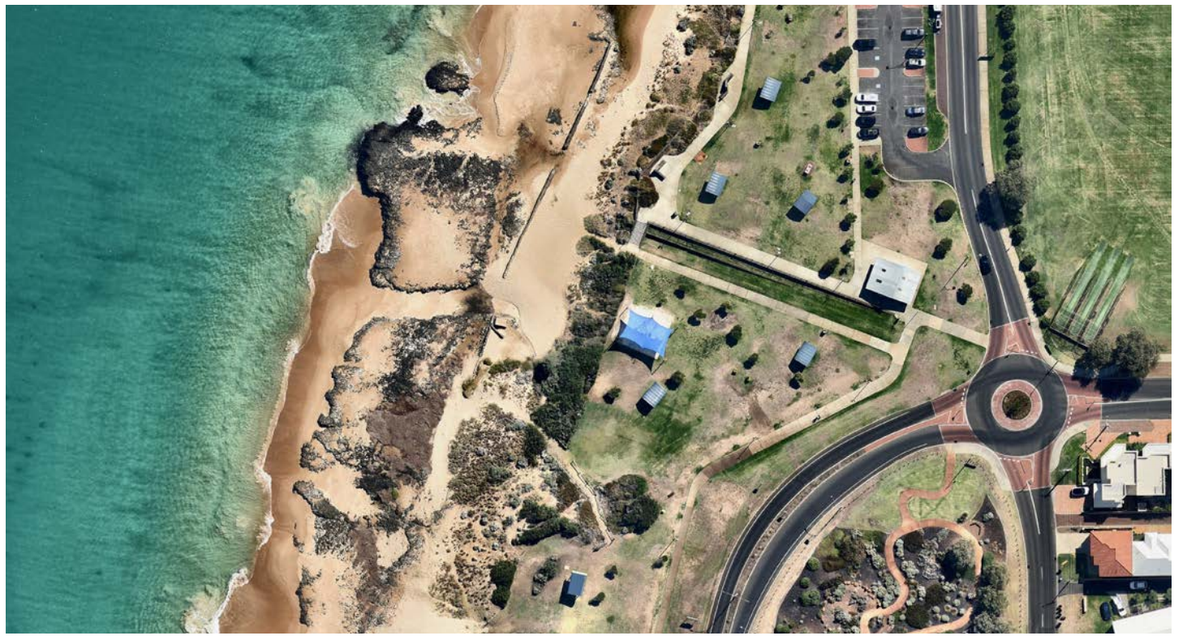

BUNBURY OCEAN POOL

Proposed Bunbury Ocean Pool - Refined Concept Plan

Funded by:

GOVERNMENT OF WESTERN AUSTRALIA
Department of **Local Government, Sport and Cultural Industries**

Prepared for:

City of Bunbury

Gavin Harris, Director of Infrastructure
Alison Baker, Executive Assistant to the Director of Infrastructure

Prepared by:

OFFICER WOODS ARCHITECTS

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Nicole Larkin, Founder

REALM STUDIOS

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Prue Batchelor, Landscape Architect

Table 1. Edition Details

Title: Proposed Bunbury Ocean Pool - Refined Concept Plan	
Production Date	14.06.2023
Prepared By	OWA
Author	Nic Thuys
Status	Draft

Table 2. Document Register

Document Register			
	Date	Document	Prepared By
01	19.05.2023	DRAFT Report to City of Bunbury	OWA
02	14.06.23	Report issued to City of Bunbury	OWA

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CONTENTS

01 EXECUTIVE SUMMARY

The City of Bunbury has engaged Officer Woods Architects to refine the indicative concept plan for the proposed development for the purpose of developing a business case and progression of the project.

The immediate aim is refine the previous indicative concept plan completed as part of a feasibility process and Fatal Flaw proof of concept presentation (MP Rogers 2021), which concluded the project was feasible but contingent on a series of investigations and design progression.

The City has identified the potential for an ocean pool to provide a safe swimming location on this rugged and potentially hazardous section of coastline as well as and act as a significant water based tourism drawcard.

The concept refinement process aims to provide the City of Bunbury with a developed concept plan to provide the basis for a business case and continued project development. The proposed site of the ocean pool, considered to be within the back beach precinct, is within an area of Bunbury that has been subject to minimal development attention compared to other areas.

There has been significant development of the Koombana Bay and Youth precinct over the past five years in Bunbury, to the east of the proposed ocean pool location. The back beach area of Bunbury has received less attention and provides a great opportunity for the creation of an Ocean Pool as part of a wider foreshore activation & tourism precinct which;

- Provides opportunities for recognition and interpretation of the important indigenous cultural heritage of the site and wider area's
- Creates a place of destination & tourism drawcard
- Creates cornerstone infrastructure & amenity to establish a wider activation area
- Encourages recreation and participation
- Provides community benefit
- Allows recognition of heritage significance
- Provides commercial opportunities,

The City has recognised the significant opportunities and potential an Ocean Pool development provides in terms of social, cultural, tourism, health and amenity contexts, as such the continued development of a concept proposal plan for the Ocean pool is being undertaken.

The refinement process seeks to integrate the next level of detail provided by the various consultants now engaged on the project. The feasibility of the concept has continually been assessed and increased through the synthesis and integration of the inputs generated through the consultant reports.

A series of options have been developed and explored, leading to a refined high level concept plan for the Bunbury Ocean Pool & surrounding site. The refined concept plan serves as the basis for an integrated costing analysis and related business case study being completed by Bridge42 consultants.

02 BACKGROUND

Historic Images of Bunbury back beach Baths

The proposed site for the ocean pool, the Wyalup Rocky Point area of Bunbury consists of a rocky section of coastline on the north of back beach, to the west of the Bunbury CBD. This section of coastline is geologically significant as it hosts visible and exposed sections of basalt formed by lava flows that occurred approximately 130 million years ago. This rock, known as Bunbury basalt has been a widely desirable and strongly identifiable building material for the region since the settlement of Bunbury.

The potential for an ocean pool in this location has been heavily contemplated over time. As early as the 1890's, in conjunction with WA State Engineers, the location at the end of Symmons Street was deemed a suitable location for an ocean bath. Initiated in 1907, the Bunbury Basalt Quarry was started with the eventual goal to create an ocean pool , this endeavor was abandoned in the 1930's due to the depression, and infilled with sand.

Subsequently, the site of the old quarry, which was frequently filled with water ,had became a popular swimming hole. By 1960 the quarry was completely filled with sand and swimming was no longer possible.

Today the site is landscaped over with sand dunes and grassed recreation areas intermixed with picnic areas, barbecues, playgrounds and toilet facilities.

The investigation into the potential for an ocean pool located at Bunbury's back beach was picked up again in the 2020's with a Fatal Flaw and Feasibility Report conducted through a concept study undertaken by the City of Bunbury and prepared by Calibre Consulting.

This report and related refinement process is being undertaken as a continuation of the 2021 Feasibility and Fatal Flaws report which found the project to have no Fatal Flaws and recommended a suite of investigations and progression of the design. A series of recommendations were made to refine the concept and reduce project risk through reduction of costs and operational running costs. The primary recommendation was to reduce the overall pool size to better suit the commercial aspects, expected usage/patronage, and business case recommendations.

MP Rogers included a recommendation to complete additional investigations and studies to further develop the scheme and its feasibility. These studies were undertaken by the City of Bunbury concurrently with the concept plan refinement process outlined in this report. The studies included geotechnical, environmental, water-quality, benthic, heritage and business case development. These reports were evaluated and the findings integrated into the refinement process in conjunction with the project & consultant team.

03 OBJECTIVES

The objective of this refinement process is to develop an ocean pool concept proposal to support a business case study, high level costing analysis and broader project progression.

The concept refinement and interactive design process should include an analysis of the previous concept scheme produced in the *Ocean Pool Feasibility Fatal Flaw Proof of Concept Study (2021, MP Rogers)*. The previous scheme should be analysed against the recommendations and outcomes of the fatal flaw report and against broader best practice principles, project requirements and the experience of the design & consultant team.

The concept should;

- Be informed by benchmarking other ocean pool projects across Australia and in a range of comparable regional cities
- Be informed by benchmarking against comparable aquatic facilities in the region
- Be informed by engagement with the CoB to develop the required features of the project
- Have the ability to meet best-practice requirements and environmental parameters for ocean pools & public recreation facilities
- Consider the potential of co-located complimentary cultural infrastructure, commercial and civic uses
- Increase the capacity for tourism in the Bunbury town and region
- Identify and engage with the Aboriginal cultural heritage of the site and wider regional and national contexts.
- Have the ability to engage with and meet best-practice requirements and design parameters for inclusive design accommodating for people with all ranges of abilities,

04 TEAM

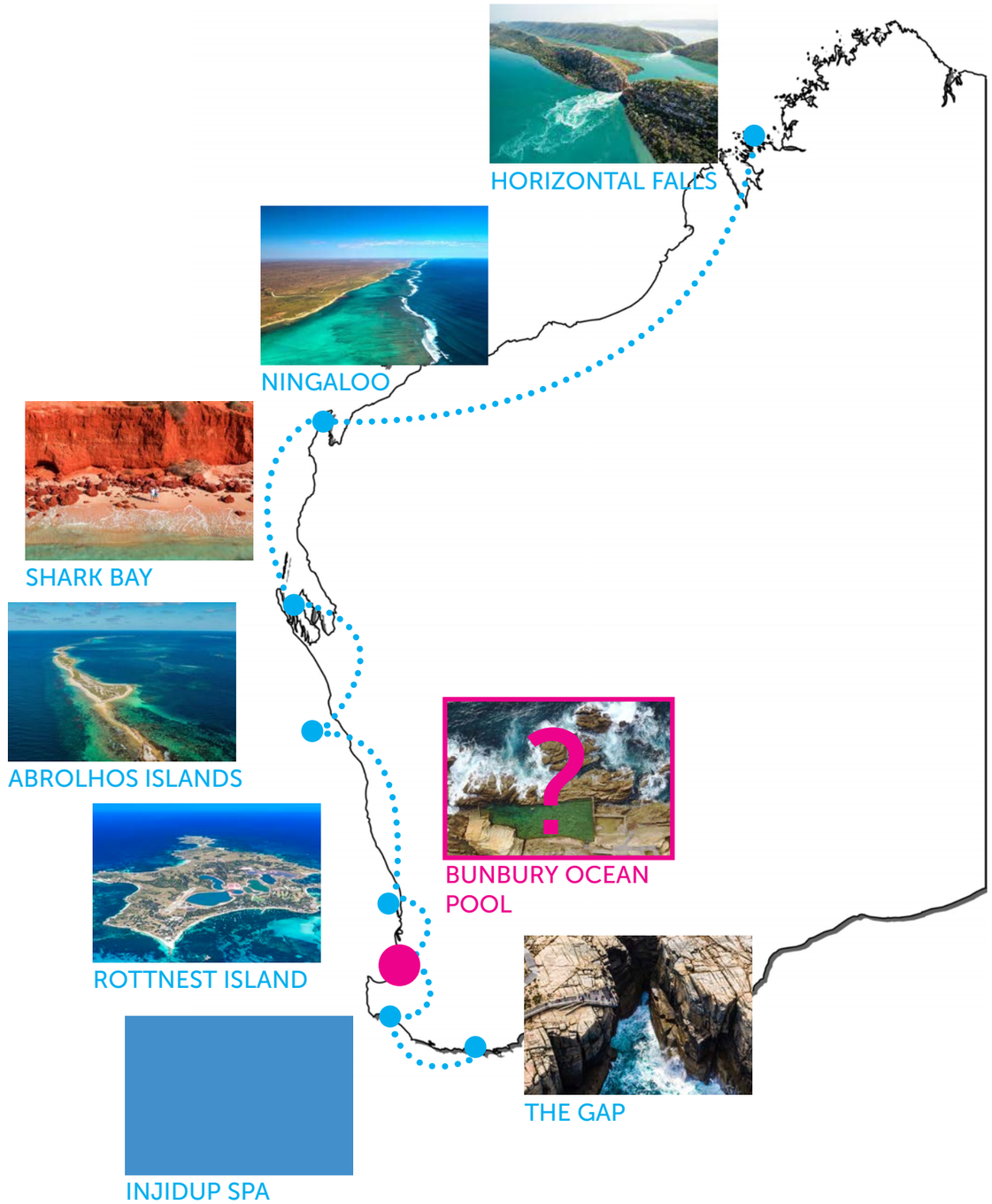
Officer Woods - Lead Consultant
Architectural & Project leadership. Focusing on the innovative environmental design approach to built form and design outcomes across all scales and areas. Offering project leadership to ensure a cohesive and effective design process is undertaken by the broader project team.

Nicole Larkin - Sub Consultant
Architectural & Design support. Specialising in coastal design & planning, Ocean Pools, and strategic frameworks for coastal structures.

Realm Studio - Sub Consultant
Urban design & Landscape Architecture support. Focusing on ecological urbanism, broad scale urban & landscape site planning with a specific focus on a deep understanding of place.

RBB Quantity Surveyors - Secondary Consultant
Construction cost consultants with experience in regional projects at all design stages. Providing input on capital and operational costing for the project (Excluding Ocean Pool)

MP Rogers & Associates - Secondary Consultant
Consulting engineering practice specialising in coastal projects. Providing high level cost input and construction cost estimations for the Ocean Pool component.



05 DOCUMENT REVIEW

The following documents have been reviewed / commissioned:

DOCUMENTS REVIEWED		
Name	***Prepared by***	***Date***
Corporate Business Plan 2022-2026	City of Bunbury	2022
City of Bunbury Ocean Pool Feasibility Fatal Flow Proof of Concept Study	MP Rogers & Associates	February 2021
Draft Bunbury Ocean Pool Business Case Brief Confirmation	Bridge42	December 2022
Bunbury Ocean Pool Business Case Progress Update: Market Analysis & Scope Definition	Bridge42	24.01.23
Draft Bunbury Ocean Pool Business Case Site & Opportunities Analysis	Bridge42	November 2022
Bunbury's Back Beach baths remembered as a "great folly" | Bunbury Mail | Bunbury, WA	Bunbury Mail	13.08.20
Bunbury Museum & Heritage Centre, Local Studies Collection Enquiry - Wyalup Rocky Point Old Quarry Site	Bunbury Museum Heritage Centre	15.08.22

DOCUMENTS COMMISSIONED		
Name	***Prepared by***	***Date***
Draft Bunbury Ocean Pool Landscape and Visual Impact Assessment	GHD	23.01.23
Draft Bunbury Ocean Pool Desktop Flora and Vegetation Assessment	GHD	11.01.23
Draft Bunbury Ocean Pool Assessment of Effects on Benthic Habitats	GHD	10.11.22
Draft Bunbury Ocean Pool Preliminary Site Investigation with Limited Sampling	GHD	16.01.23
Draft Bunbury Ocean Pool Environmental Noise Impact Assessment	GHD	19.01.23
Draft Bunbury Ocean Pool Assessment of Pool Flushing and Effects on Coastal Water Quality	GHD	19.10.22
Bunbury Ocean Pool Geotechnical Investigation	WML Consulting Engineers	October 2022
Report of an ethnographic Aboriginal Heritage Survey for a proposed ocean pool in the city of Bunbury, Western Australia	Brad Goode & Associates GHD	March 2023
Due diligence risk assessment advice for a proposed ocean pool in the city of Bunbury Western Australia	Brad Goode & Associates GHD	January 2023
Bunbury Ocean Pool - High Level Construction & Maintenance Costs Rev1	MP Rogers & Associates pl	20.04.2023
Bunbury Ocean Pool Landscaping Concept Estimate Revision 1	RBB Construction Cost Consultants	01.03.2023

06 BENCHMARKING

SOUTHWEST SPORTS CENTRE

11.7Km away. (Australind/Withers)

