Layout of the foreshore reserve.

BEACH MANAGEMENT

It is proposed to reclaim sections of the foreshore reserve where it has eroded. Soft engineering finishes including sand entrapment and dune reconstruction are proposed. Erosion to the central part of the foreshore has accelerated largely due to the destabilisation of the dunes by informal beach access. Erosion has reduced the width of the already narrow reserve and if left untended the continual impact of pedestrian use, loss of vegetation and the effects of erosion will eventually threaten coastal buildings and structures.

Historic photographs indicate that the profiles of dunes located in the central area of the beach have decreased due to the destabilisation of the sand dunes. The wide stable beach contains plenty of sand that can be used to restore dunes and reclaim areas of the foreshore that have been eroded away. The dunes provide the first line of defence to storm events, inundation, and projected sea level rise. Dune stabilisation will be assisted by the planting of local indigenous vegetation (Figure 13 shows the historic dune profiles and Figure 14 show an example of dunes under reconstruction).

Objectives

- To ensure that there is no change to natural systems and processes
- To restore and stabilise the degraded dunes to their historic profiles
- To use soft engineering solutions to prevent foreshore erosion.

Strategies

- Foreshore reclamation should occur to widen the foreshore reserve
- Dunes should be restored back to approximately their historic profiles to provide a buffer to storm events, halt erosion and to prevent inundation.
- Ongoing community involvement/education with the maintenance of the foreshore
- Protect and interpret Aboriginal cultural heritage.

Management actions

- Widen the foreshore to provide room for the proposed foreshore promenade and improvement to the coastal buffers
- Construct sand trap fencing to extend the dunes seaward to provide for a more effective natural buffer to storm events (this is a low cost economical solution).
- Appropriate timber post and stainless steel wire fencing, vegetation and landscaping along the necessary areas and paths that maintains view lines
- Invasive weeds should be removed and replaced with a program of planting local indigenous coastal vegetation
- Protect bird and wildlife habitats in dune restoration works
- To undertake a Cultural Heritage Management Plan assessment of works and action as appropriate.

Figure 13 - Historic dune profiles

Figure 14 – Example of dune reconstruction at another coastal location.

BUILDINGS AND COASTAL STRUCTURES

Council have recently invested funds to improve the Bridgewater Cafe including entering into a long term lease of the facilities and have made improvements to the amenities block about 10 years ago. The building footprints are to remain 'as is' in the foreseeable future due to leasing arrangements, existing buildings condition and the expected building asset lifecycle. The existing community public toilets and change rooms have the capacity for improvement, further internal refurbishment and modernisation of these facilities is needed.

Ideally in the long term there should be one building that encompasses all of the coastal dependant uses. The individual facilities alone struggle to provide all of the services demanded. Consolidating the buildings would increase the capacity to deliver coastal dependant uses under one roof and maximise the use of limited space. Amalgamation of buildings may allow the car parks, pedestrian access and entrances to be better designed (See figure 15 and 16 opposite that show examples of the possible building improvements).

The long term amalgamation of buildings could be triggered by major renovations, significant infrastructure upgrades, and loss of buildings due to unforeseeable circumstances, end of lease agreements or the availability of funding.

Objectives

- To provide coastal dependant uses and facilities
- To provide facilities that have the capacity to service all of the users
- To ensure that the design of buildings complements the coastal character
- Ensure that buildings, outdoor spaces and paths are safe.

Strategies

- Ensure that design solutions do not preclude the future amalgamation of facilities
- Modernise existing public amenities
- In future long term planning aim to incorporate the Cafe within coastal dependant amenities with no net increase in combined building footprints
- When required establish a Technical Working Group (TWG) to investigate the future amalgamation of buildings
- Continue with the use of the Cafe until expiry of the lease or before this upon agreement
- Pedestrian friendly space around buildings
- Ensure that public access along the foreshore is not obstructed in front of the Cafe
- Buildings should be designed for crime prevention and complement the coastal character
- Common trenching of services.

Management actions

- Improve the public toilets & change rooms i.e. internal fit out update, modern toilets, natural light, solar hot water and coastal colours
- Review the access audit completed for the amenities block to ensure access for all abilities
- Council to liaise with SLSC to use the public amenities during significant events and discuss possible shared management of the community change rooms and toilets
- Car parking areas in front of the SLSC to be replaced with a curtilage in front and at the sides of buildings (about 5 metres)
- Shared pedestrian space that provides limited vehicle access to the boat ramp (possibly incorporating access for all abilities and disabled car parking)
- Improve boat ramp access (gradient 1:8)
- Improve the use, landscaping and drainage of grassed areas behind public amenities block and SLSC
- Widen the foreshore promenade in front of the Bridgewater café
- Investigate improved layouts for the use of the café external lease areas and areas around the café including seating
- Provide beach showers in areas where beach access is located
- Utility services should be unobtrusive and where possible placed underground
- Outside power supply and connections near the facilities
- LED lighting should provide a balance for ambience, needs, and pedestrian safety.
- Investigate whether food vans should operate in the foreshore reserve area
- Support appropriate grant funding opportunities to improve the local linking tracks.

Figure 15 – The SLSC.

Figure 16 – Example of active built form frontage and shade structure.

PATHS AND OPEN SPACE

The beach is a popular destination for a range of users who require access to the beach. Limited formal paths contribute to the informal use of the reserve. Visitors who arrive by car tend to access the beach directly from the nearest point. The steps to the beach are difficult to traverse with beach equipment such as surf boards. This has resulted in a plethora of paths leading to the beach that has contributed to dune instability and foreshore erosion.

In the absence of a foreshore promenade pedestrians often move in-between cars, which creates conflicts between cars and pedestrians. There should be stronger connections along the foreshore reserve, to the beach, and links to facilities and to the surrounding areas.

There are few comfortable green spaces and day visitor facilities. Amenities such as shade, seats and tables should be provided in green spaces. Aboriginal design themes could be interwoven into the green spaces to add visual richness to the underlying culture and history (Figure 17 shows an area of the foreshore reserve that could be improved for family and groups to recreate by the beach).

Objectives

- To ensure paths connect to the beach car parks and to the surrounding areas
- To provide more responsive day visitor facilities and services
- To incorporate aboriginal themes into the coastal landscape
- To provide access for people of all abilities.

Strategies

- Paths should connect to popular destinations and link activity nodes
- Well designed and functional steps located at regular intervals to the beach
- A foreshore promenade that connects the facilities and car parks
- Provide more natural/green spaces with facilities, shade and natural park furniture
- Access for all abilities to be provided near the buildings and services
- New steps that provide quick access to the beach from facilities and car parks
- Consistent use of materials such as granitic sand, limestone and stainless steel wire and timber HW post fences are the preferred materials to be used in the foreshore reserve
- Maximise views to Bridgewater Bay from paths and elevated steps
- Consistent stylised interpretative signage
- Protect views from within the reserve to Cape Bridgewater
- Ongoing maintenance of steps with consideration of the types of materials used.

Management actions

- Create stronger links to the surrounding residential areas and regional path network
- A foreshore promenade that links the car parks, beach and the facilities (this is to be located over eroded areas and over the existing dynamic rocks to create a more effective buffer to the foreshore reserve)
- Beach access to be provided at regular intervals
- Provide access for all abilities near key facilities and services
- Rationalise informal paths to the beach (this may require upper car park and lower foreshore fencing)
- The lookouts located on the western steps should be refurbished; vegetation should be pruned to reinstate views to Bridgewater Bay.
- Develop natural/green spaces located west of the SLSC and east of the existing Cafe
- Upgrade steps at the western end of the beach
- Support appropriate grant funding opportunities to improve tourist tracks
- Provide lights at facilities and at key points along the foreshore promenade
- Renew existing horse access with natural limestone plate rock/ramp suitable for pedestrian and horse traffic
- Dog litter bags and bins to increase the comfort of all users.
- Provide appropriate vegetation, wind breaks and shade trees on the foreshore reserve
- Investigate the use of Aboriginal design themes including revegetation, an interactive family play area and interpretation and displays.

Figure 17 – Responsive green spaces for families and groups are needed for people to recreate.

Figure 18 – Historic views should be reinstated to the Bridgewater Bay from the western steps.

TRAFFIC AND CAR PARKS

In Bridgewater Road cars currently take priority over the pedestrians at the entrances, access roads and car parks. The beach is a popular destination and the area needs to be made more pedestrian friendly. Where practical pedestrian movements should be separated from cars to create a safe environment for all users. The area is a popular bicycle destination and bicycle lanes are needed on Bridgewater Road (Figure 19 that shows that cycling is popular on Bridgewater Road and Figure 20 and design drawings No. 11-14 illustrates what a bicycle lane might look like on Bridgewater Road).

The car parks could be better defined, configured and maintained to help maximise the use of the available car park areas. The existing car park located adjacent to the Surf Club needs to be improved because of its popularity as a destination for all visitors including a mix of pedestrians, cars, bicycles and boat access. A pedestrian transition zone (curtilage around the buildings) would provide a refuge for pedestrians separated from vehicle movement at this popular destination. The shared space will need to clearly define vehicle and the pedestrian priority areas.

The redesign of the boat ramp access oriented towards the car park would assist with boat launching from the beach and limit traffic movement directly in front of SLSC. Disabled car parking and areas suitable for buses, long vehicles, and bicycles should be provided in strategically located areas that provide convenient access to the beach and the facilities

Objectives

- To ensure that the entrances are safe and functional for all users
- To design for pedestrian priority and safety in and around the foreshore reserve
- To ensure the maximum use and efficiency of the car parks.

Strategies

- Improve the layout and configuration of car parks to maximise existing car parking spaces
- Support stronger bicycle links between Portland to Bridgewater and the Great South West Track
- Prevent erosion to the sides of Bridgewater Road
- Create a pedestrian friendly foreshore
- Separated pedestrian and car movement
- Retention of limestone car parks that are maintained to an acceptable standard
- Provide pedestrian safe links and areas around the buildings and facilities
- Car parks with a natural or green image with no cement curb and guttering
- A consistent approach to signage.

Management actions

- Additional parking if the layout can retain a balance for people places and spaces
- Where practical provide areas to separate cars, pedestrians and bicycles
- Lower the speed limit on Bridgewater Road to 50kh or less to make it more pedestrian friendly
- Investigate the provision of bicycle lanes, footpaths and pedestrian crossing points on Bridgewater Road
- Where practical align street lights at pedestrian crossing points on Bridgewater Road
- Provide a variety of parking spaces for the disabled, buses, long vehicles and for bicycles
- Prevent parking in front of the SLSC
- Car parking arrangement should be consistent with the Siting and Design Guidelines for Structures on the Victorian Coastline 1998
- Maintain vegetation along the southern side of Bridgewater Road to stabilise the Road edge.
- Maintain beach access for commercial boats and the SLSC
- Monitor the use for motorised water based activities such as jet skis.
- Investigate whether food vans should operate in the foreshore reserve area and provide for 240v/15amp power and hidden dump point for effluent.
- Investigate using the foreshore reserve as a Neighbourhood Safe Place (NSP) in the event of fire emergencies.

Figure 19 – Bicycle lanes are needed on Bridgewater Road.

Figure 20 – An artist's impression of a bicycle lane located along the northern side of Bridgewater Road.

WATER QUALITY

The reserve is located at the bottom of a local catchment surrounded by hills. The water flows, sandy soil, shallow depth of the water table and the proximity of water bores in the area create the potential for ground water contamination. Ground water is widely used by the public, SLSC and the Bridgwater Cafe.

Maintaining the water quality is one of the most important matters to reduce any adverse impacts on environmental and other values of the receiving waters. The aim is to prevent ground water contamination and to manage stormwater on site. The use of passive stormwater treatments such as swales and rain gardens would slow the speed of stormwater flows and allow suspended solids to be leached out on site. These swales and rain gardens should be integrated into the design of car parks and roads (Figure 21 shows examples of a rain garden and a swale located next to a public road).

Wherever possible, Aboriginal land forming and vegetation themes should be used to shape the environment. This may include land forming and passive stormwater management. Typically this might take the form of a rock aboriginal fish trap.

Objectives

- To maintain water quality and to prevent ground water contamination
- To integrate passive stormwater treatments into the landscape setting
- Monitor water quality.

Strategies

- Utilise water sensitive urban design principals including in relation to stormwater
- On-site stormwater management using passive stormwater treatment techniques
- Natural limestone/granitic sand surfaced car parks are to be retained
- Consider earth forming, swales, rain gardens and other passive stormwater treatments
- Test water quality from the local bores
- Integrate rainwater gardens that assist with stormwater management in the foreshore reserve.

