# K Road Cliffs Master Plan

Prepared for Wyndham City Council

27 August 2019

Urban Initiatives

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# 1 INTRODUCTION

Wyndham City Council engaged Urban Initiatives during February 2019 to prepare a master plan for the K Road Cliffs, located on the Werribee River.

The K Road Cliffs are one of Wyndham's most unique and memorable landscape assets.  The sculptural red clay formations stand tall above the flat and verdant landscape of the Werribee River estuary. The cliff top to the west of K Road is a popular stopping spot from which visitors can observe the cliffs and take in the expansive views across the estuary and surrounding landscape.

This section of the Werribee River is highly valued for its rich ecology and habitat significance. The river is lined with River Red Gums and characterised by low flows downstream of the Southern Rural Water Weir.  The estuary is home to migratory wading birds, frogs and fish species including black bream and is favoured by visitors for bird watching, fishing and photography. The site is also identified as having significant aboriginal cultural heritage values.

## STUDY BRIEF

The brief called for a visionary master plan to guide the future use and enhancement of the site as park facilities have come to the end of their life-cycle and require renewal.

The project provides opportunity to design the area to encourage visitors to walk the site and to access the northern section where the view of the Cliffs can be better appreciated.

Urban Initiatives were engaged to work alongside Chatterbox Projects, who managed the consultation process.




Master Plan Site Area

## MASTER PLAN DEVELOPMENT PROCESS

### Phase One: Project start up meeting, site visit and consideration of opportunities and constraints

Urban Initiatives analysed the site conditions, constraints and opportunities and began to document these over Council's GIS data.

A feature survey was also commissioned for development of the concept plans.

Urban Initiatives attended a pop up community event facilitated by Chatterbox and began to review the ideas and opinions from key stakeholders and community. Chatterbox reported on the themes, narratives and priorities which Urban Initiatives explored during the design process.

Aquatic Systems Management and Tonkin and Tonkin Engineers visited the site and prepared specialist input into the drainage and runoff issues on the site.

### Phase two: Background, context and literature review

Phase two saw the review of all relevant state, local policies, previous work on slope stability and the cultural heritage management plan.

### Phase three: Stakeholder consultation

During this phase we liaised with Chatterbox regarding their consultation with Council staff, Parks Victoria, Weribee Golf Course and tourism operators within the Weribee Park Tourism Precinct.

### Phase four: Draft master plan and concept plans and planting strategy

The master plan was developed in consultation with the Project Manager. The concepts were presented to Council and feedback sought.

### Phase five: The developed master plan report

This report aims to set out key elements that could be implemented to fully develop the site to achieve the vision and objectives set out in the brief.

Each element is described separately as it may involve different stakeholders, funding and development timelines.

The design remains conceptual and it is expected that each component will be subject to careful further design development by professional landscape architects and specialist design consultants.

Delivery of each part of the project to a high standard and in a manner that is consistent with the intent of the master plan is essential to the success of the master plan.

# 2 ANALYSIS

## ISSUES CONSIDERED IN THE MASTER PLAN PROCESS

### Geology, Cliff Stability and Drainage

- The cliffs are approximately ten metres high and formed from distinctive red clay carved out by the Werribee River. As the river cuts its course through the floodplain, and periodic flooding occurs, the base of the cliffs is etched away creating the vertical profile we see today. This process of undercutting at the base of the cliffs occurs very slowly over time and has not been identified as posing significant threat to cliff stability.
- Geological Reports prepared in 2001, 2008 and 2014 showed that active erosion was occurring on site and threatening cliff stability. In March 2019, as part of the preparation of this master plan, Tonkin and Taylor reviewed these reports, undertook a site evaluation and prepared a current geotechnical report showing that erosion has continued to occur since 2014 as evidenced by tension cracks at the top of the cliffs. The erosion is primarily caused by water from the surrounding catchment pooling at the top of the cliffs and breaking through the clay. This situation needs to be rectified as a matter of priority to preserve the cliffs and ensure the safety of visitors.
- The existing road side drainage swales are too flat to drain effectively and material accumulation and insufficient maintenance has contributed to blockages. This results in water from adjoining properties, the road reserve and car park flowing uncontrollably over the ground surface and down the cliff face, causing the eroded channels and tunnelling that is destabilising the cliffs and may lead to sections of cliffs falling into the river.
- Despite community concern regarding sink holes, additional research using LIDAR data has indicated that there is no evidence of sink hole movement on the site.



Erosion of the cliff face



Poor drainage design in the centre of the site

### Landscape and Vegetation

- Sugar Gums are a great asset because of their scale, character and provision of shade, but they are being compromised by informal gravel parking underneath them causing ground compaction. The trees are also affected by erosion of the cliff face which has led to exposed roots along the cliff face.
- They have a risk of branch drop, which means putting high activity areas clear of tree branches where possible.
- Some trees were coppiced during the study in order to reduce risk of cliff fall
- Indigenous understorey vegetation cover at the top of the cliffs, and on the lower cliffs and river edge is patchy due to erosion and damage from pedestrians entering fenced areas
- There is potential to soften the appearance of the road, carpark and fencing by increasing amenity planting

### Vehicle Access and Parking

- Currently vehicles are able to access a large area of the cliff tops. There is more area dedicated to parking than is required. Allowing cars to park on unstable areas is contributing to erosion and compromising visitor safety.
- The prioritisation of vehicles in the space detracts from the landscape experience
- Parking under the Sugar Gums is causing compaction to the root zones
- Carpark infrastructure within the site was constructed using standard detailing and has had limited attention over the years.




Coppiced trees



Expansive gravel parking

### Pedestrian Access and Connections

- There is very limited provision for pedestrian access along the cliff top and to the river's edge
- The site lacks path connections to the wider surrounds
- Where there is no formal pedestrian access, like the river's edge, informal tracks have been created. This is causing damage to vegetation and the cliffs and is dangerous for the general public because of the unstable cliffs.
- There are limited places to view the cliff face

### Site Facilities

- Fishing, bird watching, picnicking and contemplation of the landscape are popular activities on site but the facilities available for these activities are minimal, not ideally located and rudimentary in design
- Basic timber picnic settings along the cliff top are poorly located and too close to the cliff edge
- Basic sleeper steps lead down to the river edge where there are no designated fishing facilities
- Fencing is chain mesh and has been cut in multiple locations to gain access to the cliff edge
- There are no toilets on site and no existing sewer line in close proximity.



Uncontrolled access to the lower cliffs



Degraded picnic facilities

### Maintenance

- General lack of maintenance; drainage systems are blocked, rubbish dumping is evident.
- Current maintenance level is insufficient for a site of this value

### Visitor Experience and site understanding

- Signage is limited to warning signs along the cliff tops. There is no interpretive signage to help visitors understand the significant history, flora, fauna or geological significance of the site. The lack of understanding is likely contributing to ongoing breaches of fencing and access to environmentally sensitive and dangerous areas.

### Cultural Heritage

- Aboriginal artefact scatters exist on the site and are described in the Cultural Heritage Management Plan.
- There is currently no acknowledgement of Aboriginal connections or values on the site.