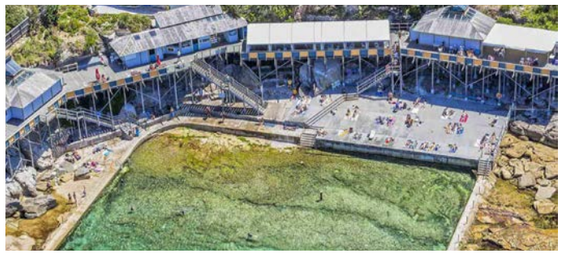
AMENITIES:
- Aquatics; 50m Lanes x10 , 25m Pool, Water Play, Waterslide, Sauna & Steam Room
- Healthclub & Cafe
- Hardcourts, Squash Courts & Sporting fields adjacent

LESCHENAULT LEISURE CENTER

5.2Km away. (Bunbury)

AMENITIES:
- Aquatics; 25m Lanes x8 ,Water Play, Spa, Steam Room
- Healthclub (400sqm.) & Cafe
- Hardcourts & Sporting fields adjacent

WYLIES BATHS (NSW)



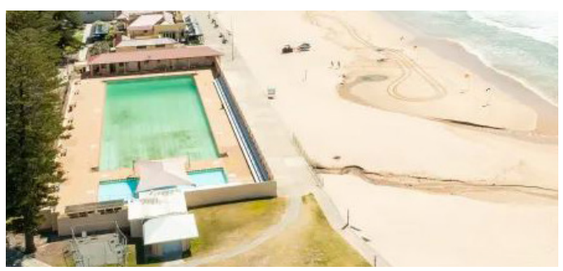
AMENITIES:
- Aquatics; 45m x 32m Pool (~1500m$^{2)}$
- Paid Entry / Set Opening Times
- Function Space, Gallery, Teaching Space (Life Saving)
- Health & Wellbeing Initiatives
- Linked to Associated Swimming Cubs

SCARBOROUGH BEACH POOL

182Km away. (Scarborough)

AMENITIES:
- Traditional Treated Pool adjacent the ocean
- Aquatics; Heated 50m Lanes x8 ,25m Pool, Leisure Pool
- Healthclub & Restaurant
- Function Room

THIRROUL OCEAN POOL (NSW)



AMENITIES:
- Pumped oceanwater pool adjacent ocean
- Aquatics; 50m Lanes & Children's Pool
- Toilets
- Changerooms & Cafe adjacent (Separate Facilities)

NORTH CRONULLA ROCK POOL (NSW)

AMENITIES:
- Aquatics; 41m x 21m Pool (~850m$^{2)}$
- Free entry;
- Use by lap swimmers & swim clubs predominantly
- No Amenities

07 METHODOLOGY

STAGE 1 ESTABLISHMENT & REQUIREMENTS

In conjunction with key City of Bunbury representatives key project principles, objectives & milestones were confirmed and refined. Project program and methodology confirmed.

- *Held inception meeting with City of Bunbury to confirm aims, methodology and deliverables*
- *Identified key representatives to consult with at City of Bunbury*
- *Identified existing documentation and reports relating to the project and site*
- *Refined/Modified high level project plan based on council feedback*
- *Discussed high-level opportunities and risks*

STAGE 2 SITE VISITS & INFORMATION GATHERING

Conducted Site Visit, established opportunities & constraints, developed in-depth understanding of Wyalup Rocky Point context.

- *Visited site to identify opportunities & constraints*
- *Conducted broader contextual study of the areas surrounding the site*
- *Established opportunities for broader scale integration of the project*
- *Collected site surveys and ground radar studies of the site and relevant basalt quarry conditions*

Gathered all existing reports and documentation and developed in depth understanding of previous concept development. Undertook desktop document reviews.

- *Identified and evaluated key findings of existing reports*
- *Reviewed GHD reports on important site & operational considerations*
- *Reviewed previous feasibility studies & concept plans*
- *Reviewed & integrated findings of business case drafts*

Participated in Aboriginal heritage Survey

- *Undertook & integrated findings from Aboriginal Heritage Survey*

Facilitated workshop with key City staff;

- *Identified the city's aspirations*
- *Understood and synthesised functional needs of the City*
- *Identified known and potential opportunities and challenges.*

STAGE 3 ANALYSIS + DEVELOPMENT

Undertook desktop analysis and key benchmarking for comparable aquatic facilities & ocean pools;

- *Identified appropriate Australian ocean pool facilities for benchmarking*
- *Identified relevant local aquatic facilities for analysis and benchmarking.*
- *Undertook desktop analysis and user demand/ competition analysis of benchmarked local aquatic facilities in conjunction with business case draft.*

Project team undertook collaborative design process in consultation with City of Bunbury. Aiming to synthesise and visualise the possibilities for the ocean pool through an iterative design refinement process;

- *Developed concept planning options for the location and disposition of the ocean pool & amenities facilities.*
- *Synthesised and integrated input parameters, and best practice project principles in design process.*

Prepare presentation + material for Council Progress Meeting

- *Presented collated site analysis to date and explained opportunities and constraints*
- *Presented precedent study and analysis to establish key benchmarking components*
- *Presented options for pool location and typology (Ocean-side pool vs Ocean Pool)*
- *Identified opportunities & benefits of each option*
- *Identified preferred option for approval and discontinued alternate options.*
- *Discussed improvements and directions for further development*
- *Summarised meeting outcomes and confirmed next steps and time frames*

Continued to iteratively develop concept planning options as required,

Reviewed and revised concept plan based on feedback from COB progress meeting

- *Revised concept plan if required to meet feedback*
- *Developed final refined concept planning option for inclusion in report & costing*

STAGE 4 REPORTING

Synthesised inputs into an Evaluation Report

- *Included a record and explanation of methodology*
- *Included benchmarking process and findings*
- *With QS, finalise resource implications for proposed concept plan*
- *Integrated costings with Business case consultant including operational costings*
- *Summarised key considerations, opportunities and constraints of concept plan*
- *Included potential areas for further development and recommendations for opportunities to be explored in further works*
- *Issued Draft Evaluation Report*

COB to provide feedback on Draft Evaluation Report

- *Reviewed and revised raft report based on COP feedback*

Deliver Final Evaluation Report

- *Prepared and presented Final Report & Final concept plan presentation to CoB*

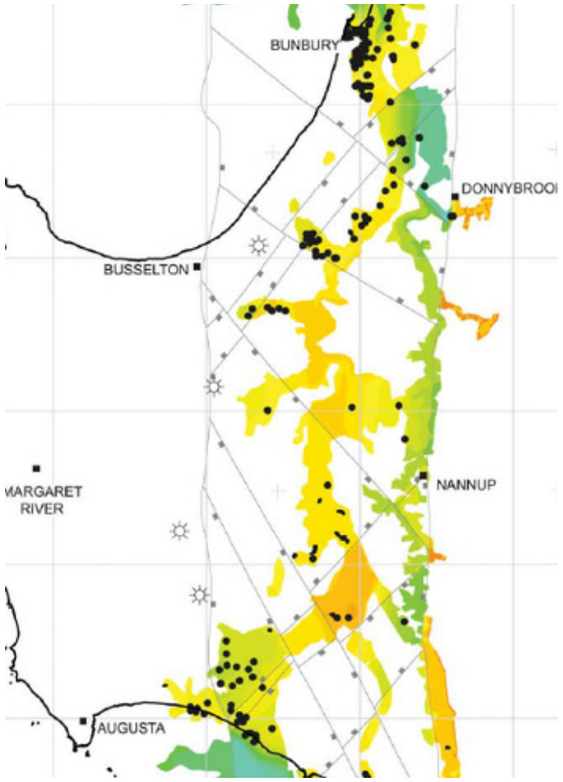
08 SITE PLANNING

CONTEXT ANALYSIS

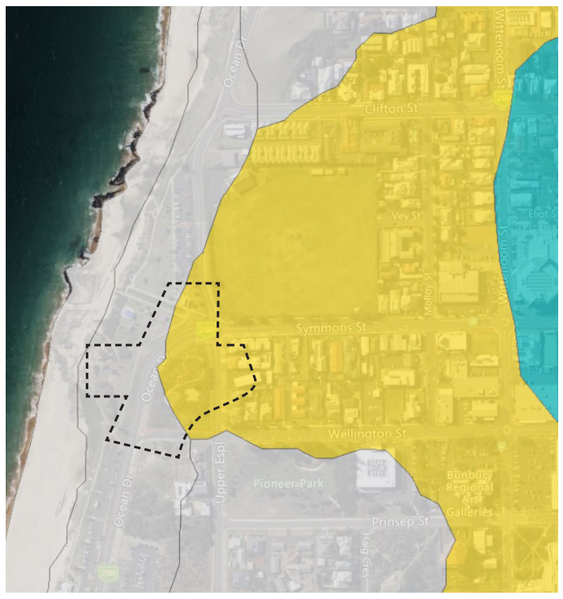
The Wyalup Rocky Point expresses at the surface part of a much larger basalt geology that connects down through the south west to Black Point. Understanding the geomorphological evolution of the site and region with its complex and distinctive basalt shelf was important to site appreciation. The exposed coastal position features strong salt-laden winds from the west and winter storms depositing and eroding the beach seasonally.

This geology and climate pattern influences the soil condition and vegetated ecosystems that exist on the site. Aeolian soils form the coastal dunes, which are critical to the health and sustainability of the beach. Preserving dunal health and revegetating them is imperative to the success and longevity of the Ocean Pools and surrounding context.

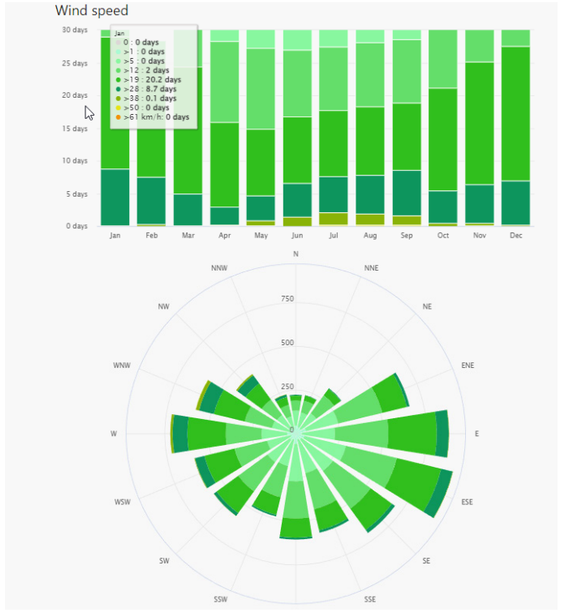
The site features a significant level change due to the geology and historic infilling of the former quarry. Existing site and geotechnical surveys informed primary view lines, access points and pedestrian circulation. These influenced the rest of the site and broader context, taking into consideration traffic conditions and flow.



Map of Basalt (Hugo K.H. Olierook)



Soils Map Quindalup (Deep Yellow Sands) in Yellow & Calcareous Deep Sands in Grey (Nationalmap)



Bunbury Wind Rose (www.willyweather.com.au)

DEEP HISTORY

In parallel with the refinement process CoB commissioned a Heritage Assessment which was received and reviewed during the concept development.

Ethnographic consultations undertaken with representatives of the Gnaala Karla Booja (GKB) Indigenous Land Use Agreement group advised that Wyalup means "the place of mourning," named in association with the graves uncovered in the area. GKB representatives discussed the potential for there to be skeletal remains dispersed within the site through the movement of the dunal system. The GKB representatives requested that the City include cultural interpretation as part of the project.

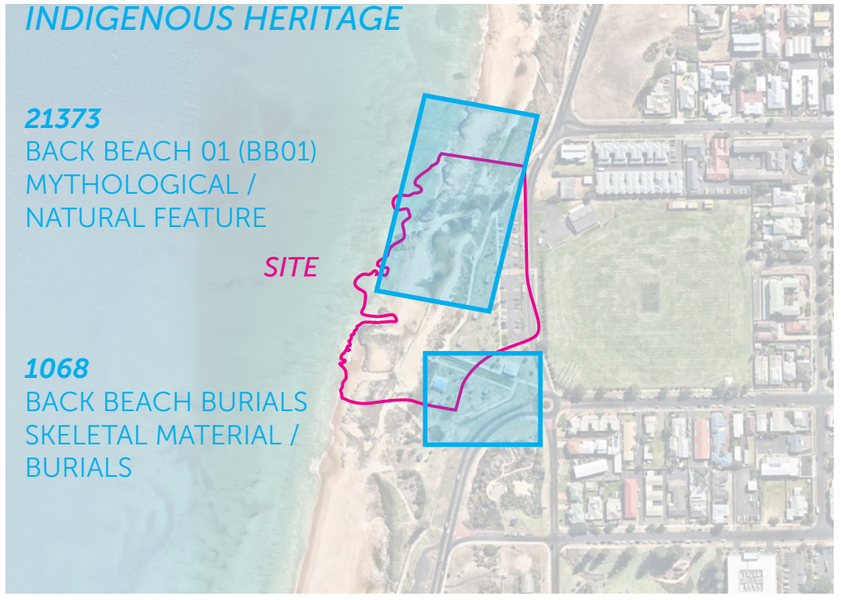
The project team identified the potential for inclusion of cultural interpretation into the ocean pool project in-line with the recommendations made in the Cultural Heritage report and recommend this be developed as the project progresses.

The Back Beach heritage site was reported as a mythological site in association with the Nyiiting or Dreaming; The black basalt rock outcrops on the beach were reported to be a part of a Dreaming Wargyl story that came from the south as the serpent journeyed back to the North from the Blackwood River. It is recommended the dreaming story be investigated further in consultation with the relevant local indigenous Land Use Group & traditional knowledge custodians.

There are two registered indigenous heritage sites on, and adjacent to the site. Through the consultation process a further widespread cultural heritage story was uncovered that was applicable to the site and the majority of the west facing beaches in the Bunbury region.

The heritage report recommends that the proponent will be required to seek ministerial consent under section 18 of the AHA in order to use the land located within these 'Lodged' other heritage places.

Please refer to Next Steps for further Heritage recommendations.



RECENT HISTORY

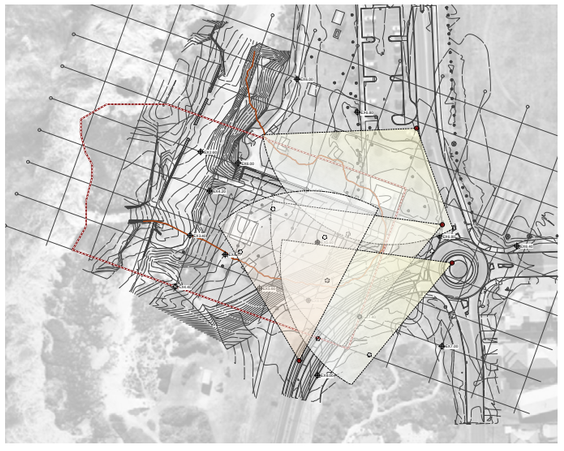
An historic aerial shows the extent of former quarrying that started in 1907 with a view to creating a world class ocean pool. The quarry operated for the next 20 years until the 1930's depression that resulted in the quarry being closed in the 1940s.

The area was then used informally as a swimming pool and campground, before being filled in (assumed to address safety issues) around 2003.

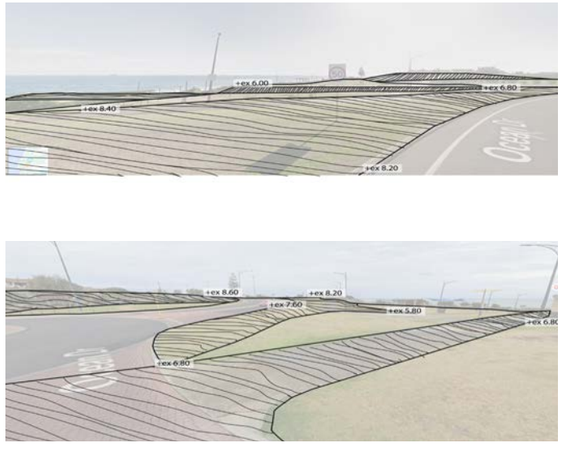
The geotechnical survey confirms the extent of quarrying shown in the aerial photo. Historic photos further reveal a vertical quarry face and ocean pool that was formed when high tides forced water into the quarry.

It is further assumed that constant sand deposition proved too challenging to on going maintenance of the pool as evidenced by bulldozer tracks in one of the photos.

