03 ANALYSIS

The analysis findings provide a brief overview of key site features and qualities, and highlight the factors that are most likely to shape the master plan design.

3.1 Climate Change

In accordance with the State Government direction, South Gippsland Council advocates for climate change mitigation and adaptation. Climate change will lead to a sea level rise, impacting the infrastructure, settlements and ecosystems of Walkerville in the future. Combined with an increased number of extreme weather events, erosion in Walkerville will be exacerbated.

Probable impacts over time include increased storm events, tidal surges, rising sea levels, increasing temperatures and reduced rainfall. Useful information is available at http://www.climatechange.vic.gov.au.

The Victorian Coastal Strategy (VCS), released in 2008, states that future planning should account for sea level rise of not less than 0.8 metres by 2100 [based on Intergovernmental Panel on Climate Change (IPCC) November 2007].

For existing development along the coast, there are three recognized adaptation options:

- Protect - protection of beaches, dunes and infrastructure, land use and development
- Accommodate – planning and building policies and provisions, redesign and rebuild
- Retreat – relocation of infrastructure, land use and development.

In July 2012 changes to the Victoria Planning Provisions and all planning schemes were gazetted which included the requirement to plan for an increase of 0.2 metres sea level rise over the current 1 in 100 year flood levels by 2040 for new developments that are urban infill. Greenfield sites must plan for 0.8 metres sea level rise by 2100.

Development in areas vulnerable to the impacts of climate change and sea level rise and susceptible to flooding, landslip and erosion should be avoided.

The full impact of climate change will not take effect immediately and as most coastal dependent facilities have a short asset replacement life (20-30 years) investment in coastal and foreshore facilities (e.g. jetties, boat ramps) can still take place even if they are relocated in the long term to less vulnerable sites.

3.1.1 **Key findings** (opinion based on current knowledge)

1. Walkerville foreshore is a naturally low lying narrow coastal site with infrastructure built on the primary dune system, close to the water edge. Creek lines entering the beach also make this coastal edge susceptible to tidal surges, localised flooding and sea water intrusion into freshwater areas. On that basis, Walkerville is likely to be particularly susceptible to the effects of climate change in both the short and long term and require a relatively higher level of response.
2. Existing infrastructure (roads, electrical supply assets, camping ground and leisure facilities) are likely to be directly affected by climate change effects. New design must anticipate these changes where possible.
3. In terms of the VCS adaptation options, 'protection' is likely to be a more likely strategic response option as the narrow, low lying coastal strip will not easily respond to 'accommodation' or 'retreat' based design approaches.

3.2 Coastal processes

Coastal Erosion Study and Works Design Walkerville Foreshore (2007)

The Walkerville North coastline is protected by its location in a Waratah Bay and by rock reefs. The Coastal Erosion Study and Works Design Walkerville Foreshore 2007 suggests that much of the erosion can be attributed to man-made factors, including the construction of Bayside Drive on a low dune.

The coastal system moves sand from south to north along the foreshore, resulting in increased erosion at the northern limit of rock dumping. These factors have produced a fragile foreshore system with low sand stores and replacement rates.

The study notes that much of the sea wall was constructed with haste and is not properly engineered. As a consequence the sea wall has failed over a number of areas. The report suggests that significant parts of the sea wall will need to be upgraded, as shown in Figure 7.

The report suggests that upgraded seawall protection should be based on a typical design profile as shown in Figure 8.

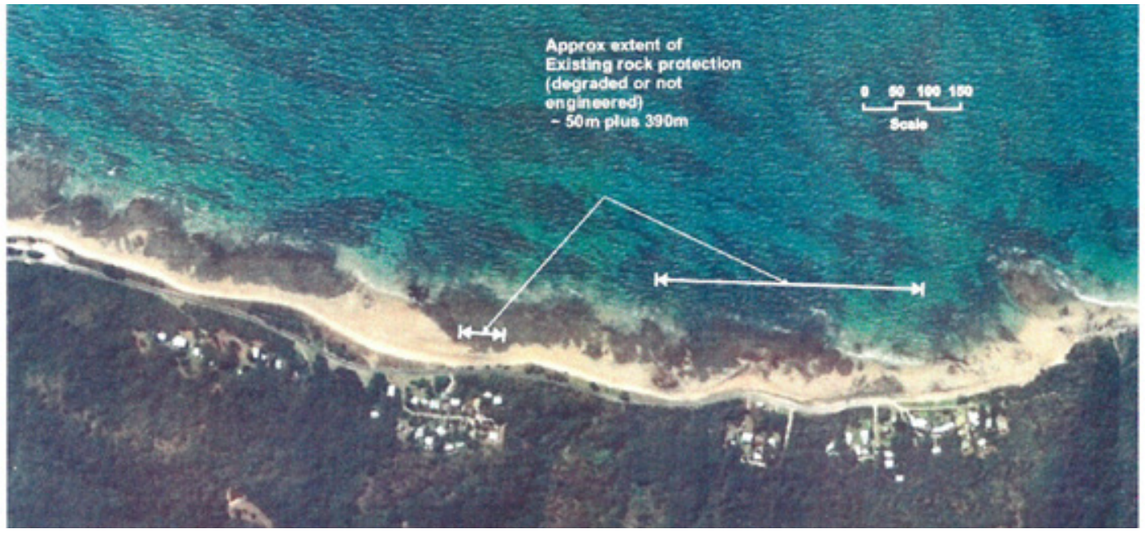


Figure 7 *Extent of seawalls requiring upgrading in 2007 (Coastal Erosion Study and Works Design Walkerville Foreshore)*

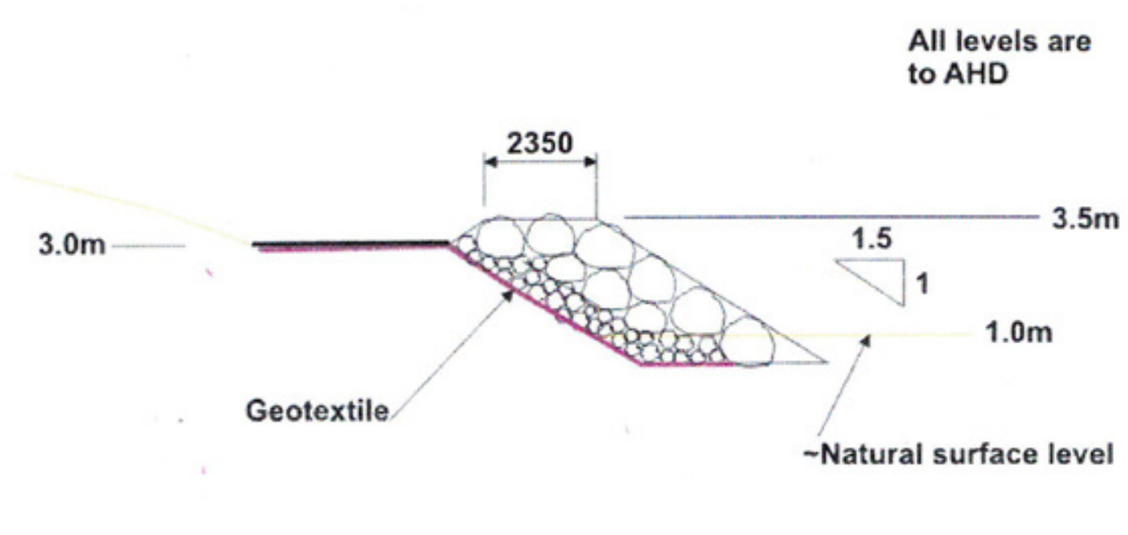


Figure 8 *Typical Sea Wall protective treatment (Coastal Erosion Study and Works Design Walkerville Foreshore 2007)*

Coastal Management Plan (2014)

The CMP suggests that in cooperation with DELWP and the SGSC, there should be planning and implementation of sensitively designed works to reduce the impact of erosion on the foreshore, particularly near the Hall and at the south end of the camping area, including upgrading of the rock 'wall' near the Hall.

Walkerville Foreshore Coastal Protection Works (2015)

Further research in Walkerville Foreshore Coastal Protection Works (2015) suggests that preventive measures need to be taken to reduce erosion and that the minimum seawall height should be raised to 4.0m ADH to prevent overtopping during small storm events.

Existing planned and completed works

A planning permit has been granted by the South Gippsland Shire Council (no. 2015/398) to undertake infrastructure improvements works at Walkerville North involving constructing a sea wall along the foreshore to assist in controlling coastal erosion. These works are currently underway. Appendix F shows they typical sea wall detail (by Water Technology) of the project at a height of 3.5m ADH.

A rock seawall in the vicinity of the camping ground has also been constructed in the last couple of years. Design work and engineering is currently being undertaken for the existing section of sea wall to bring it up to an engineered standard and reduce ongoing maintenance.