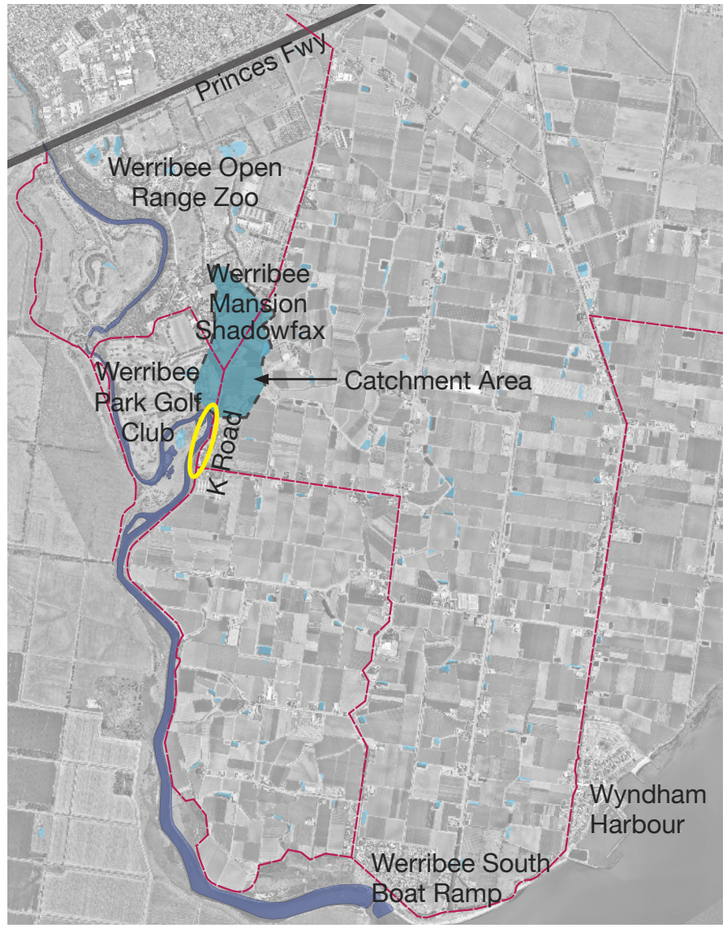


River bank fishing spot



Steps to River edge

## EXISTING CONDITIONS DIAGRAMS



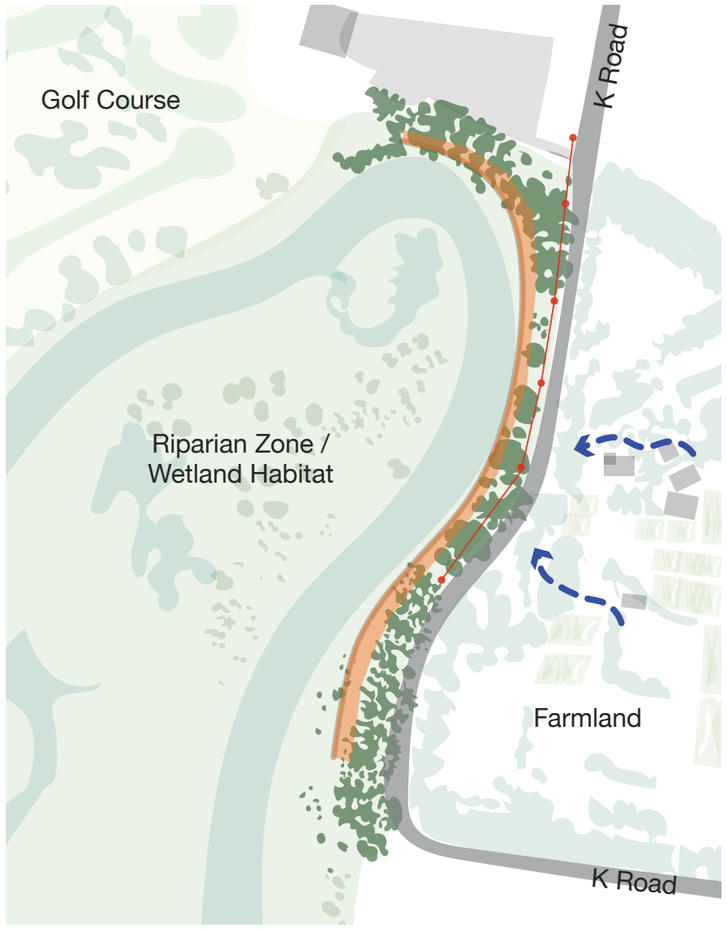

### SITE CONTEXT DIAGRAM

The K Road Cliffs is a stopping off point on the Tourist Drive 11 route which connects central Werribee with the Werribee Park Tourism Precinct and Werribee South. The close proximity to a number of prominent tourist stops, in particular Werribee Mansion and Shadowfax winery creates opportunity to provide walking and bicycle connections for visitors.




### MANAGEMENT AREAS DIAGRAM

- Department of Environment, Land, Water and Planning (DELWP)
- Melbourne Water
- Parks Victoria
- Werribee Park Golf Course
- Parks Victoria / Werribee Park Golf Course

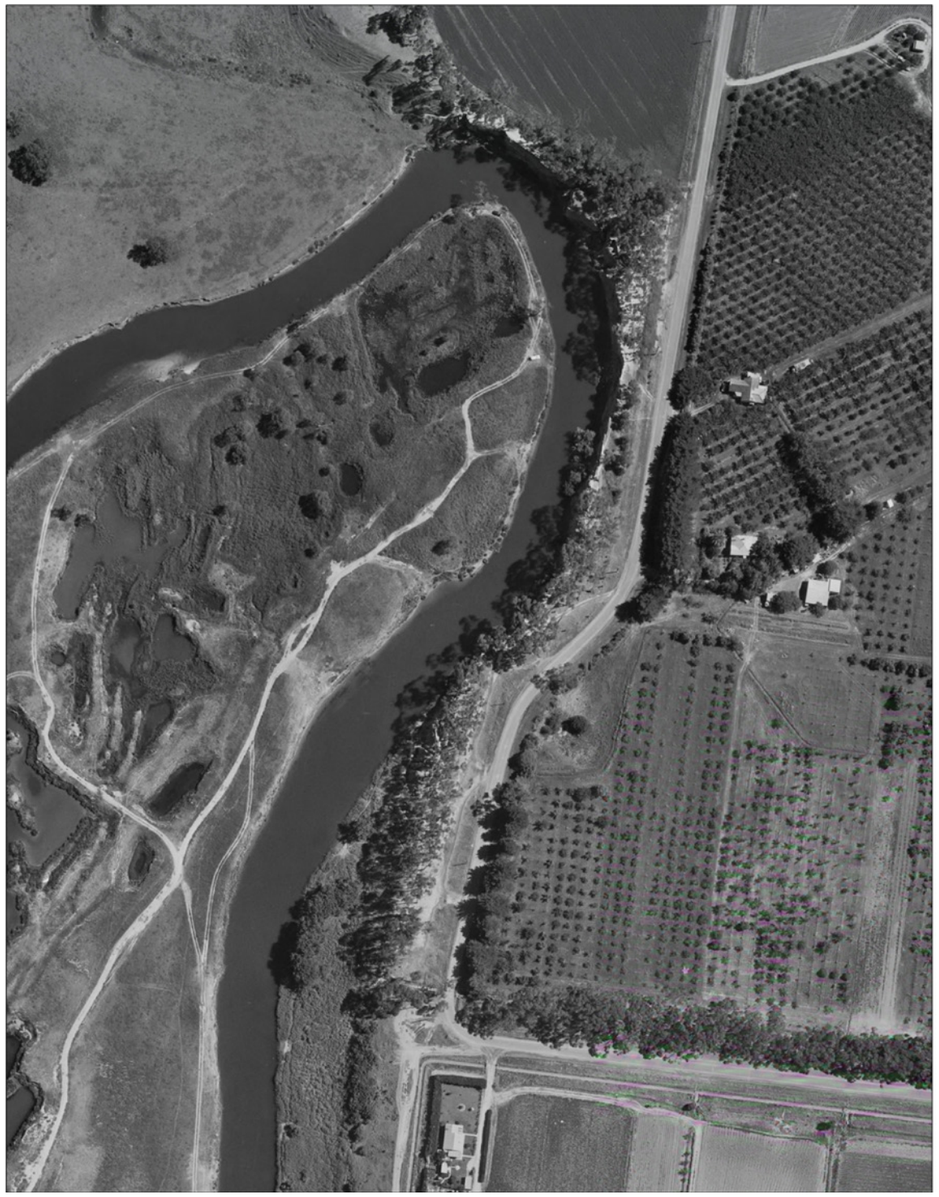



### SITE CONSTRAINTS DIAGRAM

- Large Sugar Gums
- Power Lines
- Unstable Cliffs
- Overland Flow

## AERIAL IMAGE COMPARISON 1972 & 2019

Over the last almost 50 years there have been no major changes in the alignment of the Werribee River. The image shows farming and land use changes, with the Werribee South Golf Course now occupying land once used for agriculture, with more trees and vegetation now adjoining the Werribee River to the north of the site. Car access is no longer provided on the western side of the Werribee River, better protecting the river bank, vegetation and habitat values in this area.