The idea of revealing the former quarry wall as part of this project was determined to be of interest given this history is not evident on site currently.



View points from existing N-S Road axis



Eye level terrain and level change vistas

Winter tidal surges on the basalt shelf

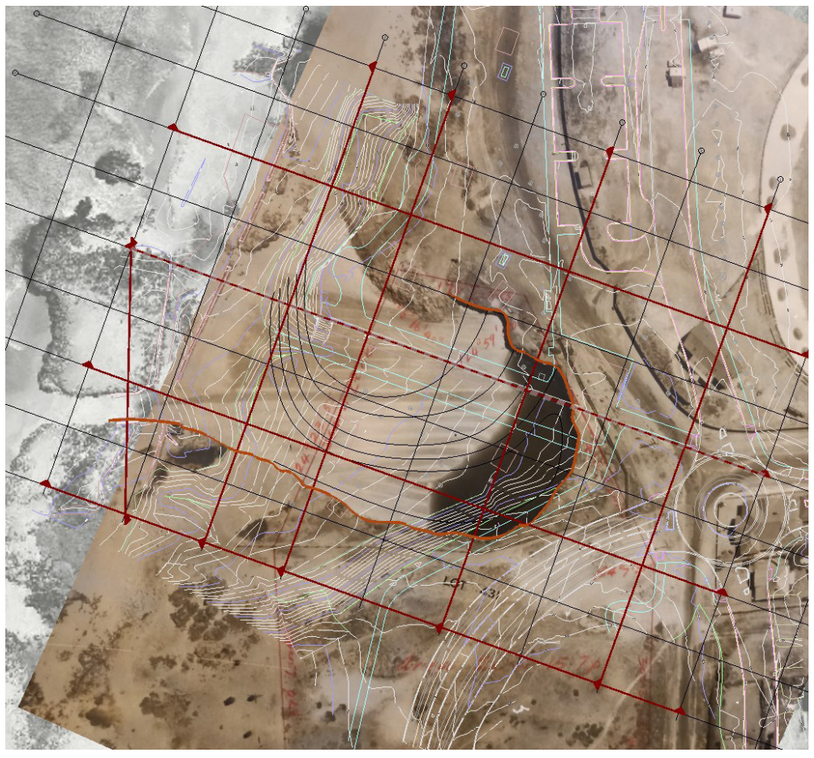
SITE ANALYSIS

A study of existing topography revealed the subtle relationship between levels, views and access. Understanding the natural slope and gradient of the site was essential to determine access points, orientation points and vantage points.

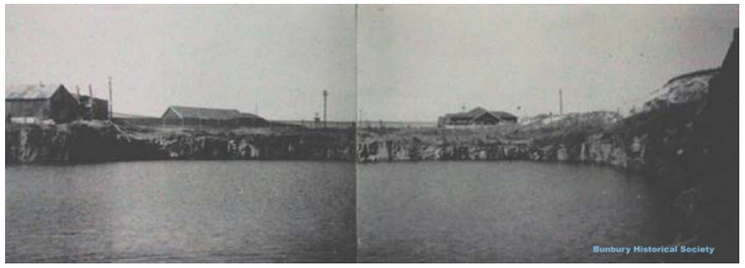
An understanding of the relationship between the exposed basalt shelf and fore dunes, locations of remnant basalt beach walls and seasonal tidal flows was important to inform pool design and access.

The north / south foreshore walk and linkages to beach, carparking and road crossing points was reviewed to understand movement networks.

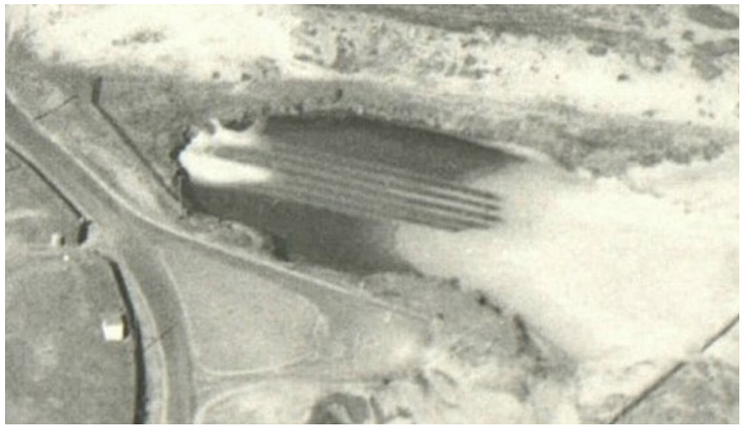
Various existing landscape elements and features, including trees, play equipment, urban furniture and shelters were also assessed for retention, renewal or replacement.



Overlay of 1959 aerial with existing aerial and survey (in white lines)



Ocean Pool and Quarry Wall (Bunbury Historical Society)



Enlargement of 1959 aerial - Lines in water are bulldozer tracks (Bunbury Historical Society)

SITE ANALYSIS

BASALT & WATER TABLE

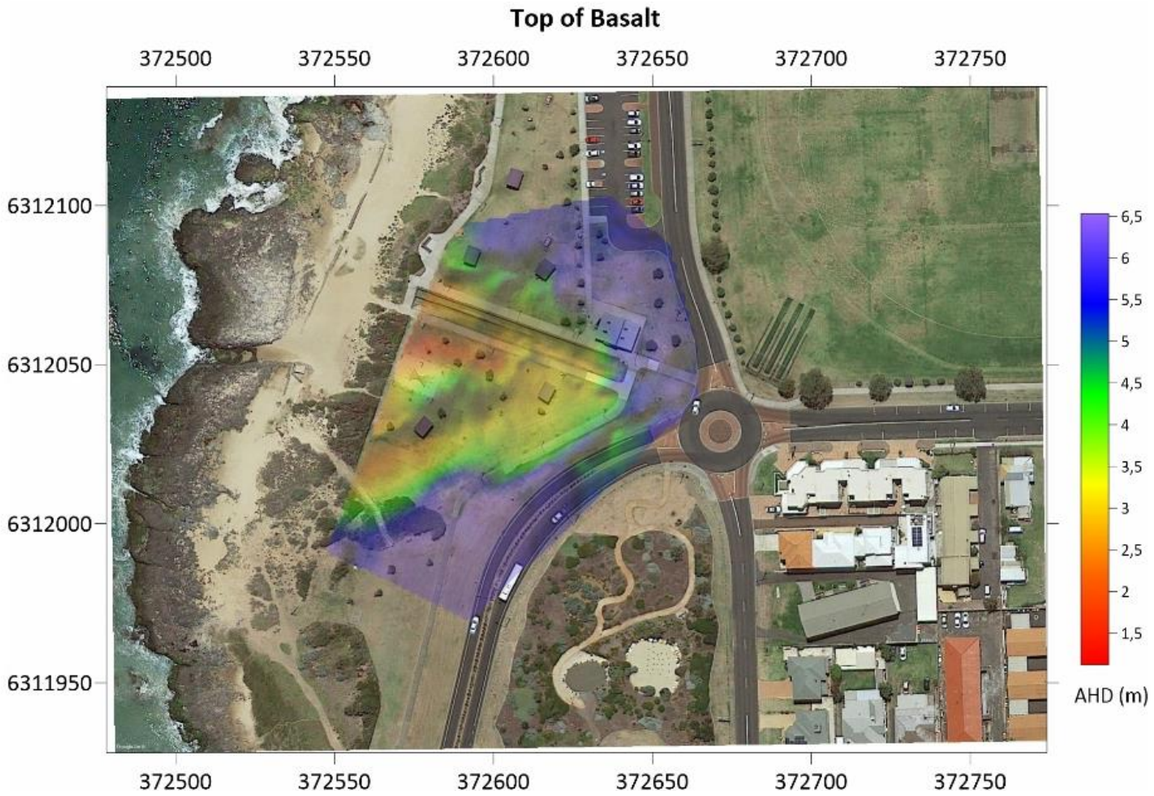
As part of this study, CoB commissioned a geotechnical investigation into the site including ground penetrating radar scan of the interpreted top of basalt across the site.

The depth of the basalt rock is considered indicative only as the GPR may not be accurate below ground water, especially if it is saline. It is hypothesized that the water table in this location is likely situated at the base of the basalt quarry bottom and given historical images show the quarry filling with water it is likely this is still the case.

The amenities buildings were positioned such that the ground level was a minimum 1.5m above the basalt located at approximately 1.5AHD-2AHD and to avoid any interaction between construction works and basalt rock breaking or the water table.

FILL & TEST PITS

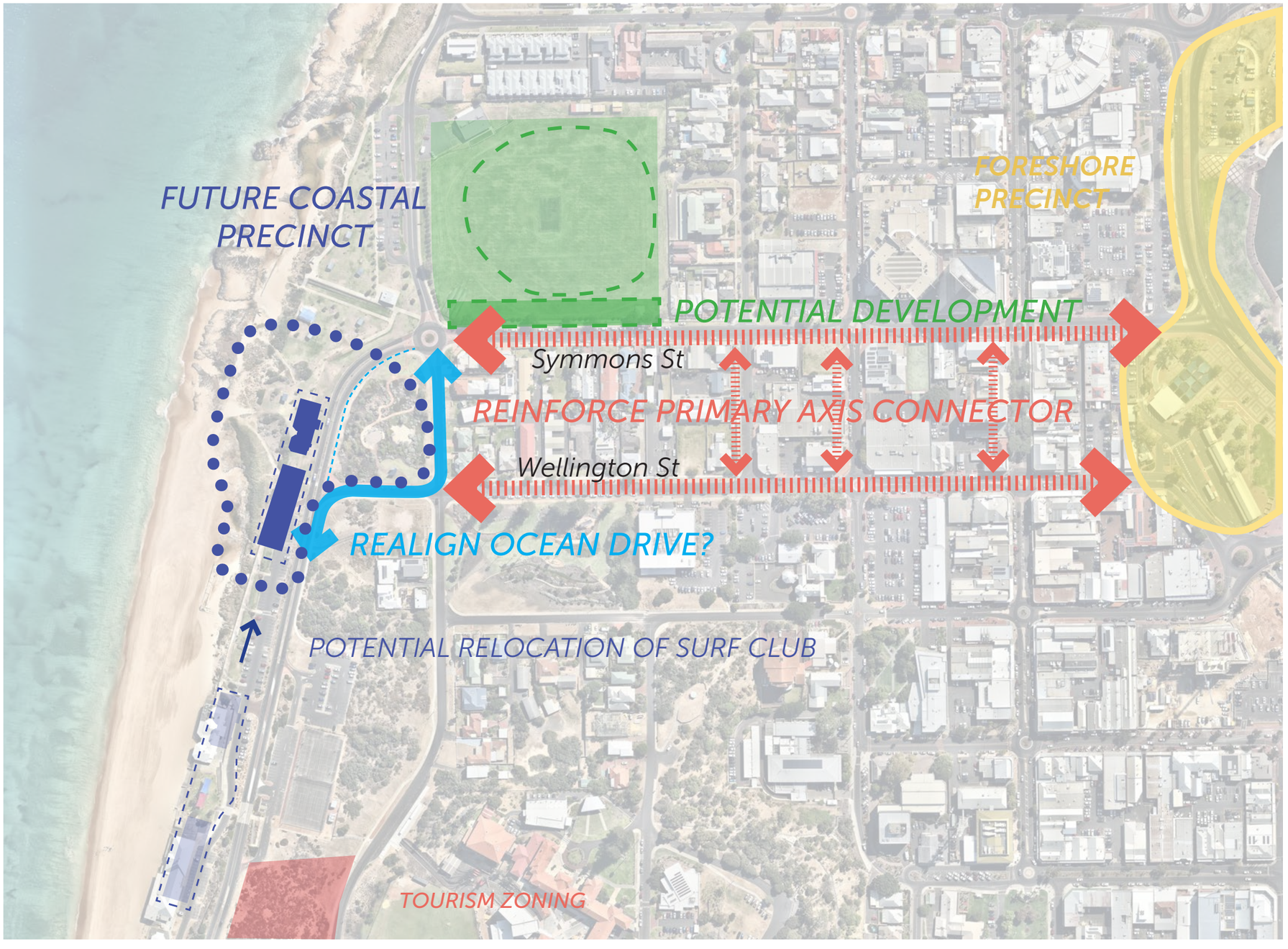
Also as part of the site investigations, the geotechnical investigation included the digging of test pits. Typically test pits located topsoil or fill sand. No contaminated materials of concern were found. Some uncontrolled fill in the form of construction waste was located in some test pits, however these were deemed suitable for reuse as long as the soil is screened and handled as pert he geotechnical reports recommendations.



TP6

TP4

09 PRECINCT MASTERPLAN



PRECINCT OPPORTUNITIES

- *Increase east-west connectivity to CBD by enhancing public domain, pedestrian infrastructure, lighting, street planting etc*
- *Co-locate the Surfclub to create an integrated precinct with back beach*
- *Potential development of southern edge of Recreation Oval to reinforce connection*
- *Integrate Wardandi Memorial Park with coastal reserve by shortening Ocean Dr and connecting to Wellington St*
- *Rejuvenate coastal landscape reserve incorporating Aboriginal Heritage using the Ocean Pool precinct as a catalyst*

The site is located approximately 500m west of Bunbury CBD and 450m north of the Bunbury Surf Life Saving Club. Immediately surrounding the site, land is predominantly zoned Public open space, a number of areas north and south of the site are zoned Tourism.

The precinct has received little development attention compared to other areas in Bunbury such as the Koombana Bay and Youth Precincts. This underdevelopment provides an opportunity to establish a further tourism and amenity precinct focused on the Bunbury back beach and additional coastal amenity.

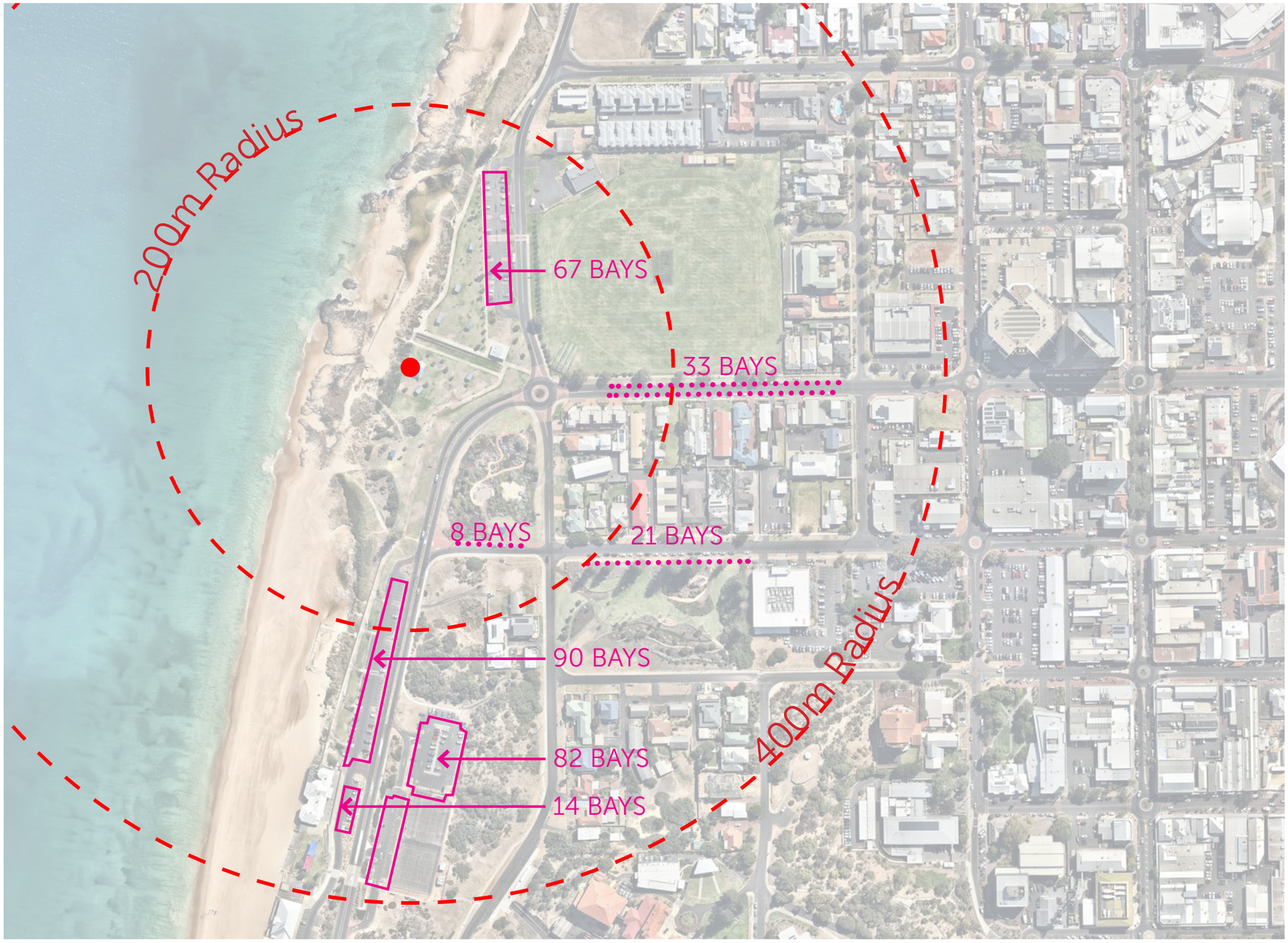
The site and proposed Ocean Pool have the potential to form the cornerstone of a larger ocean-side activity center. The aging Surf Life Saving Club building to the South has the potential to provide co-located opportunities for service and amenity consolidation for the site, in close proximity to primary CBD connectors and the ocean.