3.2.1 Key findings (opinion based on existing study findings)

1. The condition of existing dune edges and rock protection areas suggest that there is an active and ongoing process of erosion within the whole of the study area. Although the rates of erosion appear to vary across beach locations, the overall extent of erosion and the physical effects on the front dune and nearby infrastructure (road, electrical assets & vegetation) are clearly evident. On that basis, the entire study area dune edge is likely to require some form of protection in the short to medium term to avoid the risk of dune removal and damage to existing and planned assets and reduction in beach amenity.
2. 2012 changes to the Victoria Planning Provisions require authorities to plan for an increase of 0.2 metres sea level rise over the current 1 in 100 year flood levels by 2040. This estimate suggests that existing coastal erosion processes are likely to accelerate over time.
3. The typical protective treatment shown in Figure 8 does not consider pedestrian beach access needs, movement along the top of the rock formation, visual impacts or the effects of installation on existing vegetation. Each of these factors will potentially have a major impact on the amenity and natural character of the Walkerville Beach and dune edge.
4. The natural geology of the site is sandstone and mudstone (exposed on the shore platforms at North) and the current beach edge is predominately vegetated dune. The introduction of extensive hard rock (ie basalt) wall protective structures in uniform arrangements and profiles has the potential to change the appearance of the coastline and create negative perceptions of landscape character and visual quality – hallmarks of Walkerville. Design responses that allow for variations in the line and form of protective walls, that use materials that visually blend with existing site materials and retain vegetation will best fit this landscape.
5. NOTE: This Master Plan does not address the technical assessment of coastal erosion in Walkerville or detail technical methods of erosion control. The Master Plan recommendations assume that existing erosion trends will continue and that physical protection works are likely to be required.

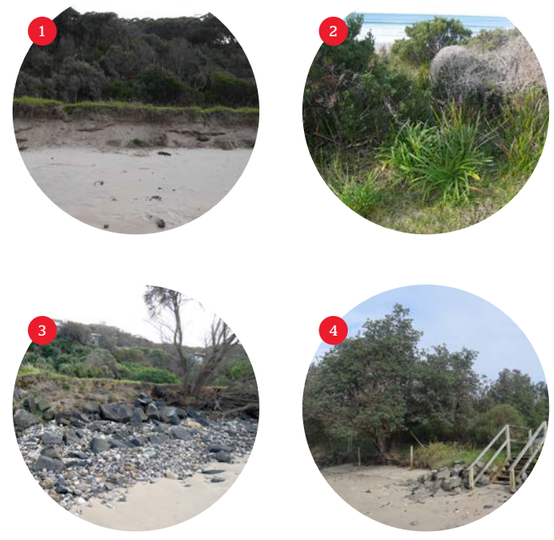


Figure 9 *Environmental analysis*

3.3 Waterways and landform

Walkerville is located along the coastal edge of a long escarpment. The landform is shaped by a network of small creeks and shallow drainage lines that drain to the coastal edge. Creeks are typically associated with steeper landforms and vegetation changes.

Roads, trails and residential development in Walkerville has generally developed on the flatter terrain between creek lines. As a result, creek lines and their associated landscapes have tended to act as natural landscape separations between development parcels. On that basis, creek landscapes are important as both environmental features and as a part of a landscape based visual management system that is a key to Walkerville's character.

Two creeks pass through the project area – McPhersons Creek, north of the Walkerville Hall and Second Creek, at the entrance to the camping ground. A third less defined drainage line is located in the Waratah Street area and shows as a series of ephemeral wetlands and low points around the Bayside Drive clearings.

Second Creek is known to produce a shallow flood over the area around the camping ground entry and visitor car park at times when the catchment is saturated, the creek is in high flow and there is a high tide, preventing creek discharge.

The Coastal Management Plan (2014) considers creeks to be important habitat with good water quality and states that the creeks and their catchments need to be preserved.

3.3.1 **Key findings** (opinion based on site analysis)

1. Small creeks, with their vegetation and dissected escarpment landforms, provide a feature within the coastal landscape and visually separates and contains development within the township. The role of creeks within the landscape must be maintained and enhanced.
2. There is an opportunity to make the creek landscapes more of a feature within the coastal edge landscape.
3. Climate change will affect sea level and weather patterns which will be seen through increased coastal erosion, higher tide levels and changes in rainfall patterns and storm events. The shallow beach outlets for McPhersons and Second Creeks are likely to experience these effects within a relatively short time frame, leading to sea water intrusion into the lower reaches of the creek with consequent ecological effects and flooding in areas such as Bayside Drive and the camping ground.

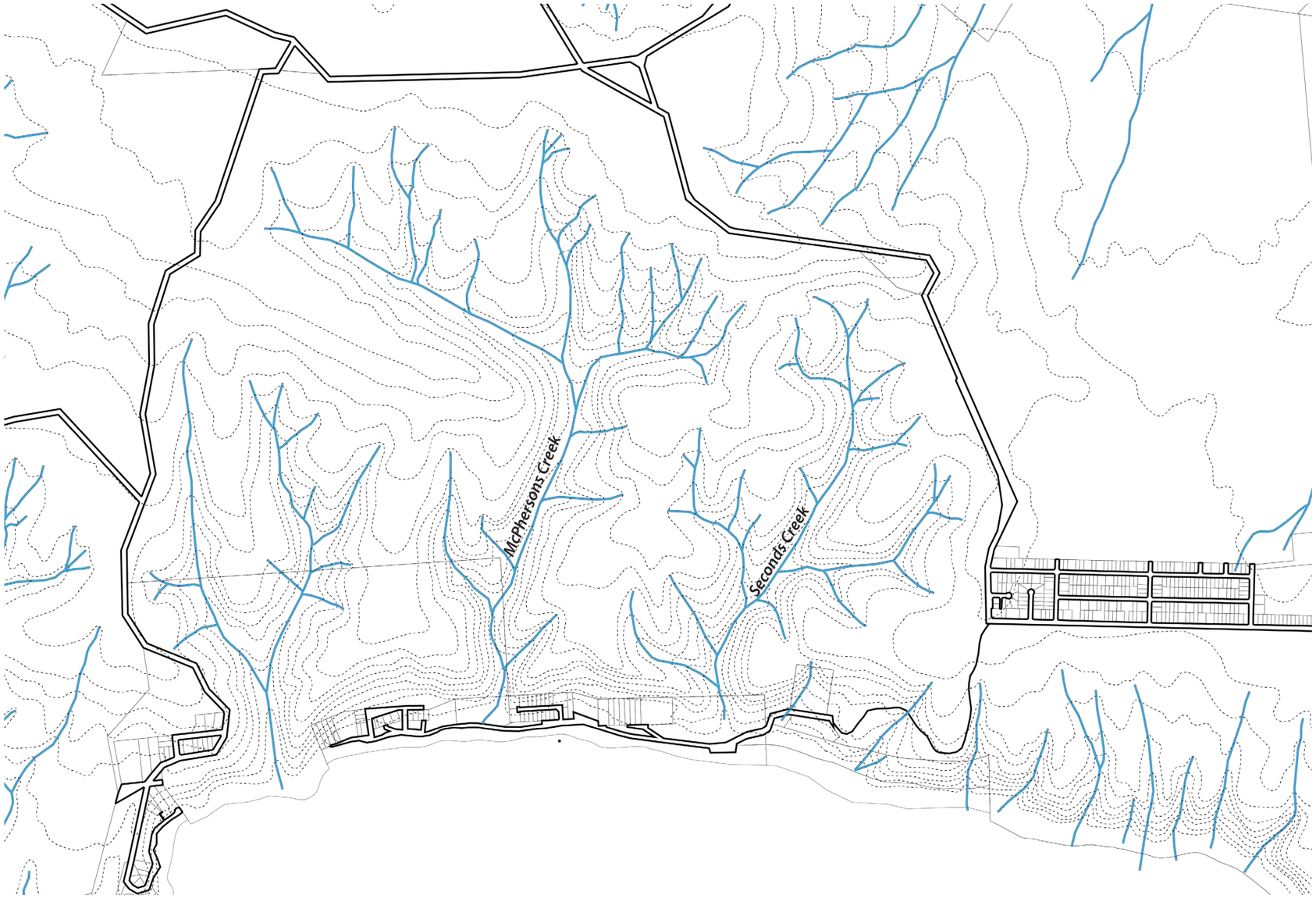


Figure 10 *Waterways and landform*

3.4 Vegetation

The *Vegetation in the Walkerville Foreshore Reserve* (Ellis, W.M., 2009) report provides an overview assessment (summarised below) of vegetation within the Walkerville Coastal Reserve (Figure 11). The area has also been subject to a recent SGSC / DELWP vegetation assessment (Appendix C) which has rated the condition of existing vegetation.

3.4.1 Vegetation type

The Reserve includes dune vegetation, coastal woodlands and damp forests with sheltered gullies with tree-ferns. Vegetation can be separated into seven Ecological Vegetation Classes (EVC).

EVC 1 Coastal Dune Scrub Mosaic includes the vegetation succession from grasses and halophytes of the foredune to the closed scrub of Coast Wattle and Coast Tea-tree on the secondary dunes behind ocean beaches of South Gippsland. This EVC occurs along the foreshore from the Caravan Park at the northern end along Bayside Road to the boat ramp at the end of the Reserve at Walkerville North. It is very narrow and has been identified as an area of great vulnerability to erosion.

