

2021

Minningup Pool Day Use Area – Master Plan Part C - Proposals and Implementation Guidelines For Shire of Collie



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Acknowledgements:

We acknowledge that we discuss the traditional land of the Noongar people, the custodians of the Region, and that we respect their spiritual relationship with the country and particularly with Minningup Pool.

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Minninup Pool Day Use Area – Master Plan

Part C

1 Introduction to Part C

This document is the third of four parts which document the planning process, the proposals and the implementation details of the Master Plan for the Redevelopment of the Minningup Pool Day Use Area. The series of documents is summarised below.

- **Minningup Pool Day Use Area – Master Plan: Part A - Background**
This contains the communication plan, investigation and feedback, analysis and development of design options.
- **Minningup Pool Day Use Area – Master Plan: Part B - Executive Summary**
Version 2 was based on early drafts of Part A and C and consisted of the Executive Summary report and associated plans that summarise the Master Plan for the Redevelopment of Minningup Pool Day Use Area as was endorsed by Council in December 2020. These are the documents that have been made available to the public. Essentially this is a description of the whole project as due to the extent of the project any more detail will give a document that is too long for most people to read. It included a description of the precincts, a summary of the proposed elements and a section on targeted outcomes to help understand how the objectives of the project are being met. It also contained an indicative cost estimate. Version 3 of this document has been updated in May 2021 to reflect the details in the completed Part A and Part C.
- **Minningup Pool Day Use Area – Master Plan: Part C – Master Plan Proposals and Implementation Guidelines**
This document details the Master Plan and provides the information required to progress the project. It contains the Master Plan proposals as documented in the Executive Summary together with more detailed information on the individual elements proposed. The elements that are not further detailed in the contract documentation (Part D) are described so that the information can be used to brief subsequent consultants and designers. The Benefits Analysis is an Appendix of this plan.
- **Minningup Pool Day Use Area – Master Plan: Part D – Contract documentation of the Civil and Landscape Works.**

It should be noted that the original spelling of Minningup was only confirmed for use by Shire of Collie early in 2021 and so documents finalised before then will use Minningup as has been the practise for many years. Minningup Road will remain as it is until it is officially changed.

The spelling of Wagul is also variable and although Wagul is generally used for this Master Plan, other spellings may be found and all are 'correct'.

2 Master Plan

2.1 Aims

The primary aims of the redevelopment of the Minninup Pool Foreshore as endorsed in Part B Executive Summary are to

- provide for the whole of the local Collie community;
- acknowledge and share Noongar cultural values and
- maintain naturalness while sustainably providing for recreation (including improving access and facilities and protecting the foreshore from visitor impacts).

The secondary aims of the development are to

- support the development of the proposed adjacent nature based accommodation facilities;
- contribute to the development of Collie trails;
- provide an attractive area that will in time become well known and encourage visitors to the area and to
- provide a venue for events and commercial tourist operations such as canoe hire, coffee vans etc.

The overall character is to be of natural open parkland with the river as its focus.

2.2 Master Plan Context and Site Layout

This section 2 describes the overall proposals for trails and the individual precincts and refers to Map 3 Master Plan Context in Appendix 1C, and the three Precinct Master Plans in Appendix 2C

- Minninup Pool Day Use Area Upgrade – Master Plan –Sandy Beach Precinct;
- Minninup Pool Day Use Area Upgrade – Master Plan – Pool Precinct and
- Minninup Pool Day Use Area Upgrade – Master Plan –Rowing Club Precinct.

These Master Plans are supplemented with three artistic impressions of the proposed development

- Minninup Pool: Entry;
- Minninup Pool: Foreshore and
- Minninup Pool: Sandy Beach.

Section 3 describes the various components of the plans in detail and will guide the subsequent development of detail design and construction drawings.

The context of the site and overall layout for Minninup Pool Foreshore is shown on Map 3 Minninup Pool Foreshore Area Upgrade – Master Plan Context. Key components of this plan are detailed below.

- Roads - The main access for Minningup Pool Foreshore will continue to be via Minninup Road off Mungalup Road. Minninup Pool Road will now merge into the road to Sandy Beach at the foreshore entry area, which returns to Mungalup Road at Griffin Bridge. The section of road from the pool to the bridge currently has no name and it is recommended it is called Sandy Beach Road. The extension of Minninup Road to the east, beyond the Rowing Club, is a dead end road which currently accesses a number of informal riverside recreation sites and in the future may provide access to a wellness centre and eco accommodation.
- Collie Golf Course – is located north of Minningup Pool.
- Camping and accommodation areas – a campground, some eco cabins and an area of floating safari tents are to be developed as separate projects by others, to provide nature based accommodation experiences.

- Dual Use Paths (DUP) – a DUP links Minningup Pool to Collie town centre and a link to Mungalup Pool is proposed with the section to Sandy Beach to be included in the day use area proposals.
- Trails – a number of informal tracks and mountain bike trails can be found in the area and some of these are noted on the plan. The role the area plays in trail provision is detailed in section 2.3.
- Minningup Pool Foreshore Day Use Area – proposed development of this foreshore is detailed in this master plan. The foreshore has three distinct precincts with their own character – the Sandy Beach Precinct, the Main Pool Precinct and the Rowing Club Precinct see sections 2.4, 2.5 and 2.6 below.

2.3 Trails

The Minningup Pool Foreshore is an important component of the Collie Trails initiative as it is proposed to

- compliment the development of the adjacent nature based accommodation which is providing accommodation for trail users;
- provide an attraction / stopping point on trails such as drive, cycle, mountain bike and walk trails;
- be the trailhead for aquatic trails on the Collie River;
- connect to trails that extend beyond the foreshore in the Minningup Pool area and
- provide some specific trails along the foreshore itself.

The foreshore needs to connect to and be integrated with the following trails that are being developed by others.

- The existing dual use path connecting to the Collie town site.
- The proposed Minningup Link Trail that will connect the Minningup Pool area to Westralia Conservation Park and the trails on the west side of Mungalup Road.
- Drive trails that visit Minningup Pool, particularly wildflower trails that benefit from stopping points with short wildflower walks.
- Aquatic (paddling) trails on the Collie River, launching facilities are required along the Minningup Pool foreshore.
- Road cycling trails.
- Mountain bike trails – well used informal trails currently exist on the reserve with loop trails east and west of the foreshore area, these are proposed to be formalised in due course by others. The connecting trail passing through the site needs retaining if feasible.
- Trails connecting the proposed accommodation areas with facilities and recreation opportunities along the foreshore.

In the context of the above trail framework the following trail infrastructure is proposed for Minningup Pool Foreshore.

- A trailhead on the foundations of the old rowing club building on the foreshore in front of the current Rowing Club Building.
- Continuation of the existing dual use path, along the current Minningup Pool Road alignment to the old Rowing Club trailhead where the dual use path will terminate. This will be black asphalt and not red asphalt.
- Planning and construction of a dual use path linking the existing dual use path to Sandy Beach. The northern section of this DUP is likely to form part of the Minningup Link (by others), but Sandy Beach itself will be a spur trail as speeding through cyclists would be a hazard for beach goers.
- The Rowing Club trailhead will have potential to link to trails in the east of the reserve if/when they are planned and developed.
- The arrival points in the main parkland area at the bend in the river will have potential for some trail information for trail users arriving from the west.

- The existing mountain bike trail passing through the site will be accommodated within the site with potential links to the DUP, links to foreshore facilities such as toilets), connections to the main trails (e.g. to Sandy Beach) and allowances to re-establish it where it is impacted by roadworks north of the Rowing Club building.
- Canoe launching will continue to be from the beach at the Rowing Club with increased lawn areas, a canoe set down bay and increased long vehicle parking. Canoe launching will also continue at Sandy Beach with a clear, wide path to the beach. However set down and rigging areas will not specifically be provided for. Informal boat launching will continue to be available at nearby Mungalup Bridge and this may be formalised in the future.

Trails beyond the foreshore are only included indicatively in the master plan as the mountain bike trails need formalising which is a planning process in its own right, any walk trails (such as new trails to enable interpretation of bush tucker) will need to be integrated with these mountain bike trails and trails linking to the accommodation areas will need to be integrated with the site planning for those locations.

The DUPs will have some trailside interpretation within the site, but trailheads and trail marking is being developed as part of the overall Collie Trails initiative see section 5.

2.4 Sandy Beach Precinct

Sandy Beach Precinct will continue to provide for informal water based activities and beach activities and there will be a focus on rehabilitating degraded areas, reducing visitor risk and increasing amenity with additional facilities, but these will be lower key than the main pool area, though services (power, water, sewerage and electricity), are to be provided. See Minninup Pool Day Use Area Upgrade – Master Plan – Sandy Beach Precinct in Appendix 2C for the overall layout and the artistic impression Minninup Pool: Sandy Beach in Appendix 3C. Specific components of the proposal are discussed below.

- Weed removal and control is proposed for before works commence but will likely be ongoing.
- Vehicles will be excluded from the beach to reduce the risk of pedestrian vehicle conflict and to enable sections of the foreshore to regenerate while other areas are left as beach to give visitor access to the water.
- The Sandy Beach Road will be set to the west, mostly in the old sand pit, to separate through traffic from beach goers.
- The car park will be a drive through design and set mostly on the existing roads and tracks with approximately 35 bays and a disabled bay. Long vehicles will be able to park on the widened shoulder of Sandy Beach Road which will have a connecting path to the beach. Vehicles will be contained in the carpark with bollards, steep banks and a combination of existing trees and new structures such as shelters and tables.
- The Cultural Area, which is to be developed to the west, will also be supported by the parking area and will be linked by a path with service access provided from Sandy Beach Road. The existing mountain bike trail will also be realigned. The infrastructure for the Cultural Area will be developed as directed by the Noongar community at the detail design stage, but may consist of a yarning circle, small bush garden and exhibit area.
- The dual use path from Minningup Pool will have a sitting area with views to the beach and will cross the road on a speed hump improving safety.
- The wide path will connect to the interpretation / arrival point from which visitors can step on to the beach. Nearby there will be bike racks.
- Interpretation was to have focused on the riverine environment but now an orientation map with a short welcome will likely be provided¹.

¹ Riverine bush tucker interpretation was proposed in Draft Part B but as at April 2021 is now unlikely.

- Service access (3m wide) with removable bollard or similar for service and emergency access will connect from the car park (with bins on this section of path) to the beach and will have a ramp / hardened access on to the beach which will also be suitable for launching paddle craft.
- Elsewhere a network of smaller paths will connect parking areas to shelters, toilets and tables etc. with some facilities suitable for use by those in wheelchairs.
- Toilets will be flushing with basins for hand washing, an outside shower and a stand tap for washing of sandy feet.
- Two skillion shelters are proposed approx. one medium with a 2 plate BBQ and table (BBQ to be electric), the second slightly smaller shelter will only have a table.
- Tables will have separate benches and a table with some suitable for wheelchair access. They will be set on concrete bases and will generally connect to paths. Some tables will be set near the river's edge near new trees (paperbarks *melaleuca preissiana*) for shade.
- Rehabilitation areas, including some foreshore areas, will be fenced off and planted with small stock and may be mulched and / or have topsoil and debris from clearing works. Coir logs may be required to facilitate regeneration along the shoreline.
- There will be no visitor access provided to the Bedrooms area with service, emergency and cultural access provided along one existing track and all other tracks to be rehabilitated.
- Wheelchair access onto the beach can be provided via a beach wheelchair that is currently available from the Collie Pool and a concrete path, with rails where it enters the water, is proposed to provide access for all to the water from the paddle access ramp.
- Minimal lighting for night time use and security cameras will be provided.

2.5 Minningup Pool Precinct – Parkland Area

The western portion of Minningup Pool Precinct is a quieter contemplative area with a focus on passive recreation and Noongar Culture. It is suggested the elevated open area, together with the terraces is actually given its own name, such as Minningup Pool Park or an appropriate Noongar name. Swimming will continue at the beach at the base of the terracing and there will be picnic tables but no BBQs with varied opportunities for sitting and contemplating the river. The site for the proposed cultural centre is north of the entry area and south of the Golf Course, but developing this centre is not a component of the master plan. The eastern portion of Minningup Pool Precinct is more focused on picnicking and water based activities and is described in the next section. See Minningup Pool Day Use Area Upgrade –Master Plan – Pool Precinct in Appendix 2C, for the overall layout and the artistic impressions Minningup Pool: Entry and Minningup Pool: Foreshore in Appendix 3C. Specific components of the proposal are discussed below.

- The intersection of Minningup Road with Sandy Beach Road will be realigned to make Sandy Beach Road the through road so vehicles have to slow to turn into the relocated Minningup Pool Road.
- Parking will be set off the new realigned Minningup Road with approximately 19 standard bays, a disabled accessible bay, 1-2 long vehicle bays and about 4 motor cycle bays. The car bays face the park and river. A couple of car bays will be set off Sandy Beach Road near the existing concrete steps giving additional river viewing opportunities.
- The existing Minningup Road will be a dual use path 3m wide also used by service vehicles. Low head walls will be installed at culverts to reduce the scale of the path.
- The existing dual use path will cross the road west of the intersection (with a speed hump) and will be located west of Sandy Beach Road. It will cross Sandy Beach Road (with another speed hump) in the vicinity of the above car bays and arrive at a small lookout (Minningup Lookout) over the pool which links to the top of the existing concrete steps. The steps will likely be removed as developing a platform at the bottom of the steps will intrude on the pool.
- The lookout will have seating and interpretation and some site orientation information. From the lookout there will be a path descending at disabled gradients to the base of the terracing by the river. The path will be almost flush with the beach enabling people to step off the path easily onto

the beach. This path will continue east up the slope to join the main Minningup path and one or two interpretation plaques will be set along the path.

- A wide path/boulevard, which follows the top of the bank, will connect the dual use path (near the lookout) to the main Minningup path. The existing dual use path will not connect to the main path in a direct line as that would take it in front of parked vehicles with the potential for alighting passengers to step out in front of cyclists. It would also make it close to the yarning circle.
- Where the northern end of the boulevard meets the main path (near two large jarrah trees) will be a welcome node with a sculptural sign and welcome to Minningup Pool information and artwork. This will be the arrival point for those arriving in vehicles. The boulevard will have seats (with arms for the elderly) set along it for viewing the pool. These seats could be Wagul seats.
- The realigned and setback Minninup and Sandy Beach Roads enable a park to be created in the angle between the two roads with the existing majestic jarrah *Eucalyptus marginata* trees in the centre. The bitumen in the area will be carefully removed and a large grassed yarning circle with logs around the circumference, established in the centre of the park. Low local shrubs will be planted to partially screen out the adjacent roads (while still allowing glimpses of the river from the road) and lawn areas established above the pool. Some plants along the edges of the lawn areas and paths may be interpreted or named.
- Picnic tables will be provided in the park overlooking the pool and more trees are established to provide shade (shelters on individual tables tend to provide poor shade and unless carefully sited they will block out views for others, so they are not proposed).
- There will be a Noongar sculpture of a Waugyl at the western side of the park, prominent for all arriving at the Pool Precinct.
- The terraces will be refurbished with blocks of a laterite concrete mix, used to build low retaining walls to replace the disintegrating timber retaining walls. An additional wall is proposed for the lower level to give a 2m wide terrace associated with the beach. The upper terrace will be wider (approximately 8m) and suitable for activities. The upper wall will be set back a little but setting back too far will restrict seating opportunities between the wall and the path. The existing steps and path down the terracing will be replaced and widened to 3m and the steps will have a central hand rail.
- All lawn will be irrigated to withstand the high use levels and to be comfortable to sit on.
- A toilet will be located near the car park with cycle racks, bins and service / emergency access all close by.
- Lighting and CCTV will be strategically provided throughout the site
- Picnic tables will be set among trees east of the terraces and this area merges with the picnic area which is discussed in Section 2.6.
- A pontoon is proposed for the river with the exact location to be decided after underwater investigations have been made as there is understood to be a lot of debris in the river such as a truck and the old diving platform. For cultural reasons the pontoon should be set in the deepest part of the river, see indicative location on the plan.

2.6 Minningup Pool Precinct - Picnic and Water Based Activities Area

Between the parkland area and the Rowing Cub are picnic areas with proposed facilities enabling access to the river for water based activities. See Minninup Pool Day Use Area Upgrade – Master Plan – Pool Precinct in Appendix 2C, for the overall layout and specific components of the proposal which are discussed below.

- The relocating of Minninup Road away from the river and the conversion of the current road to a path gives more area for picnicking and removes the potential for speeding vehicles to conflict with pedestrians.
- Parking is provided for with a central parking area of approximately 14 standard vehicles, 1 disabled bay and a long vehicle bay, off the new road. The bays are facing the pool, so the pool can still be

enjoyed from those in vehicles and this organised parking will assist with reducing compaction under trees from parked vehicles.

- Trees will have mulch on their root zones to sustain them and where there are groups of trees the combined mulch will create more natural looking areas which will separate and enclose the open areas of irrigated lawn that will be between the groups of trees.
- River access will be managed with stepped access structures built to enable visitors to access the water without eroding the river banks. The banks will be rehabilitated as necessary with coir logs, revegetation etc.
- The proposed pontoon will be accessible from these swimming access stairs.
- Between the river access structures the foreshore will be temporarily fenced for rehabilitation. No path will be provided close to the foreshore in this precinct but stepping stones and / or a small bridge will provide access across one of the drainage lines to enable people to wander along the foreshore grassed areas. Some new shade trees will also be planted for the future.
- New picnic tables will be installed to provide for more visitors.
- A seat with arms will be set along the trail.
- Picnic tables and a central 2 plate BBQ will be located near the car park.
- Trailside plaques (1 or 2) will be provided in the area and there will be a small interpretation node near the car park.
- The existing toilet will be removed and a new large toilet provided near the Rowing Club.

2.7 Rowing Club Precinct

The Rowing Club Precinct is located around the Rowing Club shed (to be the Collie Kayak and Rowing Club shed) and associated foreshore areas. The shed is currently leased by Rotary but it is proposed to blend the club and public activities and share facilities such as toilets and BBQ facilities. The area is proposed to be the focal point for trails both aquatic and terrestrial but will also acknowledge the Noongar and European (settler) cultural significance of the area. Additional parking is proposed and this will be where long vehicles visiting the pool can turnaround using the loop layout of the car park. See Map 6 Minninup Pool Day Use Area Upgrade – Master Plan –Rowing Club Precinct in Appendix 2C for the overall layout and specific components of the proposal are discussed below.

- Relocation of Minninup Road to the rear (north) of the building. This will require a new creek crossing, removal of the existing septic tanks behind the Rowing Club and removal of the pine trees *Pinus sp.* east of the Rowing Club to enable the new road to re-join the existing road that continues on to Kings Park.
- The pine trees will be removed as they are introduced and contrast with the form and colour of the existing vegetation, reducing naturalness. They also have potential to spread.
- The open areas created by the removal of the pines will facilitate the development of a parking / turnaround area that will also have set down facilities for paddlers and long vehicle parking. Capacity will be approximately 37 standard bays, 1 disabled bay and 8 long vehicles. Access to the Collie Kayak and Rowing Club shed will be integrated into the layout. Care will be taken to protect and retain the many Christmas trees *Nuytsia floribunda* in the area.
- A water point for use by fire trucks will be developed east of the old Rowing Club Shed foundations.
- The existing parking area will be removed (except for sections that are retained as paths), and converted to lawn for setting down paddle craft. New trees will be planted for shade and to 'soften' the area.
- The foundations of the old Rowing Club will be partially paved and developed as a trail head. A disabled accessible picnic table, cycle racks and bins will all be located in the vicinity.
- The steep banks will be revegetated and the existing gently sloping area just to the west will be retained as a beach for paddle craft launching and swimming, the sand will be replenished.

- The area around the fallen tree will be developed as a bush garden with local plants, possibly a sitting log and a plaque telling the story of the tree.
- A large skillion roofed shelter (approximately 4m x 12m) will be located west of the Rowing Club building for use by club members and the public. It will have 2 picnic tables and a central BBQ (disabled accessible) and possibly some panel walls for a community notice board.
- The area at the front of the shed will be hard stand or similar for use by pop up commercial operators such as coffee vans. There will be new picnic tables in this vicinity to complement the pop up business and the BBQ shelter.
- New toilets will be provided for use by club members and the public.
- East of the trailhead picnic tables will be provided in open areas along the river's edge adjacent to the parking bays, keeping clear of the existing large blackbutt *Eucalyptus patens* which could drop branches (if it is retained). This will be a low key 'bush' area once the bush has returned after the pine tree removal.

3 Design Components

This section 3 describes the various components of the plans in detail and will guide the subsequent development of detail design and construction drawings. Part D contains the documentation prepared by VWA and where further design work is to be undertaken by others this document should be the starting point for briefing these specialists.

Where potential suppliers and indicative costs have been identified they are noted, and have informed the indicative costings but these are non-binding and new quotes will be needed before purchases are made. All costs noted are Ex GST.

3.1 Noongar Cultural Opportunities

With the aim of acknowledging, respecting and sharing Noongar values the following opportunities have been incorporated into the foreshore proposals. These opportunities have been identified through workshops and discussions and will be developed by continuing to work with and be guided by the local Noongar community as part of an ongoing progress.

3.1.1 Artwork

The site has a number of opportunities for connecting with and reinforcing Noongar culture through art as follows.

- Development of a sculpture of the Waugyl at the entry to Minningup Pool.
- Design of Waugyl / serpent seats for use at key locations in the Minningup Pool Park.
- Use of Waugyl inspired designs for the interpretation structures and graphics.
- Possible use of these designs on structures
- Incorporating designs into the paving.

The Noongar community supports the graphic style that has been developed for the interpretation, see section 6 but the other artworks are still to be developed. It is proposed that an art consultant is engaged to progress the design and construction of the art works in association with the Noongar community.

3.1.2 Welcome / Arrival Area

The arrival space will welcome visitors to this important Noongar place. The welcome feature and text is being developed in association with the local Noongar community, see section 6.

3.1.3 Yarning and Story Telling Spaces

A number of different spaces will be provided with potential to be yarning areas so it is more likely a space can be found that is suitable for the different stories and groups that will visit. The proposed spaces are identified below.

- Main yarning area, 15 -20m diameter grassed area set in Minningup Park under the jarrah trees, with logs around the edge for sitting on. A central fire pit may also be provided (perhaps with a lockable lid) depending on the preferences of the local Noongar community and the Shire of Collie (SoC) advises permits for special events can be applied for to have a fire in the prohibited season.
- A terrace with two low retaining walls at sitting height near the edge of the pool, giving an amphitheatre like space.
- A small lookout integrated with the 'top step' of the existing concrete steps that overlook the river. The space will be clear of the large spotted gum *Corymbia macculata* tree as it may drop branches and will enable the peppermint (*Agonis flexuosa*) to be retained though it will need some pruning to train its shape. The steps may actually be removed but there will be seating (low walls or plinth seating) and there will be connections to the main paths and to the wheelchair path down to the beach. Balustrading may be used and there will be interpretation. The future of the steps is still to be confirmed with the Noongar community.
- Bush Garden – will be developed around the fallen tree near the Rowing Club, with a plaque sharing the story (details to be confirmed with the local Noongar community, see sections 3.5.6 and 6.1.7 for planting and interpretation concepts) and possibly a log for sitting on. There will be sloping lawns around the garden where visitors can sit or gather to receive the story of the tree.



Figure 1: L: Yarning Circle, with round logs

R: Yarning circle with sawn logs and covered fire pit

3.1.4 Sandy Beach Cultural Area

The identified cultural area inland from Sandy Beach, is still to be planned and designed to meet the needs of the local Noongar community and can be developed to suit proposed presentations and/or displays. The layout shown on the Sandy Beach Precinct Master Plan is indicative only as is the funding allocation in the indicative costings.