PARKING

A traffic impact assessment was not conducted as part of this initial scoping work however a high level investigation of the parking available in the vicinity of the proposed ocean pool site was undertaken. There is approximately 75 bays within 200m, and in excess of 330 bays within 400m of site. These are a mix of parking provided at existing carparks along the back beach foreshore aswell as on-street parking on the main connector roads.

It is understood that currently existing parking users in the vicinity of the beach are accessing the beach. It is expected that some of these users will continue to park in the area and likely attend the ocean pool - Thus it is expected that some parking usage created by the pool is already adequately serviced by the existing parking in the vicinity.

It is recommended that a traffic impact assessment be undertaken in the next phase of the project to analyze the peak user case scenarios and wider impacts on the transport and road infrastructure in the vicinity of the proposed pool. Anecdotally it is felt that existing parking is likely sufficient, however the final parking and traffic implications will need to be analysed and investigated by a traffic engineer.



10 OCEAN SIDE VS. OCEAN POOL

During the refinement and development process the project team in conjunction with CoB representatives interrogated the previous concept scheme for an ocean (side) pool. The previous scheme was a pool located in proximity to the ocean with a more organised series of amenities and a more privatised nature.

In the interrogation of ocean-side pools vs true-ocean pools the pros & cons for each option were reviewed, and a conceptual scheme produced for both. The project team identified a number of aspects of ocean-side pools which were problematic and posed implications for the feasibility of the project;

- Ocean-side pools provided a fundamentally different and sanitised swimming experienced compared to the natural experience of a true ocean pool.
- Ocean-side pools compete with traditional aquatic facilities in the region, which is already well serviced by two traditional aquatic center pool facilities.
- The nature of ocean-side pools was such that fencing,security, supervision and staffing provisions were seen to be onerous when considering cost-benefit analysis.
- Operational costs of ocean-side pools were higher when compared to true ocean pools.
- Ocean-side pools do not provide a point of inclusive access to the open ocean
- Ocean-side pools presented higher capital cost and more intensive construction required. These aspects come with negative environmental impacts and high carbon footprints.

A key implication of an ocean-side pool, (being principally a traditional pool with water that is chemically teated) is the classification of the Pool as an Aquatic facility that is governed by the *Code of practice for the Design, Construction, Operation, Management & Maintenance of Aquatic Facilities* and also being covered by the Health (Aquatic Facilities) Regulations 2007.

This means that an ocean-side pool had to conform to the required water-turnover rates, chemical dosing requirements, maximum daily pool usage, required access and staffing requirements. The implications of these requirements on the operational costs of the facility was seen to be onerous considering that Bunbury is already well serviced by traditional aquatic centers

The positive opportunities provided by true Ocean-Pools were numerous;

- Inclusive, equitable access to the coast
- Lower capital + ongoing costs (low staff, lower maintenance, resilient to coastal processes & weather)
- Reinforces and enhances the natural character of the landscape
- Provides protection from marine-life encounters and rips/currents
- Provides positive opportunities for habitat propagation and ecological restoration
- Free, high amenity, public community asset.
- Iconic tourism way-point along state coastline
- Climate adaption can be designed in, acknowledging sea level rise.

At this stage it was agreed that the City of Bunbury intended to explore the design of an true ocean pool.

Ocean-Side Pools
provide aquatic facilities adjacent to the beach

The pool is a controlled facility, separated from the beach/open ocean

A standard practice swimming pool provides a fundamentally different experience than the natural swimming experience

Thirroul Beach Pool | NSW

Scarborough Pool | WA

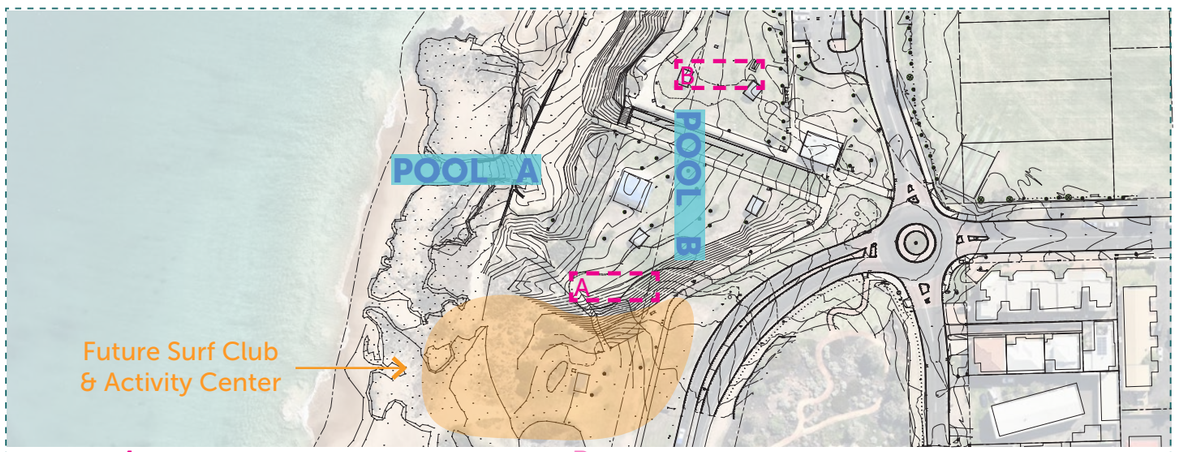
Ocean Pools
provide protected access to the ocean

The pool is a swimming enclosure on the shoreline. It is connected to and fed by the ocean

The pool engages people with the natural environment

Thirroul Beach Pool | QLD

Scarborough Pool | WA



A
Faces north whilst viewing pools
Potential to mitigate southerly winds
Anticipates future connections to back beach

B
Close proximity to northern carpark
Northern aspect to picnic area, southern aspect to pools
integrates with existing infrastructure

11 BEST PRACTICE REQUIREMENTS & DESIGN PRINCIPLES

LOCATION

Ocean pools to be located in coastal areas that are currently unsafe/underutilised

Locate ocean pool in close proximity to natural coastline, relative to low/high tides suitable for natural pool flushing and over-topping.

Located to emphasis the natural coastline, and capture and enhance iconic views and vistas, especially to the ocean.

Locate amenities in suitable relation to both ocean pool & carparking/key access points

Continuous, unimpeded beach access to the beach should not be impinged by the ocean pool

Ocean pool to be located to utilise the existing basalt rock scar resultant from historic quarry activity.

Facilitate passive surveillance through clear site lines between walking paths, amenities, the pool, and access points.

Locate amenities and the pool to make use of existing basalt outcroppings and historic features of the quarry.

MATERIALS

Specify durable, integral materials free from coating requirements, and with adequate slip ratings .

Consider specification of masonry/concrete elements in submerged areas or inter tidal zones which support and propagate marine life.

Reclaim and reuse existing basalt rock retaining and incorporate this into the living pool edge and landscape elements where appropriate.

Amenities to be constructed of marine environment tolerant materials.

ACCESS

All pathways and ramps shall be maximum 1:20 slope to accommodate dignified access for all users .Zero grade (ramping) access to the pool shall be provided to allow users of all abilities to access and use the pool facilities.

Ramp access to the pool shall be provided suitable for emergency vehicle access and machinery to clear out the pool of sand & wrack as required.

WATER AND MARINE QUALITY

Utilise the existing marine environment to provide 'very good quality' marine water to meet Code of Practice (DoH 2020) and operate without chemical dosing.

Marine water turnover time of 3.5 hours i.e the water in the pool is completely replaced every 3.5 hours.

The pool is a once through flow system with no water recirculation and natural over-flow back to sea via scupper and low level drainage.

Design the intake structure to optimise seawater quality to the ocean pool via appropriate siting and mitigate harm to the marine environment.

POOL USE & FACILITIES

Provide suitably sized areas for lap-swimming, rehabilitation and walking activities, leisure, and shallow areas for children activities.

Ensure the pool is suitable sized to accommodate the expected use cases, without interfering with existing aquatic facilities in the area.

Provide amenity facilities for showering and changing, including universal and ambulant facilities. Leverage the ocean pool facility by co-locating suitable functions such as kiosks, community and event spaces.

Set levels of pool and amenities to minimise the visual impact from Ocean Drive..

SPATIAL REQUIREMENTS

Spatial requirements were developed in response to findings from the 2021 Fatal Flaws and Feasibility Study where recommendations were made to reduce the overall pool area to reduce operational costs in proportion to forecast use case scenarios.

Lap Pool
50m Lap Pool @ 4 Lanes
50m x 10m = 500m^2
Access from concourse for diving.
Depth Ranging 1.2m - 1.8m

Rehabilitation Pool
25m Pool @ 2 Lanes
25m x 5m = 500m^2
Access via ramp with 0 grade entry to ramp.
1.2m Deep consistently

Children's / Leisure Pool
Area equivalent to half Lap pool
~ 250m^2
Access from concourse at 0 grade entry.
Depth ranging from 0m - 0.6m
"Live" Basalt rock bottom

Entry Ramp
Max 1:20 entry ramp for users of all abilities and vehicular access to service & clean pool.
Minimum 3.5m wide.

The business case findings also recommended that the size of the lap pool be reduced to approximately four lanes so as to not compete with the surrounding aquatic facilities. The 'zones' of the pool provide for users of all abilities and ensure that the pool provides equitable access to the ocean, especially for users who may not typically be able to access that environment.

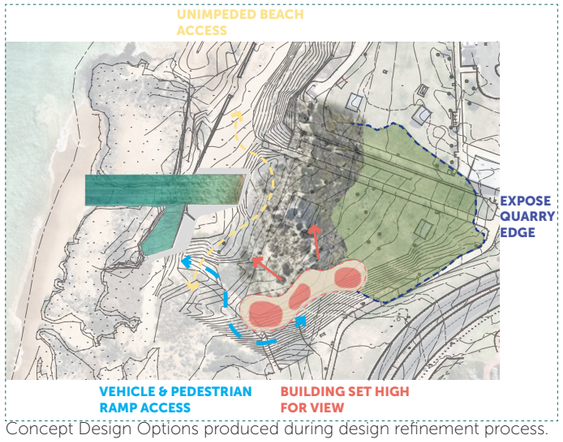
Pump Enclosure
Submersible pump enclosure within ocean pool enclosure/wall
Minimum 2.5m x 2.5m with 2.4m access around.

Community Room
Area approximate to accommodate 50pax ~ 80m^2
Sized relative to capital cost and business case/usage.
Bookable and flexible use room to facilitate a range of community oriented functions such as meetings, classes, events etc.

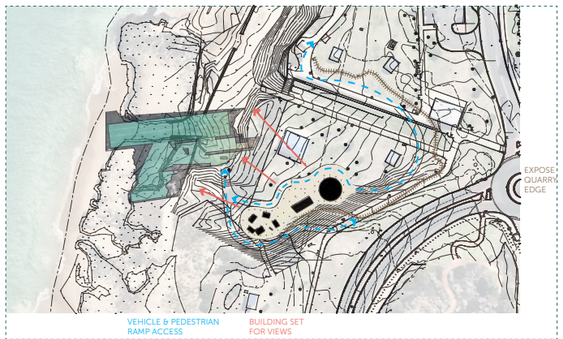
Amenities
1 x UAT | 3 x WC's & 2 x Change rooms per gender | Amenity facilities designed to be open plan, non gendered with multiple entrances/exists and good passive surveillance. Can be divided into halves if required.

Cafe / Kiosk
~ 30m^2 Sized to suit user demand & business case
Area available is variable.
Small scale offering with outdoor covered seating

12 REFINEMENT PROCESS



Concept Design Options produced during design refinement process.
Final Option shown in pink outline, bottom right.

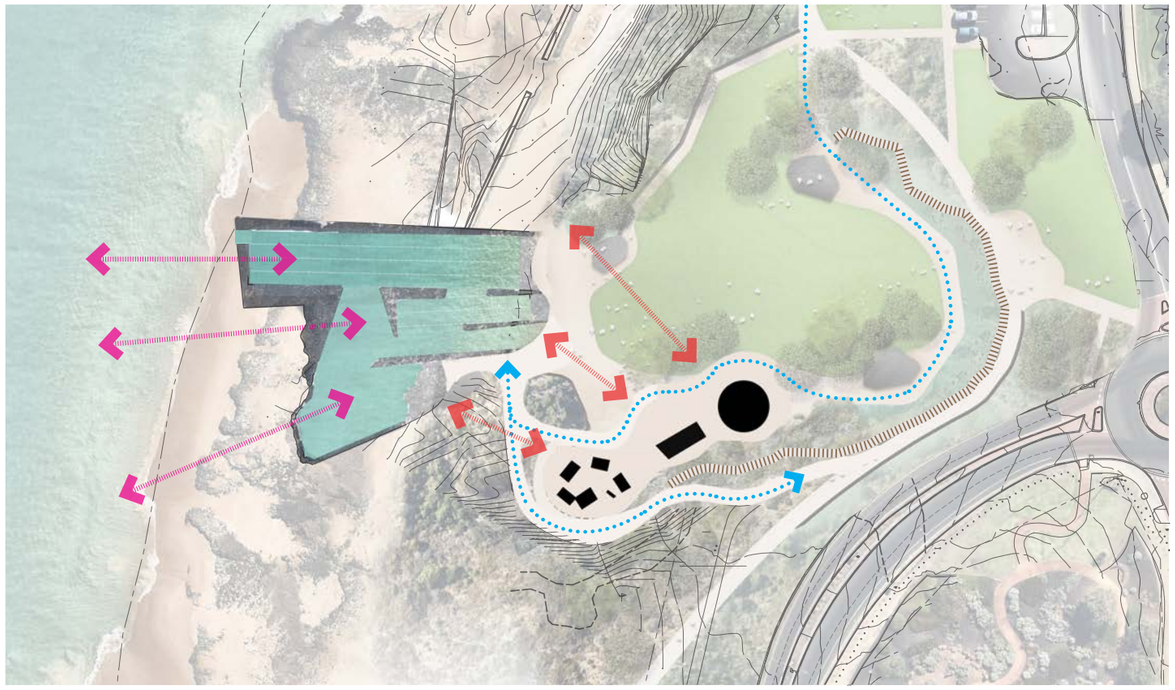


Concept Design Options produced during design refinement process.
Final Option shown in pink outline, bottom right.