Management actions

- Use of Water sensitive urban design principals to improve water treatments
- Upgrade waste water treatment for the facilities that operate in the foreshore reserve
- Where possible design green spaces and car parks integrated with passive stormwater treatments such as rain gardens and drainage outfalls
- Use permeable and natural paving where possible
- Regular maintenance of limestone/granitic sand car parks and water treatment systems.

Figure 21 – Rain garden (above) and swale (below).

DESIGN CONCEPTS – DUNE RECONSTRUCTION AND BEACH ACCESS

The reinstatement of the dunes and extension of the foreshore reserve will provide the necessary room to provide for better disabled access, beach ramps, a boat ramp upgrade and improved horse access to the beach. The reconstruction of dunes further out from the foreshore will provide for a better coastal buffer to storm events and possible inundation. Dunes are to be restored to their historic profile further away from the coastal assets and buildings.

Design Objectives

- To use soft engineering solutions including sand entrapment to reclaim the eroded foreshore
- To position access ways that minimise exposure to potential coastal erosion and to accommodate user preferences
- Protect dunes and dune vegetation from damage caused by pedestrian traffic.

Design elements

Dunes

It is proposed to widen the foreshore between 4m to 10m. The dunes would be realigned out approximately 8m from the existing alignment. Widening of the foreshore will allow space for a 1.5m planting verge between car parks and the proposed foreshore promenade and protective fence. The profile of the dunes will generally be relocated out approximately 8 metres from their current alignment however this will vary according to the location of improved access requirements in order to provide a naturally seamless blend of dunes and access paths.

Dunes are to be reconstructed to historic profiles using sand entrapment techniques and they will maintain the continuity in the elevation of the dune surface. The dunes will be constructed over the top of a dynamic rock structure hidden under the sand (see the board and chain drawing that shows the dune construction over the limestone structure (See drawing No. 21).

Beach ramps

The increased width of the dunes will make it possible to replace some existing beach access steps with board and chain ramps over the reclaimed dunes. Board and chain access ramps are designed to be not more than 100 metres apart. Beach access is designed to work with the natural contours of the dune and minimise any works/disruption to the natural coastal processes. Beach ramps over reconstructed dunes should match the natural configuration of the existing dune of approximately 1:4 horizontal otherwise the construction of switch back ramps is necessary.

Board and chain access ways are designed to be able to adjust with the changing natural construction of the dune profile and should be a minimum width of 3m. Materials used in the construction must be adjustable so that the access way can accommodate sand accretion or erosion at the same rate as occurring on the adjacent dunes (See board and chain plan and drawing No. 20).

Steps to the beach

Steps to the beach should be retained in areas where quick access is required. Steps should be designed at each end of the Bridgwater cafe as part of the access for all abilities ramp in front of the Bridgewater cafe. New steps that provide access to the beach from the commonly used car parks. Steps to the North East car park should be retained. The steps to the South West car park need to be improved to address issues that relate to access and safety. These steps should be designed with lookouts to capitalise on the view experiences to Bridgewater Bay.

Access for all abilities

Access for all abilities is proposed from the car parks located each side of the Bridgewater Café. Access ramp alignment in front of the Cafe is to be predominantly below view lines in front of café to ensure meaningful dune experiences. Access for all abilities ramps will have a maximum gradient of 1:14 and shall be constructed to be compliant with Australian Standards. The timber ramp merges at its base with the beach to form a timber landing creating a sense of arrival. This landing may be used as a safe waiting area or viewing platform for visitors who may find it difficult to navigate the sandy beach but want to experience the closeness of the water (see design drawing No. 5 and design drawing No. 17).

The stairs extending from each end of the Bridgewater Café to the beach could be upgraded and retained. The retention of these steps would enable quick access from the café to the beach. The steps will need to be carefully integrated into the design of the access for all abilities ramp to avoid any conflicts between the different access ways.

Access for all abilities ramp will be designed as part of the proposed realignment of the boat ramp. The ramp will make good existing dynamic rock structures to the underside of the path. At the boat ramp the path will assist with providing a rejuvenation and storm protection edge. The design could include a timber landing with exposed aggregate steps to 1 meter below the level of the sand as a toe (see ramp section design drawing No. 16).

A minimum total of 3 disabled car parking spaces should be provided near the SLSC and adjacent to access ramps in each of the car parks either side of the Bridgewater Café. Disabled access is to be provided in accordance with Australian Standard 1428.

Vegetation

The coastal vegetation for replanting should be selected from Ecological Vegetation Classes (EVC 876; EVC 160 & EVC 161). The profile shown in Figure 22 is generalised with only the major species listed; individual sites may differ in composition due to site characteristics (geology, aspect, rainfall, drainage). Consideration should be given to site history; look at the composition of adjacent vegetation to fine tune the species list for the Bridgewater foreshore precinct site (see Figures 23 & 24 that shows images of typical dune vegetation).

The areas where plantings should occur are listed in point form below.

- Landscaping and vegetated edges along Bridgewater Road.
- Planting verge between the car parks and the foreshore promenade (this could include shallow limestone swales where necessary)
- Swale planting between Bridgewater Road and the Café.
- The planting profile for dune vegetation consists of stunted open shrubland to 0.5 metres in height. (low shrubs should be located on top of dunes to maintain views)
- Planting of locally sourced indigenous species appropriate for the EVC should be undertaken
- Formed stormwater receiving rainwater garden and vegetation to be integrated as part of the green space located towards the western end of the foreshore reserve
- Retention of existing mature Norfolk Island trees
- Tree planting in the foreshore reserve that provides summer shade between 11.00 am and 3.00 pm.

Scientific name	**Common name**	**Height (cm)**
Trees		
Casuarinaceae	Coastal Sheoak	400
Shrubs		
Grasses		
Lachnagrostis billardierei	Coast Blown-grass	60
Poa poiformis	Coast Tussock-grass	100
Ground covers		
Apium prostratum	Sea Celery	15
Senecio pinnatifolius	Variable Groundsel	40
Tetragonia implexicoma	Bower Spinach	100
TBA Ferns, climbers, epiphytes		

Figure 22- Indigenous coastal vegetation and the heights of the plant species, varieties and mix to be confirmed with DEPI input.

Figure 23– Vegetation located at the eastern end of the beach (note that the steps at the eastern end of the beach are in good condition).

Figure 24– Coastal vegetation mixed with introduced exotic plants located adjacent to informal access path to the beach.

DESIGN CONCEPTS – FORESHORE RESERVE

It is necessary to improve the overall structure of the foreshore reserve and connections to surrounding areas. A more legible layout with improved foreshore accessibility is needed to improve pedestrian, bicycle and vehicular traffic. It is also necessary to carry out reclamation works and vegetation planting to parts of the eroded foreshore. The reinstated width will provide the necessary space for a more robust buffer to buildings, a foreshore promenade as well as improved configuration of car parks. The design response proposes to maximise the use of the existing car parks and to separate cars from bicycles and pedestrian movement to improve the safety of all users.

Design objectives

- To reinstate the foreshore reserve to enable improvements to the layout of the foreshore reserve
- To improve beach access and movement along the foreshore and links to the surrounding areas
- To improve safety for pedestrians, cyclists and motorists

Design elements

Waste water treatment system

A waste water treatment system is required to treat grey water from the surf club, public toilets and the Bridgewater Cafe. The new waste water treatment system will require separation distances between ground water sources such as a bore as per the Environmental Protection Act 1970 – Septic Code of Practice Guidelines. An initial assessment using EPA publication 500 Code indicates that a waste water treatment system with a peak flow of 10,000 litres per day should be considered.

Widening of the foreshore reserve

Reinstating the foreshore reserve is necessary to halt erosion, improve the buffers to coastal buildings and to prevent the continued erosion of the foreshore. Climatic change on the reserve, specifically in relation to the potential increase in storm surges and king tides threatens infrastructure and buildings currently located on or near the primary sand dune and also in relation to future developments recommended in the master plan.

Increasing the width of the foreshore will also create more room for a foreshore promenade, better beach access including access for all abilities and will maximise the efficiency of car park layouts and safety (see design drawing No. 7, 8, 9 and 10).

Foreshore promenade

The increased width of the foreshore reserve will provide room for the foreshore promenade which will be located behind the reconstructed sand dunes. The foreshore promenade will allow safer use of the reserve. The foreshore promenade will provide an axis of movement connecting the car parks, Bridgewater Café and the SLSC. Paths across the reserve will also intersect with the foreshore promenade and beach access points located at regular intervals to the beach.

Stone paving or a timber finish could be used between the boat ramp and the Bridgewater Café as this is likely to be a high use area. The promenade and boat ramp landing could be either stone paving or a timber finish. The materials selected will need to be able to withstand storm events, corrosion and complement the coastal setting (see Figure 25 over the page).

The foreshore promenade is 3.0 m wide. A vegetation planting strip will be located between car park wheel stops and the foreshore promenade. Lighting in high activity areas should be placed around the foreshore promenade to assist with legibility, movement and safety (see design drawing No. 22).

Car parks

A large percentage of the foreshore reserve is used for car parking however the use of existing car parking space is not maximised. The SLSC car park is the most used car park and it is proposed that this car park remain asphalt due to type of wear and level of use. Natural pavement could be used in low use areas or near high value natural areas to allow oxygen and moisture to permeate into the subsoil.

The car parking areas are to be set back from the fronts and sides of buildings to provide a buffer between users of these facilities and cars. A 6m pedestrian curtilage is placed in front of the SLSC/amenities block and 3 metre side setback to all buildings.

A one way access road for buses, horse floats and cars with drop off areas are proposed to be located in the central car park. Short term long vehicle parking is located adjacent to Bridgewater Road. Common elements for improvement associated with the retained limestone/granitic sand car parks include raised timber wheel stops to assist with parking, 90 degree parking bays and a verge between the car parks and the proposed foreshore promenade (see design drawing No. 5).

Boat ramp

Improvements to the existing boat ramp will provide efficient boat access from the car park to the beach. The boat ramp is orientated at an angle to the foreshore and will have a gradient of 1:8. The boat ramp is to be constructed in accordance with AS3962 for a single lane with a width of 4m between kerbs. The actual angle of the boat ramp is to be determined at the detailed design stage with consideration given to efficient access from the SLSC and car parks, views and the existing base slopes under the Norfolk Island pine and the tree roots system.

Access for all abilities ramp will have a gradient of 1:14 constructed in accordance with Australian Standards. The boat ramps and access for all abilities ramp will descend down to the foreshore at different gradients. Level differences between the ramps can be accommodated in the one structure.

The access for all abilities ramps will start further along the foreshore promenade towards the Bridgewater Café so this ramp can meet the gradient requirements specified in the AS. The toe of the ramp is anchored at approximately 1m below the depth of the sand.

It is proposed that the access for all abilities ramp in front of the Bridgewater Café will be timber; however the access ramp at the boat ramp will be concrete to tie into this structure. The access ramp will appear as a sculptured element along the edge of the boat ramp.

The boat ramp will have a non-slip surface constructed on top of limestone rock base and limestone revetment wall. These materials reflect the existing character of the geology and colours evident in the immediate environment of the bay (see design drawing No. 4).

Fences

Widening of the foreshore reserve will make it possible to have a granitic sand foreshore promenade set back from car parks on one side and the dunes on the other side. A planting buffer and protective fence is to protect the dunes for informal access and provide a physical separation between cars and pedestrians. For example a Beachmaster © (see design drawing No. 25), or similar sand forming type fence seaward of the foreshore promenade could be used to protect dune reformation (slatted HW timber fence as used by DEPI at Port Fairy).

A higher quality fence is proposed to separate alfresco areas of the Bridgewater Café and the foreshore promenade. Stainless steel fencing is also proposed at the front of the café separating the foreshore promenade and dunes.

Facilities and services

All of the facilities and services are located in and around the SLSC and the Bridgewater Café. The intent is to provide facilities that are spread conveniently along the beach. The facilities could include seats, tables, drinking water, shade, bicycle racks and BBQs. Seating, tables and potable water should be located in the green space proposed to be located west of the SLSC. Seats, drinking fountains, dog litter dispensers, bins and bicycle racks should be located along the foreshore promenade near each of the beach access points. The materials used would all need to be quality 316 Stainless Steel, not rag bolt down fittings (see materials listed in Figure 23).