3.1.5 Proposed Cultural Centre

The development of a cultural centre is beyond the scope of this master plan but the Noongar Community has identified a preferred location for its future development and this is identified on Minningup Pool Precinct Master Plan and where feasible infrastructure has accommodated this future use.

3.1.6 Interpreted Trails

The proposed trails and paths within the foreshore development will have trailside plaques featuring bush tucker etc. see section 6.1.7. These plaques will be further developed in association with the local Noongar community.

A new walk trail (narrow, natural surface trail, say a Class 3) could be developed (by others as a separate project) east of the Rowing Club to showcase more bush tucker (there are different vegetation types in this area) and other features. The location of this trail will need guidance from the local Noongar community and will also need to be planned and located to minimise conflict with mountain biking in the area (well used informal trails currently exist). As formal planning for these mountain bike trails has not commenced to date the walk trail cannot be progressed.

3.1.7 Incorporating Noongar Values into Site Design

Through ongoing consultation with the local Noongar community the proposals aim to respect and acknowledge Noongar values through site design and appropriate provision of facilities. These provisions include the following considerations.

- Discouraging visitors from accessing some areas and encouraging visitation of other areas through restricting or providing access as appropriate.
- Retaining trees wherever feasible.
- Siting the pontoon in an appropriate location in the deeper water.
- Facilitating access by the elderly, including community Elders, to the beach area below the terracing.
- Protecting and revegetating the foreshore while still enabling visitors to access the river in a sustainable way.
- Consideration of curvilinear paths – there are not many new paths and an option was to realign the boulevard path at the top of the terracing to have more curves to reflect the Waugyl but it was acknowledged that too many curves may make it hazardous for cyclists and so only a gentle curve is proposed.
- Development of a bush garden around the fallen tree near the Rowing Club.

3.1.8 Minningup Pool Cultural Advisory Group / Ongoing Input from the Noongar Community

The Noongar Visioning Report and consultation and discussions undertaken by VWA confirm the need and importance of ongoing consultation and discussions with the local Noongar Community regarding the development and management of Minningup Pool.

A Collie River Aboriginal Reference Group with 4-5 Noongar Community members may be appropriate or Noongar membership of a Minningup Pool management group. It is suggested that the SoC engage with the Noongar community to see how best to facilitate this ongoing interaction and a process that works well for everyone is developed as soon as is feasible.

The Noongar Community has aspirations of practical involvement with the development and management of the area and perhaps the involvement of organisations such as the Noongar Chamber of Commerce may be appropriate to assist with achieving this outcome.

3.1.9 Monitoring During Construction

Monitors will need to be on site during all construction works to ensure there is no damage to cultural values and artefacts.

3.2 Access for the Less Able

Community feedback indicated 19% of visitors or their friends and family required disabled access and this was supported by specific requests for better access for the elderly, disabled / ACROD parking and a request for swimming access with rails.

Where feasible access for the less able is integrated into all aspects of the design for the site and includes the following elements.

- Wide paths with firm surfaces are proposed. The dual use paths are 2.5m wide (including the interpreted path to Sandy Beach), the main path will be 3m wide with an asphalt surface and minor paths will be 1.5m wide with sealed or unsealed surfaces. Grades are generally gentle. There may be a narrower, unsurfaced walk trail east of the Rowing Club in the future.
- Disabled parking bays are proposed in each parking node.
- At least one disabled accessible toilet is proposed for each toilet block.
- Park bench seats all with backs and arms and space beside for a wheelchair to park alongside to be located along disabled accessible paths.
- Picnic tables that have separate benches to make getting in and out easier have been selected for use throughout the site and wheel chair accessible picnic table designs will be used in locations such as in the shelters and along paths.
- The large picnic shelter at the Rowing Club will have a disabled accessible BBQ.
- Sealed paths will connect to seats, toilets, shelters, most interpretation and some individual picnic tables.
- In addition to structures that are specifically disabled accessible (see below) such as the wheel chair accessible swimming access and the path / ramp connecting the lookout to the beach there will be hand rails on the swimming access steps and up the centre of the steps in the terraced area.
- Car bays will be orientated towards the river so passengers can have a view of the river without leaving their car.



Figure 2: L: Accessible Picnic Table C: Seat with back and arms R: Path for the water's edge

The proposed elements that have been specifically included for the less able are detailed below.

Beach Access - A concrete path at wheel chair accessible grades (1:14 ramps and landings) with handrail, that descends from the lookouts to the beach below the terraces and then ascends back to the main path.

Waterside picnic setting - A picnic setting close to the water's edge is proposed for near the trailhead in front of the Rowing Club. It may need detail design including edging (possibly of the 350mm high blocks) to stop wheel chairs rolling down the bank.

Consideration of swimming access – Access to the water has been requested with railings but the beach opposite the Rowing Club has limited capacity, is quite steep, and is already used for launching canoes. Below the terraces a concrete path will give access to within 2 – 3m of the water's edge (see photo above), but railings would be unsightly at this prominent and culturally important location. Other options for

accessing the water were identified in the form of a beach and floating wheelchairs² and beach access matting a beach wheel chair (possibly stored in the Rowing Club shed) but the SoC Disability and Access Committee (SDAIC) were not in favour of beach matting and advised there already was a wheelchair at the town pool.

Consequently a purpose built wheelchair access ramp is proposed for Sandy Beach pending support from the local community and SDAIC. This concept is for a concrete ramp and end point (shape to be determined possibly open to enable swimmers to leave the end point, or enclosed) with railing, see section 3.9 for more details, but further investigations are required to understand community preferences, identify the required standards for such a structure and to confirm the bathymetry of the river and shoreline.



Figure 3: L – C : Indicative beach wheelchair access and R:Feather Lite Aluminium wheelchair dock, could be a moveable end point for fluctuating water levels Source pinterest.com.au

3.3 River Access

Swimming in the river and paddling activities are very popular but foreshore areas are currently being degraded by visitors seeking access to the water. There is also the inherent risk of water so it is important to reduce the risk associated with water based activities wherever feasible. The proposed strategy to address these issues is to identify appropriate access points, harden or reinforce these areas as necessary so they can sustain long term use and rehabilitate the shoreline between the access points. Ongoing management such as checking for new underwater hazards and maintaining the access structures will also be required and appropriate river risk signage will need to be installed.

Shore Coastal was engaged to review the preliminary proposals for access points and prepared a technical note³ 'Collie River Minninup Pool – Review of Draft Master Plan Concepts for Foreshore Structures', (see Appendix 4C) and the outcomes from this are incorporated into the proposals below.

The synopsis of the technical note included the following notes. 'The proposed concepts for river access structures on the floodplain of the northern banks of Collie River are considered to be suitable for their respective sites. Further survey, geotechnical assessments and end-user guidance is required in design development. Structure design will need to consider seasonal water level variations (1m), Collie River flooding, ground conditions, riverbank stability, heritage requirements and safety in design requirements.' The water levels are expected to be more stable now the weirs have been repaired with 174.8 the expected level most of the time, but this will need confirming when detail design commences.

² <https://accessiblebeaches.com/beach-equipment#overview-of-equipment>

³ Shore Coastal, Technical Note 'Collie River Minninup pools – Review of Draft Master Plan Concepts for Foreshore Structures', unpublished, January 2021

A small fishability deck was also considered initially, just north east of the terracing but there was concern the fishing would conflict with nearby swimmers and the tree north of the terraces on the shore is not very sound, but has been requested to be retained, so the path that was proposed for river side of the tree (which was to access the fishability deck) will no longer be built. Consequently the fishability deck has also been omitted.

All foreshore proposals will need approving by Department of Water and Environmental Regulation (DWER) prior to implementation.

3.3.1 Underwater Investigations

The bathymetry of the river is unknown and VWA has been advised there are quite a few 'things in the river' including a truck and the old diving platform and logs and other flood debris are also likely. A survey of the river bathymetry is therefore proposed to assist with finding the most appropriate location for the pontoon and to ensure the river access points are associated with appropriate water depths.

A survey by a drone boat is required and once the general location for the pontoon is identified diving will need to occur for a detailed check for underwater hazards. The Department of Biodiversity Conservation and Attractions (DBCAs) has an underwater checklist that may assist with this assessment (see Appendix 5C), though it is recommended contact is made with the DBCAs for any updated checklist at the time of the survey.

It is understood Shire staff may be able to undertake this work, or DBCAs may be able to assist with the assessment, perhaps diving groups have the expertise and would be willing to assist, even the Navy could be approached to undertake the assessment or commercial divers may need to be engaged. Funding for debris removal will also be required.

The bathymetry survey and underwater assessment were not allowed for when this master planning process was scoped and so the surveys, and detail design of the structures will need to be done at the construction stage. However the Shire of Collie undertook repair works to weirs on the Collie River in early 2021 which resulted in very low water levels and SoC funded an opportunistic survey of the foreshore at this time to assist with subsequent design work.

3.3.2 Sandy Beach River Access

As noted in section 2.4 vehicles will be excluded from the beach areas of Sandy Beach with parking set back from the beach. Some sections of the shoreline will remain as they are, a sandy beach, enabling access to the water and other sections, particularly those with remnant trees or vegetation will be fenced and replanted to stabilise the shoreline and provide shade trees (see section 3.5.6 for planting proposals). Coir logs are proposed to assist with establishing foreshore rushes and if there is erosion along the High Water Mark, they may need installing at a later date, see section 3.4.2 for river edge treatments.

Providing swimming access for the less able and those in wheelchairs is proposed for Sandy Beach see section 3.2.

3.3.3 Area of old Diving Platform and Concrete Steps at Minningup Pool

The diving platform / existing concrete step area (Site 1 in the Shore Coastal report) will have the area of concrete removed from around the large jarrah tree (though the concrete beams will be retained as it will be too much disturbance to the tree to remove them) and sitting viewing area / lookouts developed in the area above the existing concrete steps.

The technical note states 'concrete stairs (insitu poured) that provide functional access to the water but are uneven with irregular spacing and grade. The lower stairs is undercut and overhanging and requires support. Extension of these stairs would be required to provide access to the river at lower water levels (i.e. no stop-

boards on downstream weir), and a concept for extension of the stairs and a small swimming jetty (fixed or floating) is shown attached. Survey and consultation is required to determine the length of the jetty structure, however based on the site inspection deep water is available relatively close to shore at this location.'

Retaining the steps and installing a jetty is considered inappropriate as the structure will be obtrusive along the river's edge and it will encourage swimming in a 'quiet' area away from parking and other facilities and so for this and /or other reasons the steps are proposed to be removed. The proposed pontoon should provide an appropriate alternative swimming experience. This proposal can be discussed further with the relevant stakeholders.



Figure 4: Site 1: Minningup Pool Concrete Stairs from Shore Coastal Technical Note

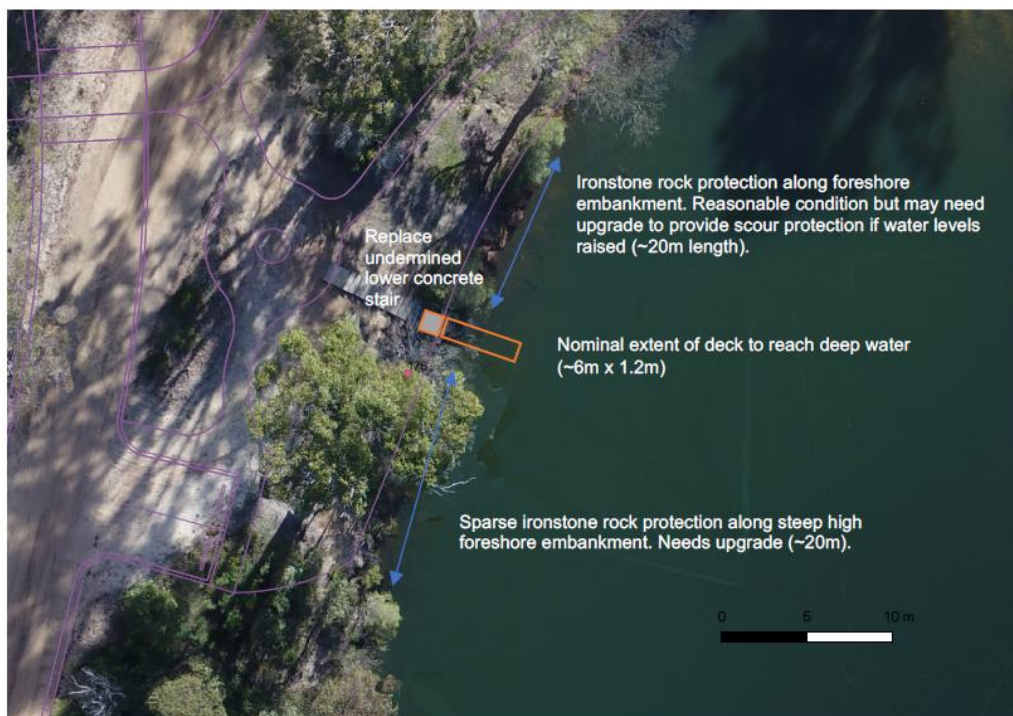


Figure 5: Site 1 Proposals from Shore Coastal Technical Note

The note goes on to state 'Further consideration is also required of stabilisation of the steep, high downstream embankment and slope stability at the design phase. Steep embankments adjacent to and

downstream of the concrete stairs are undercut in places and require some consideration of longer term stabilisation. This could be achieved by a combination of rock works integrated with foreshore revegetation.'

VWA has some concerns regarding the long term impacts of geofabric and so, the laying of coir logs at the top and toe of the existing rock work may be preferable to lifting the existing rock work, laying geofabric and relaying (or adding new where the steps are removed) the rocks. Rushes planted in association with coir logs should assist with stabilisation, see section 3.4.2 for more conceptual details. However these proposals will need an engineer to assess them and determine the best long term solution. DWER will also need to approve the proposals.

3.3.4 Terrace Beach

The beach at the bottom of the terraces (Site 2 in the Shore Coastal Technical Note) is noted as 'a flat grade beach that appears reasonably stable.' A concrete path is proposed for along the shoreline (to give access for the less able and elderly) and Shore Coastal notes it 'would likely need a modest retaining wall on the river side if constructed. Access paths that are marginally setback from the shoreline and high water level would be preferable to limit the extent of retaining required.' Therefore the path will be located as far inland as feasible (without compromising the terracing) to minimise the need for any retaining structures. Edge thickening of the concrete path may be needed to flood situations. See example below from paths that were proposed by DBCA for the flood plain of the Fortescue River, however details will need specifically preparing for this location and approving by an engineer.

MILLSTREAM PATHS

PATHS AROUND DAY USE AREA

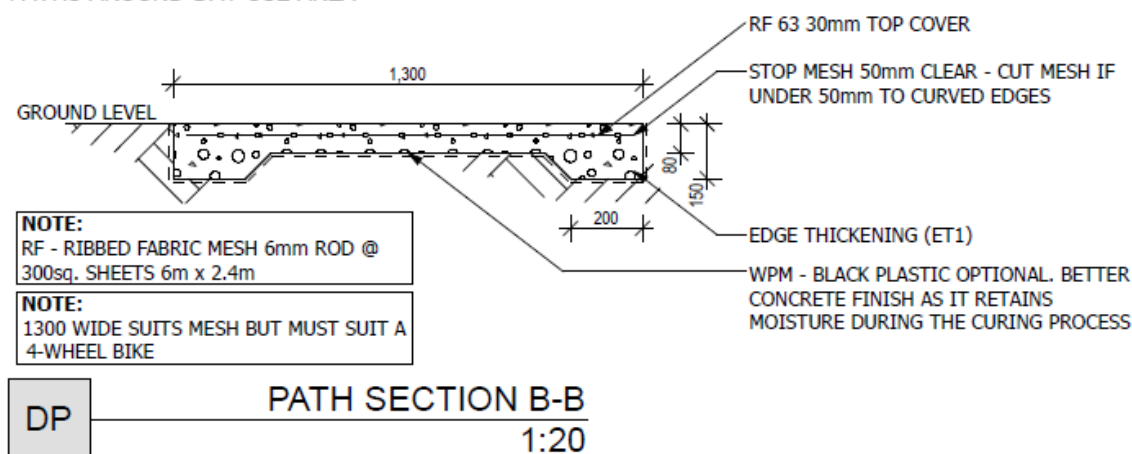


Figure 6: Path details prepared by K. Lodge for DBCA for the Fortescue River delta

Shore Coastal also notes 'To allow the beach to be accessible at higher water levels'... 'a small volume of sand nourishment' will be required and will need ongoing replenishment to be sustainable .

3.3.5 River Access Stairs

Shore Coastal notes 'Two river access structures are proposed on the east side of the outer meander bend of the Collie River, in areas where there are gaps evident in the foreshore vegetation and trees and localised erosion is occurring due to largely uncontrolled river access. The concept is based on structures installed at Deep Reach on the Fortescue River in Millstream Chichester National Park and structures along the banks of the Warren River in the Warren River National Park see photos below.



Figure 7: L and R: Deep Reach swimming access – similar proposed for Minningup Pool swimming access but with timber decking



Figure 8: L and R: River Access in Warren National Park

The northern site (Site 3 in the Shore Coastal Report) is just west of a small paperbark tree on a sandy shore and the more southerly site (Site 4) is on a rocky shoreline.



Figure 9: L: Site 3 Minningup Pool R: Site 4 Minningup Pool from Shore Coastal Technical Note

Shore Coastal notes ‘Survey is required to allow the design of these structures, and their position may adjust during the design process. Localised rock in the nearshore at Site 4 requires consideration. The design of stainless steel structures supported on the bank with a small number of stairs cantilevered into the water is likely to be feasible, in the context of heritage sensitivities with installing piles in the riverbed. These

structures are located on the Collie River floodplain and the design needs to allow for submergence and current flows during occasional flooding.

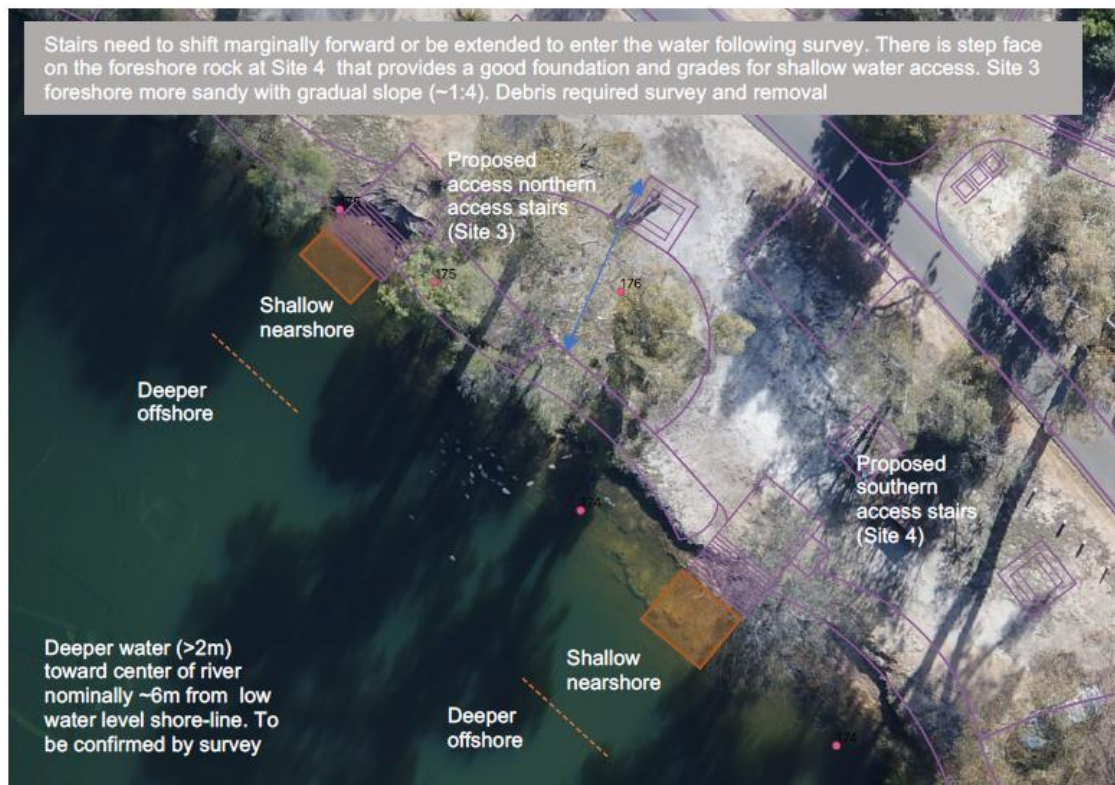


Figure 10: Sites 3 and 4 Proposals from Shore Coastal Technical Note

It is proposed that a deck will extend over the currently eroded sections of bank with steps extending from the deck into the water, preferably to low water line depending on how far this extends into the river. The steps will be 4m wide. The original shoreline will be re-established with coir logs approximately 600 – 1000mm high and backfilled with clean fill, overlaid with jute mesh through which plants will be established.

The stairs will access as deep water as is feasible while trying to minimise how far into the river the stairs extend so they are not visually obtrusive. Now the weir works are completed the river level fluctuations will be minimised in summer enabling deeper water to be accessed. The final locations of the stairs will also consider the rock outcrops, but regardless of the final location ‘no diving’ signs which also advice of other river risks will need to be clearly displayed. See section 3.4.2 for more conceptual details but these proposals will need confirming with an engineer who will also need to prepare the detailed construction drawings then approvals by DWER before finalising.

3.3.6 Pontoon

A pontoon is proposed to be moored in the central deep part of the river and will provide an opportunity for jumping and diving into the water (Site 7 in the Shore Coastal technical note). River survey is required to determine the depths of water available for the swimming pontoon.

The design, by an engineer, should consider the mooring system for the pontoon, survey of debris in the river, loadings (i.e. capacity) and pontoon stability. There are a range of commercially available pontoons for this purpose. Risk signage and / or a code of conduct may be required for the pontoon.



Figure 11: Typical swimming pontoons at Gracetown (L) and Coogee (R) from Shore Coastal Technical Note

3.3.7 Rowing Club Beach

The Shore Coastal Technical Note advises Site 5 the Rowing Club Beach ‘is steeper and higher elevation than Minnipool Beach and is understood to be made of imported fill’. The steeper banks along the old Rowing Club foundations will be revegetated and the flatter areas of beach to the north will be retained as a beach and enhanced. The concrete spoon drain and corner of the car park will be removed and the area reshaped to give larger areas of lawn which slope gently down to the beach. Beach nourishment is proposed and suitable material in terms of source, grain size and colour will need to be obtained. See section 3.4.2 and the details will be in the Technical Drawings and will require engineering and DWER approvals.

3.3.8 Fire Truck Access

SoC Emergency Services have advised they require fire truck access to a water point in a location that cannot be blocked by visitors. Consequently an access point is proposed for south east of the Rowing Club in a location that can be accessed directly off the road. Shore Coastal notes ‘A concrete pad (for vehicles to back up to) adjacent to the riverbank would be relatively straight forward. However, at this site, a structure may be required to span fringing foreshore vegetation to allow clear access to clean intake water, with steps providing direct access to the water for installing and retrieving hoses. This type of structure may require piles in the riverbed, although further consultation is required’. This proposal requires additional design work by an engineer in consultation with SoC and then approving by DWER. The river edge is well vegetated in this area and, provided the vegetation is protected during construction, the area should not require any additional vegetation.