The refinement and development process evaluated a number of siting options for the ocean pool and its related amenities. Initially analysis between an ocean-side pool and true-ocean pool converged on a true ocean pool being preferred and to be developed further. The location of the ocean pool and its related amenities facility was based on a series of key principles developed by the design team;

- Positioning of the ocean pool & related amenities to be located to the south of the site to provide connectivity to potential future Surf Life Saving Club & Activity Center
- Locate ocean pool centrally to existing basalt scar to reduce additional excavation of basalt.
- Set level of ocean pool to allow for gravity drainage at low tide and pool deck above high tide level
- Locate amenities block east of dunal embankment to avoid removing re-established foreshore vegetation
- Locate amenities block north of quarry edge to avoid additional basalt excavation
- Set amenity block level midway between pool deck and Ocean Drive to support universally accessible ramp/path access to ocean pools & across site at 1:20 gradient or less to avoid handrails, guide rails, landings and tactile indicators
- Maximise northern aspect while maintaining views to ocean pool & maximising opportunities to temper wind.

The design was presented to the City of Bunbury elected members and was endorsed in principle to be developed and high level costing provided.



OCEAN VISTA VIEWS
BUILDING SET FOR VIEWS
VEHICLE & PEDESTRIAN RAMP ACCESS

The refined Ocean Pool proposal consists of a true ocean pool in the inter-tidal zone, a flexible amenities structure containing amenities, cafe/kiosk & community room and surrounding landscape precinct.

The facilities proposed are sympathetically scaled to the nature of the ocean pool, its projected usage, and ensuring capital expenditure and operational costs are equivalent to the scale and regional context of the project.

The overall ocean pool and surrounding site arrangement is designed to highlight the important historical and geological importance of the Bunbury basalt at the site and in a wider cultural context.

The amenities are situated in the lee of a dunal embankment to the south, offering some protection from the wind as well as minimising the visual bulk and impact of the structure on the landscape, and ensuring good views to the ocean & pools are maintained.

Materials are proposed to be hard wearing, robust and suitable for the extreme ocean environment. Concrete with recycled basalt aggregate gained from excavation of the pool, steel, hardwood timber, recycled basalt, and stainless steel are proposed as part of a restrained, utilitarian and hard wearing materials palette to ensure longevity and minimise maintenance requirements.

The ocean pool has been refined in its size, volume and disposition in response to recommendations made in the Fatal Flaws report to help minimise likely costs.

The pool is located to maximise ocean views, while making best use of existing basalt rock conditions through its location in the existing cut in the basalt rock shelf which is a remnant of the historic quarry.

13 REFINED CONCEPT PLAN

ZONING

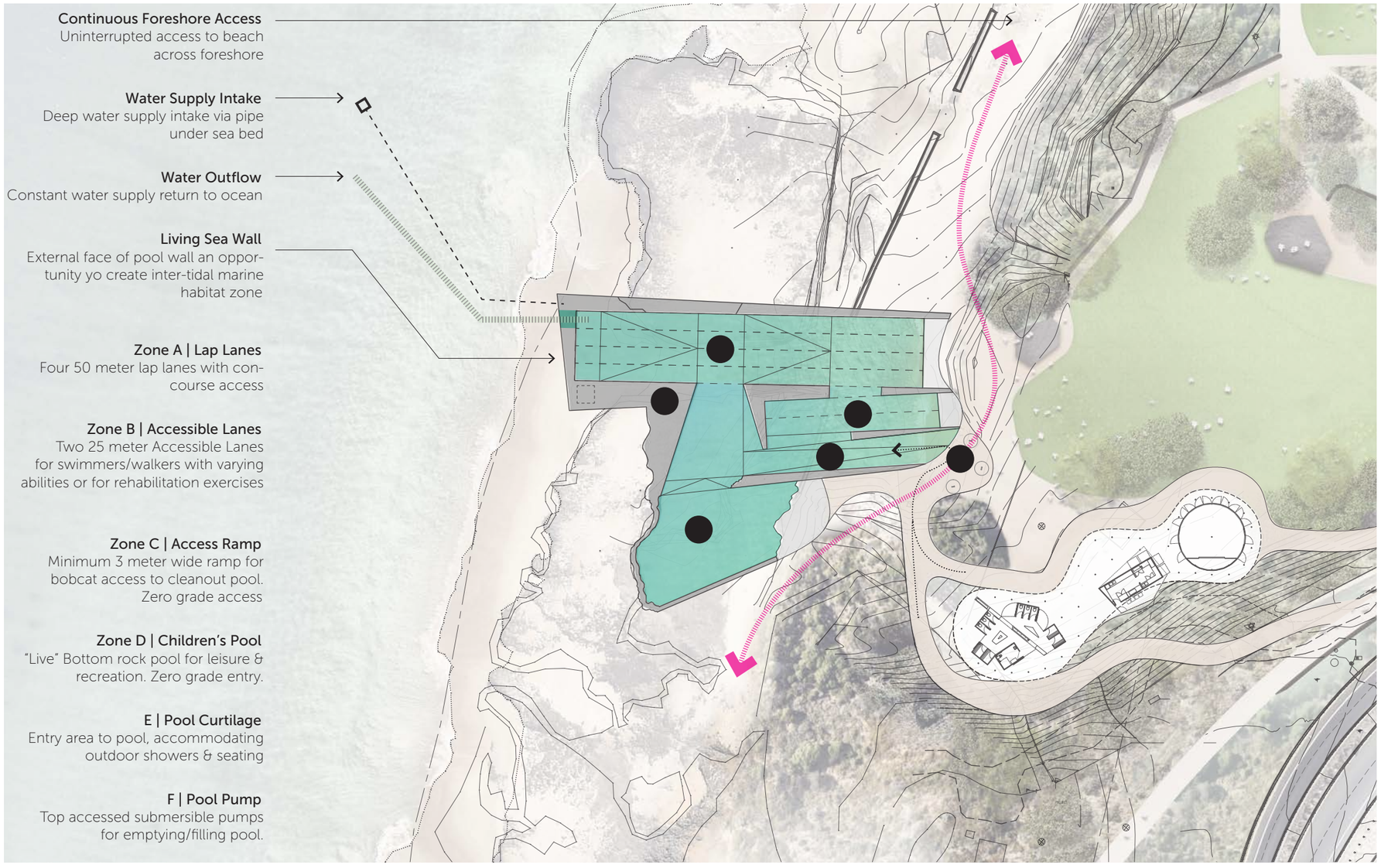
The Bunbury ocean pool is designed with four primary zones;

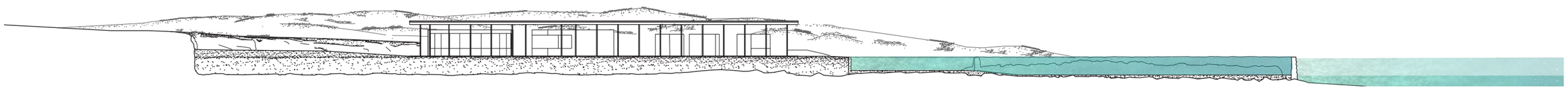
A. 50m lap pool with four lanes, to allow for fast, medium, slow and walking lane accessed via concourse and narrow stair. This has a shallow and deep end and sloping bottom.

B. A 25m lap pool with two lanes suitable for people of all abilities and especially accommodating rehabilitation exercises. These lanes have a consistent depth with even level bottom accessed via a zero the grade entry ramp.

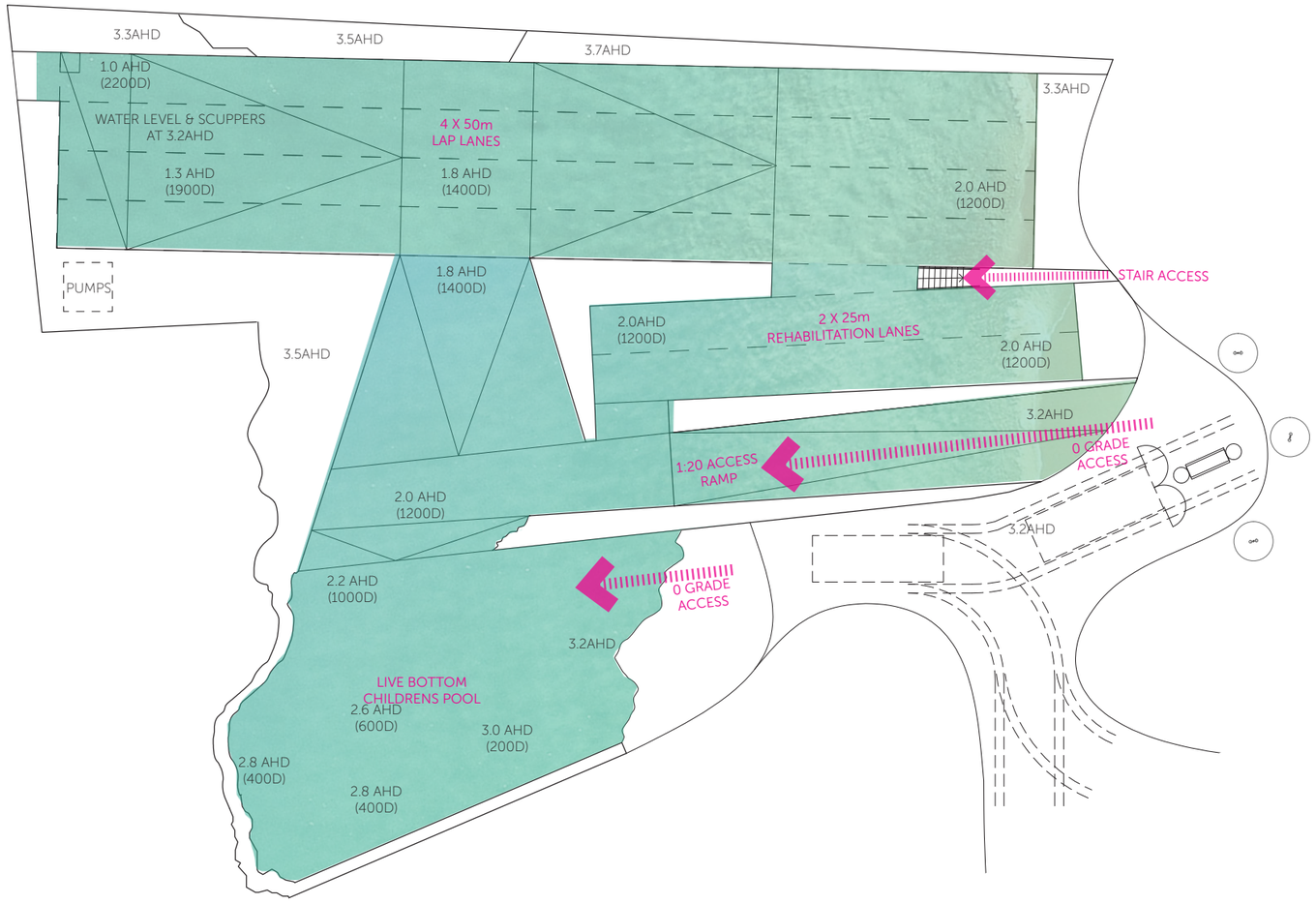
C. Entry ramp sloping at no greater than 1:20, suitable for wheelchairs and people of all capabilities. The ramp is designed to accommodate service vehicles such as bobcats for the clean-out and servicing of the pool.

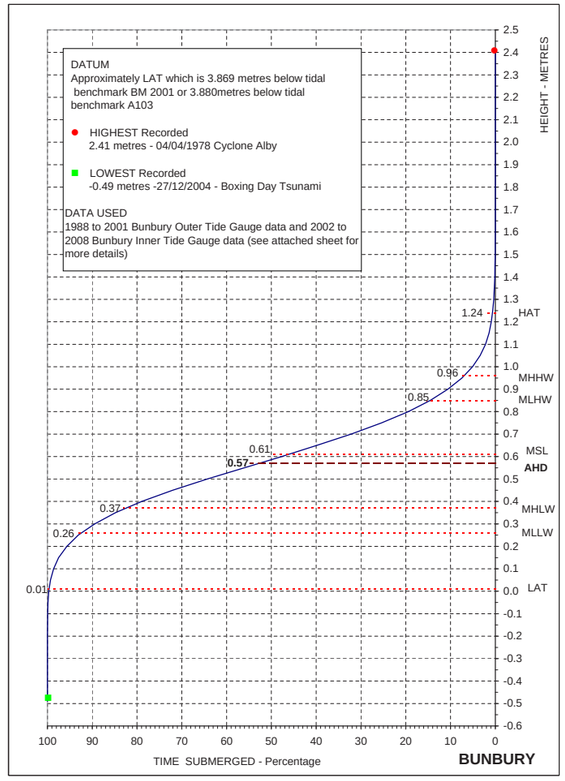
D. Children's pool and wading zone is located to the south, accessed via 0 grade ramp and proposed to be 0 - 1000mm deep with 'live' basalt and gravel bottom.





14 DETAILED ELEMENTS





BUNBURY TIDE CHART : Department of Transport

OVER TOPPING

The perimeter wall of the pool has been set at 3.50AHD which is nominally 700 above the average maximum height of the adjacent basalt shelf and nominally 300 higher than the remnant basalt walls that were built to prevent sand drift and sea water infiltration the quarry. The perimeter level varies to allow for areas of informal seating and is lowered to 3.30AHD in the north west corner to allow for wave back flow to drain. The water level of the pool has been set at 3.20 AHD and there is a scupper set at this height in the north west corner of the 50m pool. It is anticipated that the over topping will still occur during winter storm events.

POOL LEVELS

The water level for the pool has been set at 3.20 AHD to allow for zero grade entry from the pool deck to both the entry ramp and children's pool. The children's pool depth gradually increases to 200-400 deep on the south and further to 1000 deep on the north. It has a sloping 'live' bottom. The 25m lap lanes have even and consistent concrete bottom with a depth of 1200 to allow for shallow laps, walking and rehabilitation exercise. The 25m lap pool has a shallow end 1200 deep sloping to a mid-level of 1400 deep and then increasing to the deep end of 1800.

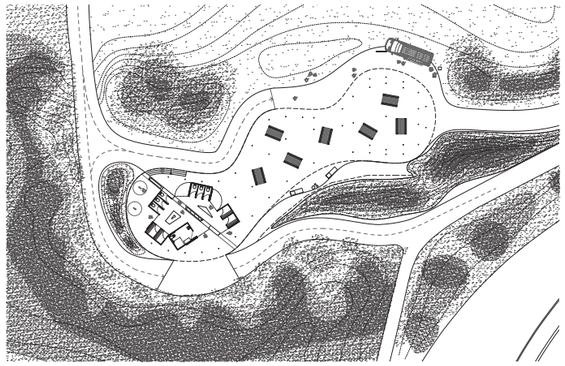
DRAINAGE AND MAINTENANCE

The pool has been configured to allow for gravity drainage, supplemented by pump drainage as required. A sump and drainage point has been set in the northwest corner of the 50m lap pool with the base at 0.90AHD which is well above the mean low water tide level and allows for sea level rise 0.35 over a 50yr period. Scuppers and over topping drainage are positioned in NW corner allowing surface leaf litter to be sent north by prevailing southerly breezes. Access ramp widths accommodate compact heavy equipment (skid steer loader) including required turning circles to facilitate mechanically assisted sand and sea wrack removal.

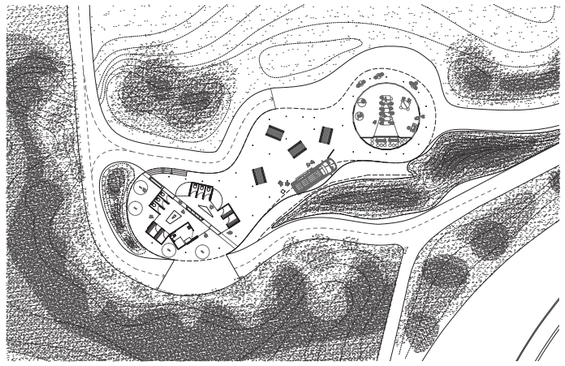
POOL ACCESS

The public arrive at the pool deck, is connected to three access points as well as pool showers and foot wash. The primary entry into the pool is via a wide 1:20 access ramp between the children's pool and 25m Lap lanes which widens at its base and connects to the 50M and 25M lap lanes and the children's pool. The children's pool can be independently accessed via a zero grade entry along its entire eastern edge. There is also a stair between the 50m and 25M lap lanes for quick access. The entry ramp accommodates maintenance machinery and the pool deck anticipates ambulance turning circles.