EVC 2 Coast Banksia Woodland is dominated by Coast Banksia over tall shrubs of Coast Tea-tree. Scramblers such as Bower Spinach are common in the understorey with a ground cover of grasses, herbs and sedges. This is mostly at the northern end of the Caravan Park, but there are small areas of Coast Banksias along Bayside Drive interspersed with Lowland Forest.

EVC 16 Lowland Forest is dominated by Messmate and Narrow-leaf Peppermint with Hop Goodenia, Snowy Daisy-bush and Prickly Moses in the understorey. Common ground cover species include Ivy-leaf Violet, mat-rushes, Austral Bracken and grasses such as Weeping Grass and Common Tussock Grass.

EVC 29 Damp Forest is also dominated by Messmate and Narrow-leaf Peppermint, but may have Swamp Gum present in areas of poorer drainage and the understorey species include moisture dependent fern species and Rough Tree-fern sometimes forms a conspicuous component. This EVC is to be found surrounding all the streams where there is more moisture.

EVC 53 Swamp Scrub occurs along streams or on poorly drained sites. It is typically dominated by shrubs of Swamp Paperbark with an herbaceous ground cover of mat-rushes, Ivy-leaf Violet, pennywort species, Kidneyweed, Bidgee-widgee and geranium species. EVC 191 Riparian Scrub also occurs along creeks. Mostly shrubs of Scented Paperbark, Prickly Tea-tree, Hop Goodenia and Prickly Moses with a herbaceous ground cover of Common Raspwort, purple flags, Creamy Candles, and Austral Bracken. These two EVCs can be distinguished from one another by the paperbark species.

EVC 161 Coastal Headland Scrub is dominated by Drooping Sheoak with Coast Tea-tree, Prickly Moses, Dusty Miller and Common Heath in the understorey. Ground cover plants include Seaberry Saltbush and Sand-hill Sword-sedge. The vegetation on the headland facing Bird Rock is Coastal Headland Scrub.

There are no significant trees or rare species recorded within the Master Plan study area.

3.4.2 Condition

Early photographs and anecdotal evidence indicate that much of the Reserve was cleared to provide fuel for the lime kilns and subsequently burnt regularly to provide feed for stock. Regrowth over the last 30-80 years has created a mosaic of vegetation of varying quality (refer Appendix C) , however it is subject to continuing threats from weed invasion and disturbance through human activity, including parking and pedestrian movement.

The Reserve is an important buffer for the Cape Liptrap Coastal Park.

3.4.3 Fire risk

Walkerville is in a remote location with extensive stands of native vegetation in the Foreshore Reserve and adjacent to Cape Liptrap Coastal Park. Wildfire in the Reserve or adjacent public land could threaten campers, residents and private property in the area.

Few wildfires have been recorded in the area but Walkerville has been named one of Victoria's 52 bushfire hotspots by the Victorian Government (2009). The most recent large fire reportedly occurred in 1928, with the township at South narrowly escaping (Gair, pers. comm.).

Land managed by the Committee forms a narrow coastal strip with generally moderate fuel loads and limited opportunity for fuel reduction burning (with the exception of an area inland from the camping area). The CFA and DELWP have primary responsibility for fire suppression on private and Crown land respectively. Fire prevention is the responsibility of the Committee.

The Coastal Management Plan (2014) indicates that fire poses a potential threat. The accumulation of fuel combined with higher average temperatures and drought over the last decade has increased the risk of fire.

Fuel reduction and ecological burns in the heathland above Walkerville would be unlikely to stop a fire if conditions similar to those of Black Saturday 2009 occurred again. The vegetation would recover, as it has done in the past, however fire promotes the regeneration of Coast Tea-tree Leptospermum laevigatum which can become very invasive at the expense of other native vegetation.

3.4.4 Key findings

1. Vegetation within the study area is a mosaic of EVC types that is linked to soil type and drainage. Any future revegetation or management works must reflect natural vegetation patterns and connections through the site.
2. Much of the coastal edge vegetation has been degraded by past development, weed intrusion and management practices (or lack of management). Areas away from development and pedestrian activity have relatively higher values.
3. Regrowth of Coastal Tea-Tree and other species provides a vegetated landscape, but with a reduced variety and site specific character. As a result, much of the visual structure, scale and character of the natural landscape has diminished. Features such as creeks supporting specialist EVC types have also been reduced in quality and are less obvious in the landscape. There is an opportunity to re-establish natural EVC patterns within the coastal landscape.
4. Fire management and community safety is likely to be an ongoing concern in this landscape setting.

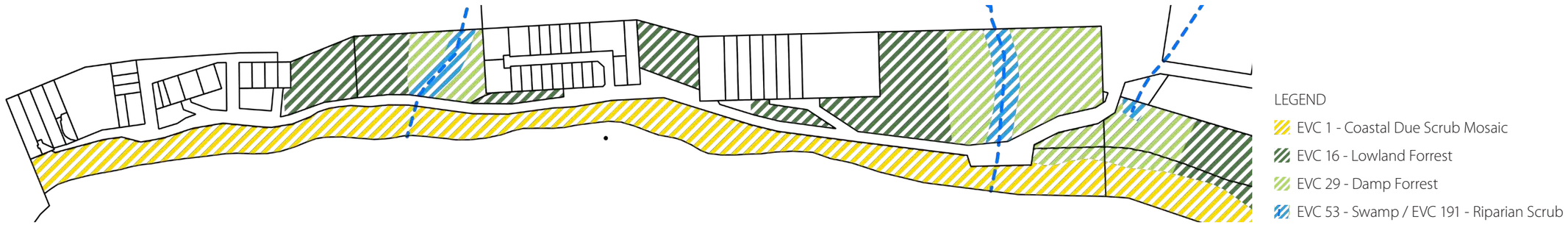


Figure 11 *2009 EVC Mapping (Vegetation in the Walkerville Foreshore Reserve)*

3.5 Landscape character & visual quality

3.5.1 Designated landscape values

The Walkerville to Cape Liptrap area has very high scenic values with sandy beaches, rocky reefs and headlands, forested gullies and a backdrop of wooded hills. These landscape values were documented by Scenic Spectrums (1990) and confirmed in the recent Coastal Spaces study of the Victorian coast, where they were categorized as of State significance (Planisphere/DSE 2006).

Significance criteria are listed as:

- Visually significant for spectacular geological complexes with ancient Cambrian rocks, limestone cliffs and landforms such as Cape Liptrap and Arch Rock.
- Characterised by a remote and natural landscape with few settlements and long sandy beaches, including intact heathland coastal forest communities.
- Valued by the community for the historic lime kilns at Walkerville South, off shore shipwrecks and its Aboriginal heritage significance.

3.5.2 Landscape character and visual quality

The foreshore reserve is defined by the nature of its landscape and related views.

- The overall setting is defined by a narrow coastal landform backed by a wooded escarpment with clear changes in vegetation type, matching changes in topography, soil type and drainage. The surrounding ridgelines are free of development and Walkerville as a settlement appears to be visually contained within its landscape setting.
- Small creeks, with their vegetation and dissected escarpment landforms, provide a feature within the coastal landscape and visually separates and contains development within the township. The role of creeks within the landscape must be maintained and enhanced.
- There are vegetated edges to the relatively narrow Bayside Drive and road edges are gravel. This provides an informal rural appearance and allows close contact between cars and vegetation – a sense of landscape enclosure.
- Vegetation typically provides a visual backdrop and a separation between residential properties. There are few built form skyline silhouettes.
- Development intrusions in the landscape are generally low in height, relatively small scale, and appear to be contained within the broader landscape. This is considered by residents and visitors to be a 'landscape dominant' setting and there is a high level of awareness of this feature and sensitivity to change.
- Car based viewing patterns are typically based around an elevated arrival point and expansive views in both north and south Walkerville, and then framed 'glimpse views' of the water and relatively short road based views in Bayside Drive caused by the meandering road alignment and enclosing vegetation in most of the study area. More expansive views are available in the south (Hall location) and the north (camping ground).
- There is a high level of north-south pedestrian movement along the beach and road corridor, depending on the tide. While recreational activity is typically focussed on the beach and vehicle based parking locations, the corridor is used for movement and this provides an alternative and more diverse way of viewing the study area. Visual variety and surprise are key qualities within this landscape.
- Small, ground level features such as the landscapes around creek outlets or rock patterns and remnant older Banksia are a part of the visual character of the place. The landscape must retain a sense of visual intimacy and personal scale for visitors as well as the larger landscape framework elements.
- Existing electrical supply infrastructure – poles and overhead wires – are intrusive elements that have no place on the foreshore and should be removed as soon as possible.