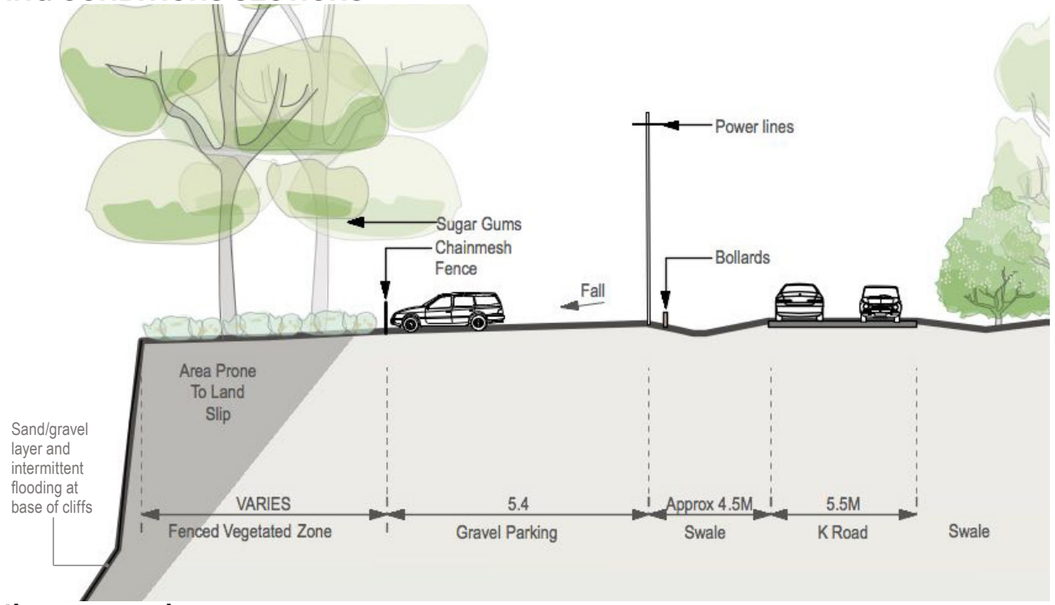


November 1972



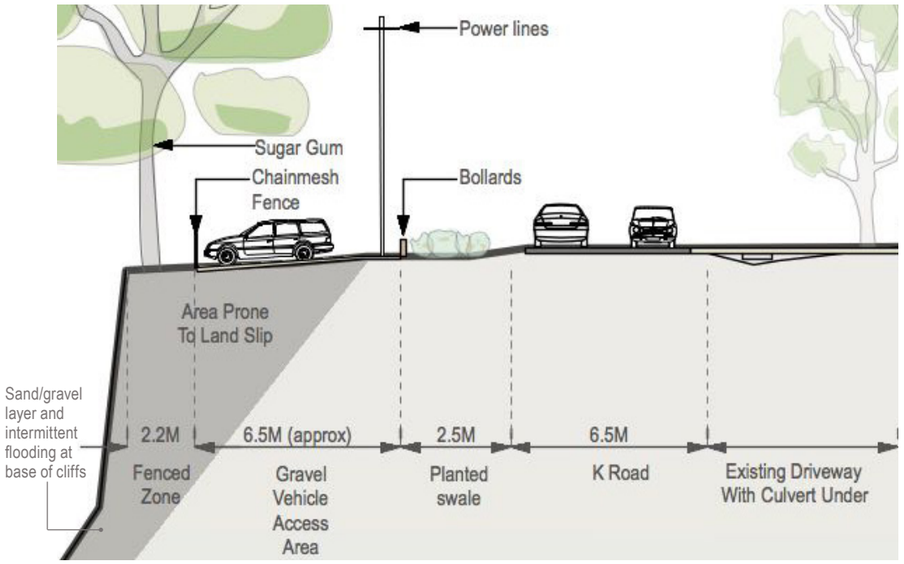
November 2019

## EXISTING CONDITIONS SECTIONS



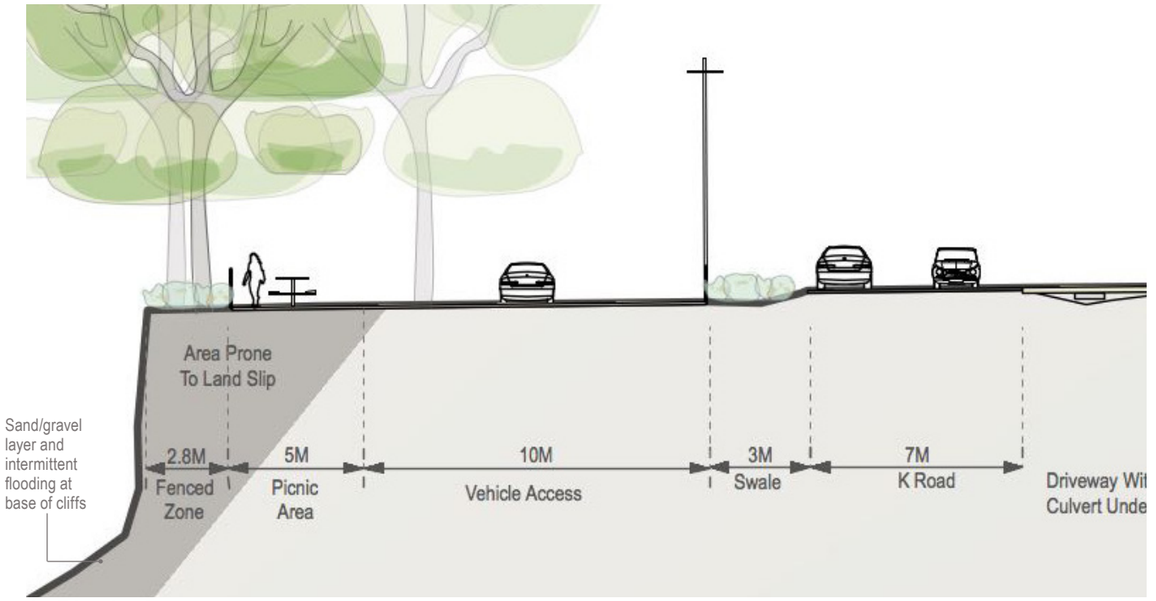

### 1. Northern car park

The northern car park requires regrading to direct water away from the cliffs. There is no defined pedestrian path along the length of the clifftop



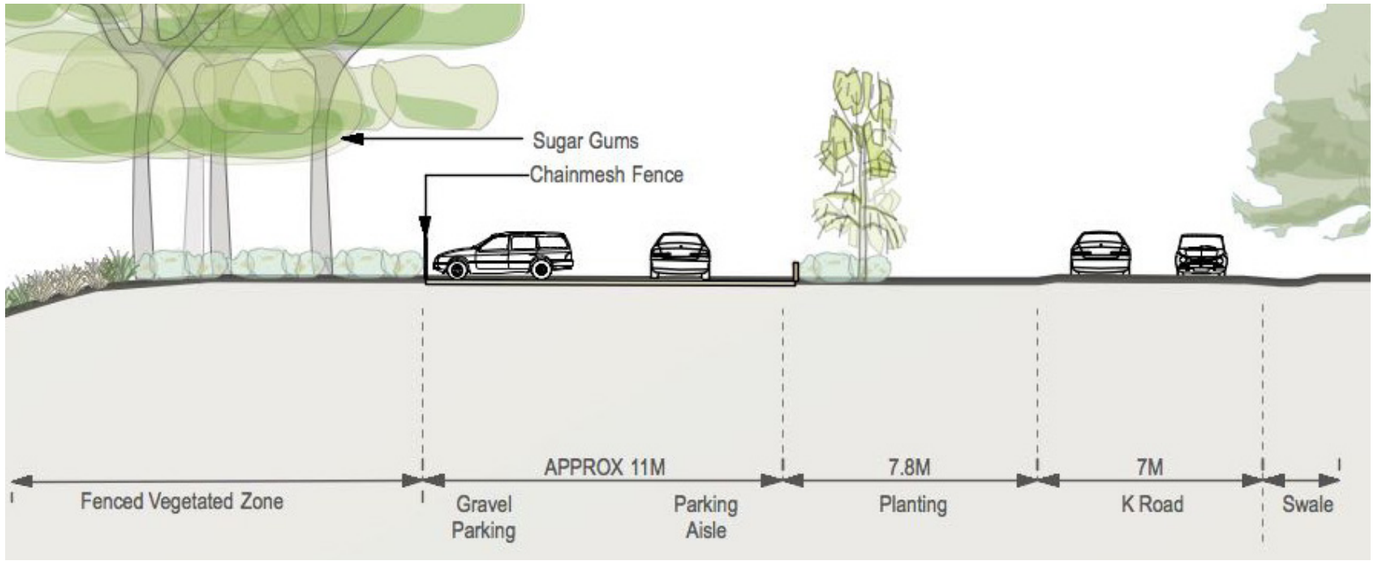

### 2. Narrow area (where K Road is closest to cliffs)

Vehicle access is currently located in areas prone to landslip.




### 3. Picnic Area

Picnic areas are located too close to unstable cliff edge. Vehicle access to the cliff top is excessive and requires consolidation.




### 4. Southern Car Park

The southern car park is larger than it needs to be and requires regrading to direct water away from cliffs.

# 3 VISION AND PRINCIPLES

The K Road Cliffs site offers significant opportunity to view and interact with the river and enhance Wydham's public space offering to locals and visitors alike. The following vision was developed in response to the brief and following consultation with community and stakeholders.

## SITE VISION

*The K Road precinct will be a special location to stop and spend time in the unique natural environment.*
*Visitors will be encouraged to park and walk to viewing areas, fishing platforms and picnic facilities, where they will spend time learning about the place and its history.*
*The precinct will make a lasting impression on visitors, who will remember K Road Cliffs as a unique destination where the natural qualities of the site are protected, valued and revealed.*














## GUIDING PRINCIPLES

### Reduce erosion and protect the unique cliff face geology

Improve drainage to direct water away from cliffs so as to maintain cliff stability and mitigate risk of collapse and associated risk to visitors and site ecology.

### Protect and enhance the natural vegetation, habitat and ecology of the site

Increase areas of revegetation and improve plant cover to encourage birdlife, enhance opportunities for wildlife photography, increase soil stability and enhance the bushland experience of the cliff top and riparian experience at the rivers edge. Improve fencing to cliff top vegetation to protect vegetation from visitors. Clearly define areas for use by visitors including designated viewing spots and fishing platforms. Prioritise regular and ongoing maintenance to the site.

### Improve parking and minimise vehicle impacts on the site

Reduce the amount of vehicular paving and consolidate parking to allow maximum parking in minimal amount of space and reduce impacts on the landscape.

### Improve pedestrian experience, connections and walkability

Improve the visitor experience of the natural landscape by providing a generous cliff top walking path that maximises opportunities for viewing and connects to surrounding sites including Werribee Mansion, Shadowfax and the proposed East Bank Trail shared path. Upgrade path connections and stairways to the rivers edge.

### Better accommodate existing activities and encourage new activities suited to the bush setting

Provide new facilities that are carefully located and in keeping with the bushland character of the site. Facilities are to accommodate individuals and small groups for fishing, bird watching, wildlife photography and picnicking and have potential to be used for group activities such as yoga, meditation and Tai Chi in the future.

### Improve visitor knowledge and understanding of sites ecology and history

Provide integrated signage and interpretive elements that educate visitors about the unique ecology, geology and cultural history of the site. Provide varied perspectives including traditional owners, early European history (including the Chirnside family and possible Hume and Hovel expedition in the Werribee River delta), aquatic biologist and ecologist. Involve the local community in stewardship of the site to build connection, improve the site profile and increase awareness of the site's value.