Access could also be provided cross the beach but SoC does not favour this due to the possibility of parked cars blocking access.

3.4 Foreshore Stabilisation and Revegetation

3.4.1 Proposed Stabilisation

Between defined access points detailed in section 3.3, it is proposed that erosion is stabilised and the river’s edge is revegetated. There will be reed beds established along the water’s edge, and woody trees and shrubs established upslope of the reed beds and existing logs along the foreshore will be retained as habitat. Access to these areas will be temporarily restricted while the vegetation establishes, with a temporary fence of timber posts (possibly with steel posts between) with plain wire and a top wire of white colour so it can

be seen. This will discourage rather than prevent access, but as most people will not climb through the fence it should be enough to allow the foreshore to regenerate.

Some sections of the foreshore are already stable and these will remain as they are and will inform proposed revegetation.



Figure 12: L: Established reed beds and stable foreshore at mouth of drain line R: Typical temporary fence

Refer Swan River Trust publications for all available stabilising options⁴, but in keeping with the natural theme a low key, natural looking approach is proposed for Minningup Pool and natural and biodegradable materials will be used wherever feasible. Coir logs are proposed for along the shoreline as necessary with the need for these logs primarily affected by the slope of the bank and the amount of existing erosion along the High Water Level (HWL). The logs are 300mm diameter and 3m long and expected to last for 6 – 12 years. In steep and or unstable areas coir or jute mesh or matting will also be considered for interim stabilisation until vegetation establishes⁵.

Planting will be an important component of stabilising the foreshore with riverine shrubs and trees planted to supplement the existing vegetation as needed on the banks and appropriate sedges and rushes established along the waterline. Coir logs are proposed to be established about 1m beyond HWL to assist with establishing reeds along the HWL. Natural regeneration is expected to be significant once the use pressures are removed.

3.4.2 River Edge Treatments

The range of proposed foreshore rehabilitation treatments expected to be used in the Minningup Pool and Sandy Beach areas is summarised below. Where they are to be installed is shown indicatively on Map 4 Indicative Planting and Treatments which is in Appendix 6C. They are illustrated in detail in Part D and incorporated into the relevant detailed area plans. For proposed planting associated with the treatments see section 3.5.5. All existing fallen trees and logs are to be retained but rubbish and debris such as old bricks is to be removed. The treatments should be approved by a (marine?) engineer prior to installation and / or they need approving by DWER. The rock pitching around the culvert outfall may also need coir logs installed where it is undercut.

⁴ Reference to Swan River Trust publications such as, Best Management Practices for Foreshore Stabilisation, Direct Shore Stabilisation Approaches, December 2009 and Best Management Practices for Foreshore Stabilisation, Erosion Control Matting, December 2009 is recommended to give greater detail on installation processes.

⁵ See above.

1. Gently (less than 1:5, 1 Vertical: 5 Horizontal) sloping shorelines with no vegetation or some vegetation and minimal erosion on HWL – Retain existing vegetation if any. Coir Log (300mm diameter) may be required along HWL if there is any evidence of erosion and if there is no stabilising vegetation present. Old access tracks will likely need coir logs. To establish reed beds below HWL a second coir log should be installed 1m beyond HWL with rushes and sedges planted up slope of the coir log.



Figure 13: L: Sandy Beach - location for Type 1 Treatment R: Either side of Terrace Beach use Type 1 Treatment

2. Steeply sloping banks (greater than 1:5) with shrub vegetation, possibly with eroding shoreline – Retain vegetation and coir logs to be placed at HWL in gaps in the vegetation, such as along old access tracks. To establish reed beds below HWL a (second) coir log should be installed 1m beyond HWL with rushes and sedges planted up slope of the log.



Figure 14: L: Steep bank W of old pump needs Type 2 Treatment R: Coir logs needed along eroding edge of pitching and to continue below steep bank as Type 2 Treatment

3. Steeply sloping banks (greater than 1:5) with no shrub vegetation, possibly with eroding HWL – reshape bank if feasible (i.e. if there's enough space and the bank is not bound by roots) and place 1 – 3 coir logs along the HWL to prevent further erosion while vegetation establishes. To encourage rushes and sedges to establish below HWL a second log should be installed 1m beyond HWL with rushes and sedges planted up slope of the log. If there is no root mat in the remaining bank consider surfacing with jute matting, but likely mulching may be sufficient until vegetation establishes.

Where there is room to grade the bank out further (i.e. achieve a 1:5 slope or less) such as in front of the Rowing Club developing / extending the beach will be considered.



Figure 15: L: Bank at old pump needs Type 3 Treatment R: Steep shoreline Type 3 near Rowing Club in foreground (retain old Rowing Club foundations) with gently sloping beach beyond

- Sections of existing reinforcing rocks –consider laying coir logs at the toe of the existing rock and where there is no vegetation above the rocks install more coir logs. This is proposed to replace lifting the existing rock work, laying geofabric and relaying (or adding new where the steps are removed) the rocks. Rushes planted in association with coir logs will assist with stabilisation. Coir logs should generally be placed above any hard toe protection works so this proposal (which aims to minimise disturbance and be a softer approach) will need considering and approving by an engineer (who may advise it is inappropriate) and DWER before installation. Ensure any new rocks match existing rocks.



Figure 16: Type 4 Treatment L: Shoreline S of concrete steps, bottom of steps in foreground R: Shoreline N of concrete steps

- Shoreline reinstatement – where the foreshore has eroded inland it is proposed it will be re-established once the erosion pressures (foot traffic) have been removed (by installing decks and stairs). Fill will be placed along the shoreline to re-establish the original banks (including under the decks), covered with jute matting and planted. Parallel coir logs will be placed along the re-established shoreline at HWL to prevent shoreline erosion and 1m beyond HWL to encourage reed bed establishment. Where the foreshore is rocky, coir logs are to be set where they can be secured

as close to LWL as is feasible. Engineers will be designing the river access structures and this foreshore treatment will need considering by the engineer and including in the construction details as appropriate.



Figure 17: L: Type 5, access stairs proposed for over exposed roots and to water's edge R: View from where person standing in previous picture. Vegetation to be established in line with remnant rushes in mid distance

6. Tree stabilisation – where the root system of a tree is exposed, coir logs should be placed just beyond (minimum 500mm or further if tree is in an area of shoreline reinstatement) the perimeter of the exposed roots in a semi-circle and rushes and sedges planted upslope of the log in soil pockets without disturbing the existing tree roots).



Figure 18: L and R: Exposed tree roots to be protected with Type 6 treatment

For coir logs to be successful the following needs to occur.

- Logs need to be secured properly with biodegradable materials. Stake size and length in the ground is dependent on river flow, wave action and soils present. Stakes should not extend more than 50mm above the log and should not pierce the log. A 25mm square stake, 600 – 900mm long (depending on soil type) is expected to be required. Coir twine should be used to tie stacked logs together and secure logs to stakes.
- Place logs at the toe of the bank in a trench that is dug slightly lower than the bed level.
- Place logs in front of any existing vegetation at or above the lower limit of the vegetation.

- Logs to be made only of biodegradable materials (no synthetic netting etc.).
- Log ends need to be effectively secured (either dug into the bank or rotated towards the bank and effectively staked).
- Logs can also be terraced say one at HWL and one at LWL, or they can be stacked, sloping back slightly and tied together.
- Logs can be used in association with coir or jute matting or mesh with jute matting the most resilient. Any fabric needs securing effectively; see Swan River Trust's Erosion Control Matting publication and next section.
- Maintenance is required to promptly address any minor failings before they cause the structure to fail in a significant manner. Failed planting also needs replacing for 2 – 3 years after initial installation to ensure the plants are established and stabilising the bank once the coir log has disintegrated.

3.4.3 Installation

It is recommended that local contractors (or community groups) who are experienced in this type of work are engaged to implement the revegetation at Minningup Pool and Sandy Beach as the works need a long implementation timeline due to the need to coordinate the production of appropriate plant material and the need to continue to replace failed plants for 2 -3 years after initial establishment to ensure the foreshore is effectively stabilised.

Installation notes for the coir logs as detailed in Swan River Trust Best Management Practices for Foreshore Stabilisation, Direct Shore Stabilisation Approaches, December 2009 are listed below. The Trust's publication 'Best Management Practices for Foreshore Stabilisation, Erosion Control Matting', December 2009 should be referred to for the erosion control matting, some key points are noted below (most of the matting will be detailed as part of the installation of the river access structures but there may be some reshaped areas of bank that also need matting). Planting techniques are detailed in Part D Detail Design

⁶The following recommended construction procedure for coir logs has been adapted from McCullah and Gray (2005) and WDFW (2003).

1. Dig a shallow trench wide enough for the log and at a depth slightly below the channel grade.
2. Lay coir logs in the trench and lace ends together. They may also be laced together on dry ground before placement in the trench.
3. Bend the upstream and downstream ends towards the bank and bury in the bank if possible.
4. Secure the coir log in the trench by driving the stakes in the ground on either side of the log. Netting should be held open and stakes driven through the netting on either side of the logs, not through the centre of the log. Pairs of stakes (one on either side) should be installed at approximately one metre intervals. Stakes should be flush with the top of the log when completed.
5. Strap together stake pairs (next to each other) to hold the coir log in place and prevent lifting. Holes can be predrilled in stakes or drilled onsite. Coir twine, plastic tree ties or similar are used to tie one stake to the other.
6. Fill and shape behind the logs if required. Additional techniques such as jute matting or brush mattsing can also be used at this stage.
7. Plants should be planted behind the coir logs and up the bank as desired'.

⁶ Swan River Trust, Best Management Practices for Foreshore Stabilisation, Direct Shore Stabilisation Approaches, December 2009.

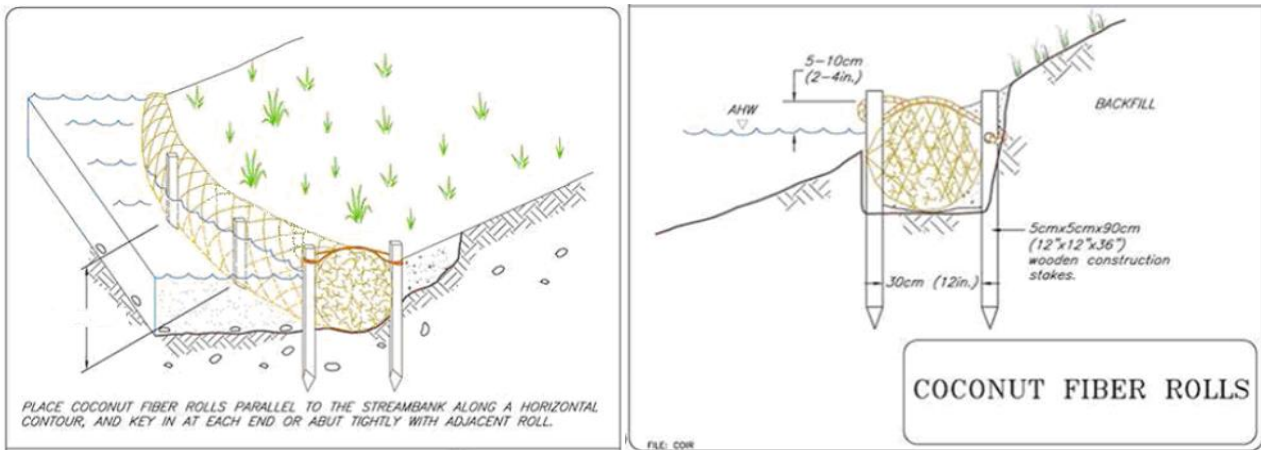
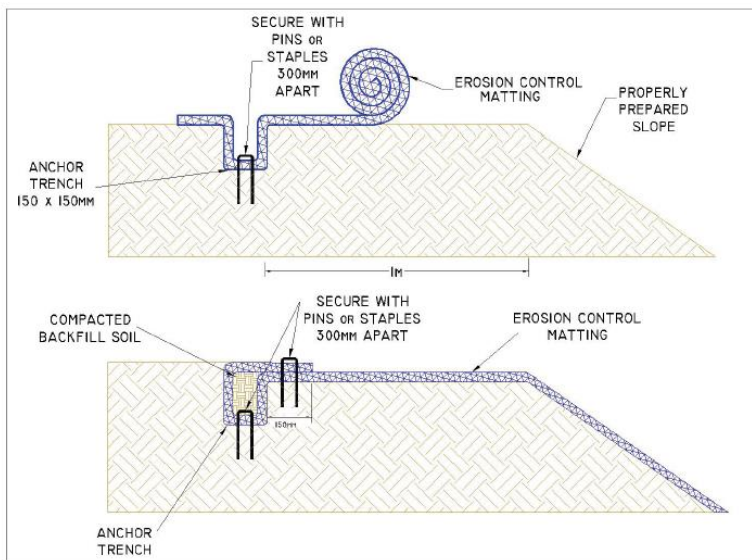


Figure 19: Typical coir log detail, source Swan River Trust 2009 adapted from McCullah and Gray (2005) and WDFW (2003)

Jute mesh is to be used on bare banks that have been reshaped, to stabilise the bank while long term vegetation establishes. The mesh is proposed to prevent minor surface erosion and to create a micro climate to help plants establish. It is expected the banks will only be subject to water flow in times of 1:5 or 1:10 flood (especially as water levels are managed by weirs), however these water flows will still be considered when installing the mesh. Reference to Swan River Trust’s Best Management Practices for Foreshore Stabilisation, Erosion Control Matting, December 2009 indicates there are a number installation considerations as follows.

1. Anchoring – secure anchoring is important. When installing matting down a slope, the top edge of the matting should be secured in a trench and also the upstream edge. It is recommended the edges are buried and anchored in a trench approx.150-200mm deep by 150mm wide, a typical anchoring detail is shown below, but biodegradable pins or staples are preferred.



Source: ECTC (2008)

Figure 20: Anchoring detail for erosion control matting source Swan River Trust 2009 source ECTC 2008⁷

⁷ ECTC 2008, Erosion Control Technology Council (ECTC) Guideline for Installing Rolled Erosion

2. Matting contact with the soil – Where feasible the soil should have an even surface so the matting is in close contact with the soil. The matting should be secured with an appropriate number of pins for degree of slope, with steeper slopes requiring more pins. As a general rule, matting should be secured with pins at 0.5-1 m intervals along the length of the matting and staggering pins 400-600 mm across the matting. Pins should be driven flush with the soil surface and be long enough to ensure sufficient ground penetration to resist pullout (WRC 2001a). Steep slopes 1:1 or 1:2 will require 6 -8 pins per m² and for gentler slopes such as 1:4, 4 pins per m² should suffice. Again biodegradable pins are recommended.
3. Matting Overlap – The joins in the matting are potential points of failure and so there should be overlap of approximately 100mm, which is secured and the upstream edge should overlap the downstream edge to minimise the likelihood of undercutting.

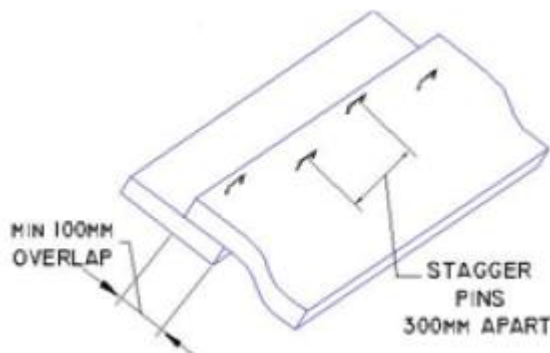


Figure 21: Overlap detail when high surface flow is not expected⁸.

4. Transition points – transition points (edges) with other treatments are potential weak points and should be carefully secured.
5. Care in storage and transportation – as the matting is biodegradable it should be stored carefully for only short periods of time before use (refer manufacturer for details) and care is needed in transportation and installation to ensure the matting is not torn as tears will be weak spots. If tearing occurs the matting should be replaced.
6. Toe protection – the toe of the matting needs firmly securing. Generally the matting should extend to LWL or 0.6m beyond the toe of the bank. As a coir log is proposed 1m below HWL to assist with reed bed establishment, the matting should extend to this coir log, be placed under it and wrap back over the log and be secured up slope. As the bank below HWL is not eroding the mesh will essentially be mulch where it extends below the HWL.
7. Maintenance – the matting should be regularly monitored for pin failures, tears etc. and repairs should be undertaken immediately to prevent greater failure of the matting. Once the vegetation is established (3 – 6 years) the matting can be left to disintegrate providing any non biodegradable elements, such as metal pins, are removed.

3.5 Vegetation Management and Proposed Planting

As the naturalness of the area is very important to the whole community and retention of trees and local vegetation is particularly important to the Noongar community there has been a focus on retaining,

Control Products in Slope, Channel and Shoreline Applications, Prepared by Erosion Control Technology Council, Texas, USA, May 2008, available at <http://www.ectc.org/pdf/ectc_may07_installationwithcaddpictures.pdf>.

⁸ Swan River Trust 'Best Management Practices for Foreshore Stabilisation, Erosion Control Matting', December 2009

rehabilitating and replanting vegetation throughout the site. The key elements of the vegetation management proposals are noted below.

3.5.1 Weed, Topsoil and Dieback Management

The SoC already has a weed management program in place around Minningup Pool as evidenced by dying patches of *Watsonia* at site visits in October 2020. It is recommended this program continues with a focus on areas that will be disturbed by proposed works to minimise the spread of weeds during construction. The extent of weeds will need confirming with the Superintendent prior to the commencement of works so that topsoil from infested areas is not used in earthworks.

The reserve was assessed as being affected with dieback⁹, however areas of dieback susceptible species occur within the site and so there may be dieback free areas and the topsoil from these areas can possibly be used for revegetation areas on the site.

The SoC is to engage a dieback specialist to assess the dieback status of the proposed road alignment and extent of clearing. Assessment of the areas to be revegetated is also recommended and the specialist is requested to prepare a dieback management plan for the works, based on these assessments. This plan should include advice on what soil can be moved where and where topsoil can be reused with the aim of reusing topsoil in areas to be revegetated wherever feasible.

The pine trees east of the Rowing Club are to be removed as they reduce the naturalness of the area, are spreading and many of them were killed in recent fires.

3.5.2 Overhead Hazard and Aboricultural Assessment

An arborist¹⁰ was engaged to assess the existing trees, identify impacts from and on proposed development and advise what is needed to sustain the trees long term. Trees also pose a risk to visitors from falling branches and so this risk to visitors was also assessed and actions to mitigate the risk were identified. This assessment was carried out using the International Society of Arboriculture Tree Risk Assessment Method (TRAQ) which is a method of qualifying risk through estimating likelihood of tree failure, likelihood of impact and consequences of impact to potential targets within the tree impact zone. It should be noted no tree can be made 'safe' as such a state is simply unattainable.

Tree assessment and impact reports have been prepared for the Minningup Pool Redevelopment park areas and proposed road alignments as noted below and contained in Appendix 7C

- Minningup Pool Day Use Area Upgrade – Stage 1: Preliminary Tree Assessment and Impact Report 2nd November 2020. This looks at the trees between the existing Minningup Road and the river in the vicinity of Minningup Pool and the Rowing Club. It contains a detailed and summarised description of all trees and a location map.
- Minningup Pool Day Use Area Upgrade – Stage 2 Sandy Beach: Preliminary Tree Assessment and Impact Report 18th November 2020. This looks at the trees between the existing access road and the river at Sandy Beach. It contains a detailed description of all trees and a location map. The summary of trees is in a separate spreadsheet.
- Minningup Pool Day Use Area Upgrade – Stage 3 – Rowing Club Precinct: Preliminary Tree Assessment and Impact Report 18th November 2020. This looks at the trees between around the Rowing Club and the north side of the existing Minningup Road that will be in future parkland areas. It contains a detailed description of all trees and a location map. The summary of trees is in a separate spreadsheet.

⁹Phytophthora Dieback Interpretation Report for Minningup Pool by NPC Consulting 2010

¹⁰ Jorgenson Ben, Kings Tree Care.

- Minninup Pool Day Use Area Upgrade – Road Alignments: 5th December 2020. This consists of a location map for all trees and a list summarising the recommendations for all trees that are likely to be impacted by the proposed alignments, but not requiring removal. Trees that would definitely have to be removed were not assessed. The generic recommendations in the previous reports will also apply.

These reports describe the trees that will be impacted by the proposals and assess their health and structure. Some tree removals are recommended as they are hazardous and tree management required is also identified including dead wood removal, removal of bitumen and concrete, aeration of the root zone, applying a mulch layer and fertilising. The indicative cost for this management is included in the overall indicative costs.

The assessment has resulted in adjustments to the road and parking layouts in the master plan and to the location of some facilities and items of infrastructure with some significant changes noted below.

- The lookout that was proposed for under the large western spotted gum *Corymbia maculata* at the southern end of the terraces will now be omitted due to the risk of falling branches as there is a lot of dead wood in the crown of the tree and if visitors are spending periods of time under the canopy the risk is increased.
- The disabled accessible path that is proposed for below the above tree will be located down slope as much as possible to reduce impact on the western spotted gum and root pruning will be allowed for, but as people are moving through the area the risk has been assessed as acceptable.
- The disabled accessible path and associated fishability deck will be omitted as the tree east of the retaining walls is hazardous making using the path a risk.
- The memorial seat by the fallen tree needs relocating.
- The picnic area and parking on the shoreline east of the Rowing Club will be moved further east to avoid a large blackbutt (*Eucalyptus patens*).

Other general recommendations include

- Not locating infrastructure under trees especially where there is dead wood in the crown, but also so it doesn't damage the root structure.
- Ideally keeping infrastructure beyond the tree protection zone (TPZ) which roughly extends to the dripline including avoiding filling those areas. Some damage can be tolerated providing this is compensated elsewhere in the zone with the arborist the best person to make these judgements.
- Avoiding damage to the structural root zone (SRZ) which is proportional to the tree trunk (approximately 5m radius for very large trees).
- Australian Standard AS4970 – 2009 Protection of trees on development sites should be referred to during the construction stage.
- Pruning should be done in accord with AS4373-2007 Pruning of Amenity Trees.
- Mulching (100mm thick) of the TPZ is recommended for all trees and where this is not feasible even reduced areas of mulch should be applied as some is better than none.
- Where tree root zones have previously been impacted, such as in the excavation area behind Sandy Beach, replacing voids/cuts in the root zone with uncompacted soil is acceptable.
- The installation of any services should consider potential impact on trees including considering the use of directional boring rather than trenching in the vicinity of trees.

Minninup Pool Day Use Area Upgrade – Road Alignments: 5th December 2020, assesses the likely impact of the new roads and car parks on existing trees on the edges of the development (excluding those trees that will need to be removed and there is no likelihood of their retention). This was needed because although the infrastructure was located to minimise the impact on trees, the impact of the development on the trees can

be underestimated, including trees where the impact is primarily to the root zone and not the actual tree trunk and the report advises what trees can be retained and what management is required to sustain their retention. This report will continue to be referred to during the preparation of the construction drawings in Part D.

it is strongly recommended that all tree management works be carried out or supervised by a certified arborist and must be done so in accordance with AS4373-2007 Pruning of Amenity Trees. Budget allowances have been made for an arborist at various stages of the project and so engaging a project arborist or referring to a relevant SoC representative on an ongoing basis is recommended so there is continuity in advice and management.