3.5.3 Key findings

1. Landscape character and visual quality are defining qualities for Walkerville as a place. This is considered by residents and visitors to be a 'landscape dominant' setting and there is a high level of sensitivity to the existing landscape character and visual quality of the place and to factors that could change that visual character.
2. Maintaining a small scale of development and a vegetation based separation between development parcels is critical to maintaining the quality of 'landscape dominance' that is valued by the community.
3. The informality of roads and public infrastructure design is considered to be a part of the character and charm of the place. Design standards must consider a 'level' of design and materiality that is consistent with the low key / rural nature of the place.
4. This setting is not only valued for expansive sea views. Enclosed views of vegetation and glimpse views are a part of the pattern of viewing and equally important to the perception of place.
5. Creeks and small landscape features such as rock patterns are important. The landscape must retain a sense of visual intimacy and personal scale for visitors as well as the larger landscape framework elements.
6. Landscape materials and colours that are unique to this place are important features.

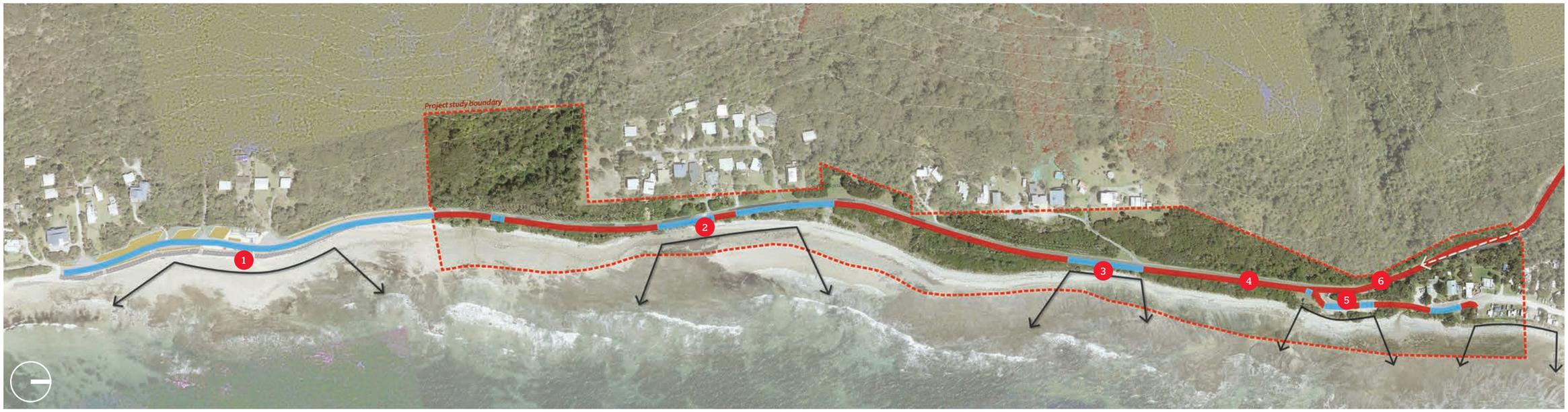
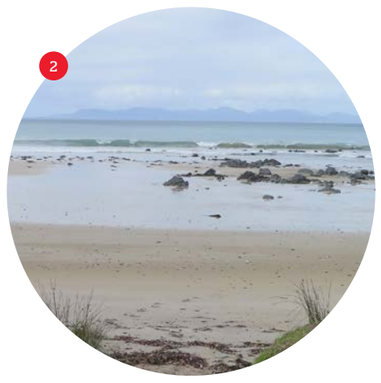
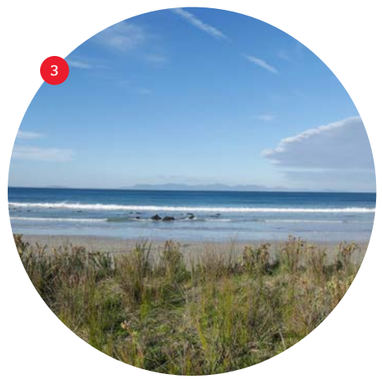
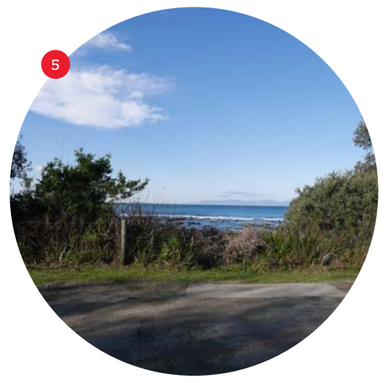


Figure 12 *Pattern of viewing*







3.6 Vehicle access and parking

3.6.1 Vehicle access

Walkerville North is only accessible from the Walkerville Rd, with traffic distributed via Bayside Drive (residential, beach and boat ramp areas) and Loop Road (camping ground and beach).

The Walkerville settlement is developed around a series of dead end streets that branch off Bayside Drive, a Council managed road with a carriageway of around 6m width (60km/hour speed limit).

The South Gippsland Shire Council has performed a number of traffic investigations, as shown in Figure 13. Approximately five times the number of vehicles pass through Walkerville North in peak season (Christmas and Easter) than in low season.

The higher proportion of vehicles passing through Site A is most likely due to campers turning at Loop Rd and not passing Site B. There is a heavy statistical bias toward peak season weekend visitation by campers. The consistent numbers at Site B in both high and low seasons indicates use by property owners and regular boating users.

The study shows the extreme seasonality of Walkerville North and the range of pressures that are placed on parking and leisure facilities at peak times. The challenge is to provide sufficient facilities or traffic management measures for the peak use times, without swamping the low season community with unnecessary facilities.

At Site B in peak season (23.12.2015 – 05.01.2016), 7,181 vehicles speeds were recorded. Of these, 90.5% were travelling under the speed limit of 60 km/h and 98.9% of vehicles were travelling less than 70km/h. The highest speed recorded was 86.4km/h.

At Site B in peak season (23.03.2016 – 06.04.2016), 7.526 vehicle speeds were recorded. Of these, 84.6% were travelling under the speed limit of 60 km/h and 98.1% of vehicles were travelling less than 70km/h. The highest speed recorded was 93.5km/h.

South Gippsland Shire Council suggest the potential use of round-abouts, road narrowing and speed bumps to reduce the speed of vehicles. These techniques have been utilised in the design of the Walkerville Hall precinct concept design described in Figure 2.

3.6.2 Parking

Parking is a high season problem throughout Walkerville as a result of the following:

- Designated parking areas are limited to the Loop Road arrival point, the camping ground visitor car park and the Walkerville Hall / boat ramp precinct. This distribution of parking relates to the primary activity destination points.
- An informal grassed parking / picnic area is located in a clearing at Waratah Street. This location corresponds to a wider, flat landform and a beach location that has less rock.
- The capacity of these parking locations is very low in capacity to the high season visitor population and the informal layout of the parking spaces increases inefficiency and decreases capacity. Larger recreational vehicles and vehicles with boat trailers potentially create further inefficiencies and safety problems through backing manoeuvres in pedestrian areas.
- The camping ground fills in peak season and this also produces excess visitor car numbers. These vehicles typically fill the Loop Road arrival point carpark which reduces the parking for day visitors.
- Full car parks typically lead to casual parking on road verges which leads to more limited road space and both vehicle and pedestrian safety issues, including poor sight lines, road crossing visibility and unpredictable parking or turning manoeuvres, including vehicles doing three point turns in side roads and driveways due to the lack of designated turning opportunities.