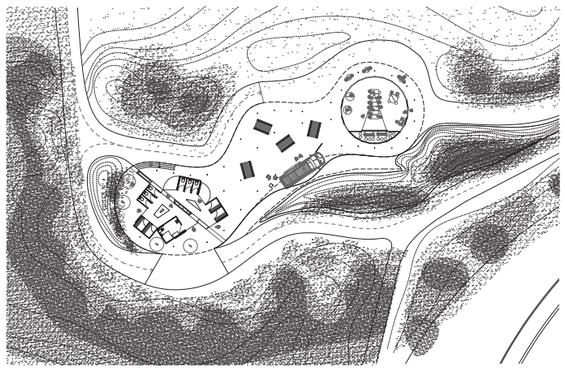
15 AMENITIES FACILITIES



STAGE 1



STAGE 2



STAGE 3

The amenities facilities have been located on the southern edge of the old quarry, north of the rim in clean fill. The facility has been set at 5.30AHD sufficiently above the ground water table to avoid complications and low enough to sit below the crest of the dunes. The western edge of the amenities is located to retain the majority of the existing regrowth vegetation.

The amenities facilities are collected under a large shade structure that is decoupled from the building function below. The three core components of the building have been designed so that they can be staged; The staging of the amenities program is non-prescriptive and all elements are designed such that construction can occur in any order, partially, or all at once.

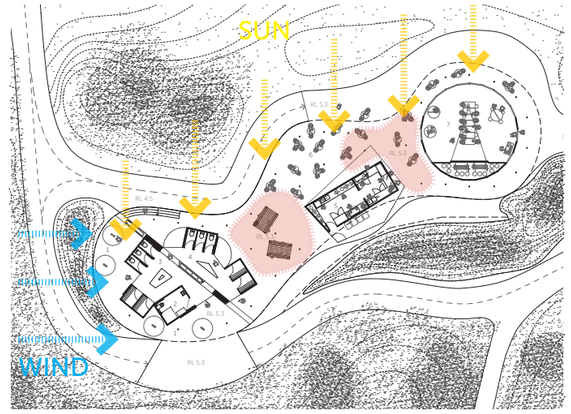
The flexibility of this program and overarching shade canopy delivers short and long term viability through additional control over capital expenditure and ability to accommodate a range of changing needs as required (even those that are unanticipated). This approach assists with maintaining control over capital costs and operational expenditure, allowing for staging of works to be congruous with obtaining funding over time from multiple sources.

Stage 1
Amenities are constructed with the wc/change block. The remaining clear space under the shade canopy can be inhabited by temporary picnic tables and is designed to accommodate food/coffee vans and has inclusions for a number of public barbecues.

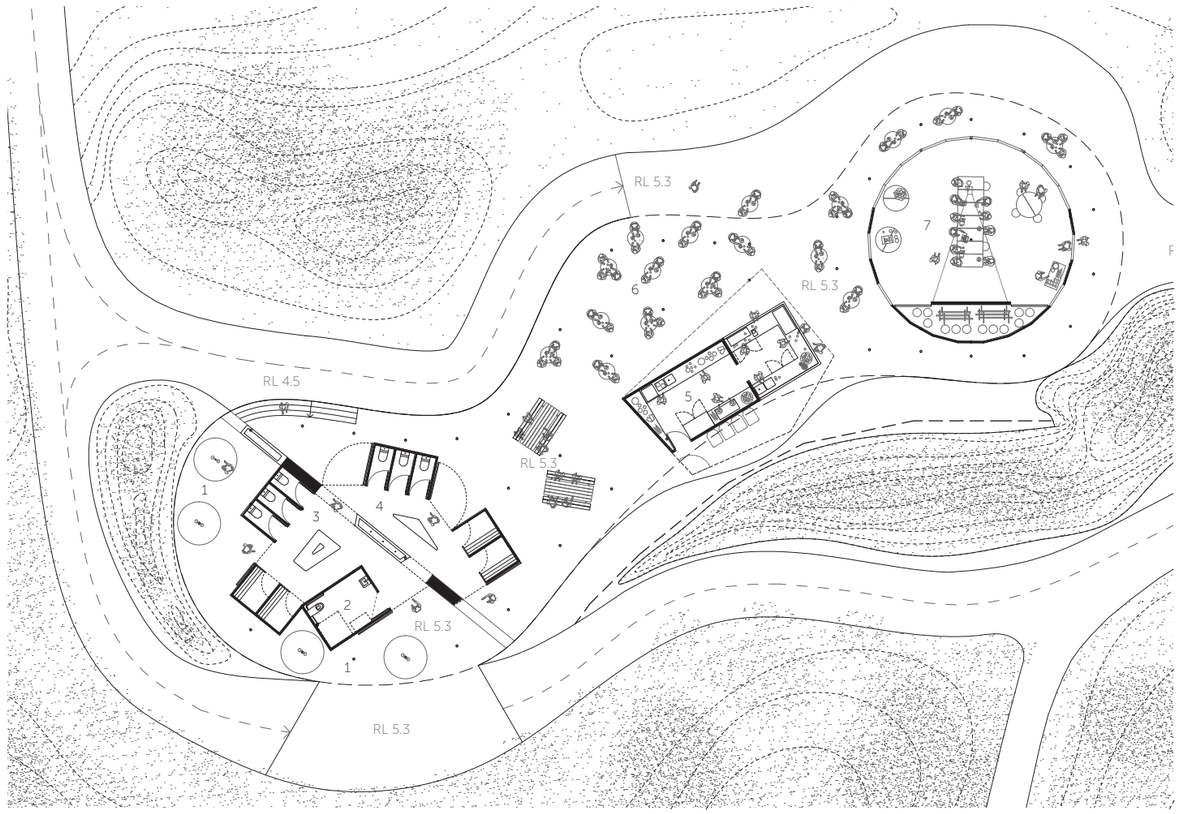
Stage 2
Kiosk/Cafe or Community room can be constructed as demand/user case scenarios require.

Stage 3
Final amenity program can be constructed as required.

The spatial disposition of the three primary amenities blocks are proposed to ensure that there are areas out of the wind and in the sun. The spaces between functional areas provide 'nooks' where the wind is tempered and baffled by the built forms adjacent.

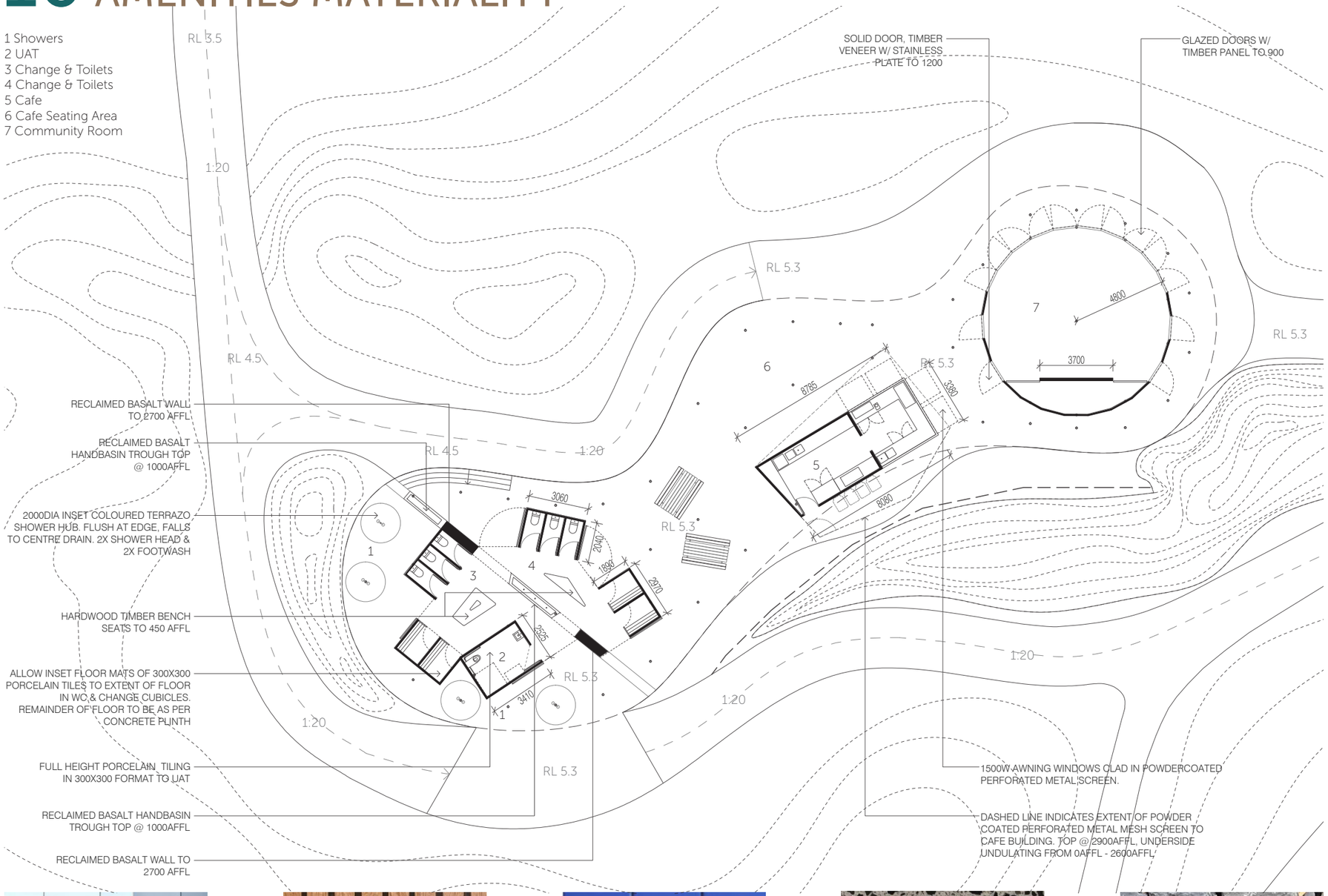


Showers 1.
UAT 2.
Change & Toilets 3.
Change & Toilets 4.
Cafe/Kiosk 5.
Cafe Seating Area 6.
Community Room 7.



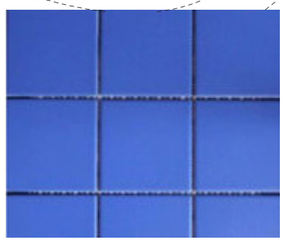
16 AMENITIES MATERIALITY

1 Showers
2 UAT
3 Change & Toilets
4 Change & Toilets
5 Cafe
6 Cafe Seating Area
7 Community Room

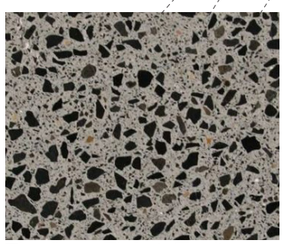


Stainless Steel

Australian Hardwood



Large format Ceramic Tiles



Terrazzo w/ reclaimed Basalt

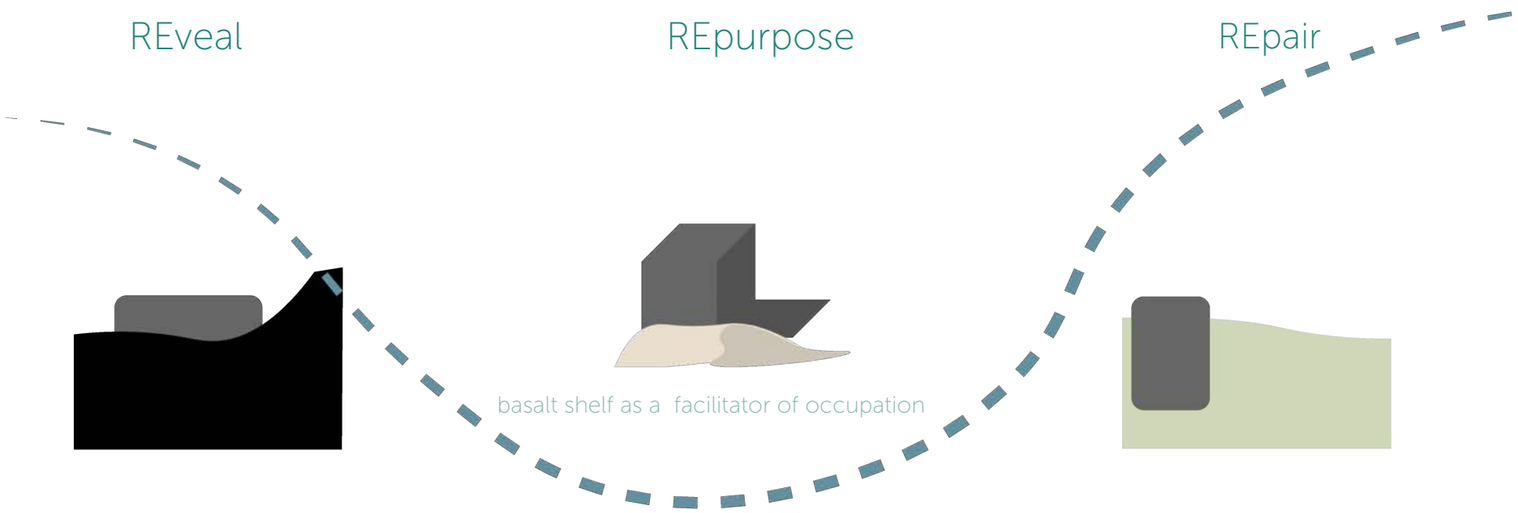
Reclaimed Basalt

17 LANDSCAPE NARRATIVE

REveal
The rugged black basalt shelf of the site is a geological topography unique to the Bunbury region. With a history of coastal quarrying, exposure, and concealment together with ebb and flow of tidal movements and sand deposition and erosion, this project presents an opportunity to reveal the cultural scars and natural processes and to celebrate this powerful geological feature.

REpurpose
Repurposing existing site materials such as the basalt boulders will establish a unique landscape character and identity. Seasonal change and sand deposition provides a backdrop while the basalt formations set the stage for occupation and interaction. An ever-changing pattern elevating the reimagined site to an iconic, inclusive community facility.

REpair
An iconic and integrated landscape system requires ongoing consideration and care. Repairing and extending the delicate dunal ecosystems will protect and regenerate the biological interface between land and sea. The project looks to minimize turf and irrigation requirements in favor of regenerated dunal ecologies.



REIMAGINE

RECONFIGURE

REGENERATE

Sept 2021 | Nov 2021 | Jan 2022 | Apr 2022 | Jul 2022

Study of sand movement throughout seasons:
Deposition over Summer months and erosion over Winter

APPLIED PRECEDENTS

A series of relevant precedent projects that demonstrate visual character are selected and applied to the landscape narrative to capture the how the Bunbury Ocean Pool could look and feel.

REveal

Reference: Bunbury Historical Society c1951

Exposed basalt integrated with paving
Reference: Sugar Beach - Claude Cormier

Curation and revealing of views
Reference: Tungeneset viewpoint - Code Arkitektu

REpair

Dunal ecologies protected from disturbance
Reference: Keast Park Site office

Protected areas for people to occupy
Reference: Keast Park Site office

REpurpose

Reference: Site Photo 22.07.09

Basalt as places to informally occupy
Reference: Sugar Beach - Claude Cormier

Basalt as play
Reference: Rocks on Wheels Mike Hewson

CONCEPT PLAN

Design & Precedents

Three key elements form a considered spatial ensemble:

1. The revealing of former quarry wall to create a protected gathering space
2. The ocean pool nestled into basalt shelf and
3. The community facilities

They are brought together through a combination of regenerated dunes, rejuvenated parkland program of activities and amenities and both an expressive and functional path network.

A considered coastal materials palette and resilient native coastal tree species for shade are employed.

Commanding views are afforded from an arrival and orientation node to the eastern side of the area. Integration within the wider context has ensured the design is an Arrival Space from town.