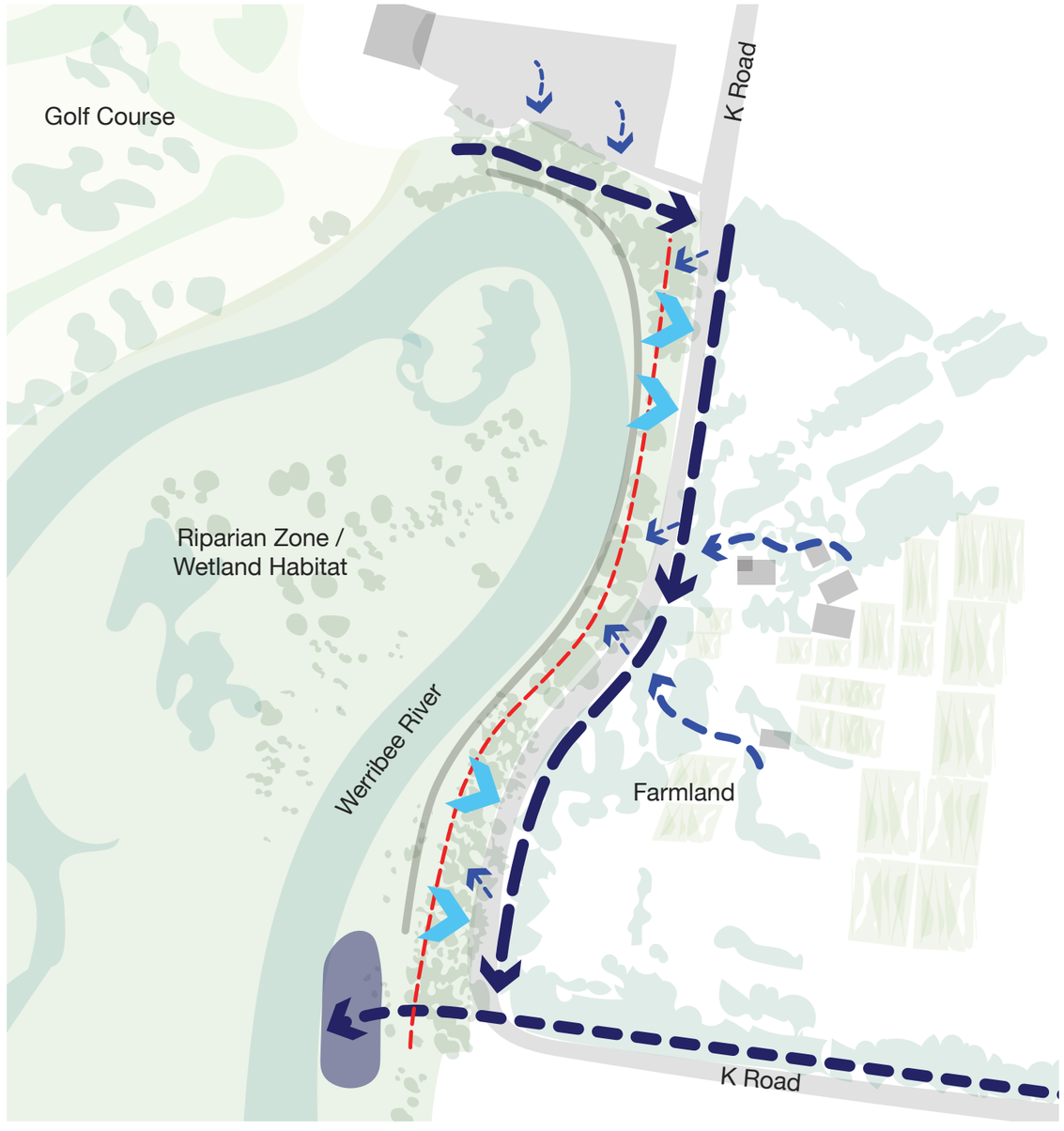
## 3.1 EROSION CONTROL AND DRAINAGE IMPROVEMENTS

The drainage system requires significant improvements to ensure water from the surrounding catchment is collected and diverted away from the cliff top area.

It is recommended that a process of managed retreat is adopted. A new fence should be offset 8m from the cliff face and visitors kept out of this area as it is the zone most at risk of collapse.

The existing swale along the east side of K Road and along the northern boundary will need to be piped and connected to existing river outlet at the south of the site as the current swales are not draining effectively.

The carpark will be re-graded and a new levy bank installed on it's western edge to the ensure excess surface water is kept away from the cliff face area.



## 3.2 PROTECT AND ENHANCE VEGETATION

Increasing vegetation cover will help bind the soil, improve amenity and increase the habitat area of the site.

A new wire mesh fence (1.2m high) is required at an 8m offset from the cliff edge to protect the vegetation and tree root zones of the existing sugar gums.

Areas within this zone that are currently used for vehicles and picnicking will be revegetated and these activities will be relocated to safe areas.

Areas of bare soil within 8m of the cliff face should be allowed to revegetate naturally as the established trees and poor soil will in these areas are not conducive to the establishment of new planting.

Low planting will be selected to ensure open views are maintained under the tree canopies to the west. Trees and shrubs will be planted to improve the buffer between the road and car parking and picnic areas.

Planting will be robust, drought tolerant indigenous species.

Council landscape maintenance level of service should be reviewed and raised to a higher level as appropriate for a site of this value.



## 3.3 IMPROVE PARKING AND MINIMISE VEHICLE IMPACTS

The car parking footprint will be reduced to allow for revegetation to unstable areas and improved planting around the parking and picnic areas.

The two car parking areas will be regraded with the levels on the western side raised to direct water away from the cliffs.

If required, bus parking could be accommodated on the eastern side of K Road.

It is proposed that the speed limit be reduced from 80km/hr to 60 km/hr (subject to assessment by traffic engineer).




**Consolidated Parking and Reduced Vehicle Access**

- Existing vehicle access and parking footprint
- Proposed consolidated parking with improved drainage
- Carpark entry / exit Master plan
- Bus Parking
- Cliff face

## 3.4 IMPROVE PEDESTRIAN EXPERIENCE, CONNECTIONS AND WALKABILITY

A new cliff top walking path will allow visitors to walk along the cliff top in the shade of the Sugar Gums and view the river, cliffs and bird life while immersed in the bushland landscape.

The path will connect with to adjoining sites including Shadowfax winery and the Werribee Mansion to the north and the Bay Trail Shared Path to the south.

The path will be located a safe distance from the cliff edge and a new fence will run along the western side to prevent access to the unsafe area.

The intention is that the fence disappears as much as possible into the vegetation and the path is located on top of the new levy bank to maximise views over the vegetation and under the tree canopy.

New path connections and stairs will be provided to access the riverfront and fishing areas.




**Improved Pedestrian Connections**

- New cliff top walk connected to shared path network
- Improved river access paths and steps
- Existing track to be retained as is
- Cliff face

## 3.5 BETTER ACCOMMODATE EXISTING ACTIVITIES AND ENCOURAGE NEW ACTIVITIES

New facilities will improve amenity and safety for existing activities and accommodate new activities.

Two new fishing platforms are proposed to increase amenity for fishers and other visitors alike. Focused access to the river will reduce the impact of visitors on the river bank and ecosystem.

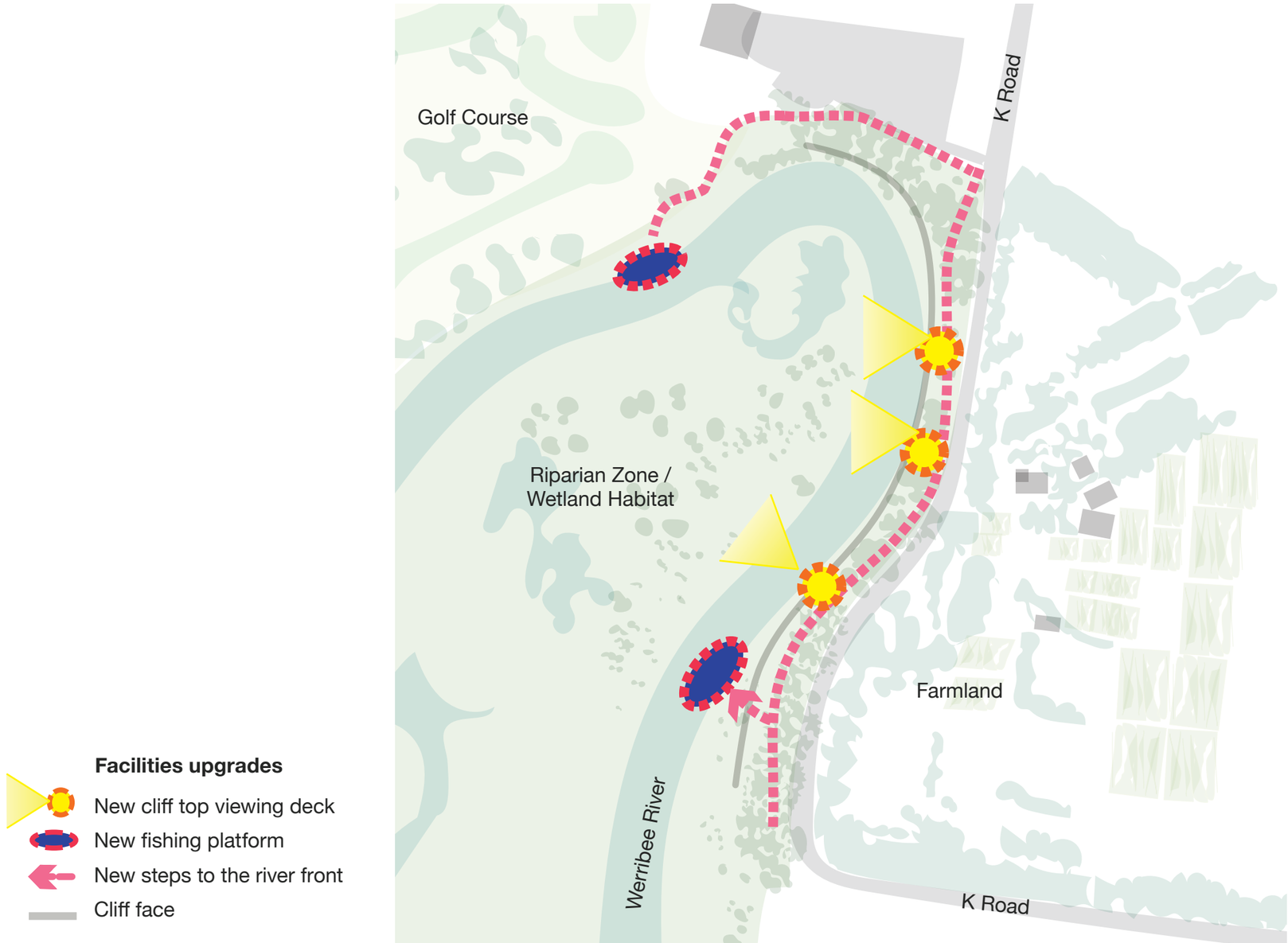
Three new viewing decks are proposed along the cliff top walk to provide viewing opportunities for birdwatchers without having to enter the fenced/vegetated areas.

Viewing platforms could be used for school groups, yoga groups, friends of groups etc. as well as everyday activities like picnics.