3.5.3 Amenity Tree Planting

New trees are proposed for throughout the site for various reasons such as to replace removed trees, to provide shade and shelter and to maintain the naturalness of the site. The new trees need to be low risk species and they need to be local to the area. Large (70 – 100litre with a height of 2.5 – 3m) advanced trees have been requested by SoC if available so they are established more quickly. The trees will need to be good quality and in accord with Australian Standard AS 2303:2018 Tree Stock for Landscape Use unless directed otherwise by the Shire Representative. SoC has requested the use of Local Provenance species (say within 30km of Collie) but seed does not need to be Local Provenance (though it is desirable), so there is a considerable lead time involved with producing these trees and so the tree supply should be organised as soon as funding is available.

- Jarrah trees (*Eucalyptus marginata*) – used on the upper elevated areas
- Paperbarks (*Melaleuca preissiana*) - used where space is more limited and close to the river.

Other trees that could be considered are swamp paperbark *Melaleuca raphiophylla* and WA peppermint *Agonis flexuosa* (though this can restrict views to the river depending where used) and additional species may be identified through discussions with stakeholders.

3.5.4 Amenity Shrub Planting

Shrub planting is proposed for a number of locations for a variety of reasons such as creating spaces and screening, stabilising steep areas and the foreshore, giving visual interest (colour and texture), attracting birds and other wildlife and showcasing bush tucker and useful plants. Local species are proposed and they should be from Local Provenance species (say within 30km of Collie) but seed does not need to be Local Provenance (though it is desirable) which may need a lead time of 2-3 years to produce the plants.

The report by Ecoedge, Reconnaissance and Targeted Flora and Vegetation Survey at pt. Reserve 34343, Collie, 2018 which is discussed in Part A, together with casual observation of the general area during site visits gave a preliminary list of plants to be considered for the amenity planting as follows.

- Collie grevillea (*Grevillea ripicola*)
- Myrtle (*Hypocalymma angustifolium*)
- Bottlebrush (*Callistemon glauca*)
- Basket flower (*Adenanthus obovatus*)
- (*Hibbertia stellaris*)
- Running postman (*Kennedia coccinea* or *K. prostrata*)
- Snakebush (*Hemiandra pungens*)
- Kangaroo paw *Anigozanthus mangleissi*
- Catspaw *Conosylis* sp.
- Lemon scented darwinia *Darwinia citriodora*

Smaller stock are preferred as they establish better in the long run, such as tube stock or maybe 140cm pots (planted at approximately 1m centres dependant on species) and they will be irrigated for at least the first year, depending on seasonal conditions. Clean local topsoil will be used to backfill excavated areas where feasible and appropriate and all areas will be mulched 100mm thick.

3.5.5 Rehabilitation Areas

Section 3.4 identifies the need for foreshore revegetation to stabilise the foreshore (in association with temporary fencing, coir logs etc.) and other disturbed areas such as old road alignments will also need revegetation together with appropriate site preparation techniques (appropriate use of local weed free topsoil etc.). Drainage swales and basins may also need establishing. Policies and guidelines are available for foreshore management such as the Water Notes that are available on the DWER website and species need to be from the Local Provenance (say within 30km of Collie) if feasible and practical. Some of the trees and shrubs noted above may be appropriate but specialist riverine vegetation will also be required for bank stabilisation and protection such as reeds and rushes. The flora survey notes the following species occur in the vegetation communities on site.

- Spreading Sword-sedge *Lepidosperma effusum*
- *Cyathochaeta avenacea* (peaty swamp)
- *Gahnia decomposita*

The selection of plant species that are suited to their position in the landscape is particularly important along the river's edge and the zones illustrated in the figure below (have been used to select river edge species). The emergent zone – lower and the submergent zone will not be planted as it is expected they will naturally revegetate once the upper zones are revegetated due to the likely stability of the water levels resulting from the re-established weirs.

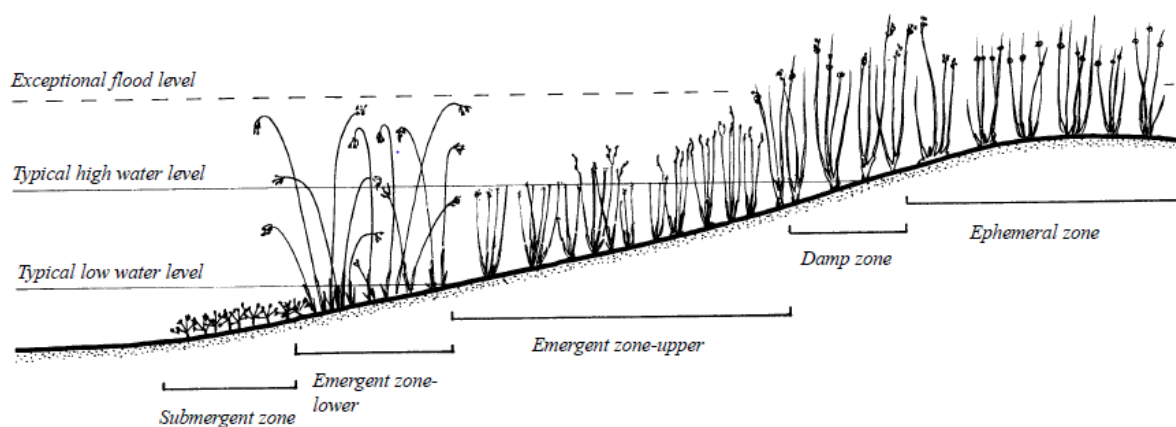


Figure 1: Wetland zones and typical distribution of some sedge and rush species.

Figure 22: Taken from Water and Rivers Commission (WRC) 2000, Using rushes and sedges in revegetation of wetland areas in the south west of WA, Water and Rivers Commission, River Restoration Report No. RR 8¹¹

¹¹ Water and Rivers Commission 2000, Using rushes and sedges in revegetation of wetland areas in the south west of WA, Water and Rivers Commission, River Restoration Report No. RR 8
<https://www.water.wa.gov.au/water-topics/waterways/managing-our-waterways2/river-restoration-manual>

Tube stock or cell plants will be used at close spacing (depending on species). Occasional mature trees will be used in the rehabilitation areas on Sandy Beach so that shade is provided more quickly. The plants will be planted at the beginning of winter and not irrigated (though mature trees will require watering for at least 2 years) and infill plantings of 20 – 30% will be allowed for in the second year. Areas will be mulched where feasible.

Where civil works occur in areas of bushland and disturbance consists of minimal cut and fill or minor disturbance to the natural topsoil or root mat, the areas will be graded to natural profiles (where necessary and may be finished by handwork) and mulched to encourage natural regeneration; planting will not be required.

3.5.6 Planting details

To improve the likelihood of the proposed plantings being appropriate for the area and practical to produce, a botanist¹², who also propagates plants, was engaged to look briefly at the plants, particularly the rushes and sedges that were growing along the river. After a site visit on 20th January 2021 a plant list was prepared that notes species observed, habitat, ease of propagation and whether it is introduced to the area, see Appendix 8C. It was acknowledged that other revegetation specialists such as the Blackwood Environment Community Nursery and the Leschenault Community Nursery, Leschenault Landcare Group and DBCA may also be able to assist. The local Noongar community and The Friends of the Collie River may also want to input to this project.

Further analysis was undertaken of the reed / rush species noted on site (noted*), together with some referred to in the WRC report to determine which wetland zone they're suited to.

- **Cyperus polystachyos*? – noted in Damp zone
- **Ficinia nodosa syn Isolepis nodosa*– Knotted Club Rush – Ephemeral to damp zone
- *Gahnia trifida* – Coast Saw sedge – Damp zone
- **Hypolaena exsulca*? Possibly *Leptocarpus laxus* or *Chaetanthus aristatus* –winter wet depressions so probably damp zone
- **Juncus kraussii subsp australiensis* – Shore Rush – Damp zone to 30cm into emergent zone
- **Juncus pallidus* – Pale Rush – Ephemeral to damp zone
- **Lepidosperma longitudinale*- Pithy sword sedge - Damp zone to 20cm into emergent zone
- **Lepidosperma squamatum* – observed in Damp – Ephemeral Zone

The Master Plan (see Appendix 2C) illustrates areas of proposed planting and these areas are identified and described briefly below together with the planting rationale for the area. The preliminary locations of these areas are shown on Map 4 Indicative Planting and Treatments which is in Appendix 6C.

Sandy Beach – generally a moist habitat especially near the river.

- Area A - Rehabilitation area south of picnic shelters which was the old access track into the Bedroom. Primarily colonising species will be planted with occasional large trees as people should not be accessing these areas, so planting trees that might drop branches is acceptable.
- Area B- Scattered infill planting proposed between the parking area and the river –These plants are to provide interest and to encourage visitors to stay on the paths.
- Area C - Rehabilitation area south of the beach (north of the rope swing) – Area A plants to be used for this area with no *Melaleuca preissiana* or *Eucalyptus rudis*.
- Area D – Sandy rehabilitation area north of the beach – Primarily colonising species suited to moist areas with the *Anigozanthus flavidus* , *Acacia pulchella* , *Eucalyptus rudis* and *E. patens* planted away

¹² Shedley, Erica, Southern Flora.

from the boundary on the beach and road boundary so people are not close to them (as they are prickly, itchy, drop branches etc.). If this area is to be a drainage basin, rushes and sedges will be used in the basin.

- Area E River Edge Planting – These plantings are to stabilise the foreshore long term and coir logs will be used on the river’s edge to assist the reed establishment. Plants potentially hazardous to visitors will be excluded and the foreshore areas will be fenced during establishment. Advanced *Melaleuca preissiana* will be planted as shade trees on the beach with shrubs, small trees and reeds along the water’s edge.
- Area M – Non irrigated lawn area, 10m wide on the riverside of the paths and picnic tables. A sterile creeping grass cultivar is proposed, possibly Village Green a male sterile kikuyu grass but the area could also just remain as sand.

Minningup Pool – Dry habitat on upper levels with a moist habitat by the river and in the low lying areas.

- Area F - Low amenity planting - Plantings are to give visual interest and spatial separation while still allowing views over them to the river so the plants will generally be no more than 600mm – 1m high. A few advanced jarrah trees *Eucalyptus marginata* will also be planted in these areas, as in the long term these will complement the existing jarrahs and frame rather than block views.
- Area G – Rehabilitation with low amenity planting - These areas are mostly sections of redundant road and paths in the entry area which will be revegetated with the same plants as are used for Area F so there is continuity either side of the road.
- Area H - Bank plantings (vicinity of old diving board and welcome area) –These plantings are for visual interest and to stabilise the bank areas with most of these areas also being in the root zone of established trees, mostly jarrah trees. Plantings are to be low, up to 1.2 m high.
- Area I –Occasional Drainage Line - This is currently mown grass and the current profile is to remain but sedges and rushes are proposed for the outfall area where the stepping stones are being installed. Mulch will be laid under the trees and existing lawn grasses sprayed out as necessary.
- Area J – Existing Drainage Line - a strip of medium high shrubs and an occasional advanced tree are proposed for area adjacent to the rushes to reinforce the drainage line and create spaces and interest in the park.
- Area K Foreshore – Tall shrubs and rushes / sedges, combined with coir logs, will be used to stabilise the river’s edge between the hardened access points. See section 3.3 for the various stabilising treatments that will reinforce the river’s edge until the planting can establish. Particularly a coir log will be placed 1m beyond HWL to encourage reed stabilisation along the HWL. Fencing will protect these areas until they are established and tube stock used. Low planting or trees (with trunks that will frame views) will be used in certain locations to maintain the views to the water from the picnic areas.
- Area L - Bush Garden - The naturally regenerating shrubs by the fallen tree, will be supplemented with a wide variety of attractive local plants to show case the beauty of the local flora. There will be rushes on the shoreline, with wetland plants set amongst the branches of the tree and jarrah forest plants at the butt end of the tree, just 1 – 3 of each plant, all to soften but not hide the tree. Any special plants that can be obtained such as *Macrozamia riedlii*, will also be added. Plants from this list will also be used to create a small planted area around the remnant *Macrozamia riedlii* in the picnic area, to give it some protection, and small areas between the central car park and the path will be planted as they are too narrow to have as irrigated lawn.

Plant lists with design criteria have been prepared for these areas see Appendix 9C and the flowering times are noted with a view to optimising the flowering at any time of the year. Planting plans will be prepared in Part D for each area, based on the plant lists. These plans will be accompanied by plant lists for each area detailing quantities required together with planting notes applicable to each area. Standard planting details

have been prepared for the range of planting types (trees, shrubs, tube stock) and general notes regarding spraying and plant supply will be included in the specification.

The staging and timing of the works and who will undertake the work will influence what plants are required at any one time and so overall plant totals are not supplied in Part D. Plant availability or propagation success may also mean species are unavailable and substitutions are required in which case reference should be made to the design criteria for each of the planting lists to ensure an appropriate substitute is selected.



Figure 23: L – C: Local Shrub Species

R: Rush species

3.5.7 Lawn Areas

Sandy Beach will have areas of dry grass established between the beach and the bush for visitors to sit on. The local couch grass species that is already growing on the river's edge is introduced *Cynodon dactylon* and so will not be used. Marine couch *Sporobolus virginicus* which comes from the South West is understood to have a poor drought tolerance, and so unless another native grass species can be identified it is proposed to use a sterile creeping grass cultivar possibly Village Green a male sterile kikuyu grass. The grass will ideally be established in autumn when the soil is still warm and will not receive any irrigation.

The main Minningup Pool area is to have irrigated grass that will withstand the high levels of use and be comfortable to sit on. Some areas of proposed lawn will need hardstand/compacted gravel removing, other areas will need aerating and in some places the existing grass will need spraying out and possibly skimming off to enable the new grass to be established. Clean soil and soil conditioner may need to be brought in. The grass species will be confirmed in Part D

The lawn areas will be established in the well-used parkland areas and will be broken up by areas of mulch under groups of trees and this will give a more informal natural appearance. There will be no edging between the grass and the mulch or between lawn areas and planting beds, to maintain naturalness.

3.6 Services

As services (power, water and sewer) are to be provided to the nearby camping area River Engineering was requested by SoC to investigate the provision of services to the Minningup Pool Foreshore Area¹³. This report is a 'high-level conceptual overview of the required services, particularly focused on spatial requirements and infrastructure provisions'. The report does not allow for arborist assessments of the potential impact on trees or visual considerations of the proposed infrastructure such as pumping stations and transformers. These preliminary concepts need refining to retain the amenity of the area (currently transformers and

¹³ River Engineering, Minningup Pool Tourism Project – Servicing Report, October 2020

pump stations are proposed for prominent positions in high use parkland areas) and to minimise tree removal and environmental damage.

3.6.1 Sewer and Water

Water is proposed to be supplied to the campground along Minninup Road but there is no indication as to how the water is reticulated from there. Sewer is also to be connected to the campground and then reticulated to Sandy Beach and Minningup Pool as shown below (these alignments may also be used for water reticulation). The figure below indicates the services will be located close to the delivery points (toilets, Rowing Club etc.) and so it is proposed the cost estimates for these structures/buildings will include the allowances for connecting to the pipe network.

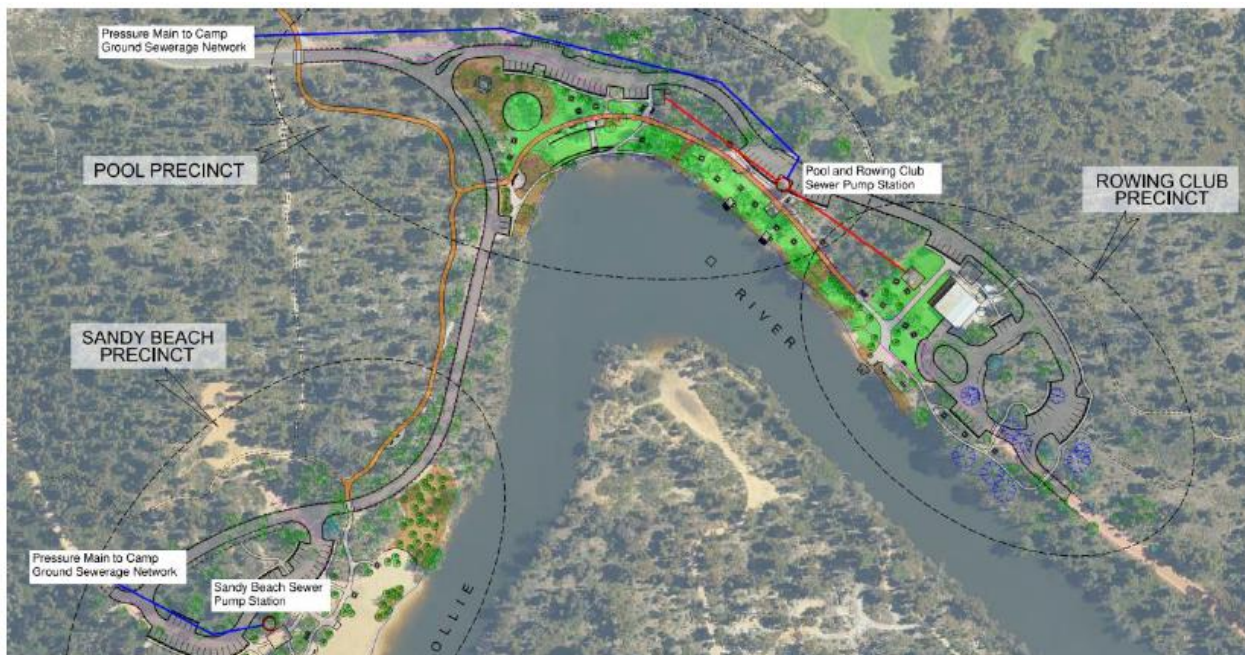


Figure 24: Sewer Reticulation - Reference River Engineering

The total cost for provision of sewer and water is between \$1.525 million - \$1.514 million (depending on which supply option is selected) of which the water reticulation to Minningup Pool and the Rowing Club Precinct is \$60k and to Sandy Beach Precinct \$50k and sewer reticulation to Minningup Pool and the Rowing Club Precinct is \$90k and to Sandy Beach Precinct \$60k. SoC advises additional consultancy fees of \$20k each for water and sewer supply are required.

3.6.2 Power and Communications (Including Lighting)

The total cost for provision of power and communications is between \$493k - \$659k - \$628k (depending on which supply option is selected) of which extension to Minningup Pool and the Rowing Club Precinct is \$49k and to Sandy Beach Precinct \$56k and this includes provision of submain cabling, site main switchboard or distribution board.

The infrastructure required is dependent on the option selected but an indication of the likely infrastructure is shown below, with a transformer also possible for the Minningup Pool parkland area.



Figure 25: Minningup Pool Main Electrical Components Reference River Engineering

3.6.3 Lighting

Focus WA Consulting as sub consultants to River Engineering developed the above power and communication proposals and they¹⁴ were approached to develop indicative cost estimates for the design, distribution, supply and installation of power supply and lighting for the day use areas.

The consultants recommended lighting in accord with the relevant standards (AS/NZS.3.1-2020 For Outdoor Carparks CAT PC3 Parking Spaces and Circulation Roadways) but the SoC advised it is not expecting to have lighting all along the roads or have the car parks all lit up, the lighting is only to be for security and night time BBQs and the cost estimates are based on this lower level of lighting.

Lighting is expected to be at the pedestrian crossing points, toilets, BBQs, footpaths, large shelters, where car parks join footpath etc. The Rowing Club will also need power and light and there may be pop up vans outside the Rowing Shed and in the entry carpark.

The indicative costs for electrical distribution and minimal lighting can be summarised as

- Design Fees \$15,000
- Sandy Beach Precinct - \$62,000
- Minningup Pool Precinct - \$158,000
- Rowing Club Precinct - \$134,000

Should the lighting requirements increase at the detail design stage or need to be provided in accord with the standards these costs will increase. Lighting of the entry sculpture is also likely and maybe even some feature trees, but these will be discussed as part of the entry sculpture design process.

¹⁴ Michael Higgs, Principal, Focus WA Consulting

Overhead LED lighting is generally proposed and black poles are preferred so they are not obtrusive in the day time. Provided black poles and fittings are used there is no need for architectural style lighting as the focus is to be on keeping the area natural rather than creating features. No specific lights were identified in the Focus proposals but Integrated Power¹⁵ suggested two lighting element options as shown below, the SL2 Series LED streetlight which comes in black as well, and is just over \$1,000 plus GST each supply with 6m poles and the more architectural Poletop Light which is closer to \$1,550 each to supply.



Figure 26: L: SL2 Series LED streetlight (comes in black as well)

R: Poletop Light

The above lights can be considered when detail designs are prepared for the power and lighting and Integrated Power was able to simulate different lighting options which assists in understanding what the final outcomes will be, see simulation of Integrated Power’s minimal lighting proposal as requested by the SoC, that is in accord with the relevant standard. Note this is not the proposal on which the budget estimates were developed by Focus, and is only included to illustrate what graphic representations of lighting designs can be prepared.

The ongoing costs of lighting are also of concern to the SoC and based on power costs of 30c/kwh, Integrated Power calculated that for the lower intensity more consistent design at 8 hours per night the costs are estimated to be \$2.66 per night. These costs will of course vary dependant on the final design.

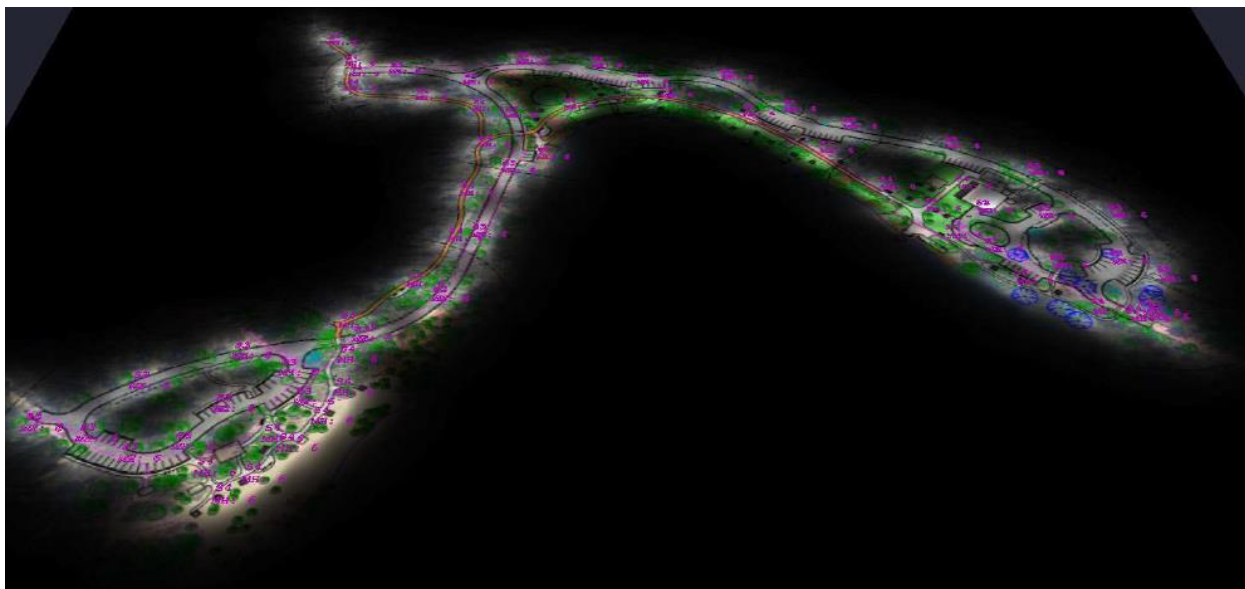


Figure 27: Graphic of minimal lighting design in accord with relevant standard (prepared by Integrated Power)

¹⁵ Gawl, Ryan, Integrated Power

3.6.4 Telecommunications

The Site Context Plan prepared by Planned Focus¹⁶ indicates there is an underground telecommunications cable along the existing Minninup Road through the parkland areas. Care will need to be taken to avoid this particularly when installing new services in the area.