Viewing platforms

There are scenic lookouts located at strategic points on the steps located at the western end of the Beach connecting to the top car park. The lookouts provide vantage points for whale watching and elevated views to Bridgewater Bay. The lookout structures should be repaired and vegetation pruned to reinstate the views from the steps.

Signage

Signage should be clear and uncluttered, using minimum content to convey the necessary information. Limited insitu signage will help retain the natural balance. Signs must be easy to read at a glance using coastal colours. The text should be in large font readable at a distance as well as by people with limited eyesight. Signs should not be placed in locations that impact on prominent views. Themed signs that provide continuity should be developed to harmonise with the natural colours prevalent in the coastal environs. As a collective the signs should include a message that relates to the story of Bridgewater Bay, its history, environs, geology, destination distances and use.

MATERIALS	DURABILITY
Class 1 timber boardwalk (as approved) and use TP H5 sub-frame 1.5m into stable sand and sub-frame is rock protected	Moderate risk (ocean storm/fire) High use.
Pinned Off white exposed aggregate / concrete path pinned 1m into stable sand (stepped) and rock protected.	Moderate risk (ocean storm/fire) High use.
Off white exposed aggregate / concrete path; (not pinned).	Moderate possibility of surface erosion to area. High use.
Stabilised sand path; with Class 1 timber edges pegged at 1m c/c (suited for bare feet).	Little to no surface erosion to area Lower use.
Fences (use same as Nuns beach) – 1. **Ramps / steps** – Stainless steel type fencing as s/s posts disappear. 2. **Fence at car parks** - Use 200*200 HW posts with s/s wire on car park top to see through uninterrupted sight lines.	
Bench Seating – Stainless steel slatted type seating over 3.2mm walled s/s pipe as sand entrapment device and maintenance free (similar to Nuns)	Life cycle of s/s is better due to maintenance and serviceability.
Other materials	As assessed

Figure 25 – Shows the durability and risks associated with some materials that could be used in coastal areas.

DESIGN CONCEPTS – BRIDGEWATER ROAD

The foreshore reserve consists of three main linear elements. Bridgewater Road, the foreshore reserve and the beach environs, each of which provide opportunities for different modes of movement and activity. A fundamental objective is to design Bridgewater Road to make it more usable, functional and safer for pedestrians, cyclists and motorists. Bridgewater Road reserve can be designed to provide a more pedestrian friendly environment by slowing traffic speeds and by incorporating a bicycle lane within the cross section of the road reserve. The pedestrian path connections across Bridgewater Road need to join with paths in the foreshore reserve that lead to the beach.

Design objectives

- To utilise the variable Bridgewater Road widths to incorporate linear elements such as a carriageway and bicycle lane
- Traffic calming to slow traffic speeds to make the road safer for pedestrians, cyclists and motorists
- Provide pedestrian crossing points at regular intervals that connect with foreshore paths.

Design elements

Carriageway

The carriageway width should be designed for target traffic speeds of up to 50kmph and sight distances to accord with the design speed. Slower vehicle speeds, a uniform carriageway width and the introduction of a shared bicycle lane will assist with traffic calming and pedestrian safety. The average width of Bridgewater Road is approximately 6.6m however it varies from 6m to 7m in some locations and the width of the road reserve is not uniform. It is proposed to create a uniform carriageway width of 6.4m and extend the shoulders of the road so that a shared bicycle lane can be introduced on the northern side of the road. Different elements may be incorporated into the road reservation depending on the width. It is proposed to typically include the following elements into the existing cross section of Bridgewater Road (See Figure 26 below).

Element	Desirable Width (m)
Shared/Bicycle lane	2.5
Carriageway width is	6.4
Sealed verge	1.5
Total width	10.4

Figure 26 – Proposed elements that could be incorporated into Bridgewater Road reserve.

Bike pedestrian lane

It is proposed that a bicycle lane be incorporated into the northern side of Bridgewater Road. It may be possible to extend the bicycle lane to both sides of the road in the future. Aust. Roads Guide to Traffic Engineering part 14 – Bicycles, recommends a desirable width of 2.5m for local bicycle lanes on roads. The bike lane will contain signs and line markings as appropriate.

Footpath

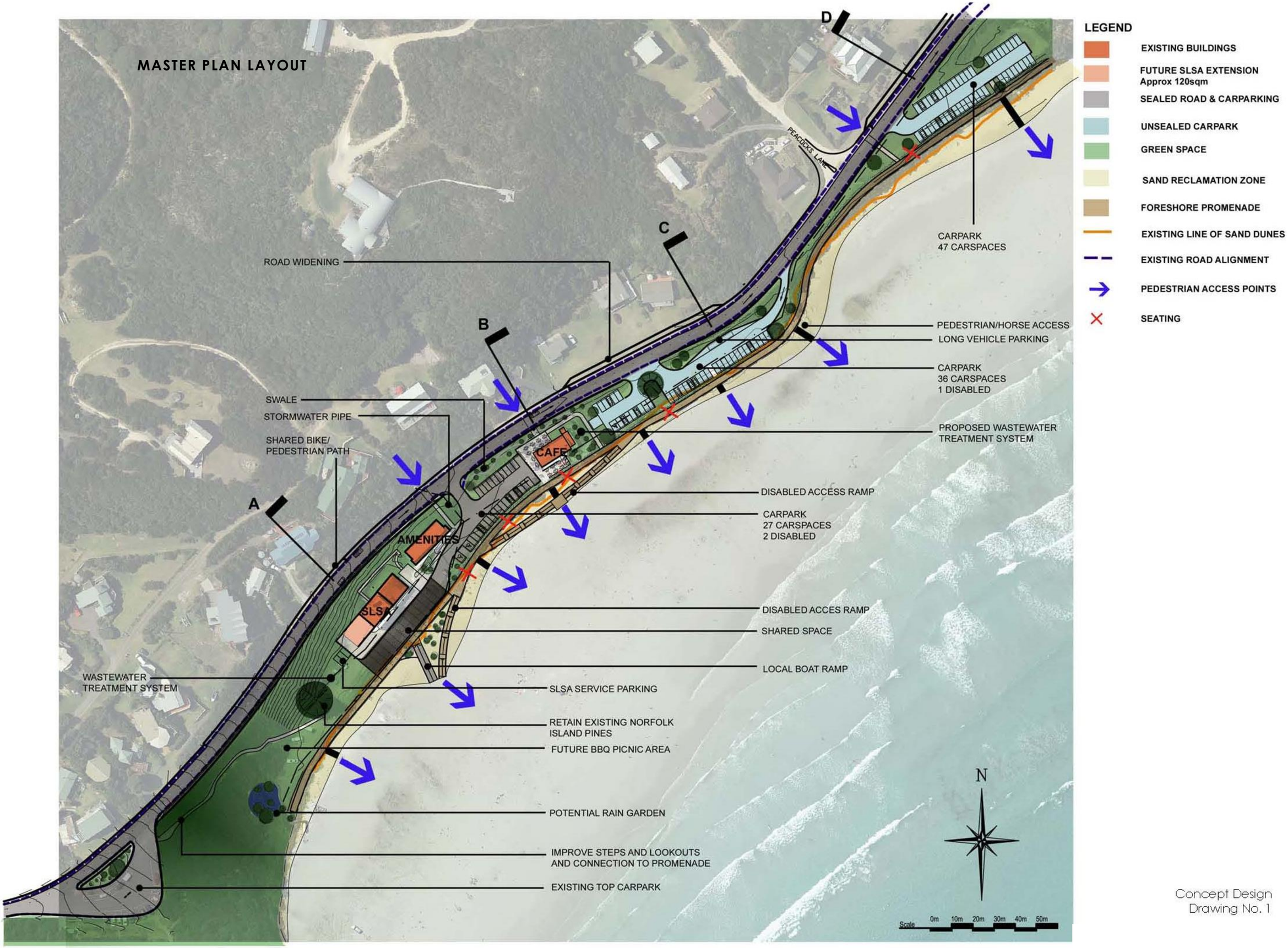
It is proposed that the 2.5m bicycle lane on the northern side of Bridgewater Road between Peacocks Lane and running west to the back of SLSC will serve as a joint use path and will be constructed as an off white exposed aggregate granitic sand path. The path will be linked to pedestrian crossing points accessing the foreshore reserve. Due to current width restrictions along the narrower section of Bridgewater Road from the back of the SLSC west to the top car park it is proposed to reduce the shared laneway to 1.65m. The use of a rumble strip between the road and laneway will help improve the safety of all road users, however further consideration should be given to the safety benefits to be had of widening Bridgewater Road along the hill section in the future. This would involve more detailed design with possible excavation and the potential removal of vegetation. Further investigation is needed to determine if the extension is feasible (see design drawing No. 11).

Pedestrian crossing points

Pedestrian crossing points are at high use locations across Bridgewater Road. The verges can be designed for safe use by pedestrians of all ages and abilities including the aged and children. Pedestrian crossing points are along Bridgewater Road opposite the SLSC and at each of the car parks and their locations can be highlighted by the alignment of street lighting. Pedestrian crossing points link the southern / residential areas across the road to the foreshore reserve. The crossing points correlate with paths that link the facilities, foreshore promenade and ramps to the beach.

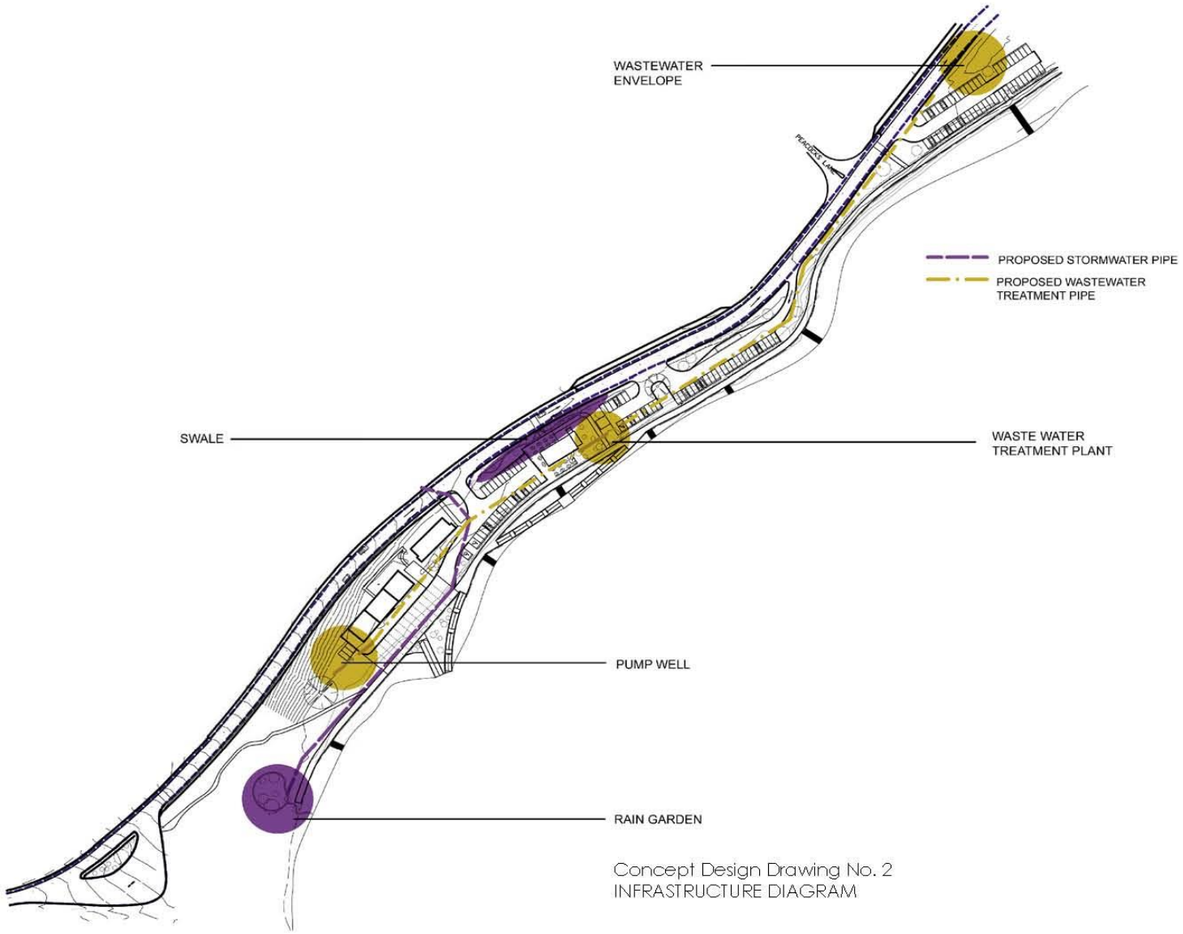
Stormwater drainage

It is proposed to intercept storm water and pipe this stormwater under Bridgewater Road to the lower areas located at the western end of the foreshore reserve. Pipes, pits and trenches are to be designed in accordance with Councils Infrastructure Design Manual Standard Drawings (IDM). Minor swale drain outfall is proposed to be located between Bridgewater Road and the Café and is proposed to be constructed with limestone rock typically placed to form a natural rock outcrop at the base. The swale drain will convey stormwater to a desired outlet in the reserve providing for infiltration into the subsoil. The swale could be constructed using a limestone retaining wall (see design drawing No. 19).