New steps to the river bank could include terraced areas to sit and enjoy the view.

Seating areas will be provided at various locations along the path to provide opportunities for rest and respite.  Seats will be positioned to take in the expansive views of the river and environs.

The suite of furniture is envisage to reflect local materials and provide comfort. Seats or battens may be made from timber from trees coppiced during the project.



## 3.6 IMPROVE VISITOR KNOWLEDGE AND UNDERSTANDING OF THE SITE

Integrated signage and interpretive elements should be provided at key points such as viewing platforms, fishing pontoons, vehicular entry points and key locations along pedestrian paths.

We see opportunities to tell the story of pre settlement aboriginal life on the river. Revegetation of the site will allow the reintroduction of indigenous plants and habitats that will help tell the story of food and lifestyle pre settlement.

The new viewing platforms also provide opportunities to contain interpretive information about the history, ecology, flora, fauna and geology of the site. This could be housed in the timber seating and balustrades.

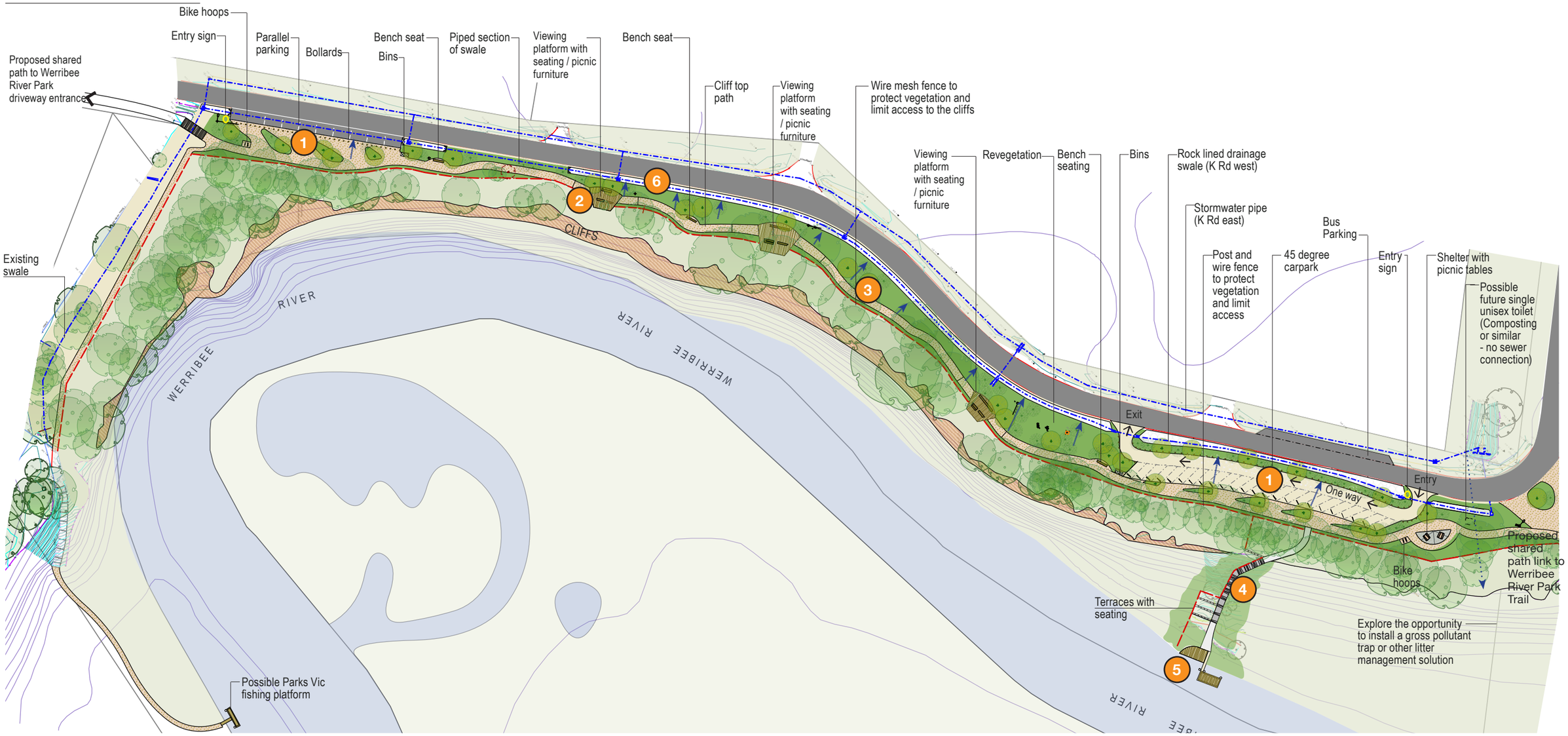
A free standing silhouette blade sign could be located on the road edge and be specific to the K Road cliffs.




**Signage and Interpretive Elements**

- K Road Cliffs Vehicular Entry Sign
- Riverfront sign at fishing platform with interpretation and warning signage
- Cliff Top sign with interpretation, wayfinding and warnings
- Pedestrian Access
- Cliff face

## 3.7 MASTER PLAN




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**KEY**

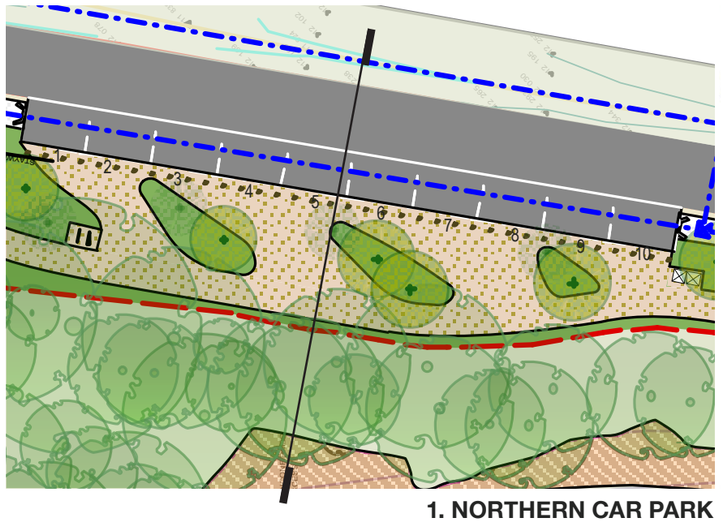
1. New visitor car parks
2. Reflective and viewing spaces
3. New cliff top walking path
4. River access and terracing
5. Water platforms
6. Drainage
7. Planting

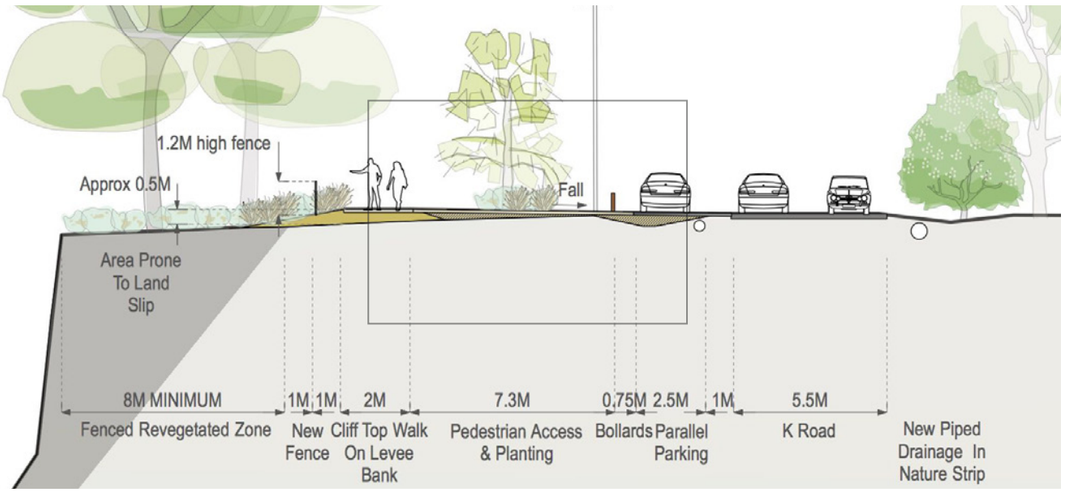
## 3.8 NEW VISITOR CAR PARKS

Two carparks are suggested to be fitted on the north and south ends of the site providing easy pedestrian access to the new picnic areas, viewing platforms and river.

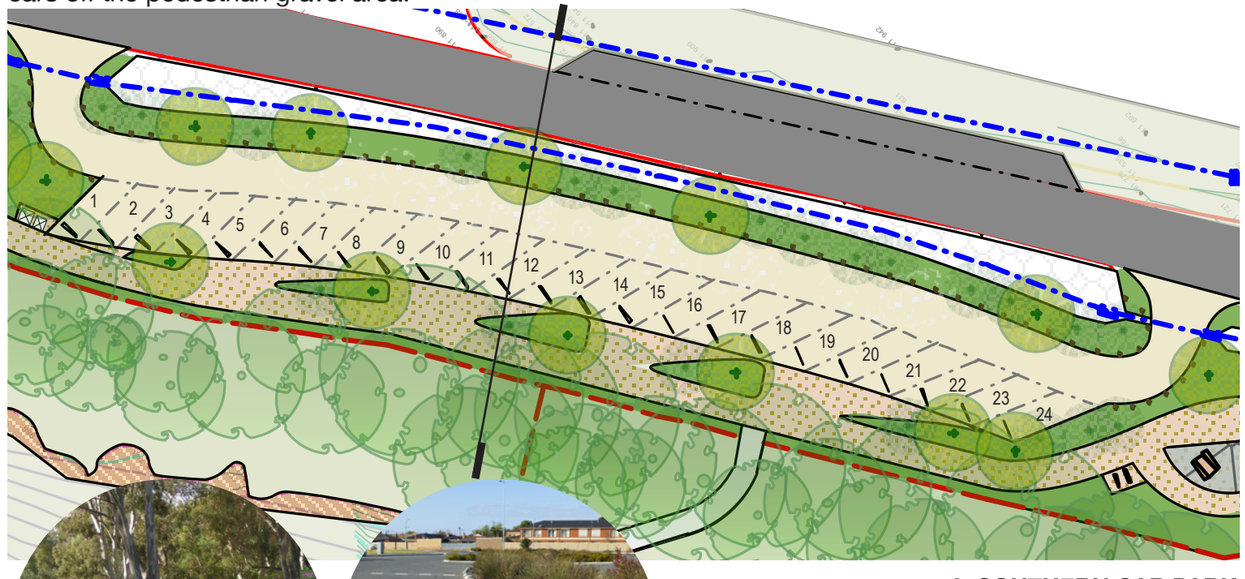
The car parks will be graded to fall towards a new drainage system at the edge of K Road. This will involve some filling to raise car park and adjoining footpath levels and careful setting of pavement cross falls and edges so that the new landscape is stable and easy to maintain.