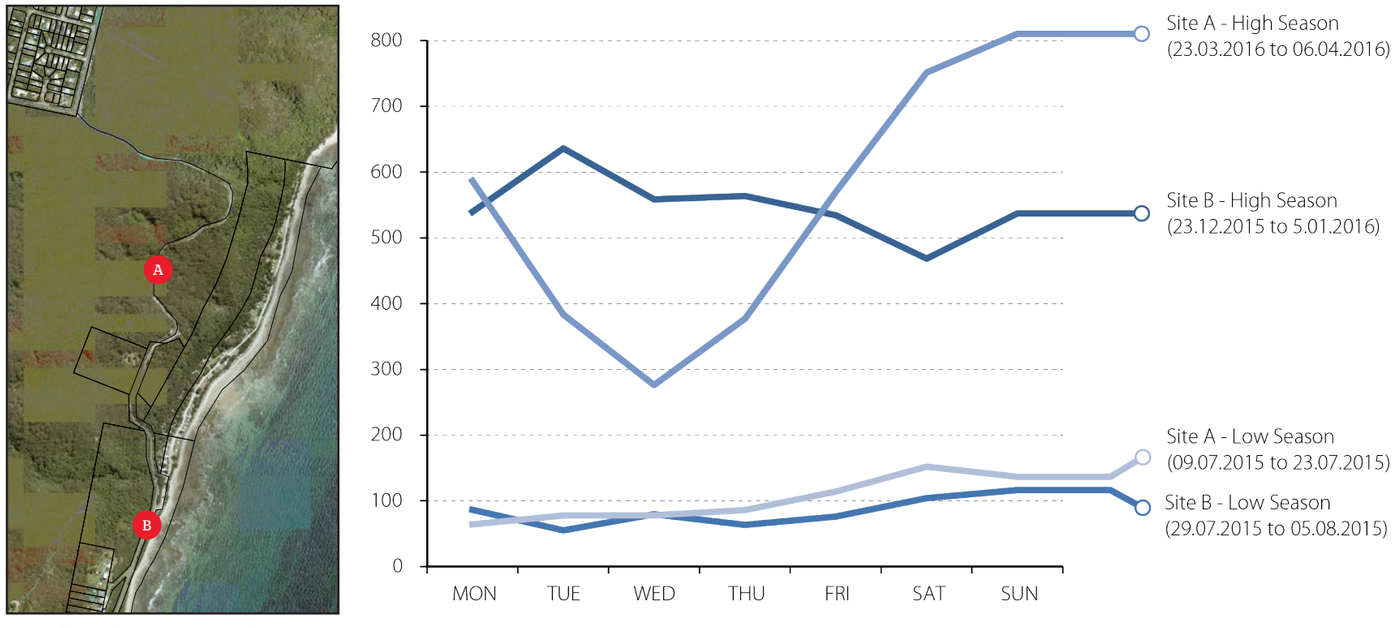


Figure 13 *High v. low season vehicle counts*

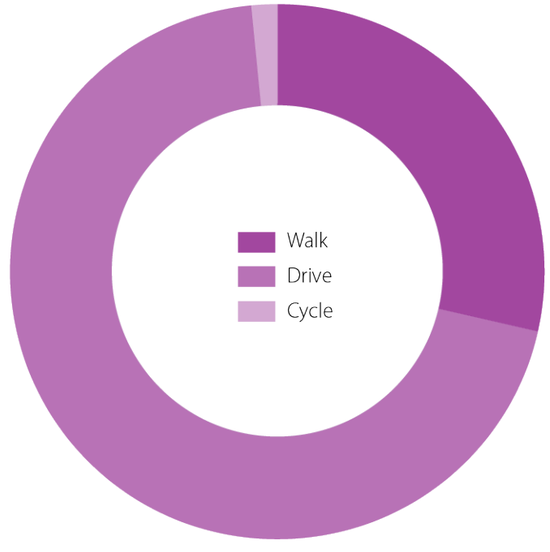


Figure 14 *Community transportation to Walkerville statistics (Walkerville Reserve Master Plan Online Survey)*

- There appears to be no active management of parking through signage or regulation and limited way-finding signage which leads to high levels of casual verge parking in some locations and also a pattern of visitors unfamiliar with the place driving through the site and returning, looking for parking. This generates undesirable traffic and turning movements.
- While the community acknowledge the nature of peak season parking problems, they are highly sensitive to design changes that are out of scale and character with the nature of Walkerville as it is.
- Anecdotal evidence (resident and WFRCoM member comment) suggest that much of the day visitation and related car activity is from the surrounding region rather than Melbourne.
- There is no formal disabled parking or disability compliant connections between parking and toilet facilities or the beach.

3.6.3 Key findings

1. Walkerville sits at the interface between an escarpment and narrow coastal dune system. The amount of flat land is severely limited and there will always be insufficient parking areas at peak times, particularly at key leisure destinations at either end of the foreshore reserve. Ultimately, parking availability is likely to limit overall seasonal visitor numbers.
2. Current parking locations are linked to the highest use leisure destinations (camping ground / arrival point and Hall / boat launch area). This results in excessive parking demand in those places and underutilisation of other foreshore places. Creating additional parking capacity in less popular locations and development of a north-south walking trail system may help to spread parking across a wider area.
3. Current parking numbers, based on ad-hoc parking arrangements, are likely to create a false idea of actual parking capacity based on safe parking & pedestrian access standards.
4. Implementing code compliant parking arrangements and limiting illegal and informal parking on road verges through design and management will improve safety but reduce peak season parking availability. This may require additional formal car parks just to offset the loss of informal parking spaces.
5. Parking capacity is likely to limit peak season visitor numbers within Walkerville unless a remote parking / seasonal transport option can be developed, which appears unlikely (financially) given the relatively low visitor numbers and fluctuations in weekly numbers.
6. In peak season, overflow parking from camping ground visitors and boat related parking is likely to occupy much, if not all, of the day parking capacity. It may be appropriate to implement parking controls to ensure a percentage of day visitor parking within key destinations.
7. The current design scheme for the Hall / boat launch area proposes designated turning areas immediately north of the Hall and the boat ramp. Further turning opportunities should be provided at the northern end of Bayside Drive.
8. Where possible, parking areas should eliminate or minimise the backing of over dimensioned vehicles or vehicles with trailers.
9. A north-south trail linking key leisure and parking locations would help to promote the use of more remote parking facilities.
10. There is a need for better way-finding signage within Walkerville that provides an understanding of destinations, parking and walking options to minimise unnecessary vehicle movements.

Figure 15 *Parking locations plan*

3.7 Pedestrian and bicycle movement

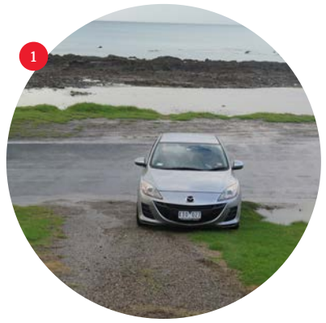
Walkerville is spread along a beach with varying patterns of rock and sand. Locations with larger sand areas and easy water access generate more leisure activities (swimming and boat launching) and therefore more parking demand and pedestrian movement.

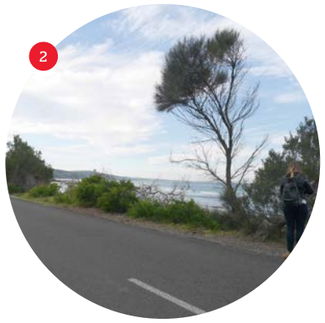
- Walkerville as a residential settlement generates a low level of year round pedestrian and bicycle activity related to beach walking and dog walking, along with recreational bicycle use.
- The camping ground produces localised pedestrian activity related to beach access as well as walking to the popular boat ramp beach area and the Walkerville South beach (preferred swimming destination). There is visual evidence of a significant amount of pedestrian traffic moving north-south along the eastern (beachside) edge of Bayside Drive which is partly due to the beach being fully covered at high tide. Pedestrian movement on the road shoulder is dangerous in this setting as pedestrians are often walking with the traffic with no effective separation from the carriageway, and the road alignment with its edge vegetation does not always allow adequate sight lines.
- Some road crossing occurs at Waratah Street and at the Hall / toilet block area south of the study area, along with a low level of movement across Bayside Drive from residential areas.
- There is both informal beach access via sand tracks and formal beach access from parking areas. Formal beach access consists of either concrete or timber stairs. Erosion occurs around the base of concrete steps, creating hazards and a poor appearance. Timber stairs allow sand to move freely and generally provide a more flexible access option.
- There are no disabled access facilities in Walkerville, including connections between parking areas and the beach or toilet facilities.
- Walkerville is surrounded by a number of walking tracks through State Park – none directly connect to the project area. The tracks are generally limited by the steep topography of the landscape and waterways, as seen in Figures 16 & 17. The most utilised walking tracks are those to South Walkerville and Promontory Views Estate.

3.7.1 Key findings

1. The location of swimming and beach activity areas is a key driver of parking and pedestrian movement. Walkerville South is a major attractor location and this results in continuous north-south pedestrian movement at peak season.
2. The beach is covered at high tide which results in the Bayside Drive edge being used as the major north-south pedestrian link.
3. North-south pedestrian movement is important to both recreational use and parking efficiency. The narrow landscape reserve behind the beach will not easily accommodate a pedestrian / bicycle trail without significant vegetation removal or changes to the road cross section.
4. Beach access points must be developed to provide better separation from parked vehicles, more integrated viewing / rest / access infrastructure and better ongoing maintenance.
5. Disabled access is not provided for in Walkerville which does not meet contemporary design standard for public places.