Concept Design
Drawing No. 1

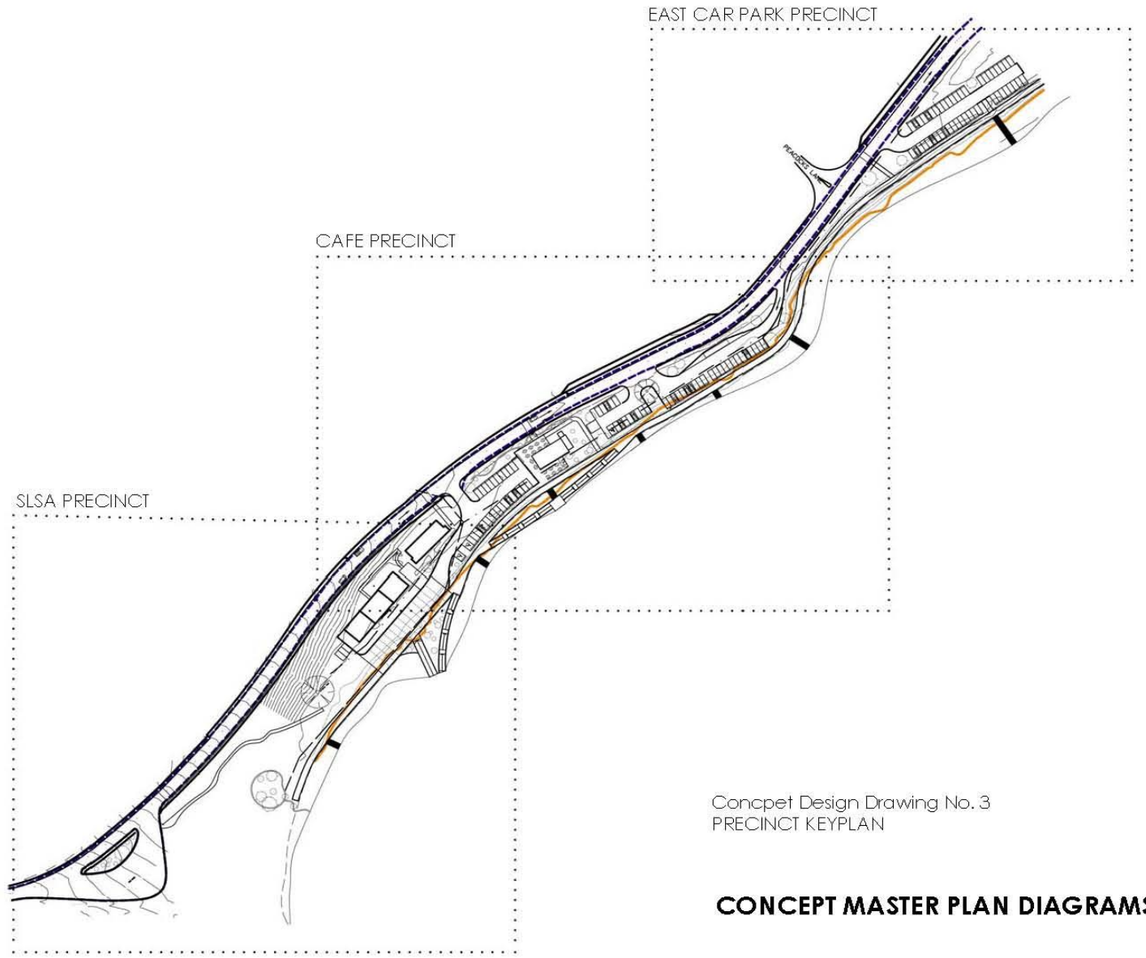
Design Drawings – Infrastructure concepts



Concept Design Drawing No. 2
INFRASTRUCTURE DIAGRAM

Infrastructure Concept Summary

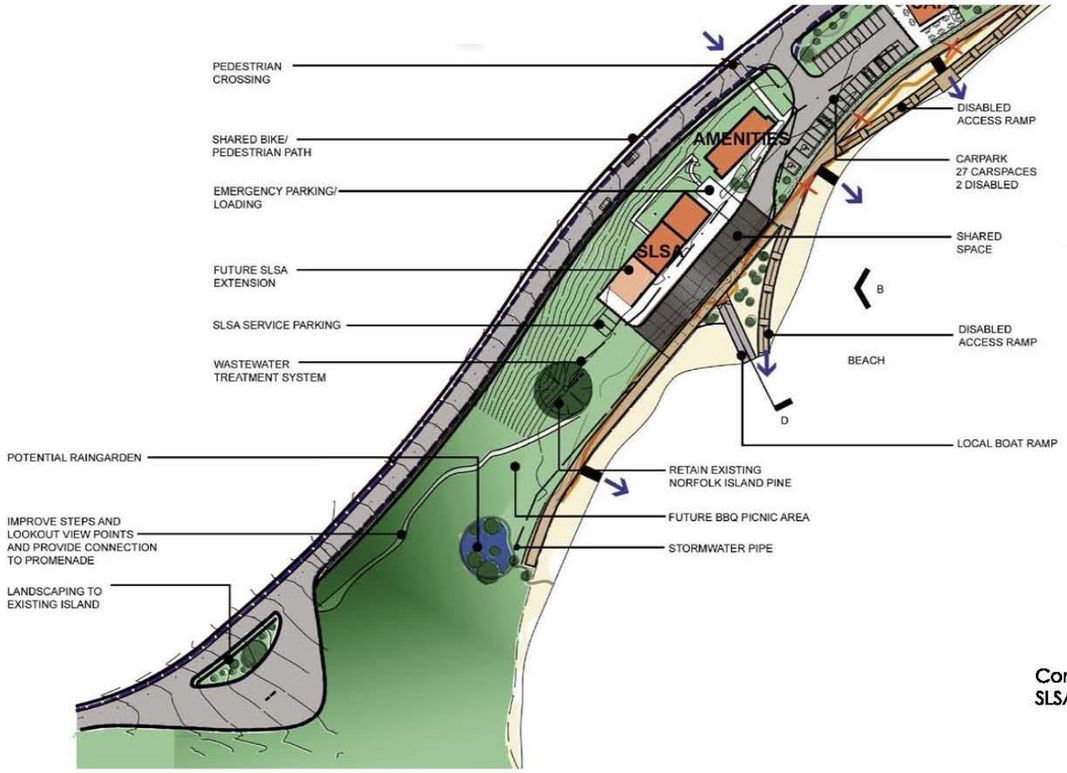
The plan shows the design for Cape Bridgewater wastewater management system. The precise location of the treatment and pipe works will be determined at the design stage. The effluent line will be buried to a depth of 450mm. The location of the pump well to direct effluent from the SLSA and public toilets to a waste water treatment plant located next to the Bridgewater Cafe. The waste water envelope will be located on the sand dunes opposite 1636 Bridgewater Road. Effluent disposal will be via a subsurface irrigation system. Irrigation pipes will be buried to a depth of 150/200mm and will require an area of 1,000sqm. There are expected to be zero odours assciated with the waste water treatment system.
It is proposed to intercept stormwater from Bridgewater Road and pipe it under the road, directing the stormwater to the western end of the foreshore reserve. Possibly the stormwater could enter a rain garden as a landscape feature. This will minimise stormwater runoff to the low points in the reserve where the Bridgewater Cafe is located. It is proposed to locate a swale drain above the cafe to collect any additional stormwater from Bridgewater Road.



Concpet Design Drawing No. 3
PRECINCT KEYPLAN

CONCEPT MASTER PLAN DIAGRAMS

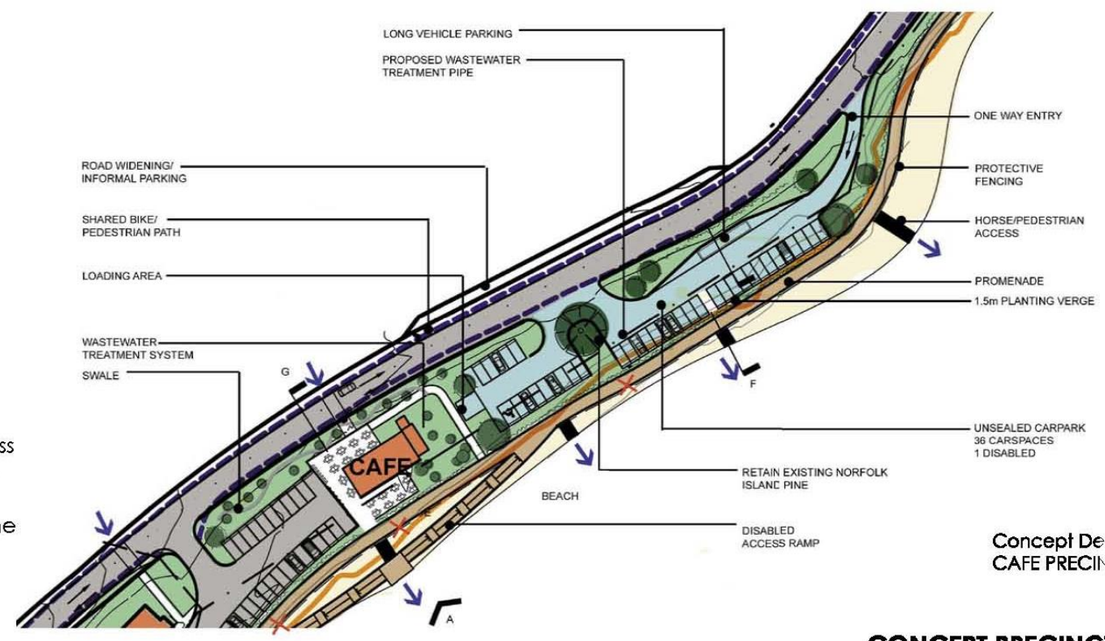
Design Drawings – SLSC Precinct concepts



Concept Design Drawing No. 4
SLSA PRECINCT PLAN

SLSA Precinct Concept Summary

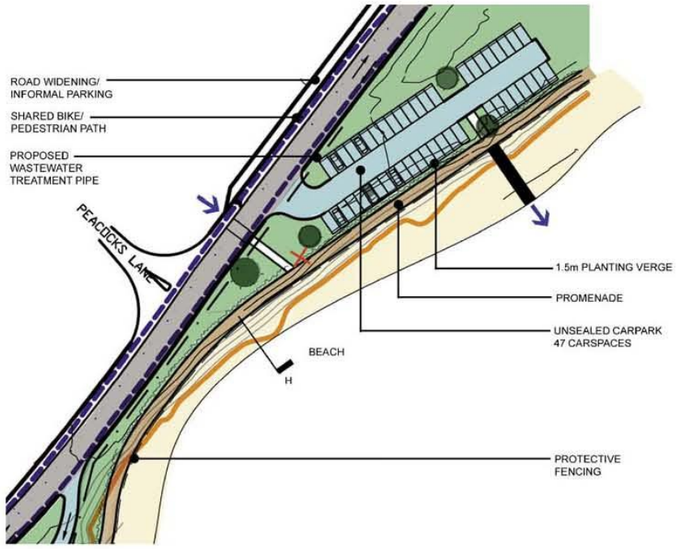
The SLSA precinct plan shows the location of existing buildings and the proposed future extensions to the SLSA. The proposed car park upgrade includes a new porous pavement surface and improved car park layout offering a minimum of 2 beach side disabled parking spaces in front of the SLSA. The introduction of a shared space between the SLSA and the new boat ramp alignment will help create a safer transition for pedestrians to the popular foreshore promenade and beach access. Access for all abilities is integrated into the design as an edge to the boat ramp which merges seamlessly with the promenade via a transitional dune experience created by a nautral dune forming profile against the ramp structure.
This plan also allows for additional overflow parking as a natural grassed area to the west of the SLSA. This area may also provide for a future BBQ picnic area. Long vehicle turnaround may be provided across natural grass surrounding a raingarden landscape feature. Opportunities also exist to upgrade the existing walkway and lookout view points from the exisitng top carpark.