Once levels and edges are properly formed and ideally fixed with concrete edging or kerbs there are a range of options for surfacing that could be determined by budget, aesthetics and maintenance constraints.  We favour gravel for the southern car parking bays with the possibility of spray seal and flush concrete edges for circulating pavement and asphalt for the northern carpark bays, with bollards to keep cars off the pedestrian gravel area.

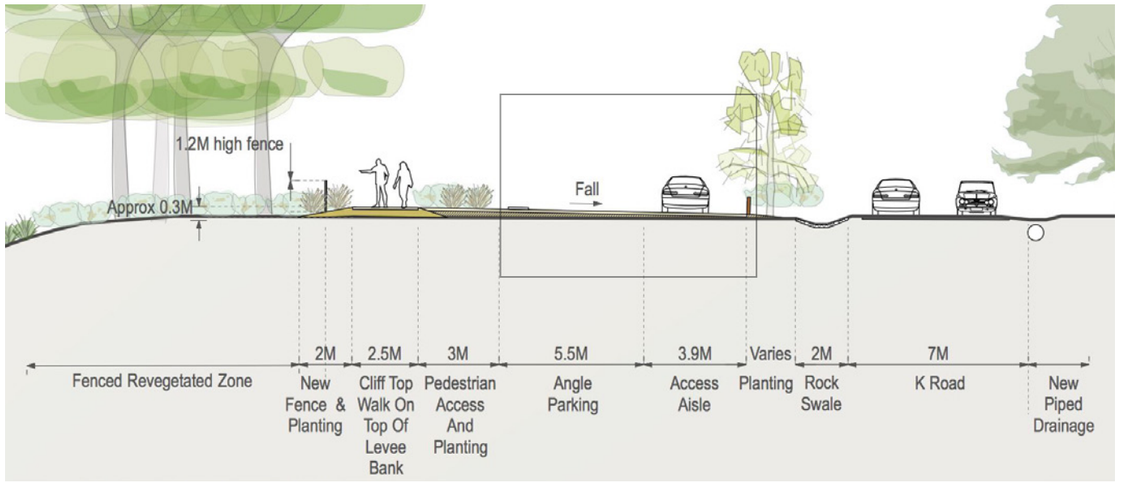



**1. NORTHERN CAR PARK**




**2. SOUTHERN CAR PARK**

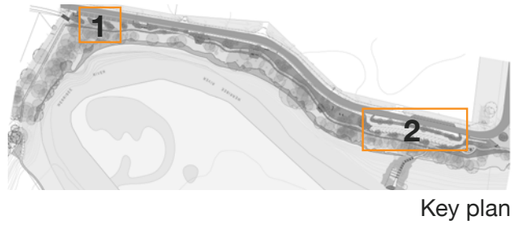





Spray seal pavement finishing



Carparking with wheelstops

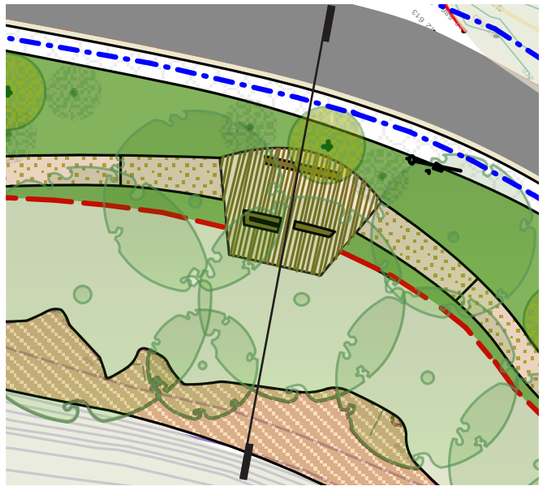



Key plan

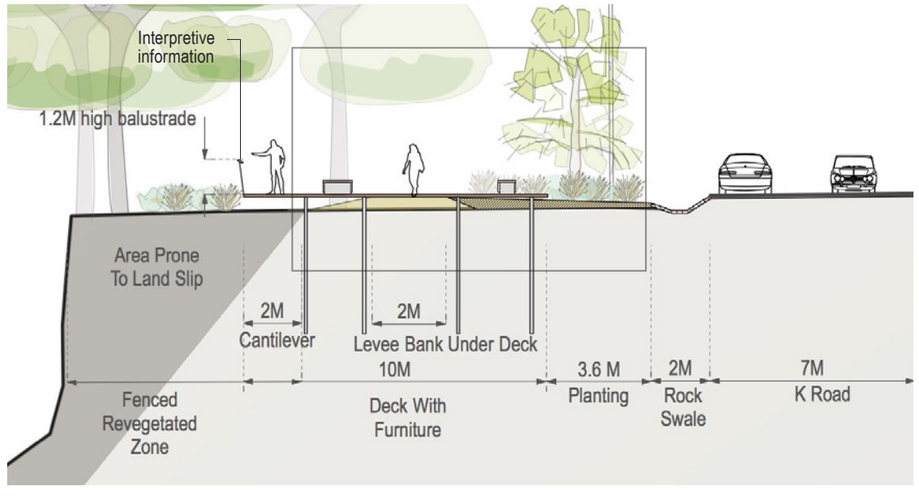
## 3.9 REFLECTIVE AND VIEWING SPACES

The central part of the site, recovered from cars, will be a natural area. It will be an attractive space to wander and stop to contemplate the river, bird, wild life, the sugar gums and new planting.

The space will contain three new timber viewing platforms with timber seating benches and balustrades that incorporate interpretive information.



**VIEWING DECK**





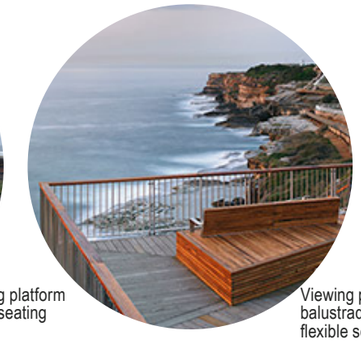

Site photo



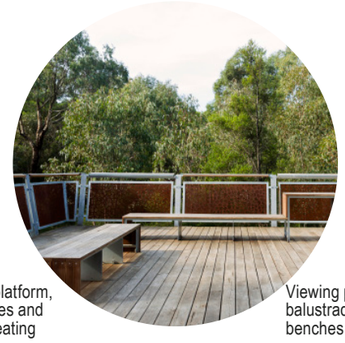
Eastern Osprey
Mandurah



Viewing platform bench seating



Viewing platform, balustrades and flexible seating



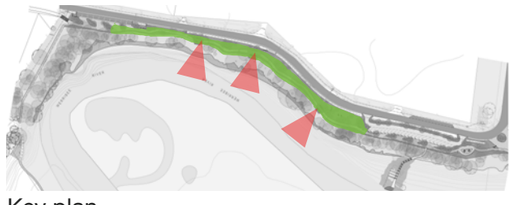
Viewing platform, balustrades and benches



Viewing/ picnic shelter



Sketch view



Key plan

## 3.10 NEW CLIFF TOP WALKING PATH

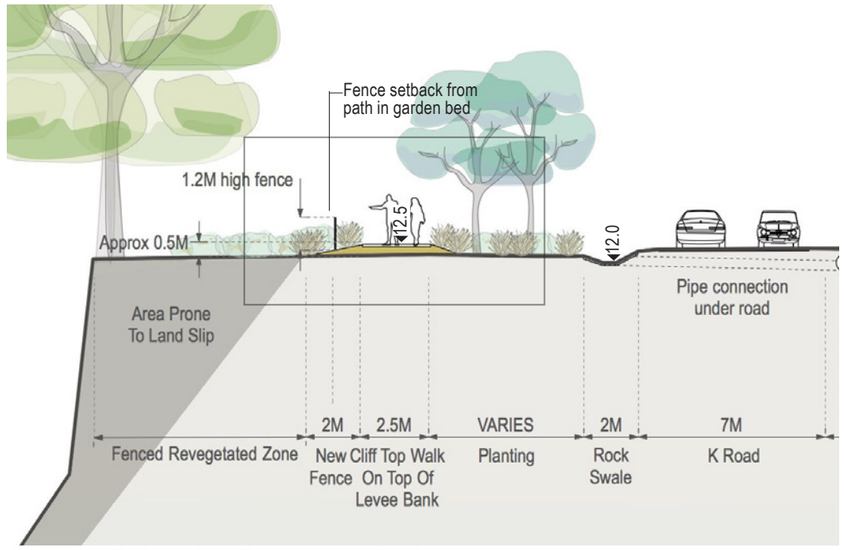
A new 2.5 meter path is proposed along the cliff top to interconnect facilities and improve the pedestrian experience of the site.