The design accommodates a North/South main promenade, allowing for continual pedestrian and cycle movement as part of the broader coastline.

A curved access path follows and celebrates the former quarry wall and basalt geology forming a link to the public facilities building and pool concourse.

A sunken turf area creates a protected zone to prolong use into Winter months and offers a defined amphitheater space for events. Community gathering nodes, children's play spaces, shelters, BBQ's and seating are incorporated within the ensemble.

1 Protected walk

2 Protected dune

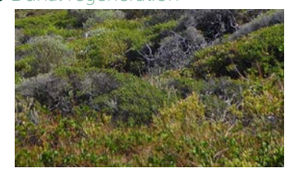
3 Public gathering

4 Path and rock integration

5 Pool hardstand curtilage

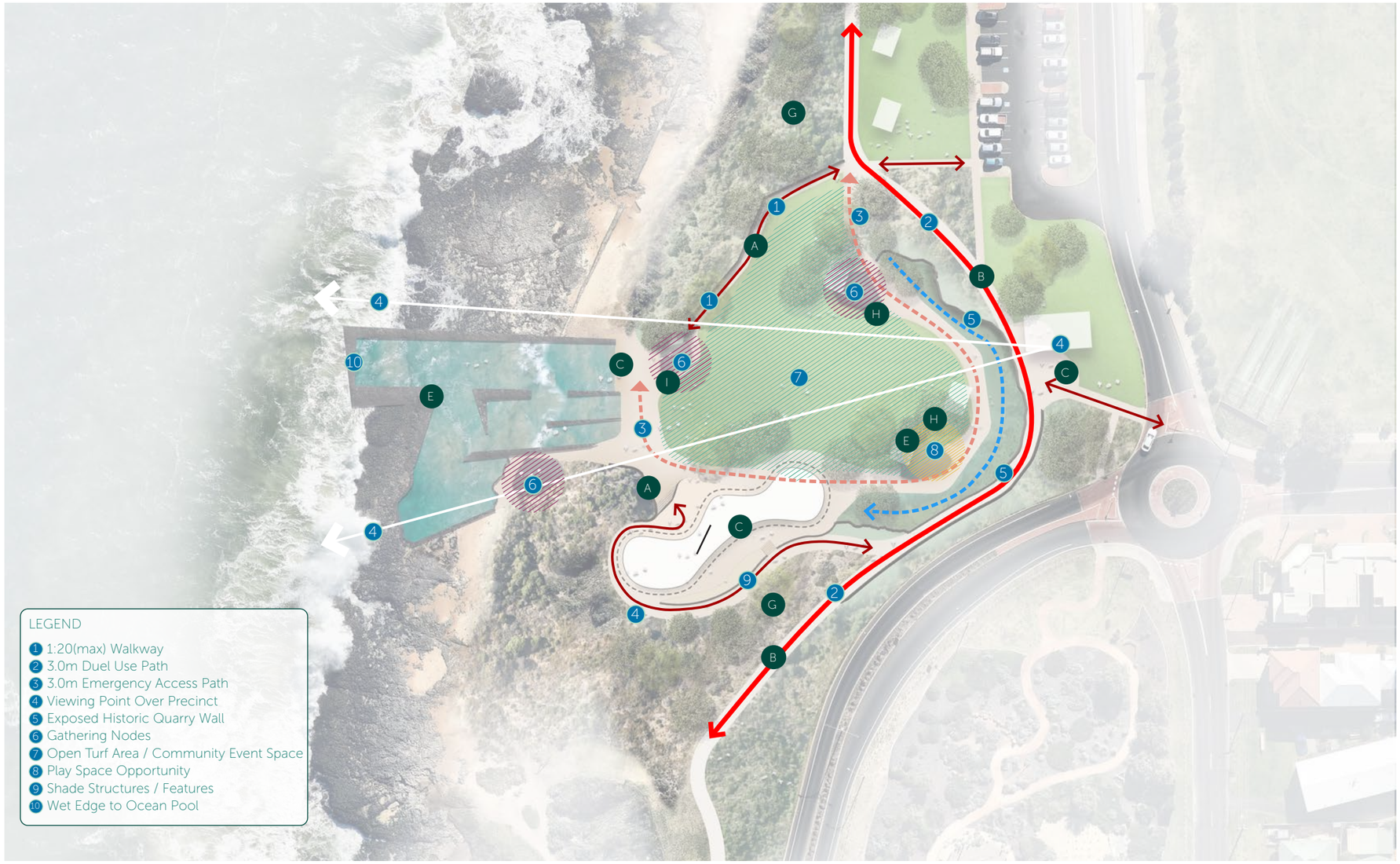
6 Cluster of coastal trees

7 Dunal regeneration



CONCEPT PLAN

Function & Materiality



LEGEND

1. 1:20(max) Walkway
2. 3.0m Duel Use Path
3. 3.0m Emergency Access Path
4. Viewing Point Over Precinct
5. Exposed Historic Quarry Wall
6. Gathering Nodes
7. Open Turf Area / Community Event Space
8. Play Space Opportunity
9. Shade Structures / Features
10. Wet Edge to Ocean Pool

G Dunal regeneration

H Basalt as play

I Occupied basalt

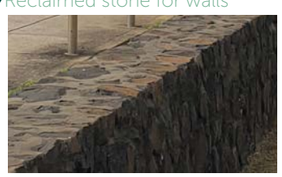
A Timber seating

B Enviro concrete paths

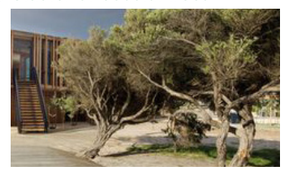
C Exposed aggregate concrete

D Path and rock integration

E Reclaimed stone for walls



F Cluster of coastal trees



CONCEPT SECTIONS

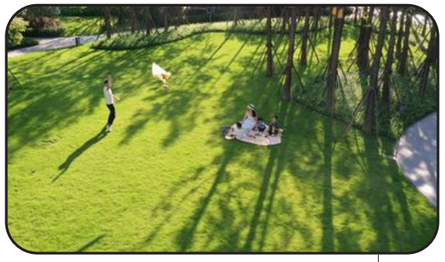
Section A
Based on the geotechnical survey, the location of the basalt shelf face is too close to the existing road to allow for an appropriately battered slope and accessible pathway.

The design resolution for this interface is to construct a gabion wall filled with basalt with balustrade over to allow for a shared pathway to run around the edge of the former quarry. This maintains the design integrity of the exposed basalt face below.
A low-lying rain garden lies between the beach access path and basalt quarry wall, allowing for site drainage and the gradual growth of micro-climatic ecosystems, which favor cooler, sunken areas.

In key areas across the site large, repurposed basalt boulders have been strategically placed as informal play and climbing structures.

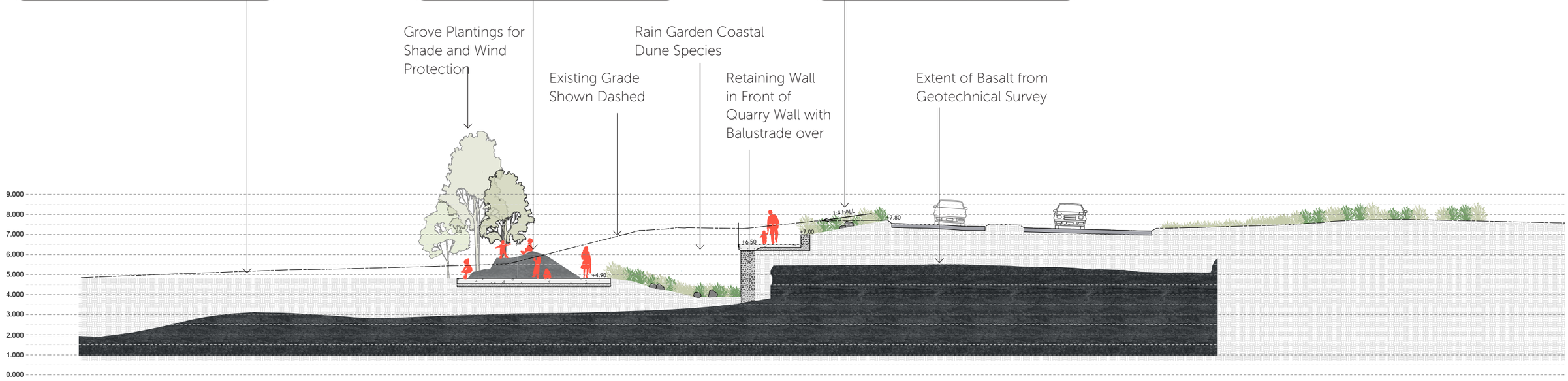
Location Plan

Public gathering space



Occupied basalt/Informal play

Dunal revegetation

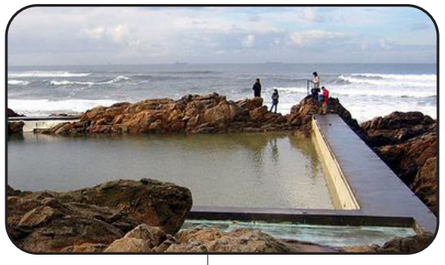


CONCEPT SECTIONS

Section B
Working with steep gradients and set floor levels, an arrangement of ramps, landings and stairs have been designed for seamless pool access. DDA compliant ramps also accommodate for pool maintenance access trucks while an informal retaining wall and set of stairs are in place to hold the 5.2 FFL curtilage of the Amenities building, establishing a forecourt area or plinth.

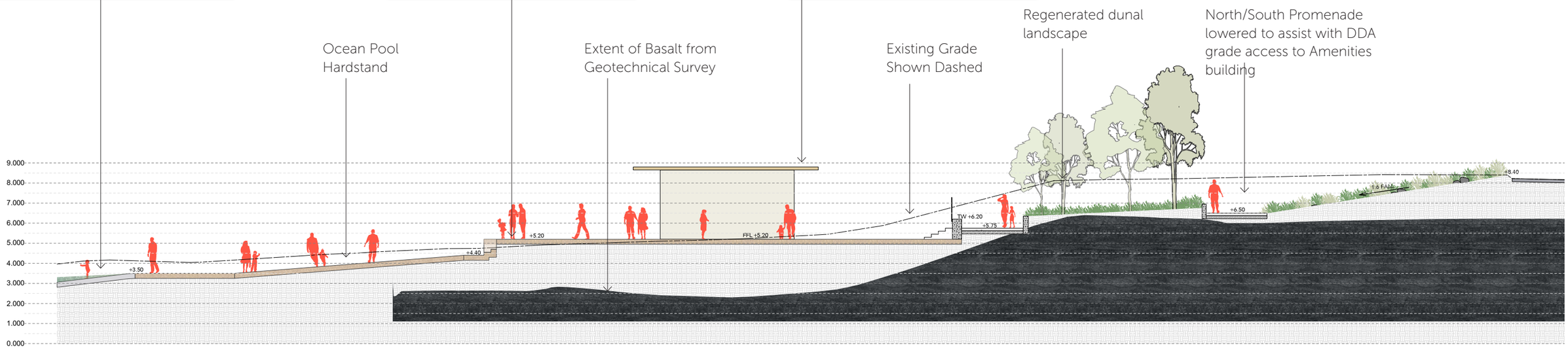
Location Plan

Pool hardstand curtilage integrated with basalt



Protected walk & Building Plinth

Amenities Facilities & Shade Canopy



CONCEPT SECTIONS

Section C
Exposing the basalt face whilst achieving compliant levels has led to a design outcome which requires additional height, in the form of a basalt gabion wall, on top of the basalt quarry wall.

Working with basalt as the primary material ensures a continuity of material expression along the level change despite potential unknown geological formations of the basalt. This edge condition and adjacent slopes at the higher and lower level are battered with vegetation specific to the site conditions. Boulders have been strategically placed as informal play and climbing structures.

Location Plan

Integrated drainage swale planting

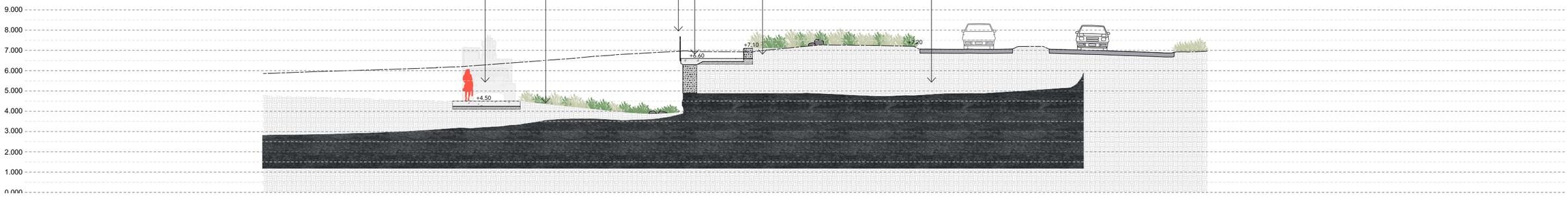
Repurposed basalt in gabion wall over quarry wall

Beach Access Path and Service Path for Pool Maintenance

Balustrade & Promenade Pathway Over Quarry wall

Existing Grade Shown Dashed

Extent of Basalt from Geotechnical Survey



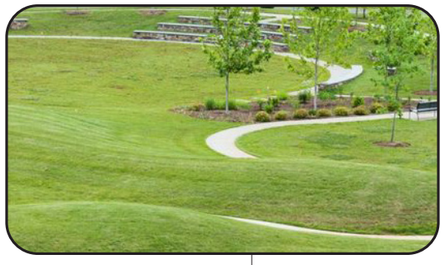
CONCEPT SECTIONS

Elevation A
An indicative elevation through the site facing the City of Bunbury provides an insight into the subtle but considered elevation changes and integration of the previously hidden basalt shelf. Compliant accessibility from the North and South unites with way-finding landscape pathways.

Location Plan

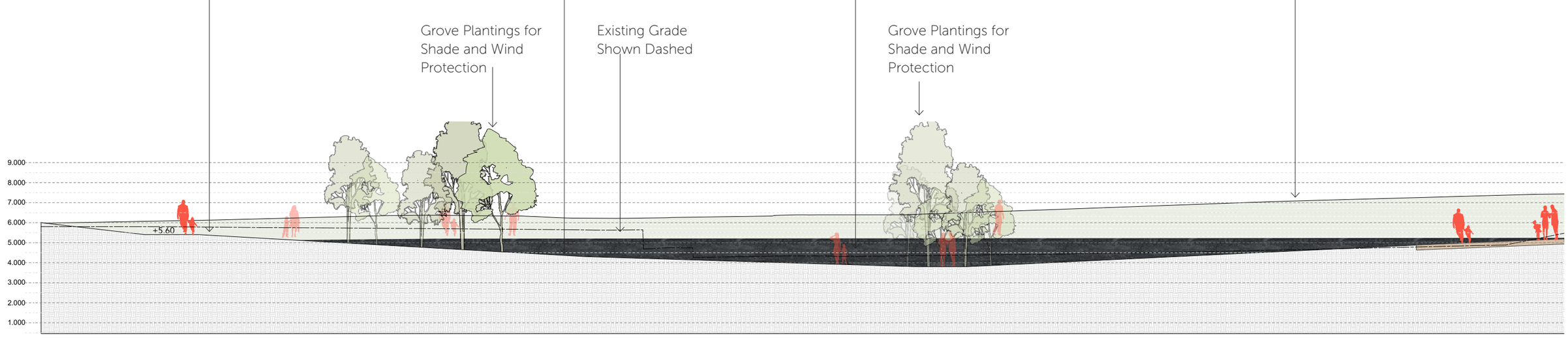
Protected path

Public gathering place



Exposed basalt quarry face

Dunal revegetation



PLANTING PALETTE

The site is part of the Quindalup Dune System on aeolian soils. These soils are deposited on the coast by the ocean and then transported by the wind to form dunes. The indicative plant palette is representative of the Quindalup Vegetation Complex, whereby the plant species occur naturally in the aeolian soil type. This vegetation has a high salt and wind tolerance, and ability to grow in alkaline, free draining, sandy soil.