Figure 16 *Access and movement analysis*





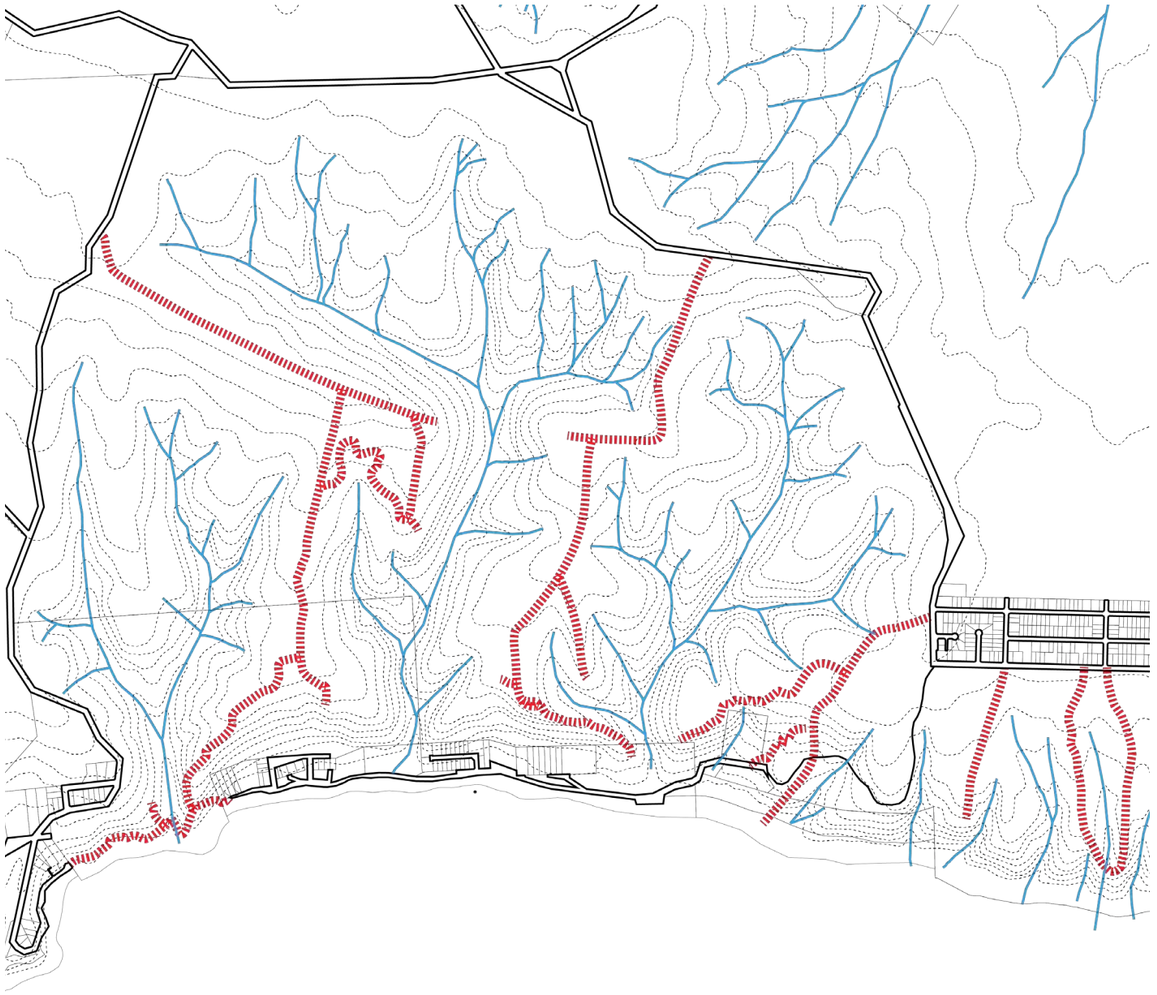


Figure 17 *Existing trails network - wider context plan*

3.8 Camping ground entry & kiosk

The intersection of Walkerville Road, Bayside Drive and Loop Road is a key location within Walkerville. It functions as an arrival point for all visitors arriving by road, it provides the first views of the coastal edge, it functions as a carpark, a beach access and picnic location, and as the entrance to the Walkerville camp ground and kiosk. The location functions as a key visitor hub that serves the residential community, campers and day visitors in peak season.

The role of this setting, its functions and design are key concerns for the study area. The following text highlights issues derived from site analysis, discussion and feedback with the camp ground and kiosk managers.

3.8.1 Arrival point

Key issues:

- The road arrival point is the first point of contact with Walkerville township, the first opportunity for visitors to stop / park and the entrance to the camping ground. The existing site has poor signage and visual cues to tell people what their options are. Typically this leads to people slowing on the main road (there is no turning slip lane) and then stopping in the middle of the parking area to decide where they are going. There is a need for a clearer system of pre arrival signage that allows visitors to make destination decisions before arriving at the intersection. Although overall traffic volumes are low, a turning slip lane is likely to make the location safer for turning and through traffic.
- There is only a fragmented view of the water from the arrival point which creates a disappointing arrival experience, given the earlier viewing opportunities from the road.
- The parking space is a cleared area without a structured layout, line marking or definition of the camping ground entry road. This leads to informal parking in different arrangements that can dramatically reduce capacity. Parking can also block or visually obscure the beach access point. Generally, this setting does not function effectively as the multi-purpose services and recreation 'hub' that it is.
- The picnic facility provides a basic picnic and BBQ facility in a location without beach views and subject to the effects of passing traffic and parked cars. Visitors to this place are likely to want picnic areas that either have a bushland setting (eg. an enclosed creek side setting) or a beach setting with coastal views.
- Overhead power lines are visually intrusive in this location
- Toilets are available in the camping ground but these facilities are some distance away and not visible from the arrival point and picnic area.

3.8.2 Camping ground entry

The entry road and control gate setting provides coded access for campers vehicles, monitoring by the management office, delivery truck access for the kiosk and pedestrian access to the office and surroundings. The area immediately outside the control gate also provides visitor parking and maintenance vehicle access and storage.

Key issues:

- The entry road varies in width along its alignment and there is no clear definition of what is road and what is parking space. In a setting where visitors are often unsure of where to go or whether they can get a camping spot, this leads to informal short parking and turning movements.
- At peak times, the camping ground visitor carpark (capacity 8) is permanently full with excess camp ground patrons cars. At those times, additional camp ground and visitor cars park along the camping ground entrance road which varies in width to a 3.5m single lane width at the creek crossing. This casual parking further reduces road width and creates a safety hazard for pedestrians and vehicles using the road.
- The visitor parking area has a small capacity in relation to the overall size of the camping ground. The carpark is one sided and a dead end. Over dimensioned vehicles or trailers compromise the use of the car park.
- The coded entry gate is positioned opposite the management office (direct sight line) north of the creek crossing. When visitors are stopped at the gate they are unable to turn around unless they proceed through the gates or back down the road to the visitor carpark or maintenance entries. This creates situations where visitors making an enquiry block others returning to their camp site.

Formal design standards

Caravan parks and camping grounds are subject to general road design and traffic standards and related approval processes. The only specific design guide available for caravan parks appears to be Victorian Caravan Parks Road Design Guiding Principles, Chia, S., ARRB, (2014). This guideline also contains a checklist tool for caravan park design which is applicable to the Walkerville facility.

The guideline findings suggest a range of factors that are relevant to the Walkerville Camping Ground situation. Some of the major finding suggest:

- Caravan parks and camping grounds are places where people have a more casual and unstructured approach to movement and with less attention on safety. This is particularly the case with children.
- Children are most commonly the victims of camping ground accidents. Intersections, areas where parked cars and pedestrians mix and locations such as kiosks and play

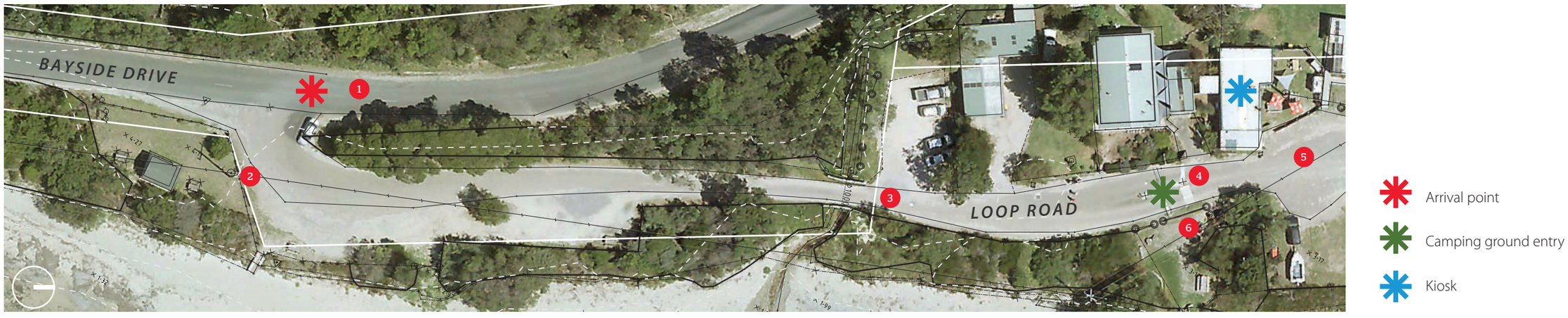


Figure 18 *Walkervilee arrival point, camping ground entry and Kiosk*

areas are places where children are particularly vulnerable because of their unexpected movement patterns and inattention.

- Places where vegetation blocks forward views and where vehicles and pedestrians mix, such as the office, kiosk and entry road are higher risk places.
- Areas of restricted edge visibility because of structures are higher risk places.

The current design of the camping ground arrival, entry road, control point, parking and kiosk arrangements suggest that this is an environment with significant functional and pedestrian safety concerns.

3.8.3 Kiosk

WFRCoM leases out a kiosk within the camping ground to a tenant, which is run as a separate commercial business. The building is located on Crown Land and is for use only by the leasee of the kiosk.

Key issues:

- The kiosk service only operates in peak season. It is the only retail business in Walkerville and services seasonal residents, campers and day visitors.
- The location of the kiosk is most suited to campers, who are the main source of business, but less visible to day visitors who may be unaware of its presence inside the control gate. Temporary roadside signage is used to advertise the business.
- The location of the control gate requires kiosk delivery trucks to enter through the control gate, to load from the roadway and do a three point turn within the site in order to leave. This creates congestion at the entry point and is unsafe for pedestrians, including children who are drawn to the kiosk location.
- The building was built in 1962 and has recently undergone some minor, mainly internal works to bring the building up to current health and safety and food handling standards but anecdotal comment suggests that the building and internal fittings do not meet contemporary standards and that the entire structure needs replacement.
- The facility is hot in summer and is seen as a takeaway venue only, not a 'destination' for extended activities. Outdoor tables are basic and there is no effective shade or wind protection.
- The outdoor setting includes storage areas, fridges etc that are unsightly.