Concept Design Drawing No. 5
CAFE PRECINCT PLAN

Cafe Precinct Concept Summary

The plan shows how the existing Bridgewater Cafe will benefit from the proposed widening of the foreshore which will provide room for an access for all abilities ramp in front of the cafe and will also enable the foreshore promenade to pass in front of the cafe outdoor seating area. The ramp provides beach access for all abilities for the car parks on each side of the cafe. The curtilage of the buildings provide pedestrian friendly spaces and are setback from car parks. Beach access ramps and improved horse access steps are located at regular intervals to the beach.

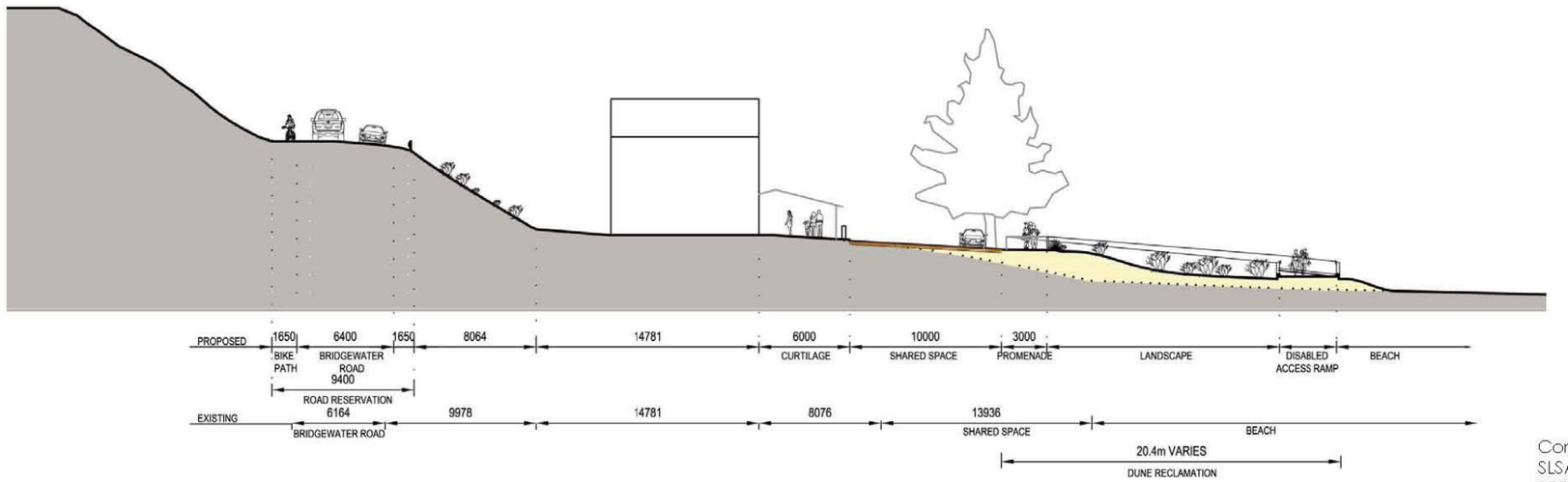


Concept Design Drawing No. 6
EAST CARPARK PRECINCT PLAN

East Carpark Precinct Concept Summary

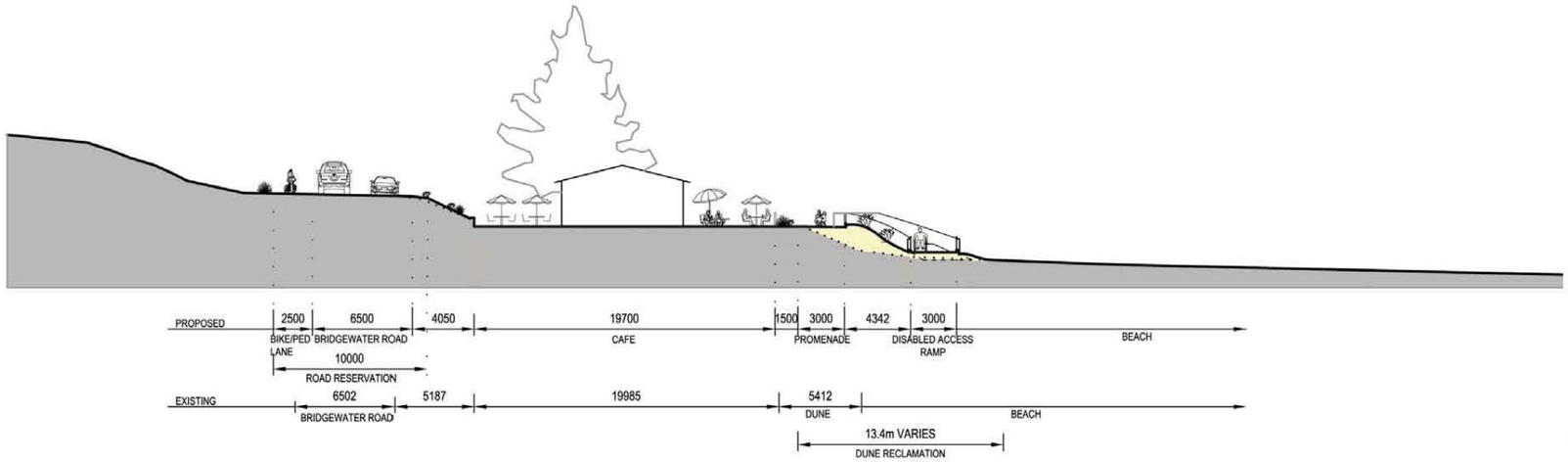
The plan of the eastern end of the beach shows proposed road widening which may be utilised as informal paralell parking and would remain unsealed in a surface finish to match the shared bike/pedestrian path on the north side of Bridgewater Road. The parking layout has been improved with 90 degree parking to both sides of the car park which will be defined by the use of timber wheel stops and parking pays which will be delineated with the use of disc markers rather than formal linework and will be typical of the proposed carpark works in this reserve.

Design Drawings – Foreshore Reserve cross sections



Concept Design Drawing No. 7
SLSA PRECINCT
SECTION A

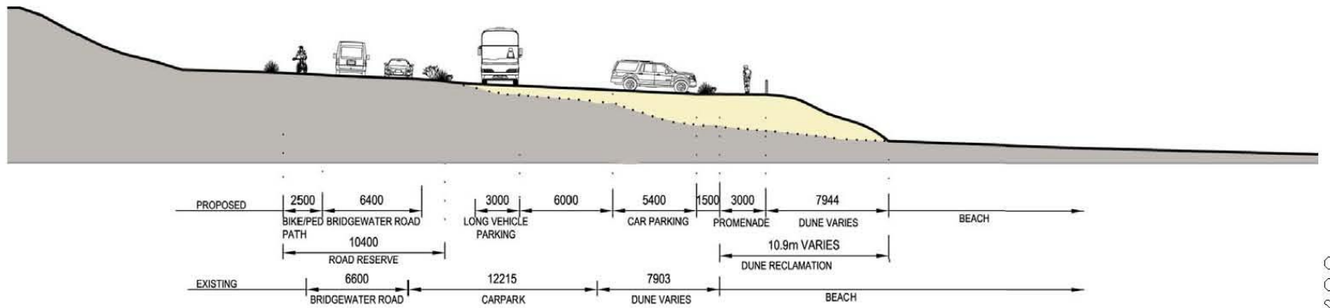
Section A
The width of the foreshore reserve is increased to provide necessary space for the foreshore promenade, boat ramp and access for all abilities. There is a shared space with pedestrian priority in front of the SLSA and a building curtilage reserved for pedestrians.



Concept Design Drawing No. 8
CAFE PRECINCT
SECTION B

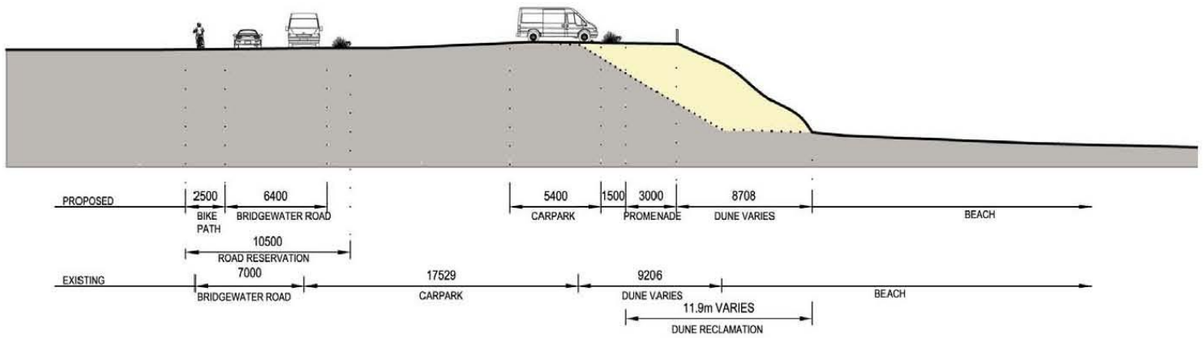
Section B
The dune reclamation provides the necessary space for a planting strip along the edge of the Cafe, the foreshore promenade and the access for all abilities ramp. The reclaimed foreshore provides for a better coastal buffer to protect coastal structures from storm events and rising sea levels.

CONCEPT CROSS SECTIONS



Concept Design Drawing No. 9
CAFE PRECINCT
SECTION C

Section C
The layout of the centre car park provides one way access and egress from Bridgewater Road. This will allow long vehicles to access this area comfortably. The cars will park to the edge of the foreshore promenade with views to local and distant landmarks.

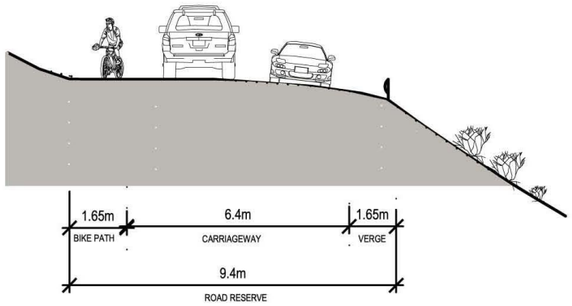


Concept Design Drawing No. 10
EAST CARPARK PRECINCT
SECTION D

Section D
A more efficient car park layout is provided by the widening of the foreshore reserve in this area. Parking is proposed to be at 90 degrees to the foreshore promenade with the use of timber wheel stops and a planting verge providing low visual impact separation between the promenade.

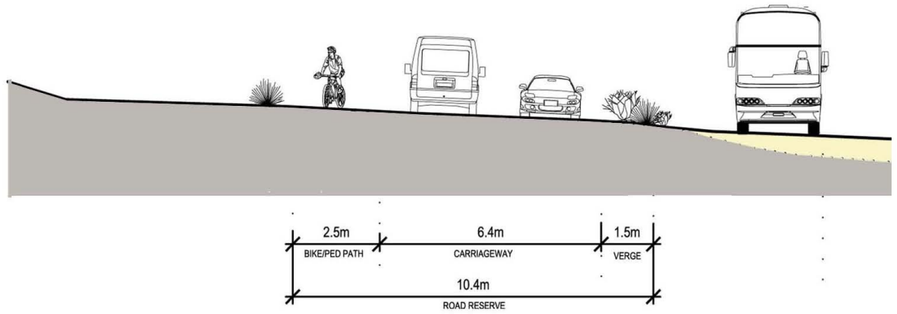
CONCEPT CROSS SECTIONS

Design Drawings – Bridgewater Road Cross sections



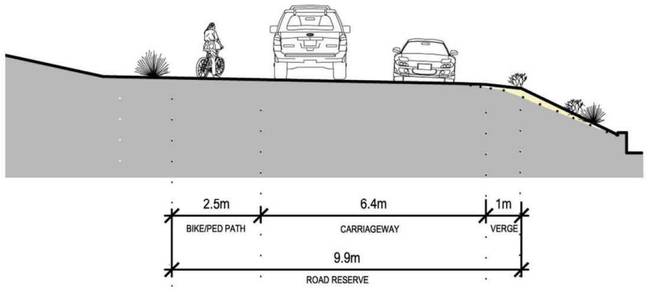
Concept Design Drawing No. 11
SLSA PRECINCT
SECTION A - HILL SECTION ROAD RESERVE

Although the Bridgewater Road reservation is wide for the entire length of Bridgewater Road, the width of the carriageway is constrained by the topography. A bicycle lane can fit into the existing road reserve however this is restricted by the available width provided by the natural topography.