Banksia attenuata


Alyxia buxifolia


Austrostipa elegantissima


Acacia lasiocarpa


Eremophila glabra


Atriplex cinerea


Melaleuca systena


Conostylis candicans


Dodonaea aptera


Melaleuca lanceolata


Olearia axillaris


Dianella revoluta


Ficinia nodosa


Frankenia pauciflora

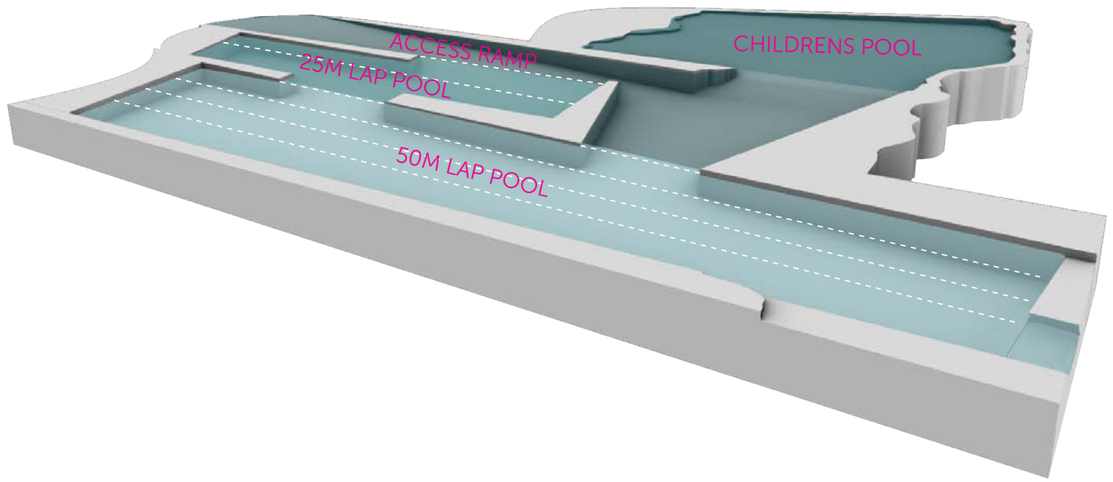

Leucophyta brownii


Westringia dampieri


Tecticornia - samphire


Hemiandra pungens

18 MAINTENANCE AND MANAGEMENT



FREQUENCY OF MAINTENANCE

Depending on local factors and the seasons, most sea-side pools are emptied and cleaned weekly, fortnightly or monthly. The concept design detailed in this report proposes a sea-side pool which is continually flushed. As such the high turnover and resulting water quality may allow for less frequent maintenance over time with monitoring of usage and seasonal changes in water quality.

Regular maintenance is suggested to occur as follows;

	Summer	Winter
Drain/Refill	Weekly	Fortnightly
Pressure Wash	4-6 weeks	6-8 weeks
Substantial Clean Out	Following heavy storm	

MAINTENANCE

A high-pressure device is used to remove algae build up from the walls, pool floor, ramps, stairs and railings. No chemicals are used, water supply is provided from mains water taps located near the pump housing. Sand and seaweed are swept to the drainage valve point in the pool and washed out to sea. The pool design proposes a low point to permit draining of the pool in most low tide conditions.

Typical Maintenance (Weekly/Fortnightly)

- Removal of sea weed and sand from pool
- Emptying and replenish with fresh ocean water

Intermittent Maintenance (Every 4-8 weeks)

- Removal of marine growth to trafficable areas
- Pressure clean trafficable surfaces
- Maintenance on gates, pumps, etc.

Substantial Maintenance (As-needs basis)

- Sand, wrack and boulder removal from the pool
- Minor concrete patching and joint sealing
- Balustrade repair or replacement
- Pump refurbishment or replacement
- Lighting maintenance

SUBSTANTIAL MAINTENANCE

Following storm events or periods of high swell sand, sea grass can be expected to get swept into the pool. The ramped access into the pool allows earth moving machinery such as a small bob cat to be employed as required to remove excess sand or debris in a safe and manageable way for maintenance crews.

PUMP MAINTENANCE

Occasionally crews need to clear the drainage valves when they are blocked with marine growth to allow the pool to empty. The pool is then drained as much as possible. Sometimes sand or weed build up, high tides and prevailing surf conditions (at the external drainage point) can make a full drain challenging. However as previously discussed the base level of the pool provides good clearance to low tides to ensure drainage is achievable in most conditions in a given month.

TIMING

Generally most ocean pools are drained and re-filled on a low tide over night to minimise interruptions to use. Crews will begin draining the pool on an outgoing tide to allow sufficient time for cleaning and maintenance to occur. Following this the pool is then refilled via the pump system. The concept design pump turn over rate is anticipated to refill the 50m lap pool in a 4-6 hour period.

DESIGN LIFE AND SIGNIFICANT CAPITAL UPGRADES

Structures located on the open ocean sustain a significant amount of wear and tear due to the harshness of the coastal environment. Generally, ocean pools in NSW have undergone significant capital upgrades every 20 years depending on their age and construction. It is expected that a contemporary ocean pool would significantly out perform this and remain durable for a longer period. Nonetheless, 20 year operational cost estimates make allowance for this should upgrades or refurbishment be required. Some examples of significant upgrades include replacement of pump systems and pipework, rebuilding walls which have cracked and lead to leaking or repairs to pool coping which has become rough and uncomfortable to walk on.

19 COSTINGS

As part of this concept design, a series of cost estimates were prepared in consultation with specialist consultants. The works were costed as two portions; Firstly all landscape works, construction of the amenities buildings, and all works excluding the ocean pool itself were costed by RBB Construction Cost Consultants. The ocean pool itself including ongoing maintenance and operational costs were estimated by specialist coastal engineers M.P Rogers.

Contingencies were provided in the unit rates applied, anticipating price escalations over a two year period anticipating construction to commence 2025 or soon thereafter.

These costs have been provided to Bridge42 to form the basis of the business case which has been completed in parallel with this design report.

BUNBURY OCEAN POOL LANDSCAPING
OCEAN DRIVE, BUNBURY
CONCEPT ESTIMATE REV 1

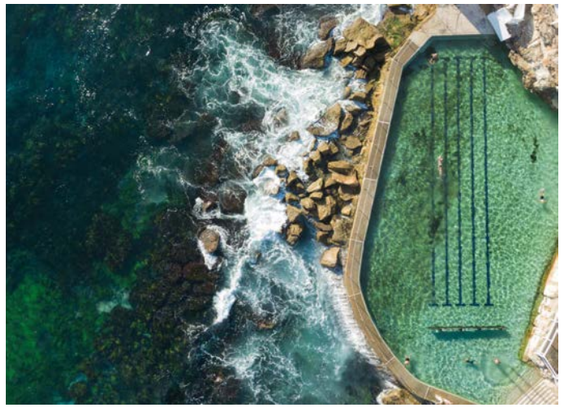
1/05/2023

Ref	Scope	Total ($)
1	Building Works	
2	Stage 1 - Slabs and Ablutions, Changerooms, UAT & Covered Area	1,045,000.00
3	Stage 2 - Community Room	635,000.00
4	Stage 3 - Café	365,000.00
5	Site Works	4,435,000.00
6	Design Stage Contingency	650,000.00
7	Sub-Total - Building Contract Works (at current Cost)	7,130,000.00
8	Escalation to Construction Commencement (12 months)	330,000.00
9	Stage 2 Amenities	65,000.00
10	Stage 3 Amenities	50,000.00
11	MP Rogers & Associates High Level Construction Cost	4,847,685.00
12	Sub-Total - Building Works Contract (to let)	12,422,685.00
13	Construction Stage Contingency	1,242,315.00
14	**Total - Building Works Contract Final Account (excl. GST)**	**13,665,000.00**
15	**Additional Allowances / Provisions**	
16	Headworks & Statutory Charges	205,000.00
17	Building Act Compliance	137,000.00
18	Public Art Allowance (local authority requirement)	Excluded
19	Tenancy Acquisition / Lease Costs	Excluded
20	Loose Furniture & Equipment	Excluded
21	General Loose Furniture & Equipment	Excluded
22	ICT / AV (provisional)	Excluded
23	Commissioning and Relocation Costs	Excluded
24	Consultants Fees (design and delivery phase)	2,054,000.00
25	Sub-Total - Additional Allowances	2,396,000.00
26	Escalation on Additional Provisions	143,105.00
27	Escalation on Pool (MP Roger)	1,615,895.00
27	Sub-Total - Additional Allowances / Provisions (excl. GST)	4,155,000.00
28		
29	**Total Project Cost (excl. GST)**	**17,820,000.00**
30	GST	1,782,000.00
31	Total	19,602,000.00

20 NEXT STEPS

- Undertake consultation with the relevant local indigenous reference groups and local indigenous community
- In consultation with the consulting Anthropologists & Archaeologists, consider the recommendation for the CoB to seek consent under section 18 of the AHA in order to use land within the DPLH Place ID 1068 Back Beach Burials and Place ID 21372 Back Beach (BB01) for the proposed ocean pool at Wyalup Rocky point. This consent is required in order to avoid potentially breaching section 17 of the AHA in relation to these places.
- Contact & Consult with GKB ILUA group Cultural Advice Committee to determine if a heritage management plan agreement is required to proceed with the project
- Investigate options for inclusion of cultural interpretative content in the final landscape, site-narrative, and wider project level. Including requests made by GKB representatives and recorded in the Ethnographic survey.
- Undertake further assessment of the coastal vegetation on the site to confirm its condition and composition to inform the environmental approvals
- Undertake investigation relating to the requirement for vegetation clearing to establish whether the proposal is determined to be environmentally significant and requires approval under Part IV of the *Environmental Protection Act 1986*, or whether approval shall be sought under Part V of the EP Act, or under clearing exemption.
- Undertake community & stakeholder engagement to explore and present the project to the community, and to
- Include standard noise mitigation measures and noise management guidelines and procedures relating to the pump locations and operation to ensure noise compliance is achieved.
- Undertake revised noise assessment once detailed design for the projects construction and operation is completed.
- Undertake further soil and groundwater investigation in accordance with DWER (2021) contaminated sites guidelines and other relevant guidelines to improve understanding regarding nature and extent of any soil and groundwater contamination.
- Develop and implement a suitable CEMP including consideration for the identification and management of unexpected finds such as PACM / hazardous materials, health and safety protocols to minimise exposure to identified CoPC in soil and groundwater, dust suppression measures, and protocols fir handling and management of excavated fill material.
- Discuss and evaluate the proposed exemption from chemical dosing of seawater source of the ocean pool to the code of Practice (DoH 2020) chemical standards with the Chief Health Officer and seek in principle approval.
- Investigate location of seawater intakes, and establish guidelines for optimization of seawater quality.
- Undertake baseline monitoring program of the proposed seawater intake location to inform design of treatment processes of incoming seawater and establish baseline date for existing microorganism at proposed pool water disposal location.
- Include requirement for routine monitoring during ocean pool operations to focus on potential key contaminant of concern being microorganism levels in inshore waters.
- Undertake investigation of specific and in-detail performance of proposed ocean pool in its intended location in conjunction with suitable coastal engineer to establish issues relating to sand/wrack management, establish optimum pool levels, and develop detail of ocean pool structure.
- Refine and develop concept proposal further. Establish construction details and finalize location of ocean pool and amenities buildings in response to outcomes of recommendations made above and as per future recommendations.
- Undertake further in-detail surveying of basalt rock and undertake LIDAR scan to aid design, documentation and preparation of graphic material.
- Undertake excavation and drilling testing of basalt rock in consultation with geotechnical engineer to establish suitability and impacts on excavation.

Review & evaluate all conclusions and recommendations made in the relevant consultants final reports. Noting only drafts were reviewed asper the included document review table.



Exposed Basalt Quarry Edge
Excavated and exposed historic quarry wall. Built up to levels with reclaimed basalt walls.

Coastal Tree Cluster
Coastal trees to temper the wind, provide shade, and habitat.

Occupied Basalt
Reclaimed basalt seating plinths.

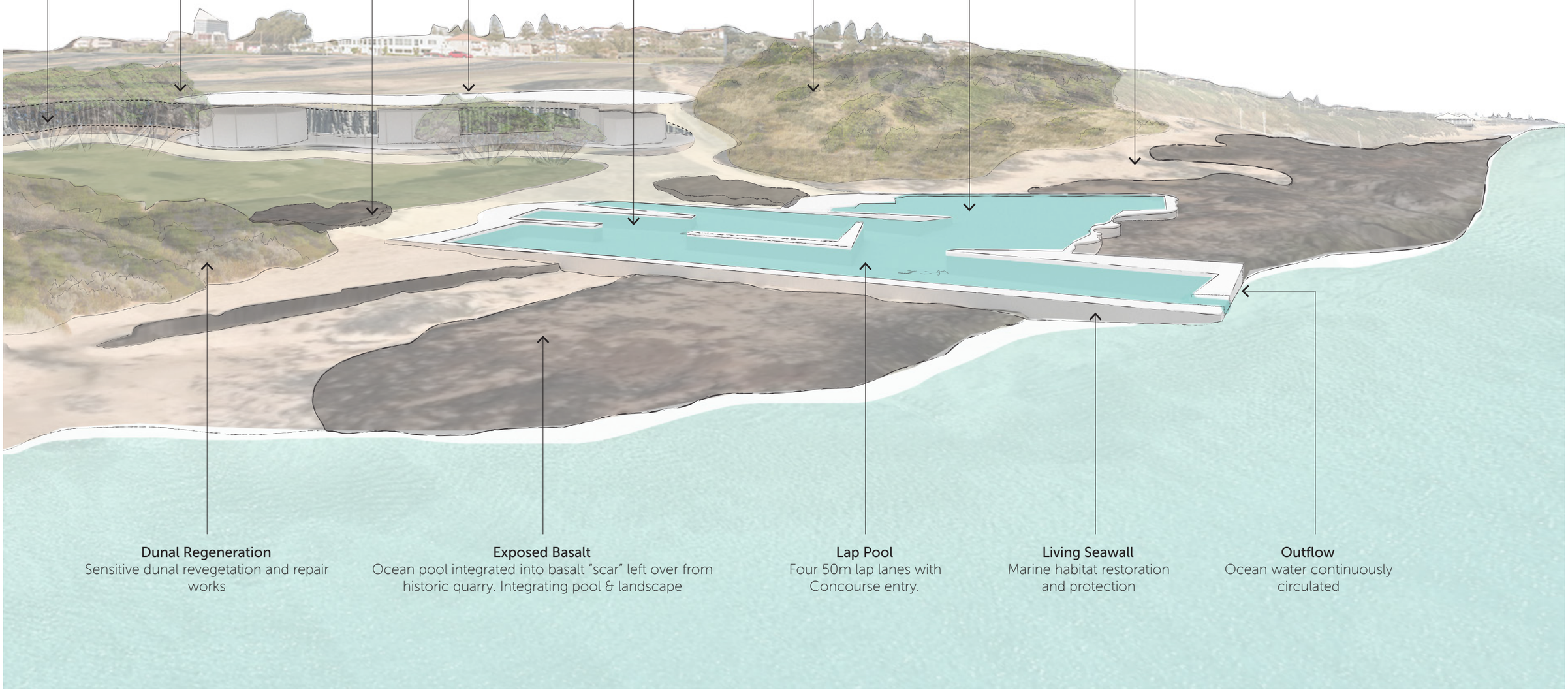
Amenities
Shade Canopy structure
& Changerooms + Cafe + Community Room

Rehabilitation Lanes & Entry Ramp
0 grade entry access ramp (1:20).
Two 25m rehabilitation/walking lanes

Dunal Regeneration
Sensitive dunal revegetation and repair works

Children's Pool
0 grade entry, live bottom, shallow children's pool & leisure zone

Continuous Beach Access
Beach access unimpeded across site activation areas



Dunal Regeneration
Sensitive dunal revegetation and repair works

Exposed Basalt
Ocean pool integrated into basalt "scar" left over from historic quarry. Integrating pool & landscape

Lap Pool
Four 50m lap lanes with Concourse entry.

Living Seawall
Marine habitat restoration and protection

Outflow
Ocean water continuously circulated