The path will be laid on top of the levee bank to elevate visitors for optimum views. It will meander through vegetation that is carefully considered to ensure walkers are buffered from the road and landscape view lines are maintained.

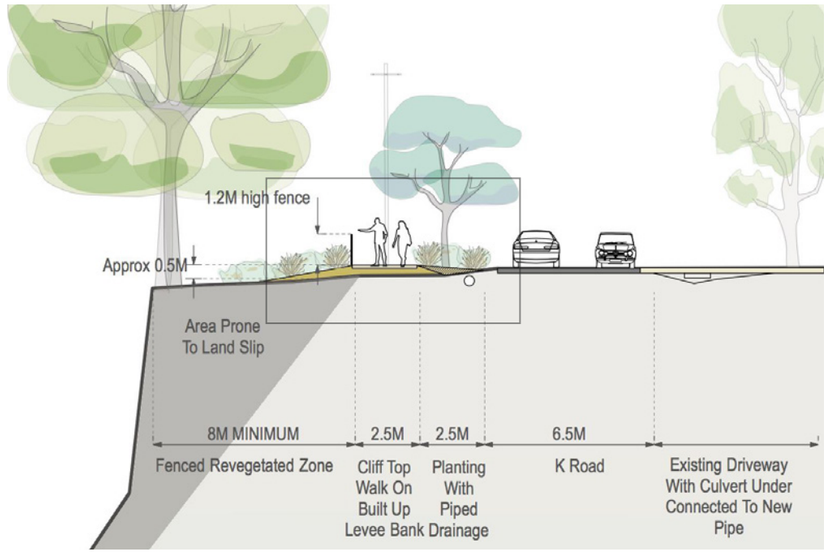
The swale will be piped through the narrowest section of the site to maintain a continuous vegetated link.



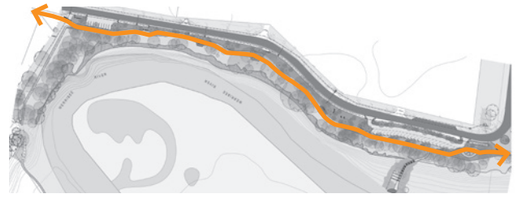
Shared path through vegetation




CLIFF TOP WALK TYPICAL SECTION




CLIFF TOP WALK NARROW SECTION



Key plan

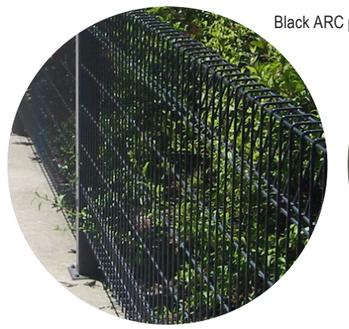
## 3.11 FENCING

Protective fencing (1.2m high) is proposed to limit access to cliffs and protect native vegetation.

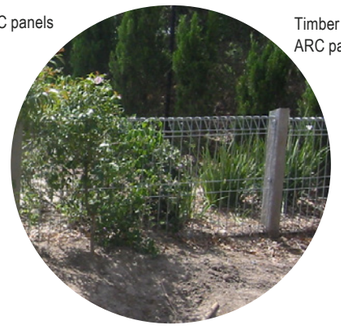
Timber fence posts with black ARC wire mesh panels are recommended adjacent to the cliff top walk to provide a durable low maintenance fence, which can not be easily vandalised.

A high quality balustrade is recommended to reinforce the special quality of the viewing platforms.

The section of fence adjacent to the lower terraces could potentially be a more low-key post and wire design.



Black ARC panels



Timber Posts with ARC panels



Balustrade with timber leaning rails



Post and wire fencing

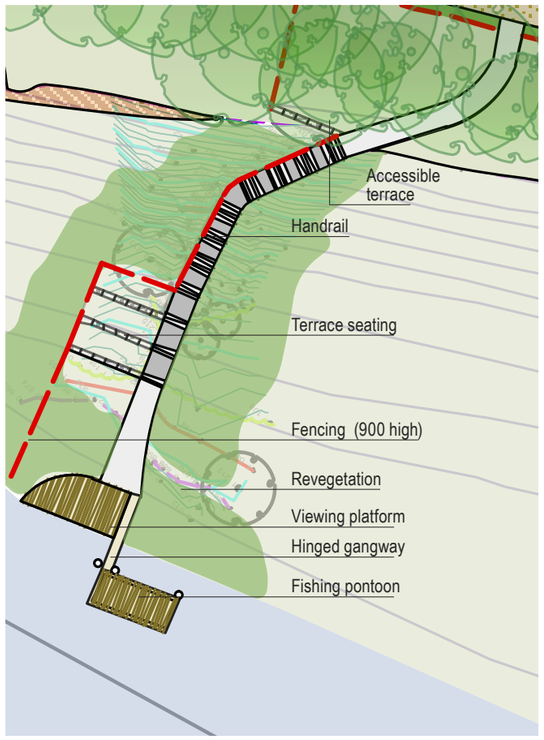
## 3.12 RIVER ACCESS AND TERRACING

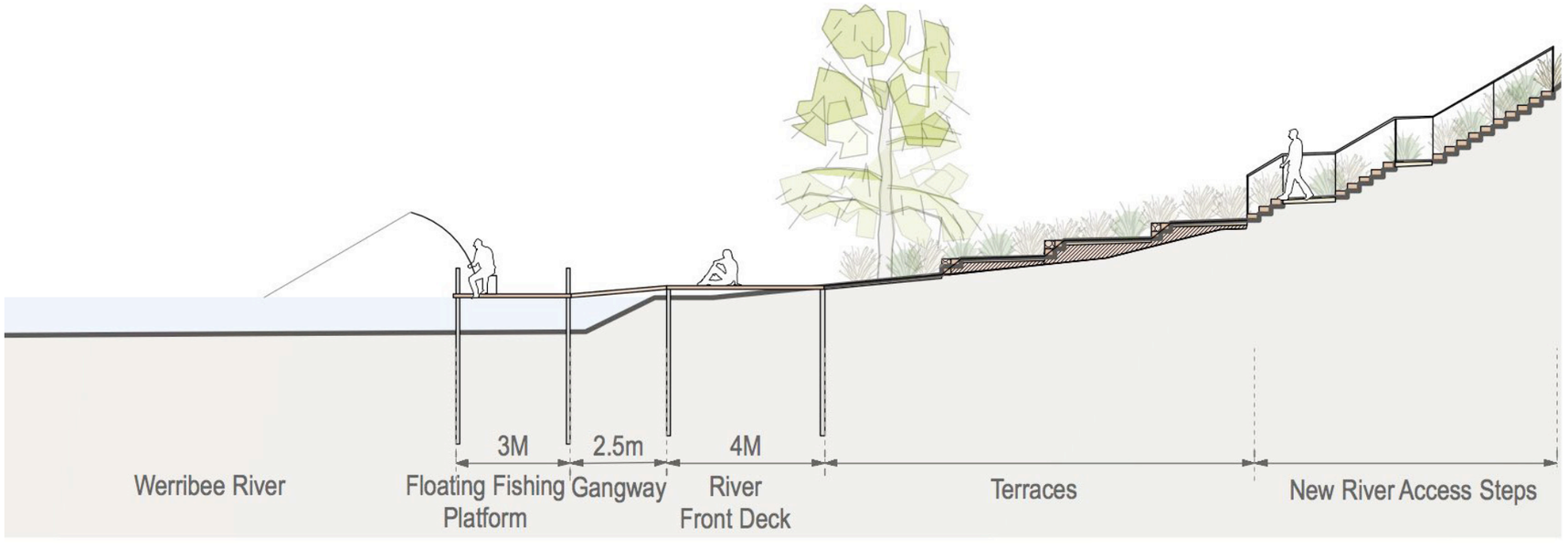
A new stair access is proposed to the south of the site to enable improved connection to the river from the shared pathway and improved vantage points for wildlife photography. These steps could be timber, fitted to the existing embankment gradient. A series of gravel terraces are proposed to be built into the river bank. They will provide safe and attractive spaces with seating for bird photography, viewing, contemplation and gathering.

## 3.13 WATER PLATFORMS

Access to the water for fishing is proposed as a floating platform with a hinged gangway. Revegetation of the river bank and waters edge is recommended to soften the visual appearance of the gangway.

A second river front platform and landscape terraces are proposed for general viewing and enjoyment of the waters edge environment.