3.6.5 CCTV

Due to a history of antisocial behaviour in the Minningup Pool area and problems with illegal camping the SoC proposes to install CCTV throughout the recreation area. The categories of surveillance range from identification, recognition to overview and SoC requires identification on the access roads to the foreshore with a lower level of surveillance internal to the site. Spyker¹⁷ provided an indicative cost estimate of \$140,000 Ex GST for supply and installation of the above surveillance (excluding traffic management and pole and trenching installation) with the Rowing Club Shed as the recording location and power supplied to the site. If a solar powered option is required this would be approximately an extra \$45,000 Ex GST.

3.6.6 Irrigation

The grassed areas around Minningup Pool and the Rowing Club are to be irrigated with water supplied from the river (to minimise ongoing maintenance costs). This will require a permit from DWER and a new pump, which can be powered by the new electricity supply. An automated irrigation system is required with the controllers in the Rowing Club shed. Total Eden¹⁸ provided an indicative price for the supply and installation of a pump and irrigation system and Down South Landscaping¹⁹ supplied an indicative cost for the supply and installation of turf.

3.7 Roads and Parking

3.7.1 Factors Influencing Design

The significant issues with the current road and parking layouts, as detailed below have resulted in the major reorganisation of the foreshore areas.

- Traffic moves quickly along both Minninup Road and Sandy Beach Road and as both roads, particularly Minninup Road are also used by pedestrians and cyclists, there is significant potential for conflict and accidents.
- On Sandy Beach vehicles drive along and park on the beach where people are recreating again resulting in significant potential for conflict and accidents.
- At Minningup Pool entry area parking is unorganised with vehicles moving randomly through the area which has some potential for conflict and potential to back into the existing trees.
- In the picnic areas vehicles park off the road, under trees which has the potential for vehicle pedestrian conflict, it reduces the grassed areas available for picnicking and it compacts tree root zones, ultimately leading to the decline of the trees.
- There is no turnaround for long vehicles beyond the main entry area.

With the aim of addressing these issues and also maintaining the visual connection to the river for those in parked cars, minimising the distances people have to walk and minimising the impact on trees and other vegetation, a number of site layout options were investigated see Part A.

The proposed road layouts incorporate the following elements.

¹⁶ Planned Focus, Minninup Pool Reserve Site Analysis, Prepared for Shire of Collie, March 2019

¹⁷ Willemse, Paul, Spyker Technologies Pty Ltd. T/A Spyker Business Solutions email 30th November 2020.

¹⁸ Dean, Simon, Irrigation Projects Manager, Total Eden.

¹⁹ Breeden, Alan, Down South Landscaping.

- Roads set back from the main activity areas with the parking mostly between the road and the destination so pedestrians can get out of their cars and not have to cross a road to get to their recreation activity.
- Bays are angled so people can view the pool and the river from their cars.
- Vehicles are slowed by road geometry (such as new intersections) and structures (such as speed humps).
- Parking area layouts incorporate parking and turning for long vehicles.
- Parking capacity is optimised.
- Separate pedestrian and cycle routes are provided, including repurposing sections of the existing Minninup Road as a dual use path. Where these routes cross roads they will be raised to create a speed hump.

3.7.2 Design Elements - Vehicle Areas

The design elements associated with the roads and parking areas are described below.

- The roads will be as minimum impact as is feasible while still being in accord with the relevant standards.
- All roads will be 6m wide asphalt with gravel shoulders with kerbing only used where necessary for drainage, as the more natural unkerbed shoulders are preferred (red gravel will soon be covered with fallen leaves and visually blend in).
- Road alignments have been adjusted to minimise the impact on trees and an arborist or Shire representative will be involved with clearing to ensure damage to trees is minimised.
- Parking bays will be a generous size (approximately 3m x 6m) to allow for larger vehicles, and concrete wheel stops will be used to prevent vehicle overhang from restricting pedestrian collector paths.



Figure 28: L: Typical parking with black asphalt, wheel stops and concrete collector path C: Low key road construction with speed hump R: Pine bollards

- Paths will generally be a different material and colour to the vehicle areas to emphasise the different areas.
- Disabled parking bays are provided and where feasible these are alongside pedestrian areas (such as paths) so these areas can also be used by disabled people getting out of their cars, optimising vehicle parking areas.
- Service access (3m wide) is provided, which will also function as emergency access (double padlocks required on removable bollards and access gates). This access in some cases uses wide pedestrian paths which will be built to accommodate service and emergency vehicles.

- Signage will be in accord with the relevant standards but where feasible more low key totems will be used rather than high signs on poles.
- Bollards will be used sparingly to control vehicles as primarily design, natural barriers (such as banks and trees, existing and new) and other structures will be used. However in some locations pine bollards will be used at 1.5m centres to supplement these other barriers. Care will be taken with the placement of these bollards to ensure they are not in the way of backing vehicles or opening car doors etc.

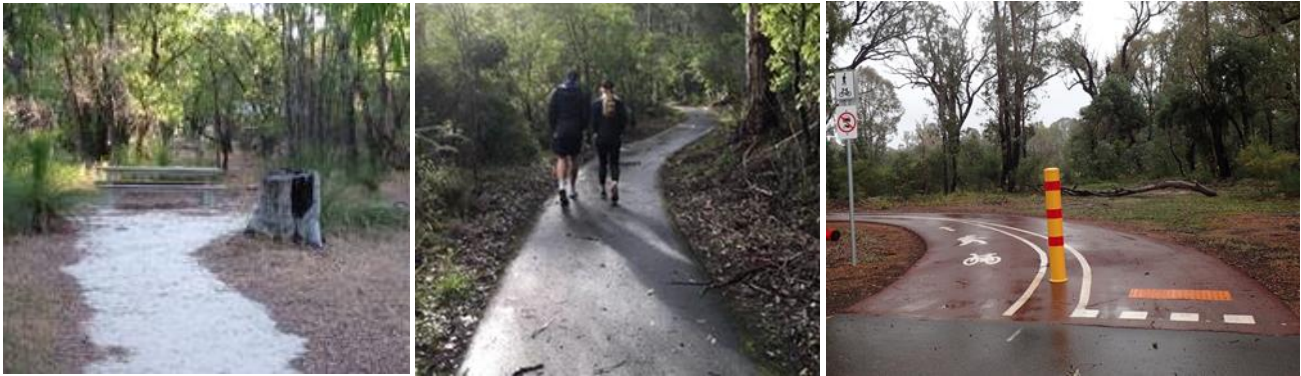


Figure 29: L: Compacted limestone path C: Black asphalt path R: Existing Dual Use Path

3.8 Water Management

3.8.1 Water Management Considerations

As the site is adjacent to a river the management of water is particularly significant with the following elements being important considerations.

- There is a natural wetland which overflows into the river just west of the rowing club via a naturally vegetated water course. Development should minimise impact on these natural features.
- Deep drains (approximately 2m x 2m) have been excavated to drain the golf course and these discharge into the river via a concrete culvert which extends from under the current Minnipup Road to the edge of the river. The outfall of this culvert will be in the revegetation zone and so fenced off from visitors, however the SoC may still want to assess any potential risk of children climbing into the drain.
- Just west of the above culvert is a minor drainage line within a group of trees with timber planks laid on the ground at the outfall to provide dry pedestrian access across the damp area. The existing extensive paved areas and the compacted areas under trees around the pool result in considerable runoff in heavy rainfall events which in turn causes erosion along the foreshore.
- The stormwater from the parking area in front of the Rowing Club discharges via a spoon drain onto the beach area causing erosion.
- Behind Sandy Beach the low lying areas resulting from previous excavation of sand material result in big pools and muddy areas in winter, rock underlies some of these pools.
- Pollution of the river should be minimised including optimising the quality of stormwater runoff particularly from roads and parking areas. Also there should be no leaching from toilets into the river.
- Facilitating water absorption into the soil profile has many benefits including optimising water availability for plants, filtering water before it enters the river and reducing erosion of fragile areas.

3.8.2 Water Management Proposals

A number of strategies have been included in the development proposals to address the need to manage water.

- Stormwater from paved areas will be directed into vegetated sump areas, swales and existing drainage channels to optimise filtration.
- The minor drainage line will remain as a local absorption area and stepping stones (to give a nature play experience while maintaining any water flow) with associated reed planting (to filter any stormwater) will be installed at the outfall.
- Compacted areas will be rehabilitated wherever feasible by removing hardstand and developing turf areas and by aerating soil and mulching under trees.
- Contours will be adjusted in parkland areas to optimise on site retention of water wherever feasible.
- Vegetation along drainage lines will be supplemented where feasible.
- The river foreshore will be revegetated where needed and existing foreshore vegetation will be supplemented as required.
- River access structures will be installed to minimise visitor impacts along the foreshore.

3.9 Paths and Trails

Trails are discussed in section 2.3 with the dual use path that connects to Collie and the informal mountain bike trail being the existing trails on the site.

A hierarchy of trails is proposed for the site as detailed below.

- Minningup dual use path/walk, much of which is set on the existing Minninup Road and sections of existing parking areas, will link from the Rowing Club trailhead through the parkland to the lookout over the pool. This will have a new black 3m wide asphalt seal to differentiate it from standard dual use paths and help it blend into the park land and enable it to be used for service and emergency access. New head walls either side of the path as it crosses the culverts will give more of a pedestrian character but will maintain the 3m clearance for vehicles. There will be seating and interpretation along the path.
- Sandy Beach Dual Use Path – this 2.5m red asphalt commuter path will extend from the existing DUP to Sandy Beach with a connection across Sandy Beach Road into Minningup Pool. The red seal will finish where the path crosses the road at the Sandy Beach end and will continue as a 2.5m wide concrete path to the interpretation/arrival node overlooking Sandy Beach. This path will have interpretation plaques and an elevated sitting area at the Sandy Beach end. It will form part of the Minninup Link referred to in the Collie Trails Strategy.
- Collector and other significant paths – 1.5m wide concrete paths will be used for all main access routes within the recreation sites. Asphalt is not used as puffs are a problem, pushing through the asphalt surface. In a couple of places these paths will be 3m wide and reinforced so they can be used for service access.
- Disabled Accessible Path to the river's edge – a 1.5m wide concrete path at disabled accessible grades will be constructed from the lookout over Minninup Pool, down to the beach then eastwards to connect to the main Minningup Walk. It will have handrails and landings as required to be in accord with the relevant standards.
- Minor paths – paths 1.5m wide that will be used infrequently and generally do not connect to disabled assessable facilities can be unsealed with a compacted surface such as limestone or shale, lateritic pea gravel is not appropriate as the round pebbles are slippery.
- Wheelchair swimming access path– wheelchair swimming access is proposed for Sandy Beach as it has gentle grades see section 3.2. Path to be concrete 2m wide extending into the water with a railing from the water's edge to the end of the concrete. A recent survey of the shoreline when the water levels were low indicates the shore below High Water Level may be steeper than originally estimated and so a low deck may be required to maintain accessible grades. The detail design of the ramp should be undertaken in association with the local access and inclusion committee, possibly with input from Department of Local Government Sport and Cultural Industries if they have

experience with these structures and with engineering input to ensure the structure can withstand flood events.

- Path names – the main black asphalt path through the parkland needs its own name and the disabled accessible path to the foreshore could also have a separate name. These names could link to and emphasise the culture and heritage of the area or natural features.

3.10 Creating Spaces and Places

As noted in section 3.1 and elsewhere in the report a number of spaces and places are being created for a variety of reasons and they include welcome areas, interpretation nodes, yarning circles, trailheads, sitting areas, a lookout and terracing on the banks overlooking the pool.



Figure 30: L: Steps and remnant concrete platform to be removed for new lookout C: Foreshore below terracing R: Possible stepping stone location



Figure 31: L: Natural earth retaining blocks L C: Stainless steel handrail RC: Balustrading R: Yorkshire stepping stones

The places, particularly the terraced area and lookout by the main pool and the trailhead overlooking the river and the new picnic shelter near the expanded Rowing Club will require the preparation of individual detail designs in Part D but a palette of materials is suggested which should connect the places and give cohesion to the site. The proposed materials are listed below.

- Natural earth cement blocks - which come in a variety of sizes suitable for low retaining walls or face blocks as might be used on the toilets. They will also be considered for the stepping stones and head walls on the culverts under the main path. The laterite in these blocks will connect to the laterite already on site.
- Porous paving blocks – which may be used in tree root zones and can also give some variety and design opportunities.
- Timber – either in round form as logs for sitting on, or sawn for a variety of uses including furniture.

- Hand rails – simple stainless steel hand rails will be used as required with the stainless steel minimising long term maintenance
- Railings and balustrades – where more than a handrail is required.

3.11 Buildings

3.11.1 Toilets

Upgraded toilets, preferably flushing ones, have been requested throughout the consultation process and with the water based activities, places to change and a shower have also been requested. As the recreation sites are on the river’s floodplain there are water quality concerns with using septic toilets however sewer and water are now to be provided to Minningup Pool and Sandy Beach enabling flushing toilets to be provided without pollution or waste removal concerns.

The proposed parking is approximately 40 bays at Sandy Beach, 40 bays including motorcycle bays in the park and picnic areas and over 40 bays in the Rowing Club precinct. Visitors may also walk or cycle to the area and numbers accessing the area by trail are likely to increase once the campground is open.

There seem to be a number of approaches to calculating toilet capacity required. The service report ²⁰ allows for 2.5 people per car bay, giving approximately 300 people overall. Guidelines for concerts, events and organised gatherings²¹ advise for camping allow 1WC per 50 people plus a urinal per 100 people. Other advice suggested a toilet per 50 visitors per day with the visitation in Easter week 2020 averaging 250 vehicles per day (625 visitors at 2.5 people per vehicle). Discussions with DBCA staff suggest extra toilets are better than not enough and as these sites are long stay sites, demand for toilets will be greater than a short stay site. Consequently it is proposed that a 4 cubicle toilet with 2 disabled accessible cubicles (excellent for changing in as well) and 2 ambulant toilets are provided at each main recreation precinct that is, at Sandy Beach, Minningup Pool and the Rowing Club. The ambulant toilets are half the size of the wheelchair accessible toilets which will keep the overall size of the building down (Approximately 5.5m x 8m including a veranda). An outside shower will also be provided at each site and a stand tap for washing feet.



Figure 32: L: Lake Kepwari Toilet

R: Stockton Lake Toilet

Council has expressed a preference for the toilets to be constructed locally and suggested the toilets that DBCA is currently constructing at Lake Kepwari may be suitable. These toilets are essentially the same as those in use at Potter’s Gorge and Stockton Lake (with minor variations in materials used). The use of a similar design at nature based sites throughout the region will give a connection and cohesion to the region.

²⁰ River Engineering ‘Minninup Pool Tourism Project – Servicing Report’ 14.10.2020 Unpublished.

²¹ Department of Health Western Australia, ‘Guidelines for concerts, events and organised gatherings’ December 2009

However all these toilets are only 2 or 3 cubicles and are all pump out toilets and so the construction drawings will need modifying. The toilets have gable rooves but they seem visually compatible with the skillion shelters at Lake Kepwari, and the Rowing Club has a gable roof which the toilets will visually relate to.



L: William Bay Toilets with all colorbond walls and similar scale to proposed Minnipool Toilets, but different roof. R: Stand tap for washing feet.

It is therefore proposed that a new set of construction drawings is developed for a toilet block that can be built locally and used at all three sites on the foreshore. The original drawings were by a south west designer who may still be available to undertake this work. The brief for these drawings will include, but not be limited to the following requirements.

- The toilet design is to be based on the toilet design for toilets at Lake Kepwari and Stockton Lake, with the Clarke Island toilet drawings to be made available to the designer see Appendix 10C. The new drawings will also need engineering approval.
- DBCA is to be consulted as they can advise improvements to the design that should be considered for these updated drawings.
- The cladding materials are to be confirmed with Shire of Collie but grey colorbond is proposed in the interim as it is understood that is the SoC's preferred material from vandalism considerations (exact grey dependent on final colour schemes but likely Woodland Grey or Ironstone). Alternatively the Stockton Lake toilets materials palette is recommended.
- Doors to be jarrah (see above, not painted), so the colour of the timber can be appreciated.
- Skylights to be provided if feasible for natural lighting.
- Floors to be concrete and cleaning requirements, such as taps to be considered.
- Provide 2 wheelchair accessible cubicles and 2 ambulant cubicles, all unisex and in accord with relevant standards.
- Provide hand basins in all cubicles if feasible, otherwise provide a central basin outside.
- Provide at least one change table and ensure a hand basin in that cubicle so the toilets are family friendly.
- Ensure there are hooks on the backs of doors.
- Provide an outdoor shower and a stand tap for feet washing nearby (with appropriate sullage pits etc.).
- Manage storm water- ensure it will not erode and is directed into the drainage systems.
- Include lighting and electrical connections in the design.
- Include all signage on and around the building.

- Include all plumbing including connections to water and sewer and sullage pits and connections for the stand tap and showers.
- Provide a separate site plan for each toilet (3) which locates the toilet and stand tap in relation to nearby paths etc. and provides levels. Suitable wheelchair access is to be detailed on the site plan.
- Discuss with SoC the need for a maintenance store in one block, possibly in a converted ambulant toilet cubicle.

Potters Gorge Toilets are about \$85,000 Ex GST including water tanks etc. Landmark has an 'off the shelf' toilet that could be suitable, the modified K9506 "Caretaker" restroom with a skillion roof, (2) unisex ambulant cubicles, (2) unisex disabled cubicles and timber ventilation screens (supply without delivery \$41,080, plus fit out \$13,590, plus installation \$29,500, plus delivery say \$5,000 say about \$85 -90,000 Ex GST).

3.11.2 Shelters

Shade shelters have been requested and open skillion rooved shelters are proposed as they provide shade and shelter with the least impact on views. Shelters that are a minimum of 4m x 4m are suggested so that they provide some shade (nearly) all of the time as smaller shelters are likely to have the shade falling beyond the picnic setting much of the time. A mix of tables and electric BBQs (some disabled accessible and some standard) will be installed in the shelters.

The following shelters were proposed in the early drafts of the master plan (sizes based on Landmark skillion shelters and using 1.8m long picnic tables).

- Sandy Beach – 2 medium open shelters about 6m x 4m, one with 2 picnic tables in it the other (closer to the beach) with a picnic table and an electric BBQ (not disabled accessible). There will be 3 other tables quite close to the BBQ shelter.
- Minningup Pool – A small shade shelter about 4m x 4m for 1 picnic table and could have a back wall, possibly with art work, to screen out nearby Sandy Beach Road.
- Main Picnic Area – A large open shelter say 10m x 4m with one disabled accessible BBQ and 2 tables with at least 2 more tables nearby.
- Near the Rowing Club – A large shelter say 10m x 4m with one disabled accessible BBQ and 2 picnic tables with at least 2 more tables nearby. Shelter could have an end /west wall for community notices and/or trailhead etc. without blocking the view to the river from the car park.

Indicative costs for Landmark 's 4m x 4m skillion shelter the Peninsula were approximately \$13,000 (supply \$5,300, deliver \$2k, install \$3k, concrete floor \$2k) The 6m x 4m shelter is approximately \$16,000 (possibly supply \$6k, deliver \$3k install \$4k concrete floor \$3k) and the 10m x 4m shelter is approximately \$23,000 (supply \$11,050, install \$4,200, deliver \$3k, conc. floor \$4k). These costs are very indicative as they have been extrapolated from other costs.

However SoC advised the shelters (and tables) need to be fabricated locally so DBCA skillion rooved shelters, as installed at Lake Kepwari, were suggested and they are made of modular bays with the following shelter sizes possible.

- Small shelter - 2 bays (4.9m x 5m plus eaves 500mm essentially a 6m square shelter)
- Medium shelter - 3 bay shelter (4.9m x 7.3m with eaves 500mm each essentially 6m x 8.5m)
- Medium/large shelter – 4 bay shelter (4.9m x 9.6m) with eaves 500mm each essentially 6m x 10.6m)
- Large shelter - 5 bay shelter (4.9m x 11.5m plus eaves essentially 6m x 12.5m).

The DBCA shelters are generous sizes and will be larger and more obtrusive than the equivalent shelters that were originally proposed as larger shelters are needed due to the bay sizes. DBCA picnic settings (table and bench seats) are also to be used as these can also be constructed locally but these too are larger than the

tables that were initially selected. Consequently to achieve the same combinations as were originally selected larger structures are required, with only a slight increase in capacity due to the larger table. Further on site assessment has resulted in a reduced number of shelters being proposed and with the aim of reducing the visual impact of the shelters. Some of the original locations are too small for the new shelters resulting in new locations being needed.

The shelter proposals using a modified Lake Kepwari design are now as detailed below.

- For Sandy Beach it is now proposed a medium 6m x 8m (3 bay) Lake Kepwari shelter is located just off the southern edge of the beach with a picnic table and a double electric BBQ in it, the BBQ in the northern end of the shelter. A partial rear wall is suggested to restrict movement behind the shelter where there is a hazardous tree. A second 6m x 6m (2 Bay) shelter with only a table in it may be set at the northern end of the beach, beach side of the main path, though this is a prominent location. A rear wall would give some separation from the path. If feasible the process of confirming the design of these shelters will investigate the feasibility of extending the concrete floor a little so 2 tables can be in the smaller shelter and 2 tables and a double electric BBQ in the other shelter but this is expected to be too tight. The shelters are set back off the main beach area and shade trees will be planted strategically on the beach to partially screen the shelters so long term the natural feel of the beach should be maintained.
- For Minningup Pool there will be no shelter as a 2 bay (6m x 6m) shade shelter is considered too large.
- For the main picnic area a shelter is no longer proposed as all locations previously considered are expected to impact on views from cars parked in the new carpark and will also take up a significant amount of the open parkland space. Instead there will be a centrally placed open air barbecue, additional picnic tables and additional shade planting (much of the area is already shaded from the existing trees). This approach is also in accord with the community's expressed wishes to maintain the naturalness of the area.
- For the Rowing Club area a medium / large 4 bay shelter is proposed with 2 wheelchair accessible picnic tables and a wheelchair accessible BBQ (on the Rowing Club end) with some extra space in front of the filled in end wall that can be a community noticeboard and / or a trailhead. Alternatively there can be 3 tables inside and the BBQ outside, but the Rowing Club members might appreciate an undercover BBQ for year round use.

The DBCA drawings of the shelters will likely require modification to provide the range of shelter sizes proposed for Minningup Pool and the actual shelter size and furniture layout should also be reviewed to optimise use of shelter capacity and minimise the obtrusiveness of the shelters (perhaps consider extending the concrete floor beyond the drip line of the roof, if this will allow extra furniture in the shelter).

Depending on the project manager and the capabilities and experience of the proposed builder, new drawings may not be required, but they are recommended to ensure all are clear as to what is being built. Until this review can be completed, the number of proposed shelters and associated facilities is indicative.

Also when the Kepwari shelters are used at Minningup Pool they may not have the low walls at the back and will not have them at the front so they appear to take up less space in the landscape and moving in and out of the shelter is easier. Consequently panels may be required below the front edge of the roof to maintain the structural integrity of the shelter. Whether these panels are required structurally or not, they are recommended as they will give more visual interest to what is essentially almost an industrial looking building.



Figure 33: L: Lake Kepwari 5 bay shelter R: Landmark Whyalla shelter with blue slats²², teal for Minningup

Some options for these panels are noted below, but the likely engineering requirements of the panels will also guide the option selection.