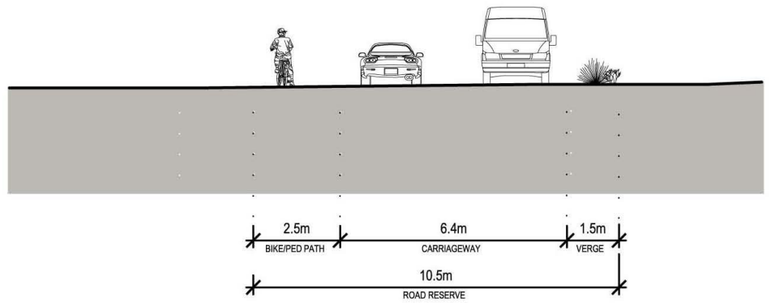
Concept Design Drawing No.13
CAFE PRECINCT
SECTION C ROAD RESERVE DETAIL

One way traffic and long vehicle parking is proposed for the central car park. This corresponds with pedestrian crossings and pedestrian paths through the reserve to the beach.



Concept Design Drawing No. 12
CAFE PRECINCT
SECTION B ROAD RESERVE DETAIL

It is proposed to reduce traffic speeds on this section of Bridgewater Road. This will make it safer to provide a shared bicycle & pedestrian lane the entire length of the road including the hill section located at the western end of the reserve.

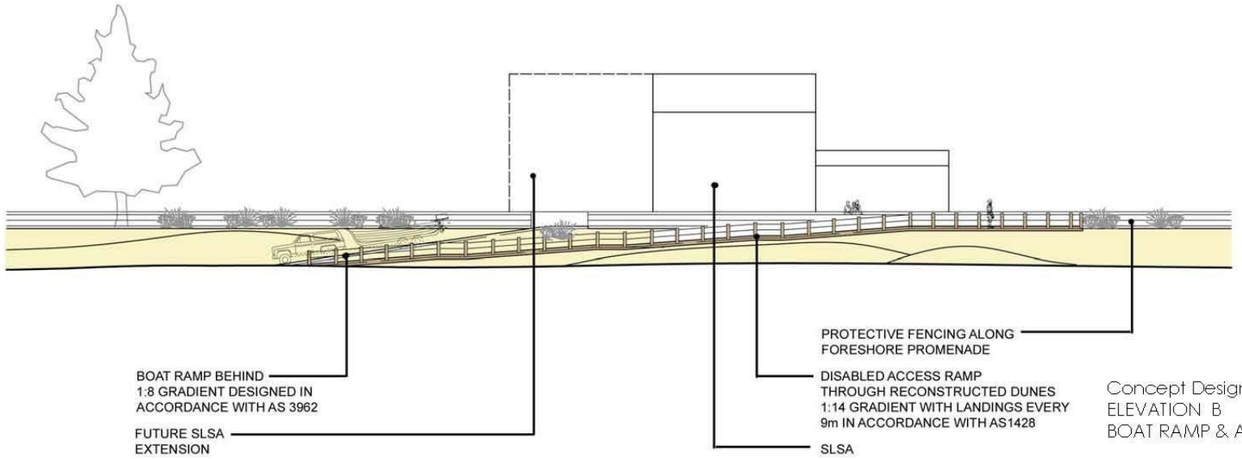


Concept Design Drawing No. 14
EAST CARPARK PRECINCT
SECTION D ROAD RESERVE DETAIL

The drawing shows that it would be possible to provide informal parallel parking, bicycle lane and dual carriageway on the flat sections of Bridgewater Road. The road could be widened using the existing shoulders of the road.

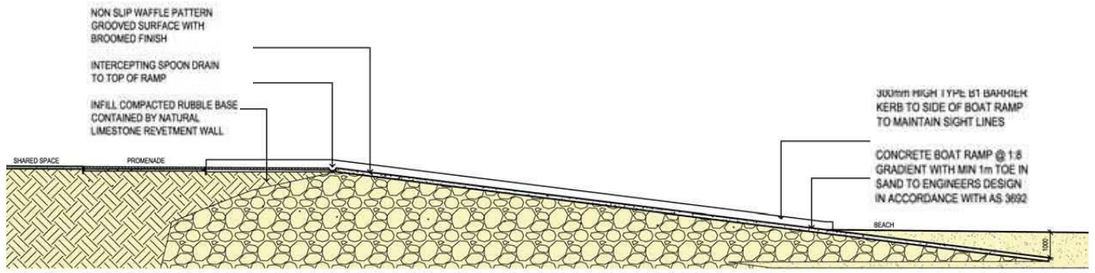
CONCEPT DETAIL - ROAD RESERVE

Design Drawings – Boat Ramp cross sections



Concept Design Drawing No. 15
ELEVATION B
BOAT RAMP & ACCESS FOR ALL ABILITIES

Elevation B
The boat ramp and the access for all abilities ramp will descend down to the foreshore at different gradients. The access for all abilities ramp will start further along the foreshore promenade towards the Cafe so this ramp can meet the gradient requirements specified in the Australian Standards. The access ramp will appear as a sculptural element along the edge of the boat ramp. The building volume and proportions of the future extensions to the SLSA are also outlined.



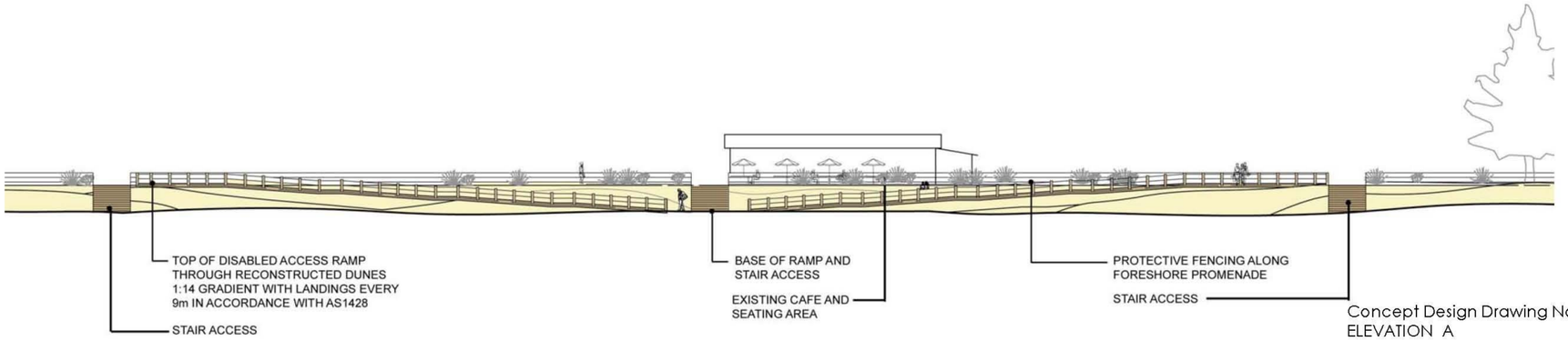
Concept Design Drawing No. 16
SECTION D
BOAT RAMP

Section D
The cross section shows the relationship between the boat ramp, shared space and the promenade. The non slip surface is placed on top of a limestone rock base and limestone revetment wall. These materials reflect existing characteristics of the geology and colours evident in the immediate environment of Bridgewater Bay.

Note: These are concept design intent drawings only and are not intended for construction purposes and may not reflect actual site conditions.
Final design to be in accordance with engineer design details and specifications.

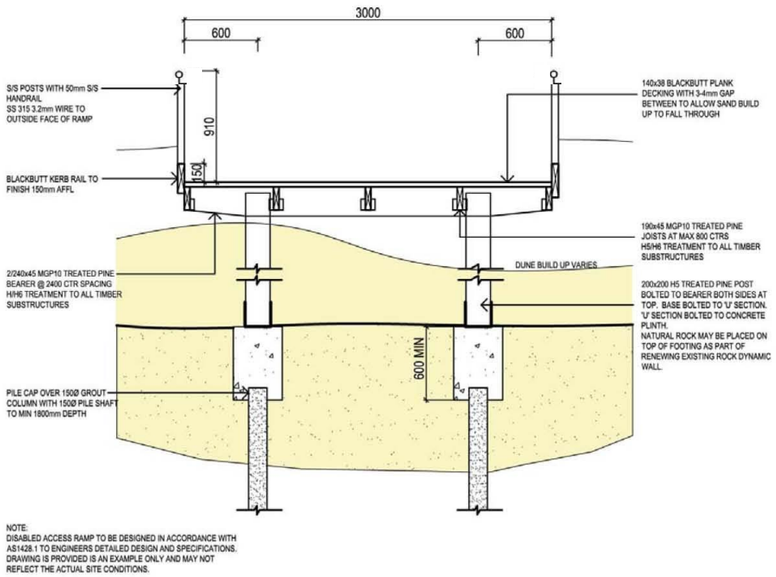
CONCEPT DETAILS - SLSA PRECINCT

Design Drawings – Café Precinct cross sections

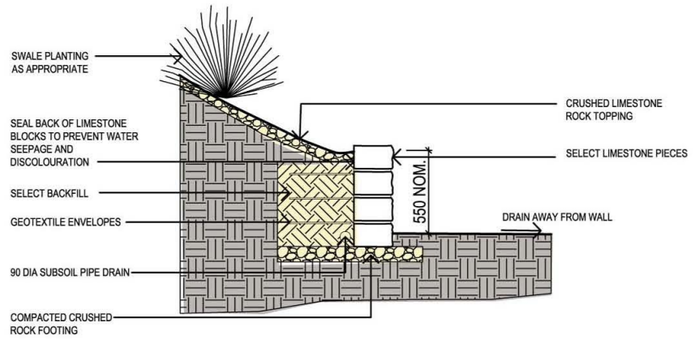


Concept Design Drawing No. 17
ELEVATION A
ACCESS FOR ALL ABILITIES

Elevation A
The cross section shows the levels of the access for all abilities ramp down to a timber landing base at beach level. The ramp will provide a remote dune experience below the sight lines of the Bridgewater Cafe. Note the plain wire fence that is intended to protect the dunes. The ramp will be constructed to Australian Standards.



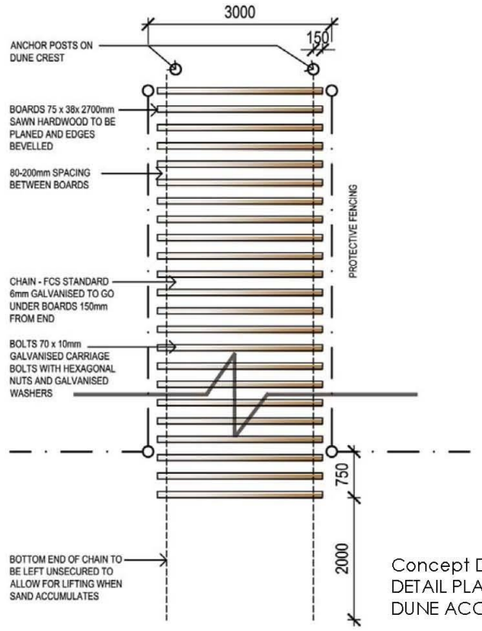
Concept Design Drawing No. 18
SECTION E
ACCESS FOR ALL ABILITIES RAMP
This drawing provides an example of the construction of the access for all abilities ramp in front of the Cafe. The ramp provides a more robust stable structure compared with chain and board access ramps.



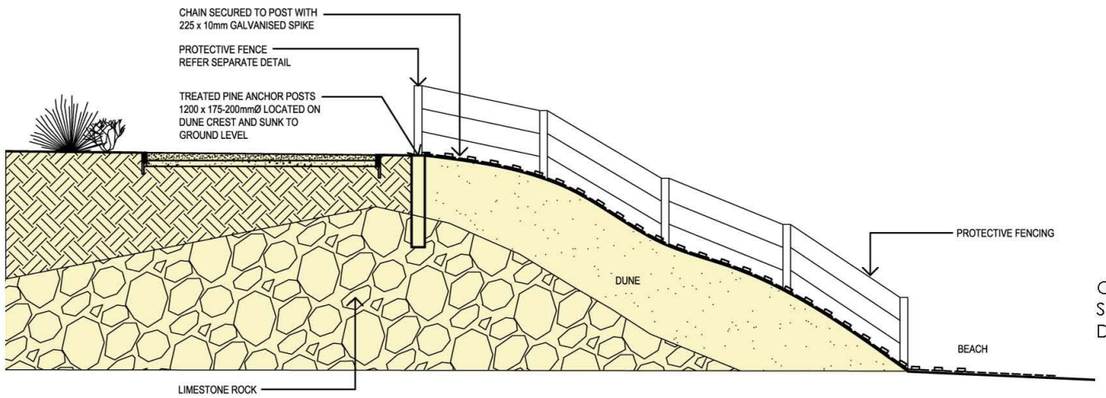
Concept Design Drawing No. 19
SECTION G
SWALE DRAIN RETAINING WALL
This cross section drawing provides an example of a swale to intercept stormwater between Bridgewater Road and the Cafe.