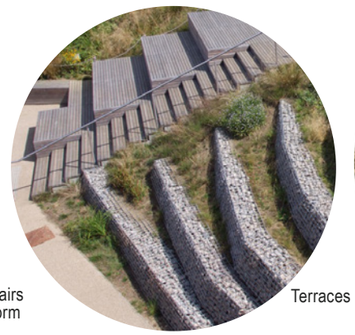




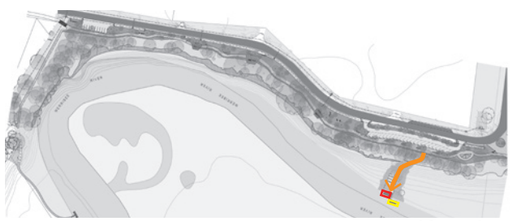
Timber stairs


Timber stairs and platform


Terraces


Fixed platform


Hinged platform with vegetated riverbank

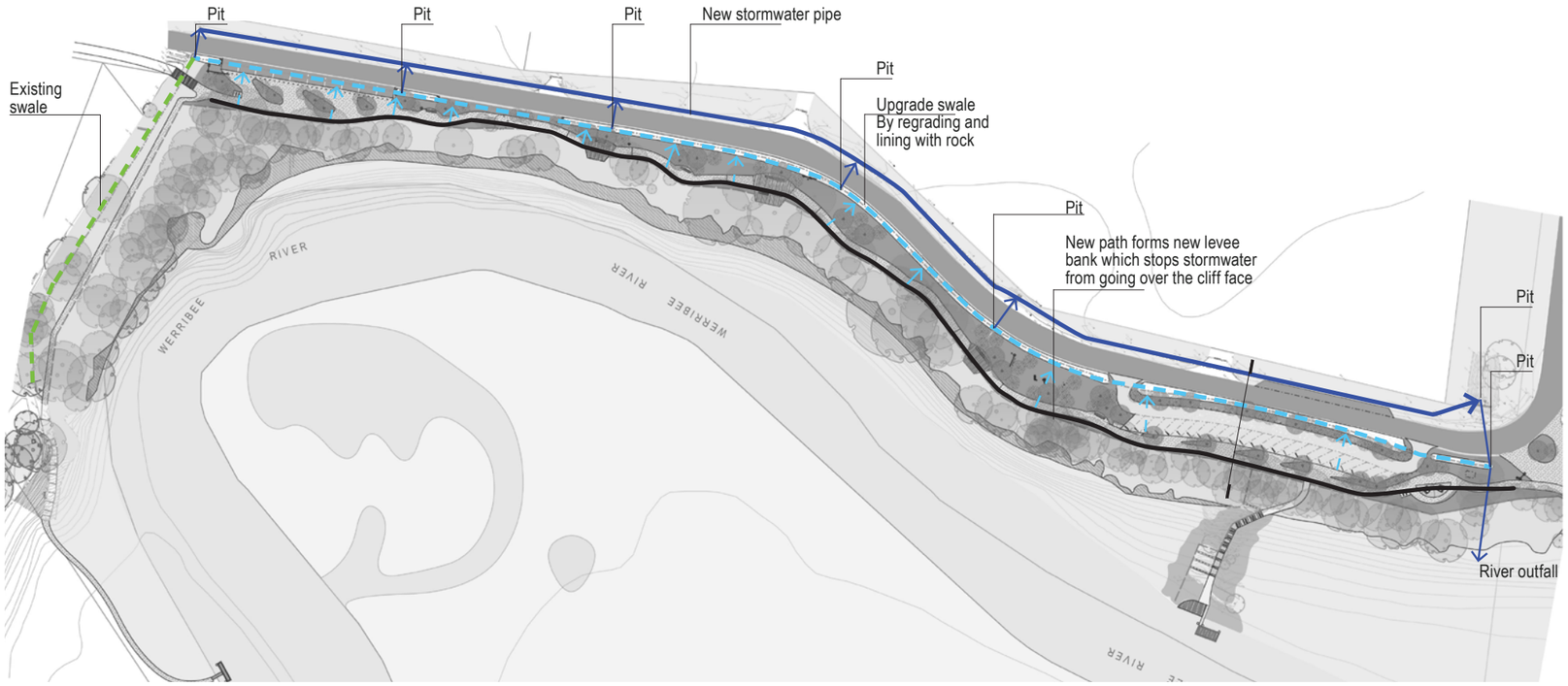

Key plan

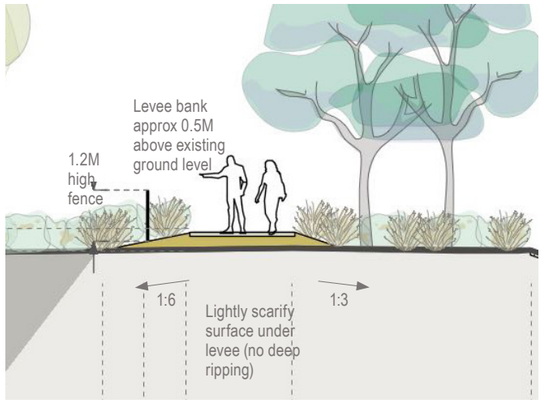
## 3.14 DRAINAGE

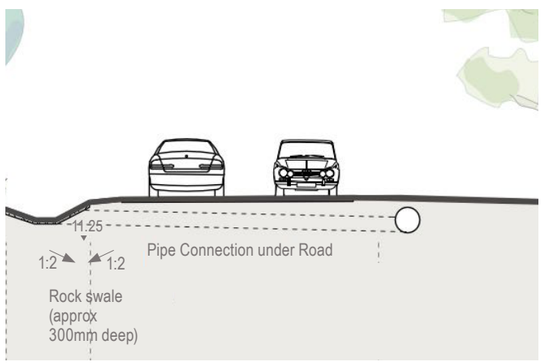
To prevent the cliffs from further erosion all site storm water will be redirected to an upgraded surface drainage system along the west edge of K Road.

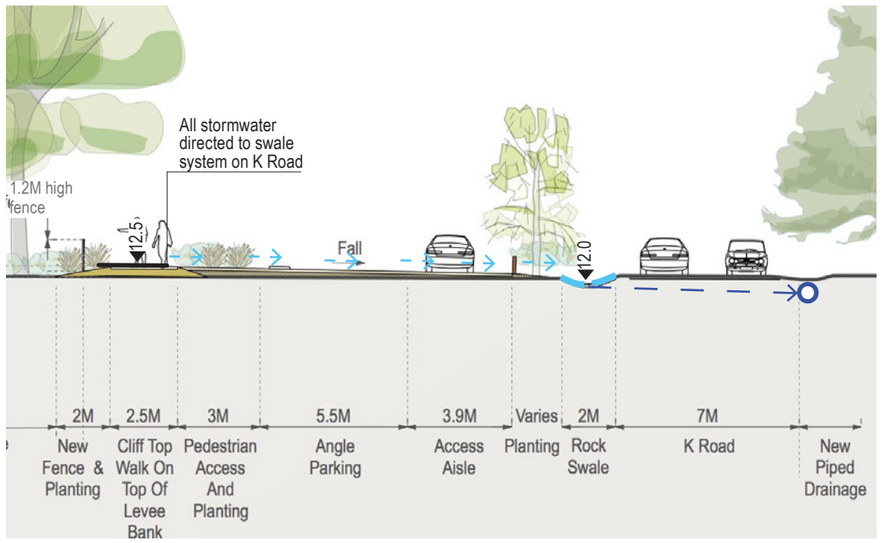
A new pipe system is also proposed on the east side of K Road to transport water to the existing river outfall at the southern end of the site.

This system will require complex design and documentation by a specialist team.




**PROPOSED SITE GRADING AND DRAINAGE**



Rock lined swale



Raised levee bank path

## 3.15 PLANTING

The upper riverbank will include indigenous native plants and grasses, with the possible addition of some prickly shrubs to discourage climbing over the cliffs. Revegetation of the site will allow the reintroduction of indigenous plants and habitats that will help tell the story of food and lifestyle pre settlement.

The planting palette includes plants from the two Environmental Vegetation Classes (EVC's) specific to the site as well as regionally indigenous plants.

The two relevant EVC's are:

EVC 55 - Plains Grassy Woodland

EVC 56 - Floodplain Riparian Woodland

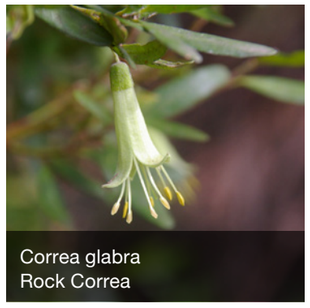
The list also includes three non-indigenous, native trees well suited to the conditions including succession planting of Eucalyptus cladocalyx (Sugar Gum) which is a quick-growing, deep-rooted tree that will help stabilise the cliff-top and enhance the existing Heritage Sugar Gum windrow remnants. (Sugar gums are recommended in low traffic areas where risk of limb drop is minimised.)


Eucalyptus baueriana subsp. thalassina Werribee Blue Box

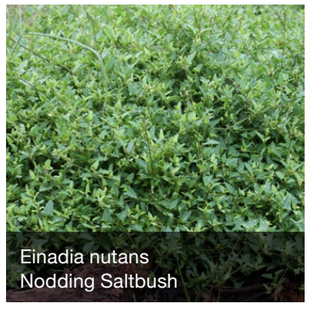

Allocasuarina littoralis Black Sheoak

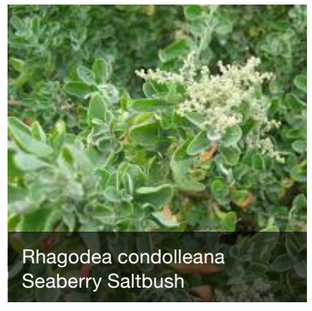

Banksia marginata Silver Banksia


Senna artemisioides Silver cassia


Correa glabra Rock Correa


Atriplex semibaccata Berry saltbush


Einadia nutans Nodding Saltbush


Rhagodea condolleana Seaberry Saltbush


Myoporum viscosum Sticky Boobialla

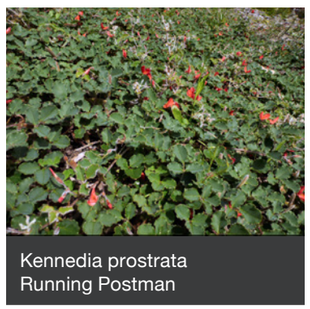

Ficinia nodosa Knoby Club Rush

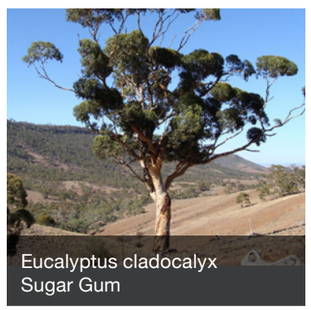

Clematis microphylla Small-leaved Clematis


Gahnia radula Thatch Saw-sedge


Themeda triandra Kangaroo Grass


Lomandra longifolia Spiny Head Mat Rush


Kennedia prostrata Running Postman


Eucalyptus cladocalyx Sugar Gum


Eucalyptus melliodora Yellow Box


Corymbia maculata Spotted Gum


Melaleuca lanceolata Moonah


Acacia acinacea Gold Dust Wattle