- Steel panels with cut out artwork (to be designed as part of the Noongar art project).
- Teal blue slats with or without steel Waugyl attached to the slats centrally.
- Timber slats (similar to those used in Landmark’s Peninsular shelter).

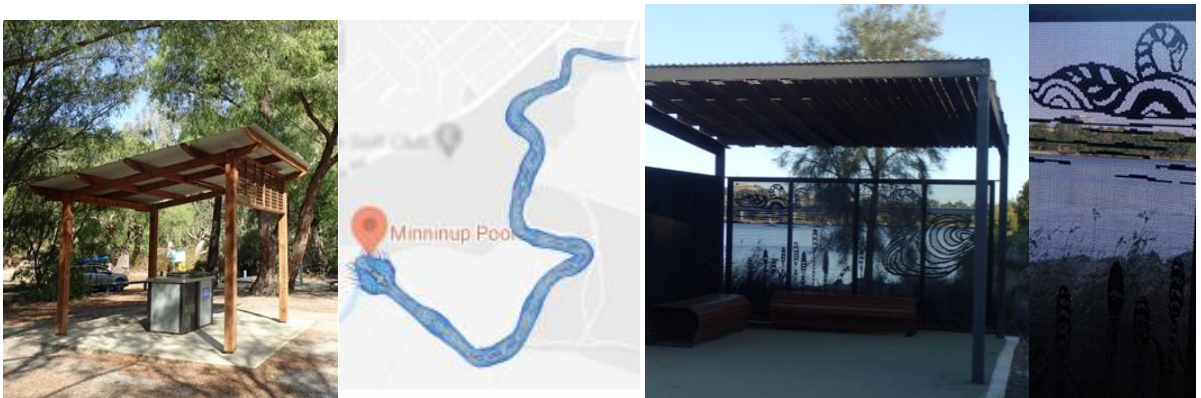


Figure 34: L: Landmark shelter with timber panel LC: Waugyl motive R: Art by Wendy Hayden in Swan River shelter

The following requires documenting in all shelters.

- Provision of power for lighting and where required, connections to BBQs.
- Consideration of CCTV installation especially when providing power.
- Detailing of proposed lighting.
- Skylights as appropriate.
- Provide a separate plan for each shelter which locates the internal furniture, provides shelter specific floor levels and shows how the shelter connects to the path system including how wheelchairs will access the shelter. See Appendix 11C for Lake Kepwari shelter drawings, which will inform the new shelter drawings. New drawings will also need engineering approval.
- The location of picnic settings. Generally tables in shelters to be set at right angles to the river, where feasible, so no one has their back to the view. As the shelters are a generous size generally

²² <https://www.landmarkpro.com.au/wp-content/uploads/Park-Shelter-Brochure-1.pdf> on 18.01.21

picnic settings will likely be wheelchair accessible. DBCA designed tables and benches (minimum 2.4m long) are to be used.

- Removal of the low walls at the front and possibly the back of the shelter and replacement with panels below the roof (these may or may not be required for structural reasons but should be included anyway for aesthetic reasons). End walls may also be considered.
- The grey colorbond material will match the toilets. Opportunities for using the teal colour should be identified where appropriate such as above panels or internal walls.
- Manage storm water to ensure it will not erode and is directed into the drainage systems.

3.11.3 The Rowing Club

The development of the Rowing Club building is outside the scope of this master plan but when the building is developed it should be considered in the context of the adjacent shelter, toilets and pop up commercial outlet, so that the structures combine to give a cohesive built node, which reflects the heritage of the area and compliments its natural setting.

3.12 Furniture

A range of furniture is proposed to suit the bush setting and / or relate to other furniture in the town. Timber will be used as much as possible as it is comfortable to sit on, relates to the bush setting and is feasible to maintain. There has been a request to retain the existing timber tables but they are in poor condition, are not a design that is easy to access and do not have concrete bases and so, as requested by the SoC, they will be replaced. SoC has advised furniture should be made locally wherever feasible.

3.12.1 Yarning Circle Logs

It is proposed the logs for the yarning circle can be sourced from timber that is cleared from the site. The Noongar community has still to advise if they have a preference for rough sawn or round logs but the finished height of the logs should be about 450mm above ground level. Some spaces should be left for campers to bring their own camp chairs.

3.12.2 Picnic Settings

DBCA style seats will be used at Minningup Pool as they can be made locally and meet the criteria of timber slats and practical steel frames. Drawings are available for these seats see Appendix 12C and the tables can be built with extensions to suit wheelchair users. Exteria Daintree settings which come in standard and wheelchair accessible versions would also be suitable.

Generally a concrete base (approximately 2.6m x 3.6m for DBCA tables) will be installed under tables to prevent erosion by feet, but some tables may be installed in the ground directly in less used more natural areas with mulch underneath. Indicative costs for Exteria Daintree table setting with cast aluminium metal work and jarrah slats is supply \$4,200, and say delivery \$500, assembly \$100, install \$600, concrete 3m x 3m maybe \$1,000 giving approximately \$6,500 per setting.



Figure 35: L: DBCA tables, inground C: Exteria Daintree setting on concrete base R: DBCA Plinth seat

3.12.3 Seats

Comfortable seats have been requested with arms and backs so that they are suitable for use by the elderly. Exteria Courtyard seats are recommended as they are known to be comfortable and they have broad timber slats that are easier to maintain than smaller slats (and are similar to the DBCA seat slats) and they come in jarrah, a local timber, see Figure 2 in section 3.2. The metal components can also be powder coated in colorbond colours and so can be the grey of Minningup Pool's colour palette. The seats should be set on a concrete base and have space beside them for a wheelchair to park. Indicative costs are supply \$1,600 + \$300 (arms), freight say \$600, assemble say \$50 and install say \$400, concrete footings would be extra but as the seats will be connected to paths the concrete costs can be included in the overall paving costs.

It is recommended that the existing memorial seats be replaced with courtyard seats long term as these seats have arms. The memorial plaques can be put on the new seats.

3.12.4 Plinth seats

DBCA also often installs plinth seats which are part bench, part table and these are useful in areas where use can be varied such as by the swimming access structures. The construction is similar to the picnic tables, steel frame and jarrah tops so they can be made locally and construction drawings are available in Appendix 12C.



Figure 36: L: Christie's All Access BBQ and C: Disabled accessible BBQ R: Exteria Omni standard double BBQ

3.12.5 Barbecues

All BBQs will be electric as power is to be supplied to the site and they are to be double plates. Exteria's Omni Double (with central work area) Greenplate BBQ is \$10,350 to supply and for a disabled accessible BBQ it is approximately \$19,000. For Christie's modular double plate barbecue with central workbench (MOD – E – 3/2) the indicative supply and delivery cost is \$9,450 and for the above disabled accessible barbecue (A – E – 2/2) the indicative supply and delivery cost is \$11,600. Christie's new All – Access Icon series barbecue is now available with brushed stainless steel or monument (grey) powdercoat options (supply approximately \$9,000).

A double BBQ unit is proposed for Sandy Beach, the picnic and water based activities area and the Rowing Club Precinct, but not for the Parkland Area as this is a quieter area. Initially only one wheelchair accessible barbecue was proposed but as the new Christie All Access barbecue is a similar price to a standard barbecue having all All-Access barbecues is equitable. If only one All Access barbecue is required the shelter next to the Rowing Club may be the most suitable as it has more facilities close by and more open lawn areas. However if development of this precinct is delayed the barbecue to the west would also be suitable.



Figure 37: L: DBCA Firepit used at Martin’s Tank C: Barbecue made by Bunbury Prisons R: Dog waste bag dispenser, from Woodlands in nearby park

3.12.6 Firepits

The Noongar community has requested a central fire for yarning around and SoC has indicated permits can be issued on a case by case basis in the fire season. It is assumed that fires will be permitted in the cooler months as they are elsewhere. Consequently provision for a campfire will be made in the centre of the yarning circle. Discussions are needed with the Noongar community to understand their preferred fire pit style. An area of bare earth could be provided if required but a lockable fire pit, with signage, can clearly indicate closed and open campfire seasons.

3.12.7 Bins

SoC suggested Exteria Frankland surrounds (1385mm x 820 x 760mm) are used for 240l bins as they are already used in the Collie Town Centre. The timber panelling will visually contribute to the naturalness sought at Minningup Pool and the metal hoods can be powder coated in a number of colorbond colours and it is recommended they are the Minningup Pool grey (likely Woodland Grey).

The bin surrounds will be set on concrete bases in groups of 3 and will be located within 10 – 15m of road access for the service truck. Indicative price for the supply of a bin surround is \$2,000 with delivery, installation, concrete base and wheelie bin all extra. They are to be installed in accord with the manufacturer’s instructions and set about 300mm apart.

3.12.8 Dog waste

Separate bins are not required for dog waste as the bins are emptied regularly but a dog waste sign is required and a bag dispenser will be provided. The dispensers will be provided at each set of bins and at significant arrival points such as the Dual Use Path from town.

The SoC already has bag dispensers installed in the town and nearby parks that will be suitable for Minningup Pool. These are supplied by Woodlands and are custom brake dispenser units that can be produced in custom colours so they can be the Minningup Pool dark grey colour cost per unit delivered is just under \$200 plus GST each. Exteria also provides a bag dispenser in a rectangular shape approximately 500 x 260 mm of pressed aluminium in a powder coat finish with key lock and an internal dispenser holder, indicative cost \$350 and with a post included \$670. Minningup Pool colours could be used and the writing on the dispenser will need to be detailed in the section 5 if this option is selected by SoC.



Figure 38: L: Exteria dog bag dispenser CL: Exteria Frankland bin surround CR: DBCA Wombenger bike rack graphic R: Bike using similar style rack.

3.12.9 Cycle racks

DBCA has developed a bike rack incorporating the Wombenger motif (see above) that is suitable for all sizes of bikes as they can be hung up or leaned against the ends (which have wood edges to avoid scratching the bikes). The length of rail is adjustable to suit specific locations (maximum 3m). A test rack is currently (January 2021) being produced and providing this is acceptable to all concerned, it is proposed that this rack will be used at Minningup Pool. Drawings are available for the construction of this rack, see Appendix 13C so it can be made locally. Costs will likely be available once the test rack has been built.

3.12.10 Fences

Along the foreshore a simple pine post and plain wire fence is proposed to temporarily protect the foreshore vegetation as illustrated in Figure 12 section 3.4.1.

At the Rowing Club most of the existing fence will need removing and the new security arrangements and infrastructure will need discussing with the Collie Rotary Club who are the lease holders. With the proposed CCTV, replacing the fencing is not currently proposed.

4 Management

The proposed works will require some specific management actions and general increases in management and maintenance. Although it is beyond the scope of this report to prepare a management plan some management considerations are detailed below.

4.1 Benefits of Development

The proposed redevelopment of Minningup Pool Foreshore is expected to bring many benefits to the local Collie community and beyond. Section 3 of Part B, The Executive Summary of the Minningup Pool Day Use Area - Master Plan which looks at the targeted outcomes of the proposed works, identifies many of these benefits which include social (especially cultural), environmental and economic benefits with many proposed actions resulting in more than one identified benefit.

The benefits have been clearly identified in the Minningup Pool Day Use Area Upgrade Benefits Assessment prepared by Syme Marmion and Co²³ see Appendix 14C. This analysis is available for managers to use in applying for funding (both capital and ongoing), addressing community concerns etc.

4.2 Resources

The need for ongoing additional management and maintenance resources is acknowledged, but this needs to be considered in the context of the ongoing benefits (see above). The need to reduce ongoing management has been considered in the preparation of these proposals, see section 3.9 Minimising the Pressures on Management Resources in Part B which notes the key points below.

- High quality materials (which are often more expensive) such as stainless steel railings and vandal resistant finishes to interpretation panels, will be used to reduce ongoing maintenance costs.
- Advice will be sought from SoC managers on how to simplify maintenance such as enabling mowers to access spaces, providing necessary service vehicle access, locating bins where they can be easily emptied, using electric rather than gas BBQs, etc.
- Providing an automatic irrigation system and pumping water from the river to reduce ongoing water costs.
- Providing a new mower as part of the capital costs of the project.

However additional resources will still be required to sustain the Minningup Pool foreshore into the future.

4.3 Leases and Licences

A small area of new development is proposed for the Golf Course Lease area and so adjustments will need to be made to the lease to accommodate this development.

The Rotary Club currently leases the Rowing Club, including all the area enclosed by the wire fence. It is proposed to develop a new toilet and provide a picnic shelter with BBQ and tables in the lease area that are available to both the Rowing Club and the general public to use. This will require adjustments to the Rowing Club lease and new management and maintenance arrangements.

4.4 Fire management

A fire management plan is recommended to be prepared (by others) for the reserve (note an allowance is included in the indicative cost estimates) and this may require additional infrastructure. A new water point for filling fire trucks has already been requested by SoC and is proposed for east of the Rowing Club. Fire managers will require a separate key for accessing locked bollards etc.

²³ Syme Marmion & Co, Minningup Pool Day Use Area Upgrade Benefits Assessment, March 2021,

Illegal campfires occasionally occur and so signage should make it clear that camp fires are prohibited.

4.5 Illegal Camping

Camping is not permitted along the foreshore and this needs clearly communicating to visitors. It will be noted on the site identification signage, but may also need reinforcing elsewhere.

4.6 Emergency Access and Management

Provision and maintenance of emergency access is required and St. John's Ambulance will need a separate key for accessing locked bollards etc. Provision of a defibrillator may also need considering in due course.

The SoC does not currently have a specific Emergency Management Plan for the reserve but the need to retain Sandy Beach Road open to Mungalup Bridge as a second exit from the area is incorporated into the proposals as requested by SoC. Preparation of the sign plan may identify other emergency management requirements such as locating a muster point and in the long term an emergency management plan will likely be required as the reserve is progressively developed.

4.7 Monitoring and Visitor Satisfaction

Monitoring and recording of visitor use levels (vehicle counts, trail counters etc.) is recommended to assist with reviewing management actions and seeking future funds.

It is suggested vehicle monitoring continue on Minninup Road and possibly a second counter could be placed on Sandy Beach Road so the visitation relative to each site can be established. Trail counters may also be informative particularly one on the dual use path from the Collie Town Centre.

Satisfaction surveys can also guide management and possibly a low cost survey could be set up on the SoC's website which could be supplemented with the handing out of surveys at Minningup Pool (Friends of Collie River volunteers may assist).

4.8 Management Associated with Providing Access to the River for Recreation

Water quality is already monitored at Minningup Pool and this will need to continue as swimming is being facilitated in the river.

Additional management requirements are likely to include

- Developing codes of conduct, as necessary, associated with use of the structures (such as pontoon etiquette).
- Provision of river risk signage so visitors are aware of risks associated with accessing the river.
- Management of river access structures and pontoon will be ongoing and will include regular engineering checks of the structures (including the mooring) and underwater checks for submerged hazards (as water levels are controlled this is likely to be less of an issue than at some other wilder rivers). See Appendix 5C for DBCA Underwater Hazards Visitor Risk Management check list.
- The river bank structures will be designed to withstand flood but the pontoon may need management procedures developed for times of significant floods as it might need taking out of the river when floods are expected.
- Replenishing beach sand as required.

4.9 Pet Management

Many people take their dogs to Minninup Pool often for a swim in the river. Dogs sometimes roam freely around the picnic areas which can trouble other visitors. Dog waste can also be a problem and the presence of dogs discourages wildlife. However many people value being able to take their dogs to Minningup Pool and so it is recommended this continues to be permitted with the following provided to minimise conflict.

- Dog waste bags provided by bins.
- Signs indicating dogs must be on the leash at all times provided at Minningup Pool and the Rowing Club.
- Signs indicating dogs are allowed off the leash but must be kept under control at all times will be installed at Sandy Beach.

Horses have been seen swimming at Sandy Beach which is of concern to some beach goers, but at this time the SoC does not propose to take any action or install any signage.

Duck feeding is a popular activity with many including children and this has resulted in the ducks often coming ashore to seek food from visitors. The duck feeding activity brings joy to the children; however the ducks can be a nuisance and can foul areas with their droppings. Also processed food such as bread is not good for the ducks. Consequently it is proposed that duck numbers are reduced, particularly the hybrid ducks (wild crossed with domestic) are removed, but that 'a blind eye' is turned to the duck feeding with signage provided which advises why feeding wild animals is inappropriate. This will hopefully result in visitors 'learning' a little about feeding wild animals while still enjoying their visit.

4.10 Increases in Maintenance and Servicing

Providing additional infrastructure and visitor facilities requires increases in servicing and maintenance to maintain the quality of the visitor experience and minimise the risk to visitors.

- Soft landscape management will increase including mowing and lawn maintenance and maintenance of planting areas and new trees. A new lawn mower is to be provided for in the project costs.
- The stabilisation of foreshores using revegetation and soft structures such as coir logs is considered to have a three year construction phase²⁴ requiring regular monitoring and maintenance (infill planting and weed control) to be successful.
- Overhead risk management – regular inspections and management of trees will be ongoing (increased visitor numbers also increase the risk from falling branches, because the likelihood of an event occurring increases).
- Regular servicing of new and improved facilities including toilet cleaning, rubbish removal, BBQ cleaning, etc.
- Resources for paying for services such as power, sewer, water etc. will be required.
- The increased levels of infrastructure will require ongoing maintenance (painting, oiling timber, repairing etc.) and allowances for capital depreciation.
- If QR codes are provided resources will be needed to keep the associated information up to date and current.

4.11 Enforcement

It is hoped that the upgrading of the infrastructure, particularly the provision of lighting, will lead to respectful use of the facilities and reduce the likelihood of antisocial behaviour; however increased SoC resources will likely be required for the following.

- Enforcement of the no camping policy along the foreshore.
- Ensuring compliance with fire restrictions.
- Ensuring compliance with regulations regarding keeping dogs on leashes and removing dog waste. Dogs also swim in the water which may need management attention.

²⁴ Swan River Trust, Best Management Practices for Foreshore Stabilisation, Direct Shore Stabilisation Approaches, December 2009.

- Monitoring for unruly and antisocial behaviour
- Maintenance and monitoring of the CCTV.

4.12 Heritage

As the heritage of the Minningup Pool is very significant it is suggested that additional heritage listings could be sought, possibly in association with heritage research that might be undertaken by locals or students to continue the community connection to the area.

5 Signage

Brighthouse²⁵ noted 'Establishment of extensive wayfinding, internal and external to the site, especially on trails and at riverbank locations' was a priority component of the project and integration with 'Collie town centre and the walking and mountain bike trails' should occur. Brighthouse defines a wayfinding system as 'A wayfinding system may incorporate the following types of elements : branding, signage, maps, printed collateral including brochures, interpretation kiosks, video screens, GPS navigational devices, smartphone messaging and chat boxes, QR codes, websites, mobile apps and virtual reality.

Wayfinding provides the tools we use that tell us where we are, where we want to go, and how to get there. Symbols can contribute simplicity, clarity and personality to a wayfinding system'.

The scope of this master plan includes the preparation of interpretation and signage proposals for Minningup Pool Foreshore in the context of the total wayfinding system. Development of a branding and wayfinding system specific to Minningup Pool will be done by others if required and likely as part of the development of the accommodation proposals.

It has been generally proposed by the SoC and DBCA that Minningup Pool is integrated with the Collie Adventure Trails proposals and is also seen as one of the suite of nature based recreation sites across the region, albeit with its own specific character. Consequently the influences on signage will be The Collie Adventure Trails Branding and Marketing Report ²⁶ which identifies the context in terms of trails and the Wambenger Trails Brand Style Guide²⁷ which develops the brand. The Wambenger Trails Signage Style Guide²⁸ (WTSSG) has been recently developed to guide signage for the Adventure Trails and DBCA also has a sign style guide in place²⁹ for nature based recreation sites in the region; the 2016 Revised Sign Prescription - Jarrah Marri Forest. Both of these guides will influence signage at Minningup Pool.

5.1 Colours Context

A colour scheme that reflects the character of an area reinforces its 'sense of place' and coordinated use of colour will contribute to the cohesion of the area. At Minningup Pool on the foreshore colour will be used on interpretation and other site identification, directional, management and trail signs. Colours can also be used on structures and buildings, though generally structures in natural areas have subdued natural colours.

There is a variety of existing colour palettes that need to be considered when selecting the colour framework for Minningup Pool. These influences include the Collie Shire logo, the palettes in the above publications and the natural colours at Minningup Pool. The influences are shown below.

²⁵ Brighthouse, The Minningup Pool Demand and Pre-feasibility Study prepared for the Shire of Collie and the South West Development Commission, December 2019.

²⁶ Gumfire, Collie Adventure Trails Branding and Marketing Report, March 2020

²⁷ Gumfire, Wambenger Trails, Collie Western Australia, Brand Style Guide.

²⁸ Wayfound, The Wambenger Trails Signage Style Guide, Version 1.1, February 2021.

²⁹ DBCA, 2016 Revised Sign Prescription Jarrah Marri Forest, 2016



Figure 39: L: Shire of Collie logo R: Wambenger Brand and colour palette from Wambenger Trails Brand Style Guide

Note that the Burgundy, Light Grey and bright green Splash colours of the Wambenger Trails Brand Style Guide are the colours of DBCA's 2016, Revised Sign Prescription Jarrah Marri Forest which is in use in the region.



Light grey, burgundy with a 'splash' of new leaf green

Figure 40: Colours from DBCA's 2016 Revised Sign Prescription for Jarrah Marri Forest

The Wambenger Trails Signage Style Guide (WTSSG) identifies a colour palette for different cycling disciplines and other activities with the February 2021 palette shown below.



Figure 41: The Wambenger Trails Signage Style Guide colour palette for different cycling disciplines

At A Glance - Sign Structures

NOTE: PG number refers to the appropriate technical drawing for the sign plate

Management & Orientation (for Hazard/Risk signs refer to Drawings PG38-41)

Directional/Identification

Interpretation

Frames and signs are for illustrative purposes only and are not to scale.

2016 Revised Jarrah Marri Sign Prescription

Figure 42: Application of DBCA's 2016, Revised Sign Prescription Jarrah Marri Forest colours to DBCA's sign system

5.1.1 Proposed Colours

Waugal colours have been developed as part of the Minningup Pool planning process. These colours were inspired by the natural environment and have been approved for use on interpretation plaques and panels at Minningup Pool. They are proposed to be mounted on cut out aluminium structures/ supports, which will reflect the grey mist of the pool see section 6.1.1.



Figure 43: The colour palette approved for use for Minningup Pool interpretation

The Jarrah Marri Forest Sign Prescription colours reflect the forests well but the focus at Minningup Pool is the river and so it is not considered so suitable for this site. It is proposed to evolve the colours and use the Teal p119-16C of the wambenger (not available in colorbond) instead of the burgundy of the forest prescription, together with the light grey PMS 420C (colorbond Shale Grey or Windspray) of the forest prescription and the dark grey p179-15C as the third colour (the colorbond colour needs confirming, possibly Woodland Grey).



Figure 44: Proposed Minningup Pool Colour Palette

When a graphic designer is engaged to prepare the signs, how the colours will be applied and the availability of Teal in the required finishes will be confirmed, DBCA may also be able to assist as it is using the Teal in a number of applications. The powder coat colour Duratec Coast Satin 90N5233S may have to replace the Teal, see below or a blue closer to the Waugyl colour such as Duratec Reef Gloss 90N5011G.



L: Duratec colour Coast Satin



R: Duratec colour Reef Gloss.