Future directions

The leasee has expressed a desire to change the location and nature of the kiosk business to achieve at least some of the following:

- Move the kiosk to a more visible location outside the camp ground control gate and within sight of Bayside Drive.
- Develop the business as a dining destination with larger internal and external use areas.
- Develop a more complex retail business, potentially selling fuel and other products.

Comments from the community and members of the WFRCoM suggest that the kiosk should be upgraded and potentially relocated to a more serviceable location, but the role of the kiosk should remain essentially small scale and consistent with the 'low key' development approach proposed for the Walkerville foreshore as a whole.

3.8.4 Key findings

1. The location effectively functions as a major visitor hub that acts as an arrival point, leisure destination, parking area, camping ground entry and visitor facility location. The Walkerville Hall and boat launch area and the Walkerville South location function as the other major visitor hubs.
2. The arrival point is a visually confusing and unstructured space that is contested by a range of users. Its design and small size leads to inefficient parking and safety concerns related to the mixing of pedestrians, cyclists and vehicles.
3. The camping ground entry has limited visitor parking and a vehicle control point that does not allow turns. The entry is likely to require reconfigured parking and a change to the location of the entry gate.
4. There is a need to separate pedestrians and cars as much as possible within the entry zone. The current design does not appear to meet safety requirements.
5. The kiosk requires a major upgrade and potentially a different location given the existing problems with truck deliveries, outdoor use and pedestrian safety. There appears to be little community acceptance of the idea of relocating the kiosk to a roadside location with new and significantly expanded commercial uses.
6. Beach viewing and access requires improvement.
7. As a visitor hub, this location must be connected to other places along the foreshore to distribute visitor activity to a wider range of locations.

3.9 Visitor experience

3.9.1 Visitor experience

Visitors are drawn to Walkerville by its unique landscape character and visual quality, by its intimate scale and by its simple uncluttered style which often reminds people of earlier times. This is seen as a place of escape, rather than a place of activities and events, although unique geological and cultural heritage features and boating draws visitors to the site.

The narrow coastal edge and single road entry emphasise the intimate scale of the place and the dominance of the landscape over development, but equally, the site is physically confined and large numbers of cars and people at peak season are not easily absorbed into the landscape.

Maintaining the quality of the visitor experience while improving the quality of existing infrastructure requires a site specific approach based on the following:

- A 'visual management' approach to site planning, where facilities are designed for minimal visual impact on the setting.
- Spreading visitors out across a range of smaller leisure settings, rather than concentrating activities into one or two locations. This is likely to involve the development of higher order 'hub' locations with more support facilities and parking, and secondary recreation settings that provide simple beach access, shade and picnicking. This approach spreads the impact of visitors across a larger area and maintains the small scale of recreation settings.
- Creating pathway links between leisure settings so that visitors walk between venues rather than drive and re-park. This limits traffic impacts and creates a separate visitor experience based on the journey between places as well as the destination.
- Maximising information systems so that visitors maximise walking and minimise car based travel within the site.
- Adopting simple design styles for infrastructure that represent the low key style of Walkerville as a place.
- Ongoing management is a key consideration. Places and facilities that are clean and well maintained demonstrate the values of the communities in which they exist and are less likely to be subject to vandalism or misuse.

3.9.2 Facilities

Facilities in North Walkerville include a toilet block, picnic tables, benches, BBQs and shelters, however they are limited in number and unevenly distributed across the reserve. These facilities are currently well utilised and likely to be over-run in peak season.

- The Hall location has toilets, a basic shelter and picnic table
- The Waratah Street clearing contains two picnic tables and a seat
- The Loop Road arrival area contains a shelter / BBQ and two picnic tables, along with a non-potable water supply. Toilets within the camping ground are at a distance and not visible to non-camping ground users.

Public Toilets

The toilet at the Hall is a basic public facility with the following limitations:

- Minimal design standards with poor natural lighting and cleanable surfaces
- No shelter for those waiting to use the facility
- Low capacity in peak times
- No disabled access or specialist / unisex disabled facilities and no disability compliant access paths or parking areas adjacent to the facility
- No baby change facilities
- No internal or external showers or change areas to facilitate beach and boating activities
- No drinking water supply
- No rubbish or sharps container
- No signage directing visitors to alternative facilities such as the camp ground

Future needs:

Facilities that meet contemporary design standards in visitor hub locations – Walkerville Hall, Waratah Street and Loop Road arrival area.

Note: Walkerville South is not included in this study area, but is likely to function as a visitor hub.

Rubbish

The foreshore has a no bins policy, which is reported to be generally successful. Consultation comments suggest a wish for bins within the reserve at key locations. Rubbish deposits (bagged visitor rubbish) within the existing toilet facilty suggest that there is a need for at least one rubbish collection point within Walkerville (outside the camping ground).

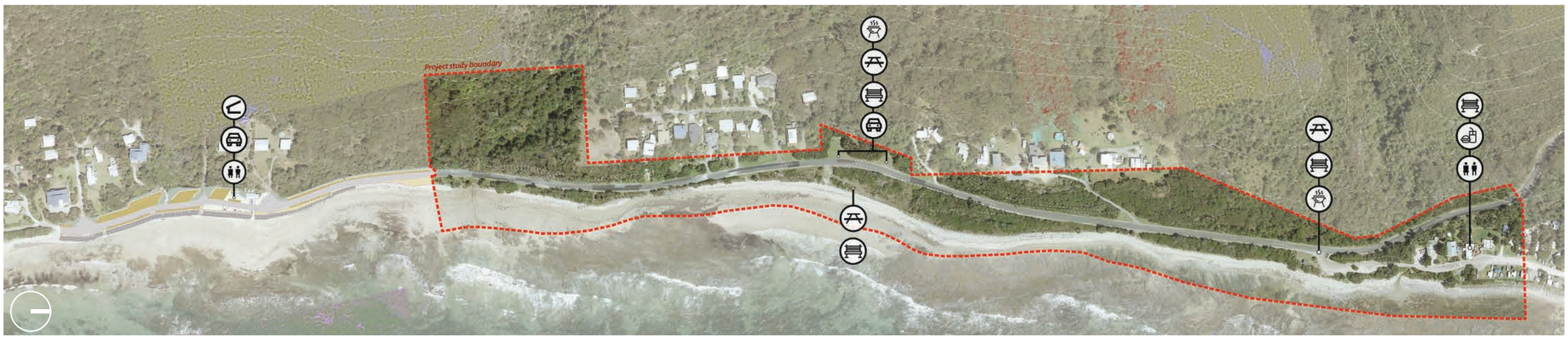


Figure 19 *Experience analysis*

Future needs:

Bins should meet the following criteria:

- Located in hub locations only
- Provision of waste and recycling options
- Covered top to prevent animal / bird intrusion
- Daily removal in peak times to match the camping ground maintenance schedule

Shelter

Weather protection is a desirable feature in a coastal location with rapidly changing weather patterns. Picnic shelters provide limited shelter to those directly involved in those activities, but do not service the wider range of activities that are a part of the Walkerville foreshore.

Future needs:

- A mixture of picnic shelter and small scale weather shelters and shade structures across a range of settings, including walking trails.

Picnic & BBQ

Picnic and BBQ facilities are in key settings. While these are used by some visitors, they do not cater to the larger number of visitors using the site at peak times.

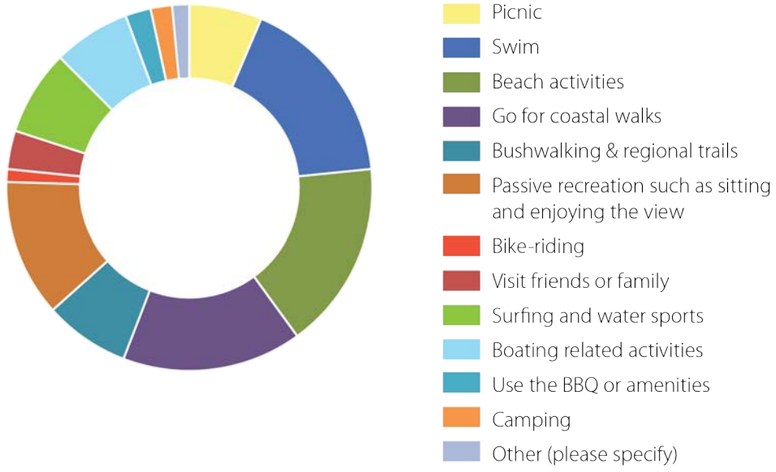


Figure 20 *Activity popularity (Walkerville North Foreshore Reserve Master Plan Online Survey)*

Future needs:

- Formal picnic and BBQ facilities at two hub settings.
- Multi-use seating / picnic units (eg 1m x 1m seats) at a wider range of settings.