Note: These are concept design intent drawings only and are not intended for construction purposes and may not reflect actual site conditions.
Final design to be in accordance with engineer design details and specifications.

CONCEPT DETAILS - CAFE PRECINCT



Concept Design Drawing No. 20
DETAIL PLAN
DUNE ACCESS



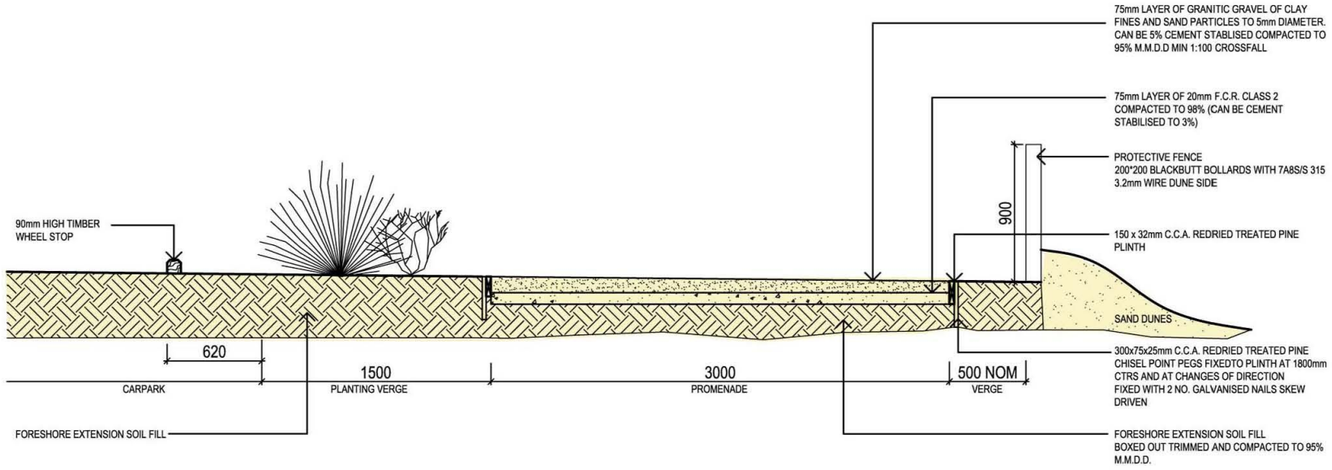
Concept Design Drawing No. 21
SECTION F
DUNE ACCESS

The increased width of the dunes will make it possible to replace the steps with chain ramps over dunes. The board and chain access ways are designed to adjust with the changing profile of the dune.

Note: These are concept design intent drawings only and are not intended for construction purposes and may not reflect actual site conditions.
Final design to be in accordance with engineer design details and specifications.

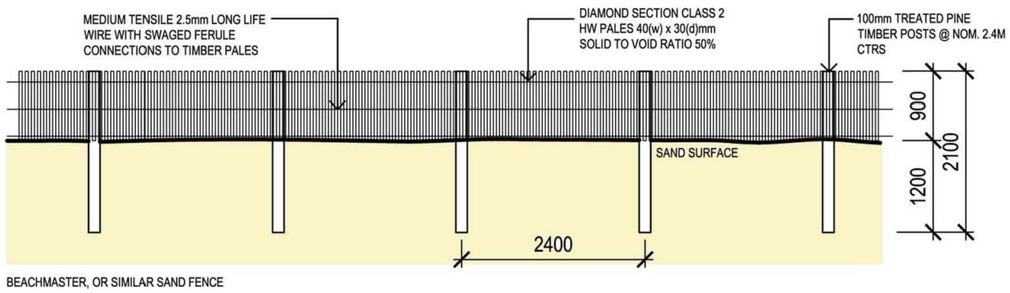
CONCEPT DETAILS

Design drawings – Eastern Car Park cross section



Concept Design Drawing No. 22
SECTION H
FORESHORE PROMENADE

Section H
Widening of the foreshore reserve will make it possible to have a granitic sand forshore promenade set back from car parks on one side and the dunes on the other side. A planting buffer and protective fence is to protect the dunes from informal access and provide a physical separation between cars and pedestrians.
Note: This is a concept design intent drawing only and is not intended for construction purposes.
Final design to be in accordance with engineer design specifications.



Concept Design Drawing No. 23
DETAIL ELEVATION
DUNE FORMING FENCE EXAMPLE

Note: These are concept design intent drawings only and are not intended for construction purposes and may not reflect actual site conditions.
Final design to be in accordance with engineer design details and specifications.

CONCEPT DETAILS

IMPLEMENTATION

The intent of this master plan is to provide a strategic approach to managing coastal risks by identifying key risks and providing recommendations to manage them. This would then allow programming of projects and allocation of resources to be conducted in a coordinated way.

- Benefits of Cost Planning
- Greater satisfaction with end results
- Better value for money
- Improved building quality and performance
- Budget and value accountability
- Improved relationships between participants
- Design problems identified and solved earlier
- Early identification of high-cost elements.

Design drawings

The conceptual drawings provided in this report illustrate possible design options. Detailed design drawings will need to be completed for projects to assess feasibility and to ensure the visual character of the coastal setting is not eroded. Development should:

- Be hidden, screened or not visible, from specified viewing locations
- Be evident but not prominent in that it borrows from the existing landscape setting
- Not detract or upstage the natural visual character of the coastal setting i.e. signage.
- Refer to Council Arts Master Plan.

Risk management

The identification of potential risks such as matters to do with public safety, maintenance of the quality of ground water, foreshore erosion, climate change and the potential impacts of these on environmental values and coastal assets has been assessed and prioritised in the implementation plan. The master plan has identified potential risks to public safety. The main risks are associated with environmental risk such as contamination of ground water, public safety, foreshore erosion and potential damage to buildings linked to climate change. Management risks will need to be addressed as a matter of priority in the plan. Some of the major risks are listed in Figure 27).

No	Major Risk Management Issues
1	Possible ground water contamination
2	Erosion of the foreshore dunes that may result in damage to buildings & infrastructure
3	King tides, storm events and inundation that threaten coastal infrastructure
4	High traffic speeds and lack of vehicle, bicycle and pedestrian separation/priority
5	Dangerous and inadequate beach access including suitable access for all abilities
6	The inadequate design and maintenance of pedestrian steps, car parks and coastal structures
7	Durability of materials & the cost of maintenance
8	Spread of weeds/loss of coastal vegetation
9	Loss of natural character through inappropriate design and development
10	Impact of random access on wildlife habitat including the endangered Hooded Plover.

Figure 27 – Major risks that need to be addressed.

Asset Lifecycle

The priorities established also take into consideration the lifecycle of assets and potential sources of funding. The management responsibilities identify high priority management, medium to long term projects and the monitoring, review, evaluation and reporting of the progress made. In the long term it is proposed to amalgamate facilities and services within SLSC. This is to occur towards the end of the assets lifecycle or when leases for the Bridgewater Café have expired.

Committee of Management / Coast Care Group

It is recommended that the Committee of Management be supported by an active coast care group consisting of local residents, community groups and other individuals. It is anticipated that there will need to be an annual program of maintenance works funded by external grants, council funding and other additional potential sources of funding. Increased access to additional income may be achieved through the priorities set in the Master Plan and progressively achieve through grant arrangements.

Neighbourhood safer place

The area currently does not meet the standards for a neighbourhood safer place. Long term consideration should be given to a neighborhood safer place for residents to assemble in a bush fire event. The reserve could provide a degree of protection and space which may be considered further as a place of last resort for individuals. The neighbourhood safer places program should be developed in partnership arrangement among the CFA, local government and local communities. Some of the advantages of using the foreshore reserve as a safe place are listed below.

- Relatively close and well known to the local area
- Is an appropriate site with managed vegetation
- New buildings could be designed to meet the requirements of a neighbourhood safer place The area provides some access to water
- The foreshore area could be suitable to provide areas to those seeking shelter from bushfire.

Aboriginal involvement

There should be employment opportunities for Aboriginal involvement in the implementation of the Master plan. The story of Aboriginal cultural heritage should be told in land forming, physical displays and interpretative signage. The implementation strategy should also focus on ways to recruit and retain Aboriginal people in the workforce.

Budget Summary

The project budget identifies the major capital works projects, estimated cost, priority and primary responsibility for project delivery. The estimated expenditure for the staged implementation of capital works is detailed in the budget summary on the next page.

Capital Works Project	Approx. Est. Cost	Priority	Res. Auth.	Notes
Protective fences	$75,000	H	CoM	200*200 Black But bollards with 7A*S/S 315 3.2 mm wire dune side Promenade: approx. 450 lm Beach access: approx. 76 lm
Beach reclamation & dune revegetation fence	$95,000	H	CoM	Beachmaster© or similar - Allow $230 per lineal metre (not including rock base) Dunes: 410 lm approx.
Board & chain access ramps	TBD	H	CoM	Approx. 96sqm or 38 lm Refer design drawings No. 20 & 21.
Access for all abilities (in front of the Café)	TBD	H	CoM	Approx. 60 lm ramp + landing Refer design drawing No. 18.
Boat ramp including disable access ramp	TBD	H	CoM	Disabled access ramp: approx. 34 lm, Boat ramp: approx. 19m + 8m toe Examples of other boat ramp construction costs: Apollo Bay precast boat ramp: $250,000 (2001) Altona boat ramp: $280,000 (2008) Cowes boat ramp: $250,000 (2009)
Horse access ramp	$30,000	H	CoM	Renew with lime-stone plat rock
Waste water treatment system	$195,000	H	CoM	EPA publication 500 code –A system with a peak flow of 10,000 litres per day.
Refurbishment of public amenities block	TBD	M	CoM	Modernising change & toilet facilities
Café front deck			CoM	Stainless Steel fence
Foreshore promenade Typical promenade High traffic area	 $74,000 $27,000	H	CoM	Typical promenade area to be granitic sand path 3.0m wide, approx. $62sqm. Approx. 1180sqm. High traffic area to have stone paving 3.0m wide, approx. $74sqm between the Café and boat ramp, including the shared space. Approx. 365sqm. Excluding excavation , filling, compaction and drainage works

Capital Works Project	Approx. Est. Cost	Priority	Res. Auth.	Notes
Lighting	TBD	L		TBD
Vegetated verge between car parks & promenade Option 1 Option 2	 $35,000 $28,000	L	CoM	Generally 1.5m wide verge approx. total 376sqm. Option 1: Assume 3no. shrubs/sqm, 200mm pots with 19mm crushed rock topping (50mm depth) allow $92/sqm. Option 2: As above with smaller plant size 150mm pots allow $73/sqm. Alternative: small river pebble topping (50mm depth) add $28/sqm. Excludes excavation, filling, compaction and drainage works
Building curtilage & shared space treatments SALSA	TBD	H	CoM	200*200 bollards
SLSC car park upgrade	$111,000	M	CoM	Porous pavement: Approx. 1500sqm. Allow $74sqm. Based on the use of concrete pavers (nom. 230x115x60mm) on a 75mm compacted sand bed Excluding excavation, filling, compaction and drainage works
Car edge treatments	TBD	M	CoM	Wheel stops
Potable drinking water	TBD	M	CoM	3 drinking fountains near beach access points
Car park maintenance	TBD	H	CoM	Ongoing
Green space	TBD	L	CoM	BBQs, Shelter, furniture, drinking water etc.
Park furniture and bicycle racks	TBD	L	CoM	1 in each car park area
Bicycle lanes	TBD	M	CoM	

Capital Works Project	Approx. Est. Cost	Priority	Res. Auth.	Notes
Footpath	$33,000	M	CoM	Granitic sand path 1.5m wide approx. total 530sqm. Allow $62/sqm Excluding excavation, filling, compaction and drainage works
Stormwater pipe	$13,000	M	CoM	225m dia $72m + $127/bend (Rawlinsons max size) excludes excavation and backfilling
Stormwater swale		H	CoM	Swale: 400sqm approx. Similar to planted verge
Option 1	$48,000			Option 1: 3no. shrubs/sqm, 200mm pots with large river pebble topping (50mm depth) allow $120/sqm.
Option 2	$40,000			Option 2: smaller plant size 150mm pots, allow $100/sqm. Excludes retaining wall, excavation, filling, compaction and drainage works
Stormwater rain garden	TBD	H	CoM	Further development required to determine size
Other Projects				
Improvements to seal cruises track & jetty		M	STBD	
Underground power lines		TBD	CoM	Could occur when poles are due to be replaced
Weed removal		Medium	CoM	
Signage /Interpretation			CoM	

Disclaimer Note: These estimates are provided as an Opinion of Probable Costs only and have been based on the concept design drawings provided in this document. Available rates from Rawlinsons Construction Cost Guide 2012 have been used to determine the estimated costs to which an allowance for inflation and location outside of the base rate area have been added, however estimates provided should be used as a guide only and are not to be relied upon by readers of this document in any circumstances. CHMP costs will be additional if applicable.