5.1.2 Proposed Sign Style

The existing signage is detailed in Section 4.7 of Part A and there is no style currently used at Minningup Pool. It is proposed that the signage for Minningup Pool is based on the DBCA sign style but uses the above colours that are specific to Minningup Pool. See previous section for the Sign Style at a Glance using the Jarrah Marri Forest Colours that will be evolved to use the Minningup Pool Colours. It is proposed that Woodland Grey is added to this palette and used for the backs of signs and in other situations where structures are to blend in.

This approach was used by the Shire of Augusta Margaret River at Alexandra Bridge, see below for signs that are based on DBCA signs but use Shire of Augusta Margaret River (SoAMR) colours, logos and graphics.



Figure 45: DBCA style signage using Alexandra Bridge colours L: Site identification sign C: Totem R: Management sign

The WTSSG will guide trail signage but does not contain signage for dual use paths or aquatic trails however as the guide continues to evolve it is expected additional signage will be prescribed in due course. DBCA is managing the development of the Wambenger Trails signage and so the Wambenger Trails style is integrated with DBCA sign styles. DBCA will in due course develop the trail signage at Minningup Pool but this report will identify the signage required to enable use of the recreation area with additional trail signage to be provided later once trails have been named and all the relevant trail networks identified. The trail sign elements, available to date that will be applicable to Minningup Pool are shown below.



Figure 46: L: Symbols CL: Reassurance totem C: Trail Network Sign 900 x 2200 CR: Trail marker R: Road crossing signs

As there is currently no guide for dual use paths it is proposed that the rail trail cycle signage is used for the DUP.

Symbols will be used wherever feasible as they are particularly useful for non-English speaking visitors. DBCA uses white on black and may be reflective in areas of night time use. A variety of symbols are available from DBCA and sign manufacturers and these include graphics, numbers and miniature road signs. If the symbol or message is not already available a graphic designer can develop new symbols as required. No more than 4 symbols will be used on one sign and no more than 2 of these will be negative.

The Shire of Collie logo will be used on all signs except totems that have only standard symbols.

5.1.3 Trailhead signage

The main trailhead for the Collie Trails, with a purpose built trailhead shelter, will be in the centre of town, location still to be confirmed (at February 2021)³⁰. A secondary trailhead will also be located in town and so a variety of trailhead material will be progressively produced. Minningup Pool will not be a major trailhead, though it will have some information on trails across the region. A general/regional panel and possibly a paddling trailhead sign can be set by the river (the identified trailhead location in the master plan) but information about other trails will be set back from the river, possibly on the end wall of the picnic shelter or maybe on the boatshed. When it is time to adjust the Lake Kepwari picnic shelter design for use at Minningup Pool near the Rowing Club, the required trailhead signage will be assessed and options for locating the signage determined (i.e. shelter or Rowing Club depending on how many signs are required).

5.1.4 Proposed Sign Types

The proposed range of signs that will be used at Minningup Pool is identified below. The standard road signs will be documented on the civil drawings in the detail design documentation.

Road signage

- Approach signs – blue standard road signs in the form of an intersection directional sign back in town at Coalfields Highway and Mungalup Road intersection and an intersection sign at Mungalup/Minningup Road intersection are being installed by DBCA.

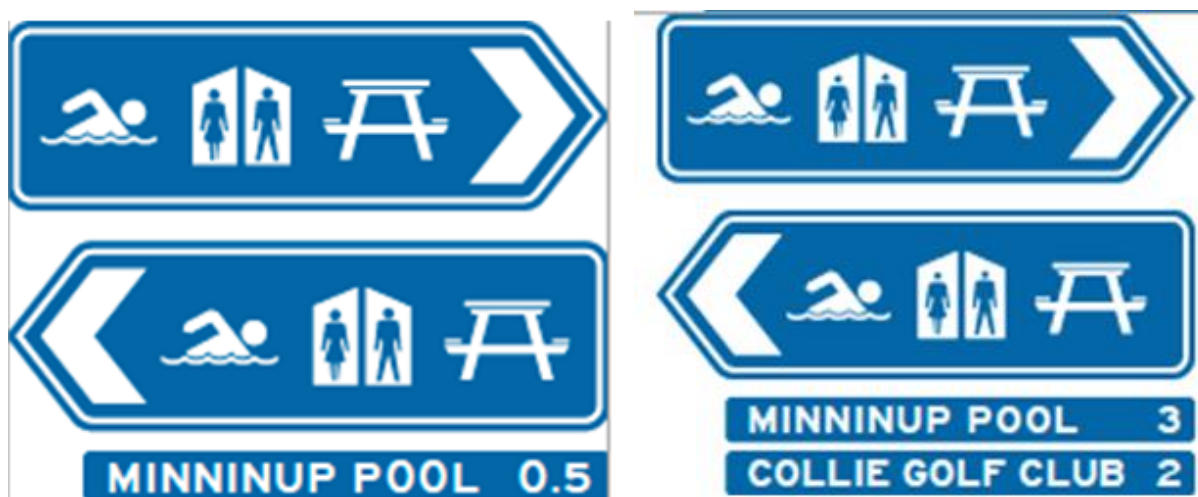


Figure 47 Approach signs being installed by DBCA

³⁰ Pers. Com. Rod Annear, DBCA February 2021.

- Standard brown tourism signs approx. 1300 -1800 x 380mm as per (WTSSG) for the intersection of Mungalup Road and Minninup Road (these will not be provided at this time).
- 2 post brown information sign set along Minninup Road, back from the intersection with Mungalup Road, which can be updated relatively easily as new facilities are developed.
- Standard road signs (often yellow and black or red, black and white), some regulatory on 3.2m long round galvanised post with steel cap and brackets to attach sign (the signs on the road and trails will be prescribed in the engineering drawings and those on the trails are in Table 1 see Appendix 15C).
- Road crossing hoop rails see WTSSG for details. DBCA advises³¹ the walk trail green is to be used for Dual Use Paths.



Figure 48: Signage L: Brown Tourism signs C: Standard road signs C: Road crossing hoop rails R: DUP Signs

Customised Signs

- Customised signs – These signs will use the Minningup Pol colour palette and will be individually designed by the graphic designer based on the DBCA sign style guide. The graphic designer may also develop some graphics to supplement the DBCA design style that will differentiate the SoC signs from DBCA signs (see Alexandra Bridge signs that have some additional colour on the top and bottom of the panels). The processed graphic signs will likely use 1.6 aluminium digital print onto class 2 reflective vinyl with clearcoat for longevity and quality, but this will be confirmed by the graphic designer. All signs are to have the backs painted Woodland Grey.
- Two post customised signs – DBCA style aluminium 2 post sign with frame will be used for one off signs such as site arrival signs (see picture above from Alexandra Bridge) and these signs will vary in size depending on their content. The posts of the two post signs will likely be painted Woodland Grey, but this will be confirmed by the graphic designer once the overall sign style has been developed in association with SoC. The remainder of the frame that can only be seen from behind will be Woodland Grey no matter what colour the posts are.
- Customised process graphic sign 300 x 400mm on 3.2m long round galvanised post with steel cap and brackets to attach sign, round galvanised posts will also be painted Woodland Grey. These may be customised management signs.
- Customised process graphic signs generally 300 x 400mm or 400 x 600mm either attached to a 1m (above ground) galvanised post or to a nearby structure (e.g. River Risk sign on railings). These signs will use the Minningup colour palette as appropriate but risk signs will also use the red triangle for danger and possibly yellow and black as shown below. Use of existing DBCA risk signs may also be acceptable providing the wording meets the need of SoC managers (it is suggested the amoebic

³¹ Rod Annear DBCA 22nd April 2021 via email

meningitis warning is integrated into the wording of the DBCA River Risk sign to rationalise the number of signs on site).



Figure 49: L: DBCA customised signage in Jarrah Marri prescription colours -Minningup colours will be used at the pool C: Risk sign on a bridge R: Risk sign on a post

Trail Reassurance / Direction Signs

- As noted in the WTSSG for the rail trail these reassurance signs will give destinations and distances on custom designed process graphics. Initially to be in Minningup Pool colours possibly dark blue on light grey suitable for a vehicle totem (this was approved by DBCA and SoC in May 21), but as walking green is now proposed for DUP's the WTSSG colours could be used. The graphic designer should advise the most effective signage, but use of Minningup Pool colours is preferred to emphasise its sense of pace. The vehicle totem with (750mm – 1000mm above ground, 300mm wide and approximately a third in the ground set in concrete) suggested aluminium, see WTSSG for colours and 250 x 250mm customised graphics required with the relevant symbols incorporated in the graphics, see Figure 46.
- Plastic trail markers are not proposed as the trail routes are well defined (being sealed paths) but trail users will likely need to be reassured they are heading in the right direction for the destination they are seeking (hence totems above), particularly as they may be first time trail users or less able visitors.

Totems

Totems will replace signage on 3.2m long poles wherever feasible. Totems will also be used to provide directional signage for pedestrians and cyclists, however the use of this signage will be minimised to reduce the overall visual impact of the signage. The site is relatively open and visitors should be able to see where they're going once they've looked at an orientation map.

- Vehicle Totem – for use in directing vehicles or for larger symbols or small processed graphics, (750mm – 1000mm above ground, 300mm wide and approximately a third in the ground set in concrete) suggested aluminium painted Light Grey colour for maximum contrast with 250 x 250mm symbols (standard black and white). Maximum 3 symbols as the totems are only 1500mm long.
- Standard Totem – for use in directing pedestrians and cyclists (750mm – 1000mm above ground, 200mm wide and approximately a third in the ground, set in concrete) suggested aluminium painted Light Grey colour for maximum contrast with 150 v 150mm symbols(standard black and white)unless a process graphic is specified.

Shire of Collie Management Signs and Stickers

Shire of Collie currently have a range of signs in use including stickers and processed graphic signs approximately 300 x 400mm on round metal poles 3.2m long. These will be used where appropriate and new stickers may also be proposed.

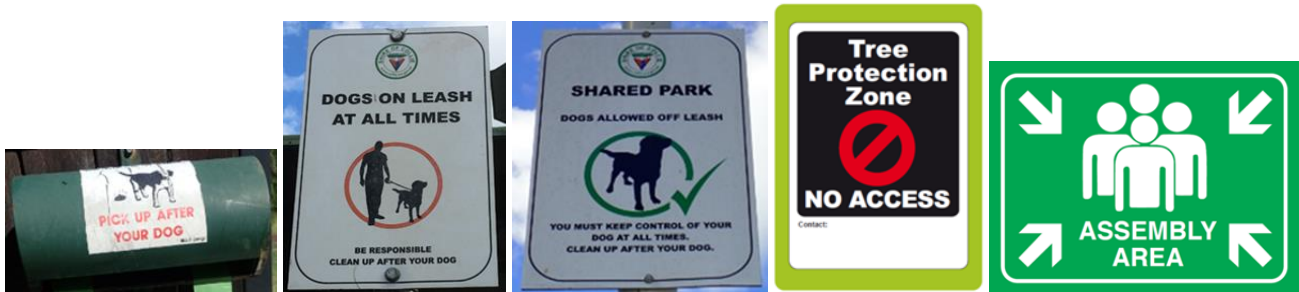


Figure 50: L: Sticker on bag dispenser C: Dog signs currently used in Collie R: Signs that may be needed

Multiple Message Management Sign

It is important to effectively communicate management messages and in some cases there may be regulatory signage requirements, however a lot of (any sort) of signage can give a cluttered look and reduce the naturalness of an area.

The signage proposals have aimed to minimise the use of signs but there may be additional messages that it would be beneficial to communicate with the community such as fire and emergency procedures, management of dogs swimming etc. or to reinforce messages communicated in only one or 2 locations such as dogs on leashes, no camping, no fires, please don't feed the wildlife etc.

An alternative or complimentary approach to communicating management messages is to bring them all together on one sign and place that sign in a number of prominent locations, such as on toilet blocks. This may reduce the overall number of signs and can certainly increase the amount of information that can be discretely provided to visitors. See Figure 51 for an example of such a sign produced for Alexandra Bridge campground in the Shire of Augusta Margaret River.

5.1.5 Proposed signs

The signs proposed for Minningup Pool day use areas have been identified in Draft Table 1 Minningup Pool Proposed Signs for Discussion, in Appendix 15C. Map 5 Indicative Locations of Signage and Interpretation is in Appendix 16C and indicates generally where signs will be located, with the detailed locations shown in the detailed design documents.

Signs have been identified according to the area they are located in (e.g. SB for Sandy Beach and T for trail signage).

Once the number and content of all signs has been approved by Shire of Collie (possibly with input from DBCA where DBCA style signs are used), a graphic designer will need to be engaged to develop the overall sign style for approval by SoC and custom design signs as required and identify specific symbols, paint colours etc. required for each sign. Once the graphics are complete relevant DBCA or Shire of Collie standard structures will need to be confirmed for each sign and relevant approvals sought, such as engineering approval for signs beside roads.

Happy visitors ...

a bit of advice to keep everyone happy.



CAMPFIRES

Camp fires in designated fire places only.
You will need to bring your own firewood.
Camp fires can start bush fires. **Do not** leave your fire unattended and extinguish camp fires completely before you leave the site.
Observe the campfire restrictions posted nearby.



PEACE AND QUIET

Please respect your fellow campers at all times.
Quiet time from 9.30pm onwards.
No generators to be in use between 9.30pm and 8.00am.



DOGS WELCOME

Your dog can stay with you at this camp ground – but you will need to keep them on a leash at all times, and clean up after them!



RUBBISH

Food scraps may attract unwanted wildlife.
Please help to keep the camp ground neat and tidy.
Skip bins are located between upper and lower toilet blocks



SWIMMING

Swimming is at your own risk. No diving or jumping as depth varies and there may be submerged objects. Supervise your children.



FISHING

Protect your catch by only taking what you need. Follow bag and size limits set by Fisheries WA. Some species have restricted seasons.



WILDLIFE

Please do not feed any wildlife



NO CARAVAN WASTE DUMP POINT

There is no caravan waste dump point at this campground. The nearest one is at Margaret River



FIRE and Emergency - CALL 000

If you are advised of an emergency, proceed to the Assembly Area down by the river day use area.

Bushfire information - tune to ABC South West 684 AM
or go to the Department of Fire and Emergency Services website:
<https://www.emergency.wa.gov.au>



Figure 51: Comprehensive Management Sign in place at Alexandra Bridge Campground

6 Interpretation

Visitor interpretation has been requested for Minningup Pool and is proposed for each of the three precincts and along the walk trails. There will be a focus on the Aboriginal cultural values of the area but other values will also be shared. There will be a welcome feature at the main entry / arrival area and inclined panels at the interpretation nodes and along the trails.

6.1.1 The Walgu and Proposed Interpretation Structures

A graphic theme depicting the Walgu has been developed by a graphic designer³² and discussed with the Noongar Community.

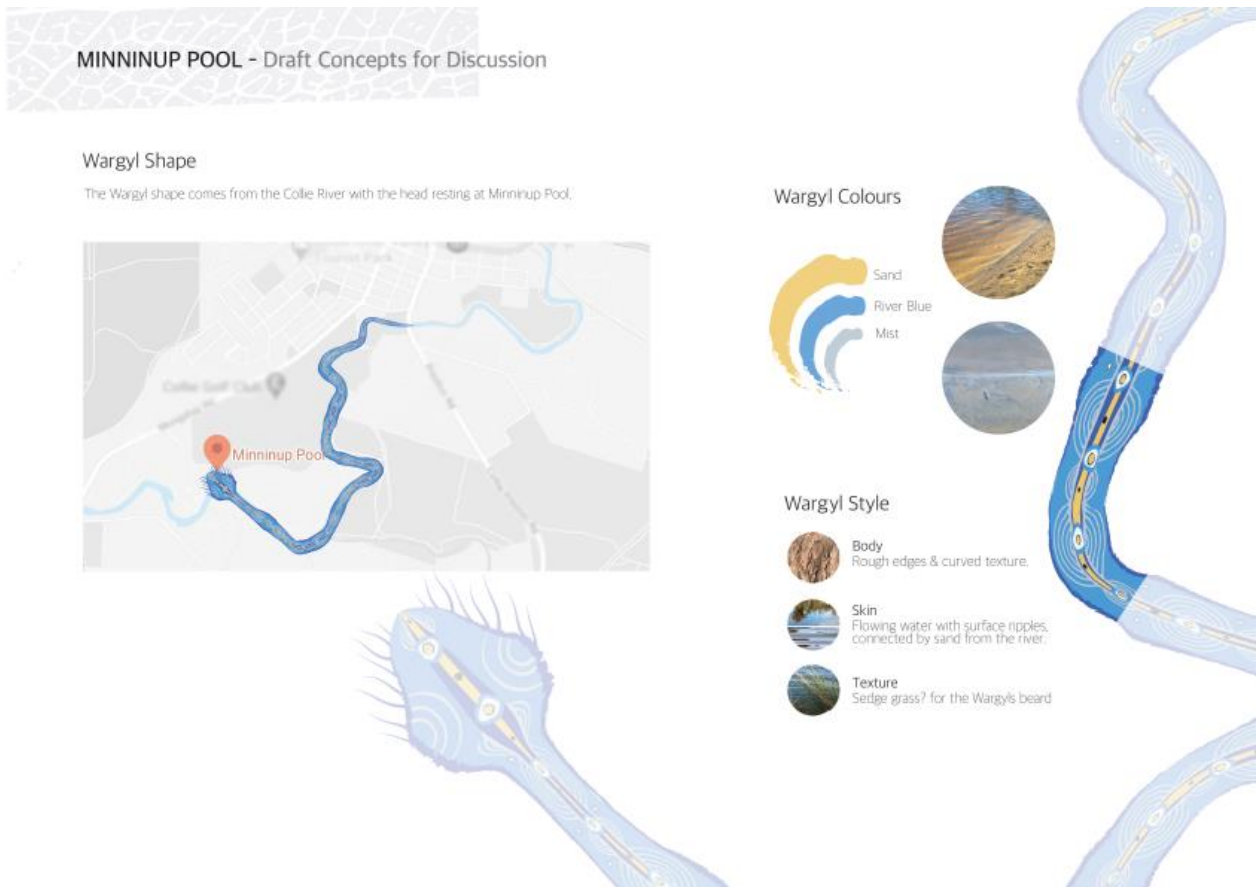


Figure 52: Graphic theme depicting the Walgu

It is proposed this theme will be used in the graphic design for each panel and possibly applied to the vertical component of the panel structures.

³² Bunting Shaun, Tiger graphics 2020.

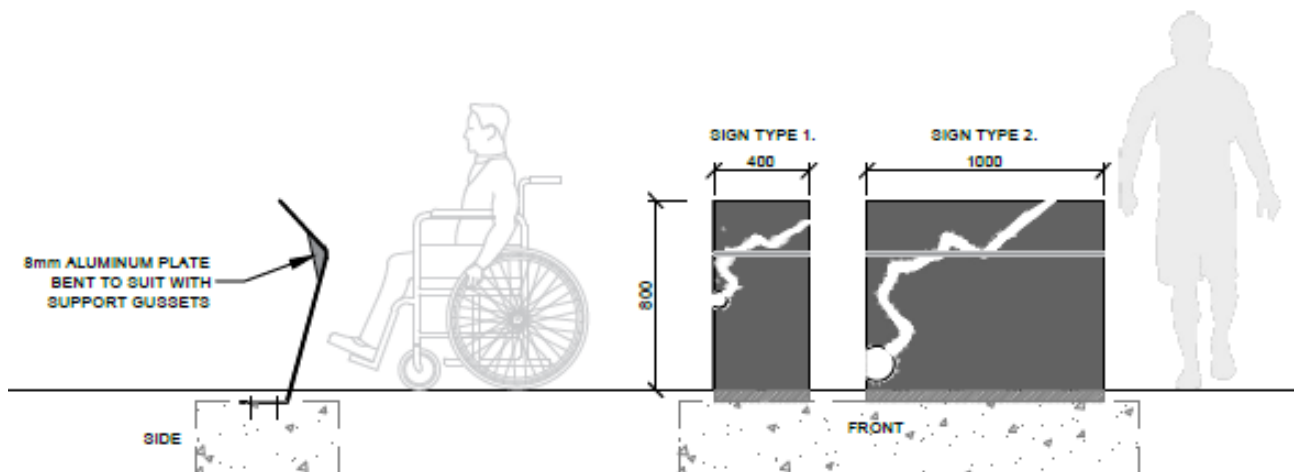


Figure 53: Sketch of side and front of proposed panel structures (indicative only)

The inclined panels at the nodes will be approximately 1000mm x 500mm and along the walk trails they will be smaller with 400mm x 300mm panels. See above for the general form of the panels and it is proposed there will be bespoke ‘Walgu’ artwork on the vertical component, either cut out, etched or applied.

Alternative panels including ‘off the shelf’ inclined panels are also shown below which illustrate the proposed sign sizes with the bright colour graphic (e.g. Colorlok) format that is also proposed. The structures below would be cheaper as they are a standard design and do not incorporate bespoke art work.



Figure 54 L: Similar Inclined Panel C: Typical Trailside Panel Format R: Large panel format with an alternative structure and similar proposed bright colours.

A large welcome feature is proposed for the main arrival area, see below for indicative concepts for and a conceptual Minningup structure, but alternatives will be considered at the graphic design production stage.