Way-finding and interpretations signage

Way-finding is a problem in North Walkerville in terms of content, location and presentation. It is common to see a number of signs mounted separately which adds visual clutter to the landscape.

Future needs:

- A revised way-finding signage system for both road and pedestrian systems. This system should address direction and key locations.
- An interpretations signage system dealing with cultural heritage, ecology, geology and coastal processes.

3.9.3 Key findings

- The quality of visitor experience is a key driver of design.
- A hierarchical and network based structure of foreshore destinations is most likely to maintain the values for which Walkerville is known.

3.10 Utility services

3.10.1 Overhead electrical services

Walkerville North is serviced by overhead power lines provided by AusNet Services. A main line of high and low voltage poles run alongside Bayside Drive with low voltage distribution lines connecting to individual properties.

The power pole and overhead line system is visually intrusive and is at odds with the natural values of the foreshore and the fire risk associated with the location.

Figure 21 illustrates the power line arrangement. The power poles along Bayside Drive are maintained under a 3-5 year test cycle. AusNet Services have advised that there are no plans to underground the power lines in the near future and that high voltage poles located on the beach are currently safe, with some protected by rocks. If erosion damage occurs, it would be dealt with on a pole by pole basis by moving the pole to safer ground.

At a minimum, the cost to underground the high voltage power lines from the camping ground to the end of Bayside Drive would be 1 million dollars or more. This cost does not include a number of services integral to the undergrounding of the power lines.

It will be proportionally more expensive to underground small segments of power lines due to overhead costs, but a staged process of undergrounding is likely to be the only way that the works can be achieved.

3.10.2 Water supply

Water to Walkerville is supplied to the Camping Ground.

3.10.3 Sewer

Sewage treatment is currently based on septic systems which are considered to meet existing requirements. There are no plans to change the current approach.

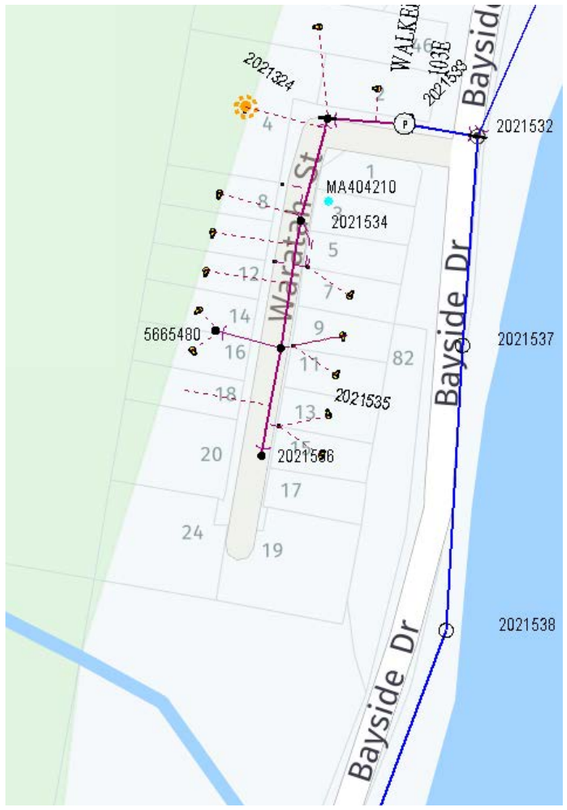
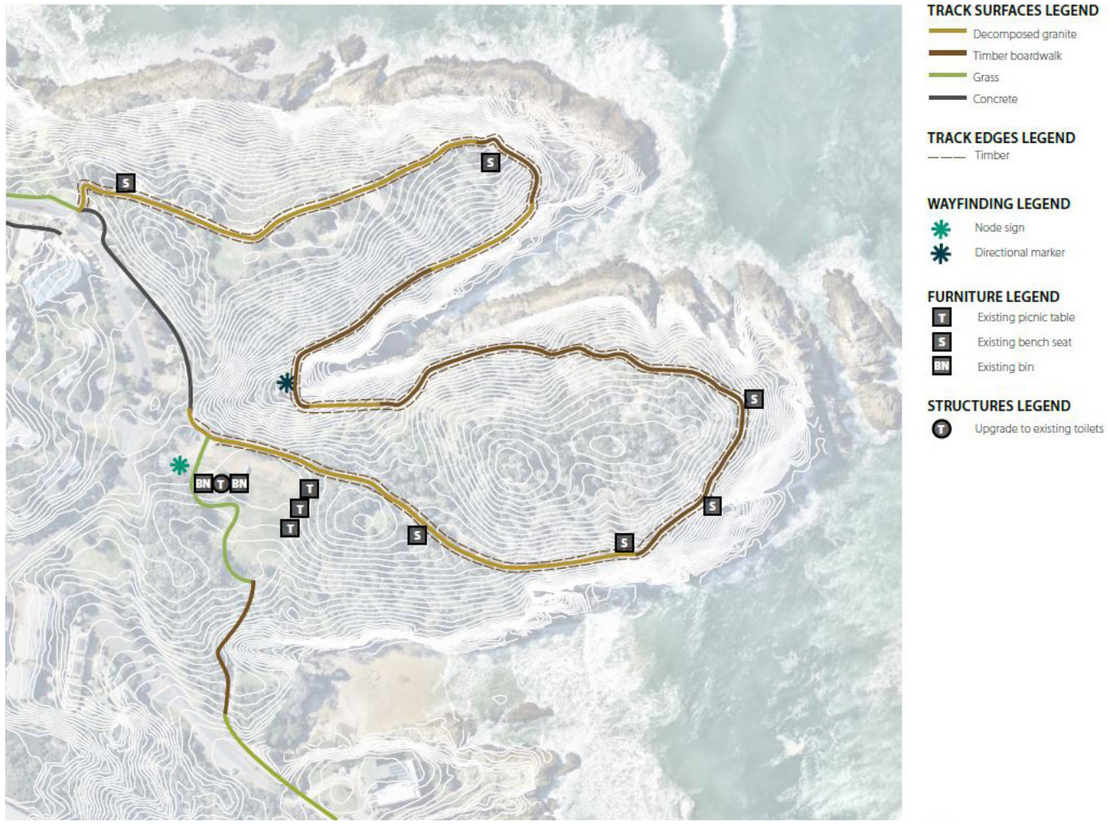


Figure 21 *High voltage (blue) and low voltage (red) powerlines in the Walkerville North area. Image supplied by AusNet Services*

04 BENCHMARKING

The purpose of this section is to provide a range of interesting design examples that have been developed for other sites with comparable qualities or objectives to the Walkerville study area.

These dsign examples are not intended to be copied for the Walkerville North Master Plan, but they may inform thinking on the project as it moves forward into master planning design phase.



TRACK SURFACES LEGEND
- Decomposed granite
- Timber boardwalk
- Grass
- Concrete

TRACK EDGES LEGEND
- Timber

WAYFINDING LEGEND
- Node sign
- Directional marker

FURNITURE LEGEND
- T Existing picnic table
- S Existing bench seat
- BN Existing bin

STRUCTURES LEGEND
- T Upgrade to existing toilets

Point Lookout Costal Walk Concept Plan, QLD (2016)
by Tract Consultants

The Point Lookout Coastal Walks Project provides a site planning and design concept for a safe and continuous journey between Cylinder and Main Beach on Stradbroke Island, QLD. The site is state heritage listed and as a consequence the protection and enhancement of the natural landscape character was paramount to the design.

Key findings

- Trails add value to existing recreation assets and create new ways of seeing the landscape – the journey becomes as important as the destination.
- Trail systems can create networks of destinations that can operate collectively with hub locations and secondary locations.

Narrabeen Lagoon Multi-Use Trail, NSW (2011)
by Aspect Studios

The 2.5km multi-use trail facilitates access and the use of Narrabeen Lagoon's natural resources. The timber and fibreglass lookouts and trails sit respectfully within the landscape, complementing the setting with minimal impact to the landscape and key views.

Key findings

- Many of the proposed design changes are simple enhancements that protect the environment and make meaningful functional improvements without altering the valuable landscape character.
- The design of elements such as seats and lookout areas is flexible and allows multiple forms of use eg seats can alternately function as lookouts and picnic benches or signage.

Metamorphous, Canada (2014)
by Paul Sangha

Metamorphous is a sculptural Corten steel sea wall that has been designed to reduce the effects of king tides and increase flora and fauna habitat. It is an architectural alternative to a basic rock or concrete sea wall, creating interest in the landscape.

Key findings

- Infrastructure can be designed in different, non-standard and expressive ways and still achieve functional outcomes using standard materials (stone & concrete) or alternative materials.
- Infrastructure forms and materials can artistically express a larger design idea or interpretive theme (eg geological forms).

Punta Pite, Chile (2005)
by Teresa Moller

The walkways and tracks of Punta Pite give way to their landscape, blending and twisting into their landscape. The design uses the coast's natural forms and materials, revealing vistas and complementing the geology of the site.

Key findings

- Place specific materials and forms that directly relate to the site provide functional outcomes, but can also create visual meaning and place specific visual character.