Areas and quantities of works are subject to change as the design develops and a more detailed cost analysis should be undertaken by a qualified quantity surveyor.

CONCLUSIONS

The Bridgewater Master Plan and design works sets out the priorities for the future improvements to the foreshore reserve. The master plan has been prepared in accordance with with current Coastal Master Plan guidelines to attain Coastal Management Act consent.

The reserve has many natural values and these are being impacted upon detrimentally by the informal use of the reserve. The narrow linear reserve has limited space for buildings, car parks and coastal structures. The fragmented layout, potential for ground water contamination, informal paths causing dune instability and random car parking is impacting on the natural coastal attributes of the beach. The use of the foreshore reserve is resulting in the emergence of safety issues associated with vehicle, bicycle and pedestrian movement on Bridgewater Road and in the foreshore reserve.

The design response recommends the introduction of waste water treatment system, retention of limestone/granitic sand car parks and the better management of stormwater runoff from Bridgewater Road to assist with the maintenance of acceptable levels of water quality. Widening of the foreshore Reserve and the reinstatement of dunes to their historic profiles is proposed to improve the coastal buffer and to create extra room to introduce elements such as a foreshore promenade, beach access ramps, access for all abilities, a new boat ramp, more efficient layout of car parks and pedestrian spaces beach side of the facilities.

The intent is to make Bridgwater Road and the foreshore reserve more pedestrian friendly by appropriately defining areas for vehicle, bicycle and pedestrian movements. Bicycle lanes, footpaths and pedestrian crossing points on Bridgewater Road should connect to paths in the foreshore reserve and to the beach.

In the long term there should be one building on the foreshore. This would make it possible to better utilise the limited space and to connect the foreshore spaces. In the current master plan, design solutions now should not prejudice future improvements to the foreshore reserve. There should however be improvements to public facilities and possible extensions to the SLSC to adequately accommodate the projected demand for facilities as the interim need for these services grow.

The introduction of park furniture, facilities and services at strategic points along the foreshore reserve are located to encourage use along the entire length of the beach and not purely focused on areas where the coastal buildings are located.

A Coast Care Group should be formed to implement some of the improvements, ongoing maintenance and education for the need of a vegetated dune and foreshore reserve. There is a general consensus that where possible these strategies and actions need to embrace soft engineering finishes in keeping with the natural and unspoilt environment.

The capital works projects identified in the Master Plan are stand-alone projects that can be progressively implemented over time. Future improvements to the foreshore reserve should not be compromised by short term projects.

GLOSSARY

Biological diversity

The variety of life forms: the different plants, animals and micro-organisms, the genes they contain, and the ecosystems they form. It is usually considered at three levels: genetic diversity, species diversity and ecosystem diversity.

Catchment

The catchment refers to the area of land that drains to a watercourse or estuary. Coast (Victorian) broadly defined in this strategy to include: the sea and the seabed to the state limit three nautical miles or 5.5 km; land and inland waters in the coastal catchment.

Coastal Action Plan (CAP)

Identifies strategic directions and objectives for use and development in a region or part of a region to facilitate recreational use and tourism, and to provide for protection and enhancement of significant features located along the coast including the marine environment.

Coastal-dependent use

Uses and associated infrastructure, which depend on the coasts' natural assets and could not take place at any other location.

Coastline

Generally where the land meets the sea.

Committee of Management (CoM)

Appointed under the *Crown Land (Reserves) Act 1978* to manage reserved Crown land on behalf of the Minister. For coastal land, committees are either an agency, such as Parks Victoria, Local Government, or community volunteers appointed through an expression of interest process.

Crown land

Public land not vested in a public authority, including land temporarily or permanently reserved under the *Crown Land (Reserves) Act 1978.*

Cultural heritage

Qualities and attributes possessed by places and objects that have aesthetic, historic, scientific or social value for past, present or future generations.

Eco-based tourism

A form of tourism that involves visiting natural areas, Ecosystems and all the organisms in a community, together with the associated physical environmental factors (living and nonliving) with which they interact. Ecosystem, at any scale from an ocean, to a bioregion, to a local estuary.

Environmental weed

Exotic or Australian native flora growing beyond their natural range that have, or have the potential to have, a detrimental effect on natural values.

Appendix 1 – Issues and opportunities

Councillor Worksop

Key issues summary14/01/2014
Need to get the basics right within master plan
Traffic Management issues need consideration
Parking capacity to be maximised while retaining and integrating with natural environment
Access for all people required to all areas including to beach (ramp)
Need for consultation and an understanding of the diverse interested parties
Popular with locals and tourists and a balanced perspective is required
Sensitivity of Environment to be considered
Area utilised for diverse activities
Amenity of public areas and beach needs to be maintained and where possible improved
Limited financial capacity to change building footprints
Pedestrian (linkages) movements need consideration
Wheelchair access will need to be provided
Time frame for process needs to be streamlined

Community workshop

A community workshop was held on the 27th February 2014 and public submissions received by Council closing the 28th March 2014. The communities' aspirations were compiled from the key stakeholders workshop, submissions, meetings and comments that are summarised in point form below.

Issues

Aboriginal interpretation
Amalgamate amenties
Accessibity to amenities
Boat ramp needs improving
Better jetty for seal cruises
Cleanliness of amentities
Condition of car parks
Crash rail protection needed
Clarifiy management
Don't develop the Cape
Damage to buidlings from erosion
Fire hazard/lack of escape route
Inadequate maintenance
Illegal camping
Lack of grassed areas
Limit further development
Limited tourist accommodation
Manage motorised activities (jet skis)
Overhead power lines
Run down car parks
Safety of steps (west end hill)
Septic not adequate
Smoking on beach
Too many signs
Traffic spead
No public transport
No pedestrian paths
No rock walls should be built
Poor surface of car parks
Protect views

Appendix 2 –Native vegetation & weeds

Scientific Name	Common Name
Olearia axillaris	Coast Daisy-Bush
Alyxia buxifolia	Sea Box
Leucophyta brownii	Cushion Bush
Ozothamnus turbinatus	Coast Everlasting
Rhagodia candolleana ssp. candolleana	Seaberry Saltbush
Correa alba	White Correa
Sarcocornia quinqueflora	Beaded Glasswort
Samolus repens	Creeping Brookweed
Senecio piannatifolius	Toothed Groundsel
Actites megalocarpa	Coast Sow-thistle
Dichondra repens	Kidney-weed
Disphyma crassifolium ssp. clavellatum	Rounded Noon-flower
Carpobrotus rossii	Karkalla
Calandrinia calyptrata	Pink Purslane
Austrostipa stipoides	Prickly Spear-grass
Dichelachne crinita	Long-hair Plume-grass
Ficinia nodosa	Knobby Club-sedge
Lachnagrostis billardierei s.l.	Coast Blown-grass
Poa poiformis	Coast Tussock-grass
Lepidosperma gladiatum	Coast Sword-sedge
Dianella brevicaulis	Small-flower Flax-lily
Tetragonia implexicoma	Bower Spinach

Figure - Common native species

Scientific Name	Common Name
Coprosma repens	Mirror Bush
Euphorbia spp.	Petty Spurge
Gazania spp.	Gazania
Lycium ferocissimum	African Boxthorn
Sonchus oleraceus	Common Sow Thistle
Senecio elegans	Purple Groundsel

Figure - Common weed species

Appendix 3 – Design options (may include the following, provided to seek discussion on initial draft):

1. Bollards to define boundaries / entrances.

2. Bollards to separate roads from the pedestrian paths.

3. Bollards define a car park.

4. Post and rail fences can be a very visual barrier.

5. Car park and footpath (note timber wheel stops).

6. Solar lighting to assist with car parking at night and capacity.

7. If natural vegetation is not allowed to capture sand hard solutions may be required.

8. If vegetation is not protected and allowed to capture sand hard solutions may be required.

9. Resilient vegetated beaches capture natural sand drifts, protect and regenerate after storms.

10. Veranda, seating and shade.

11. Beachmaster© Sand entrapment fencing assists to protect beaches.

12. Sand gabions assist to protect beaches until established.

13. Vandal resistant seating (locally made).

14. Path with vegetated edges.

15. Step lookout points over the environment

16. Crossings must be to standard.

17. Rain gardens can improve/soften the treatment of drainage outfalls.

18. Bike path with vegetated (soft) edges.

19. Defined access to beaches reduces erosion.

20. Road with parking and dedicated bicycle lane.

21. Integrated car park furniture at collector points.

22. Car parking and low vegetation to retain views.

23. Boat parking requires a larger area.

24. Fish cleaning facility.

25. Low profile interpretive signage.

26. Low profile seating and textured pavements with curved interpretive signage on poles.

27. (fig 26) Sight poles to local landmarks.

28. Vandal resistant seat of sand colours.

29. Information plaque on seating.

30. Bicycle stands.

Appendix 4 – Legislative Frameworks and Policies

The following is an overview of the key legislation, frameworks and policies that directly affect and direct the management of the Reserve.

The Crown Land (Reserves) Act 1978

The Act provides for the reservation of Crown land for a variety of public purposes, the appointment of committees of management to manage those reserves and for leasing and licensing of reserves for purposes approved by the Minister for Environment and Climate Change.

The Aboriginal Heritage Act 2006 (State)

Provides legislative protection for all Aboriginal cultural heritage sites, places and objects, with the involvement of Aboriginal people. Under the Act, coastal areas are considered to have high cultural heritage sensitivity and where works include high impact activities; a Cultural Heritage Management plan is required to be prepared. The Act recognises Aboriginal people as the "primary guardians, keepers and knowledge holders of Aboriginal cultural heritage" and establishes the Aboriginal Heritage Council of 11 traditional owners and Registered Aboriginal Parties (RAPs).

The Environment Protection Act 1970

Provides the legal framework by which environmental objectives, regulations and goals are established throughout the State for industry, commerce and the general public. The Act reflects the precautionary principle; the protection of intergenerational equity, the polluter pays principle, and the protection of biodiversity. It puts the responsibility for sound environmental management on Victorian businesses, communities and individuals. The Act aims to achieve greater environmental performance through shifting to collaboration and co-regulation as opposed to the traditional 'command and control'.

The Flora and Fauna Guarantee Act 1988

Provides the legal framework to conserve Victoria's native plants and animals. Its broad aim is to prevent the extinction of any more plants and animals and to ensure that native flora and fauna survive, flourish and retain their potential for evolutionary development in the wild.

The Wildlife Act 1975

Establishes procedures in order to promote the protection and conservation of wildlife, the prevention of taxa of wildlife from becoming extinct, the sustainable use of and access to wildlife and to prohibit and regulate the conduct of persons engaged in activities concerning or related to wildlife. Permits to keep wildlife are issued pursuant to this Act.

The Planning and Environment Act 1987

Establishes State planning and land use processes including provisions for planning schemes for individual council areas. A planning scheme is a statutory document which sets out objectives, policies and provisions relating to the use, development, protection and conservation of land in the area to which it applies.

A planning scheme regulates the use and development of land through planning provisions to achieve those objectives and policies. Every planning scheme includes the State Planning Policy Framework. This Framework consists of general principles for land use and development in Victoria and specific policies dealing with settlement, environment, housing, economic development, infrastructure, and particular uses and development.

The Local Planning Policy Framework sets a local and regional strategic policy context for a municipality including Crown land. It comprises the Municipal Strategic Statement and specific local planning policies.

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