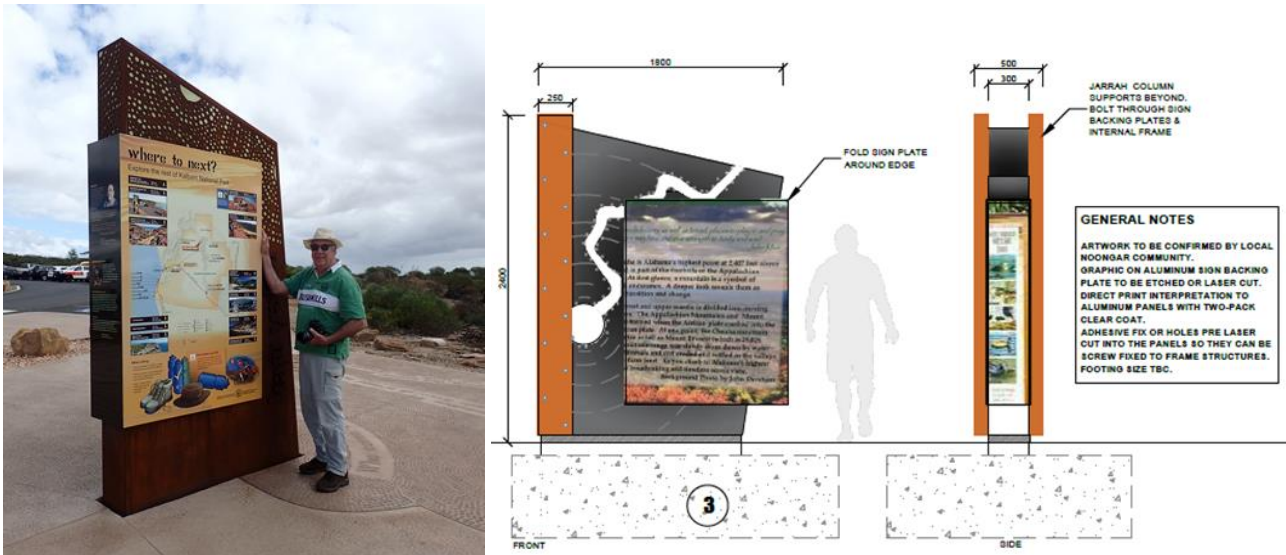


Figure 55 L: Indicative Welcome Feature though brushed aluminium would be used R: Minningup concepts

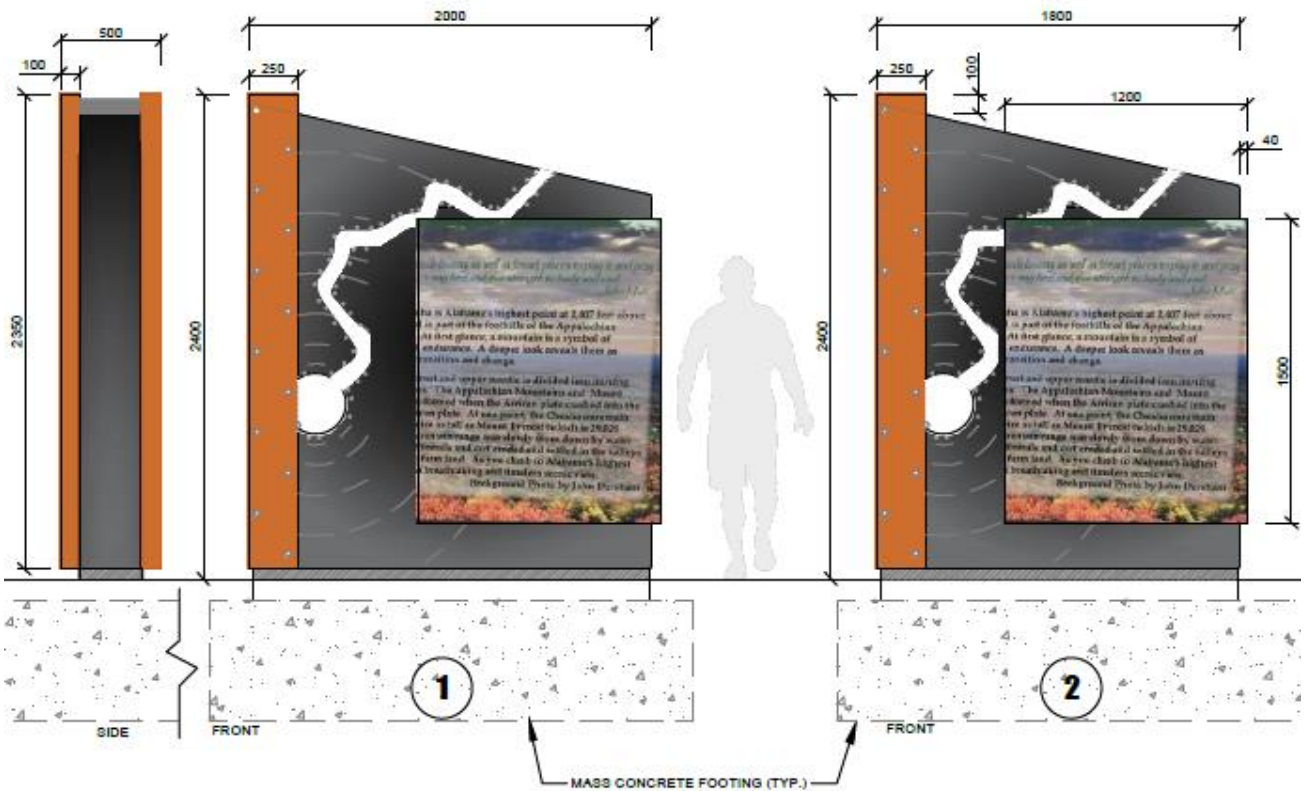


Figure 56 Alternative Minningup Welcome Structure concepts

The proposed interpretive themes are identified below and will be discussed further with the Noongar community. Appendix 17C contains the current (as at April 2021) draft of the panels.

6.1.2 Main Arrival / Welcome Area

At the main entrance point from the new car park, near two distinctive jarrah trees and where there is currently a picnic table, a large arrival welcome feature is proposed, approximately 2400h x 2000w x 300d with some similarities to the one shown above except it will be in brushed aluminium.

The three proposed themes are:

- **Welcome to Minningup Pool** – a special place for Kaniyang Wilman people and a sacred place for the huge mythological serpent – the hairy Walgu which still inhabits Minningup Pool
- **Site map and district orientation map.**
- **Welcome to Kaniyang and Wilman peoples country**, and dialect map (linear panel on the end).

6.1.3 Central Picnic Area

Between the Arrival Area and the Rowing Club a small interpretation node will be set adjacent to the main path, near the central parking area. There will be an inclined panel 1000mm x 500mm with the themes:

- **Birds from the bush around Minningup.** You are likely to see several bird species – here are a few.
- **Wildfowl or feral?** There are many species of wild waterfowl at Minningup Unfortunately you also see many feral ducks that have invaded from the town site.

6.1.4 Rowing Club

In the interpretation node / trailhead on the foundations of the old Rowing Club there will be two inclined panels each approximately 1000mm x 500mm with the following themes.

- **'Settler's History'** Community history of sporting, picnics, and relaxation at Minningup. The story behind the Roberts Rocks Weir and dedication of the reserve etc.
- **Inset – Commander Collie** Surgeon on board H.M.S. Sulphur - part of convoy to found new colony of Western Australia. Lived in Albany 1829-1835 made particular friends with Noongar man, Mokare.

At the arrival area north of the Rowing Club building, not far from the toilets will be an orientation panel.

- An abbreviated version of the **Welcome** Area text and site orientation map.

There may possibly be a fishing sign for this trailhead area and liaison with the Department of Primary Industries and Regional Development (DPIRD) will be required regarding format of any signs and who is responsible for them.

6.1.5 Lookout where the Concrete Steps were near the Main Pool

At this circular lookout space will be an approximately 1000mm x 500mm inclined panel with the following theme:

- **The sacred river:** members of the Noongar community visit Minningup Pool after the death of a loved one to ask the serpent Walgu to accept the spirit of the deceased person and allow them to rest at this place in the afterlife.

A central circular panel approximately 1000mm diameter is proposed for the centre of the space with the following theme:

- **Noongar six seasons:** Noongar people divide the year into six seasons, and they passed through this area following the seasonal supply of food from the river.

6.1.6 Sandy Beach

At the interpretation node adjacent to the path overlooking Sandy Beach there will be an inclined panel approximately 1000mm x 500mm with

- An abbreviated version of the **Welcome** Area text and site orientation map.
- Alternatively modified **sacred river** story.

6.1.7 Trailside Panels

Eleven trailside panels will be provided along the Dual Use Path from Sandy Beach to Minninup Pool and the Rowing Club along the main Minninup Pool path where there are suitable plants. A smaller panel 400mm x 300mm will be used. Possible themes are:

- **Kaarl boodja koorliny** – burning country. Burning by the Noongar peoples occurred mainly during occasional mild periods of the dry summer months of Birak and Bunuru (December to March). They had a deep understanding of fire behaviour and ecosystem responses to fire.
- **Moodjar tree** (*Nuytsia floribunda*) commonly known as the Western Australian Christmas tree. The moodjar or kaanya tree” - kaanya, meaning recently departed soul - is regarded as “highly spiritual” because it was associated with the spirits of the dead.
- **Marri** - bush first aid kit
- **Banksia and other nectary plants.** Nectar was obtained from the flowers and a sweet drink was made from them.
- **Moonah - paperbark trees** (*Melaleuca sp.*) bedding, wrapping for transporting food, roofing mia mia etc.
- **Djiridji - zamia palm** (*Macrozamia reidlii*) produce baio seeds: a food which required considerable preparation before it could be eaten.
- **Balga - grass tree** (*Xanthorrhoea sp.*) The resin from balga plants was used in spear making and as an invaluable adhesive for Aboriginal people, the dried flower stalk scape was also used to generate fire, the leaves were used as roof material in mia mias.
- **Wonnit – WA peppermint** (*Agonis sp.*) and other medicinal plants and smoking ceremony plants.
- **Madja – edible root plants.** Bloodroot, orchid roots, bulbs and tubers, yangit reeds, were the main sources of vegetable food - gathering these was a task for the women and children.
- **Wuanga - wattles** (*Acacia sp.*) and other seeds –used for flour and damper.
- **The importance of trees to Noongars** - the spirits are still present in the landscape, and trees are a visual expression of this, so all trees hold some connection to the spirits.

Optional:

- **Protein supermarket: bardi grubs, yonga - kangaroo and other meats.**
- **Snottygobble**
- **Riverside reeds and the story of the hairs on the Walgu**

6.1.8 QR Codes

The Covid WA Safe App has introduced a majority of the population to the use of QR codes. Interpretive signage is inherently a static media, not easy to update or revise. However, it can be a portal to an on-line experience that is easily expanded and updated. Whilst outside the scope of the current project, the community meeting endorsed the suggestion to further develop interpretation off-site. One of the most exciting opportunities in relation to both signage and overall tourism product is the widespread use of mobile phones. QR codes displayed in on-site interpretation can link phones immediately with website content of remarkable depth and up-to-date accuracy, including audio clips, more stories and artwork.

Whadjuk Trail Network on Noongar land in the western suburbs of Perth uses QR codes on its trails. When scanned, the QR code link allows users to listen to Aboriginal stories and songs, and to learn more about the flora and fauna of the area.

With QR codes, it all depends how much you want to invest in quality content. To set up a supporting static web page connected by QR code to give a quality extra content for say the ten trailside panels on Noongar food may cost around \$50 000 This gets two pages - one for desktop / tablet user and another for the phone user.

Populating it with more meaningful content – for example audio clips - makes it more interesting but the unknown cost here is in preparing the content.

7 Approvals, Costs, Staging and Timing

7.1 Approvals

This report does not identify all approvals required for the implementation of this project however it is noted that the approvals required by DWER will be needed prior to the letting of construction contracts. It is likely DWER will require detailed information on the proposal to take water from the river for irrigation purposes and so it is suggested that the design of the irrigation system is obtained prior to seeking DWER approvals.

As noted in the Aboriginal Heritage Assessment Report³³ the Shire of Collie will need to 'seek Section 18 approval to undertake the works from the Department of Planning Lands and Heritage, before any on ground actions are taken'.

7.2 Costs

The cost estimates below were prepared in December 2020 and should at best be considered indicative as they were based on very preliminary quantities and general rates. The project has evolved with a higher level of infrastructure being provided than was initially envisaged and although in general, suppliers have provided prices for this infrastructure provision, these were only ever requested to be indicative. The costs are still considered to be indicative (at May 2021) as although some items have been added others have been deleted but it is recommended that the SoC engage a quantity surveyor once documentation of Part D is complete to confirm cost estimates for detailed funding applications and before quotes or tenders are called for construction. It is also understood contractors and consultants are (as at May 2021) becoming very busy with the current increase in construction projects and this may further influence prices.

Table 2 Indicative Costs Ex. GST (as detailed in Part B Executive Summary)

Item	Comment	Cost Ex GST
WHOLE OF PROJECT/PREPARATORY COSTS		
Project Management	10% of Project cost, see cost summary	
Project manager		
Construction supervisor		
Obtaining approvals		
Ongoing Noongar Input and Management		
Monitors during construction		\$25,000
Collie River Aboriginal Reference Group or similar	For 2 years	\$12,000
Noongar Art Project – scoping meeting with art consultant to identify projects to be worked on.		\$5,000
River Investigations		
Bathymetry Survey		\$8,000
Detailed underwater assessment by divers		\$5,000
Removal of debris as required.		\$20,000
Design drawings and fabrication drawings of structures		\$20,000

³³Mitchell, Myles and Rosie Halsmith, Minnipup Pool Precinct Project, Aboriginal Heritage Assessment, prepared for the Shire of Collie, February 2019.

Services		
Water and sewer delivered to precincts between \$1.525m - \$1.514m NB Connection costs to outlets to be included in cost of structure e.g. toilet	Of total cost water reticulation costs to - Sandy Beach - Minninup Pool and Rowing Club Consultancy fees	\$50,000 \$60,000 \$20,000
	Of total cost sewer reticulation costs to - Sandy Beach - Minninup Pool and Rowing Club Consultancy fees	\$60,000 \$90,000 \$20,000
Power delivery to precincts Between \$493k - \$659k - \$628k	Of total cost power costs extension to the precincts is between \$233k - \$293k - \$336k excluding environmental costs	Say \$250,000
Electrical distribution and lighting	Design Fees Sandy Beach - Power and Lighting Minninup Pool – Power and Lighting Rowing Club – Power and Lighting	\$15,000 \$62,000 \$158,000 \$134,000
CCTV	If power not available add another \$45k for solar power	\$140,000
Irrigation – supply, construct and commission	Design to be included as design and construct.	\$130,000
Detail Design		
Road design and hard and soft landscape design	Generally covered by existing contract	
Preparation of new construction drawings for toilet and shelter based on DBCA designs		\$5,000
Graphic design - signs		\$3,000
QR Codes for 10 trailside plaques, no audio		\$50,000
Other		
Seed Collection for propagation of local provenance plants		\$5,000
New mower for grass areas		\$30,000
Fire management plan		\$10,000
	SUBTOTAL	\$1,387,000
SANDY BEACH (INCLUDING SANDY BEACH ROAD UPGRADE)		
Weed removal (by Shire)		\$8,000
Basic Engineering costs - Protective barriers for trees, clearing, earthworks, pavement construction, kerbing, humps, paths, drainage, line marking		\$377,000
Paths (included in above engineering costs) – Dual Use (2.5m), collector (1.5m), compacted limestone and service access		
Canoe launch ramp	Compacted limestone say	\$1,000

Wheelchair swimming access	2m wide concrete path approx. 25m Handrail stainless steel	\$5,000 \$10,000
Specialist tree works		\$25,000
Bollards, barriers and gates – supply and install		\$20,000
Signs – design, supply and install		\$13,000
Interpretation – design, supply and install		\$17,000
Toilets – Cubicles - 2 Unisex DA and 2 unisex ambulant, supply and install, Lake Kepwari style	Alternative is Landmark Caretaker approx. \$90,000	\$110,000
Shelters – 2 x skillion, medium size 6m x 4m supply and install	Lake Kepwari style TBA Landmark Peninsular \$16,000	\$32,000
Furniture – supply and install, bins, BBQ, picnic settings (DA and standard), dog waste bag dispenser and cycle racks		\$105,000
Planting – advanced trees (paperbarks), foreshore rehabilitation, tidy up mulching and dry grass		\$44,000
Cultural Area	To be developed by Noongar community, allow \$50,000 to start	\$50,000
	SUBTOTAL	\$817,000
MINNINUP POOL PRECINCT		
Weed removal (by Shire)		\$2,000
Basic Engineering - Protective barriers for trees, clearing, earthworks, pavement construction, kerbing, humps, paths, drainage, line marking		\$403,000
Paths (most included in above engineering costs) – Dual Use (2.5m), Black asphalt (3m) collector (1.5m), Wheelchair accessible beachside path, service access, links to informal MTB trails	Extras - low walls either side at culverts/creeks \$3,000 Stainless steel handrail along wheelchair ramp \$20,000 Links to informal MTB trails \$1,000	\$24,000
Yarning Circle	Sitting logs and fire pit	\$10,000
Terraces –walls, steps and handrails		\$40,500
Lookouts and other masonry structures, including stepping stones		\$22,000
River Access Structures – refurbishment of concrete steps area, beach replenishment, 2 x swimming access stairs, pontoon		\$245,000
Toilets – 2 Unisex DA and 2 unisex ambulant, supply and install, Lake Kepwari style	Alternative is Landmark Caretaker approx. \$90,000	\$110,000
Shelters – skillion 1 small and 1 large, Lake Kepwari style	Lake Kepwari style TBA Landmark Peninsular \$13,000 and \$23,000	\$36,000
Specialist tree works		\$48,000
Bollards, barriers and gates – supply and install		\$26,000
Signs – design, supply and install		\$11,500
Interpretation – design, supply and install	DPIRD signs not included Includes welcome feature \$22,000	\$57,500
Entry Sculpture	Costs depend on scale \$80 - \$200,000	\$120,000
Furniture – supply and install, bins, BBQ, picnic settings (DA and standard), seats with backs and arms, custom seat for lookout, dog waste bag dispenser and cycle racks		\$105,500

Planting – advanced trees (jarrah and paperbarks), low shrub planting, foreshore rehabilitation, tidy up mulching and turf areas.	Note Establishing turf 2,500m2 @ \$22/m2 = \$55,000	\$95,000
	SUBTOTAL	\$1,356,000
ROWING CLUB PRECINCT		
Weed removal (by Shire) including removing pines		\$10,000
Basic Engineering - Protective barriers for trees, Clearing, earthworks, pavement construction, kerbing, humps, paths, drainage, line marking		\$335,000
Paths (included in above engineering costs) –Black asphalt (3m) collector (1.5m), service access, trailhead node.		
Landscape construction – old boatshed foundation, reshaping beach and logs for bush garden		\$5,000
River Access – beach replenishment and water point construction		\$25,000
Toilets – 2 Unisex DA and 2 unisex ambulant, supply and install, Lake Kepwari style	Alternative is Landmark Caretaker approx. \$90,000	\$110,000
Shelters – 1 large, Lake Kepwari style	Lake Kepwari style TBA Landmark Peninsular and \$23,000	\$23,000
Specialist tree works		\$45,000
Bollards, barriers and gates – supply and install		\$12,000
Signs – design, supply and install		\$9,500
Interpretation – design, supply and install		\$22,000
Furniture – supply and install, bins, Disabled Accessible BBQ, picnic settings (DA and standard), seat with back and arm, dog waste bag dispenser and cycle racks		\$84,500
Planting – advanced trees (paperbarks), low shrub planting (Bush Garden), foreshore rehabilitation, tidy up mulching and turf areas.	Note Establishing turf 1,500m2 @ \$22/m2 = \$33,000	\$43,500
	SUBTOTAL	\$724,500

Table 3 Summary of Total Project Costs Ex GST

	Preparatory	Sandy Beach Precinct	Minninup Pool Precinct	Rowing Club Precinct
Subtotals	\$1,387,000	\$817,000	\$1,356,000	\$724,500
10% Project Management	\$138,700	\$81,700	\$135,600	\$72,450
10% Contractor Overheads	\$138,700	\$81,700	\$135,600	\$72,450
20% Contingency	\$277,400	\$163,400	\$271,200	\$144,900
	\$1,941,800	\$1,143,800	\$1,898,400	\$1,014,300
			GRAND TOTAL	\$5,998,300 Ex GST

7.3 Staging

The staging of the implementation will likely be dictated by the availability and sources of funding. However there are some items that are dependent on other items being completed first and there are some components that can be completed independent of other elements.

The costs were broken down into the separate precincts with a 'whole of project' section which mostly consists of necessary preparatory works. Provision of power, water and electricity are a major part of the preparatory works as they need to be installed preferably before road and path construction to avoid digging up newly laid surfaces. They are also required for toilets, barbecues etc.

If items such as road construction are staged according to separate precincts it will be more expensive overall due to extra mobilisation costs for each stage.

7.3.1 Items requiring preparatory works

While some steps can be taken to allow for works that are still to come, such as installing conduits under roads and paths for irrigation and other services, some items require preparatory works before they can be implemented or installed. The items that have been identified so far, as requiring preparatory works are listed below, but this should not be taken as the complete list of preparatory works, the project manager or contractor is responsible for confirming this list.

- Provenance seed collection for the propagation of plants – this will need to occur a minimum of 2 years before the plants are required, longer for larger plants and up to 5 years for advanced trees.
- Installation of new pump and irrigation system before plantings at Minningup Pool can be undertaken.
- Proposed location of new pump is required before foreshore treatments can be finalised.

7.3.2 Items that can be completed independently of other works

The following items could be completed independently of any other works

- Design and installation of the pontoon (including the drone boat survey of the river).
- Design and Installation of the river access stairs (though the revegetation would be subject to the preparatory works for plants noted above).
- Possibly undertaking restoration works in the vicinity of the existing concrete steps.
- Arboricultural work – particularly managing many of the existing trees and spreading mulch on their root zones.
- Sandy Beach Precinct and Minningup Pool (including the Rowing Club) Precinct can be completed independently of each other, but Minningup Pool cannot be completed independently of the Rowing Club as there would be nowhere for long vehicles to turn around.
- New picnic shelter near the Rowing Club (once adjustments have been made to the Rowing Club lease, though an electric barbecue could not be installed until electricity was supplied).

7.4 Timing

The season and weather will also affect the timing of the works in a variety of ways. The following should be considered when programming works.

- Construction work such as roads, parking areas and major paths should be undertaken in dry soil conditions to prevent soil damage. Dry soil conditions are also required to minimise the spread of dieback and other plant pathogens.
- The installation of coir logs below high water level should occur when the water level is low and this usually occurs in late summer. However as the weirs influence the water level it may not go down enough over summer for easy installation of the coir logs. Consideration should be given to lowering the water level by removing boards at Roberts Weir, to facilitate installation of foreshore protection measures.
- Planting requires adequate soil moisture (see planting notes) so planting should occur after the onset of winter rains. Plants also need warmth to grow and so early winter is the preferred time when there is still warmth in the soil.

- Weeds need to be actively growing if herbicide treatments are to be effective.

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.

9 List of Tables

Table 1 Proposed Signs for Discussion - see Appendix 15C

Table 2 Indicative Costs Ex. GST (as detailed in Part B Executive Summary) – see pages 72 - 75

Table 3 Summary of Total Project Costs Ex GST - see page 75

10 Appendices (see separate document)

Appendix 1C – Map 3 Master Plan Context

Appendix 2C – Precinct Master Plans (3)

- Minninup Pool Day Use Area Upgrade – Master Plan –Sandy Beach Precinct;
- Minninup Pool Day Use Area Upgrade – Master Plan – Pool Precinct and
- Minninup Pool Day Use Area Upgrade – Master Plan –Rowing Club Precinct.

Appendix 3C – (3) Artistic Impressions

- Minninup Pool: Entry;
- Minninup Pool: Foreshore and
- Minninup Pool: Sandy Beach.

Appendix 4C – Review of Foreshore Structures by Shore Coastal

Shore Coastal, Technical Note ‘Collie River Minninup pools – Review of Draft Master Plan Concepts for Foreshore Structures’, unpublished, January 2021.

Appendix 5C – VRM Checklist for Underwater Hazards – DBCA

Visitor Risk Management (VRM) Hazard Identification and Maintenance Report – Parks and Wildlife Service, Department of Biodiversity, Conservation and Attractions.

Appendix 6C – Map 4 Indicative Planting and Treatments

Appendix 7C – Arborist Reports

- Minninup Pool Day Use Area Upgrade – Stage 1: Preliminary Tree Assessment and Impact Report 2nd November 2020.
- Minninup Pool Day Use Area Upgrade – Stage 2 Sandy Beach: Preliminary Tree Assessment and Impact Report 18th November 2020.
- Minninup Pool Day Use Area Upgrade – Stage 3 – Rowing Club Precinct: Preliminary Tree Assessment and Impact Report 18th November 2020.
- Minninup Pool Day Use Area Upgrade – Road Alignments: 5th December 2020.

Appendix 8C Plant List for Minningup Pool Foreshore

Appendix 9C Plant Lists of Proposed Planting

Appendix 10C DBCA Construction Drawings for Clarke Site Toilets

Appendix 11C DBCA Construction Drawings for Lake Kepwari Shelter

Appendix 12C DBCA Construction Drawings for Tables and Bench Seats

Appendix 13C DBCA Construction Drawings for Bike Racks

Appendix 14C Benefits Analysis

Minninup Pool Day Use Area Upgrade Benefits Assessment prepared by Syme Marmion and Co, March 2021

Appendix 15C Table 1 Proposed Signs for Discussion

Appendix 16C Map 5 Indicative Signage and Interpretation

Appendix 17C Draft Interpretation Panels as at April 2021