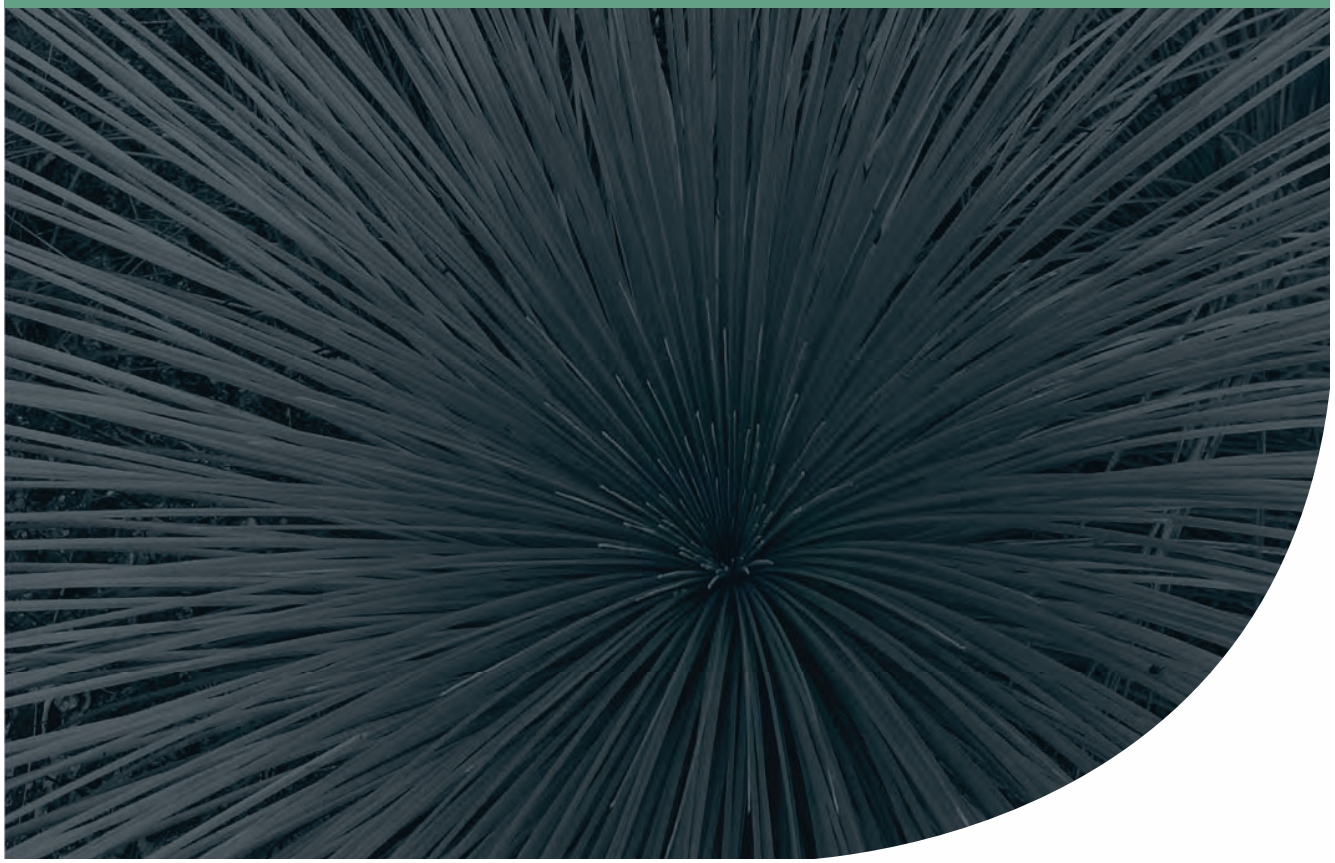
Foreshore Landscape Masterplan Report

Burns Beach, WA

Project No: BB-LMP-001

Prepared for Peet Fund Management Limited
February 2022



Document Control

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2	November 29 2021	Paul Broderick	PB	Liam Lacey	LL
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1 Introduction.

1.1 Project background

The Burns Beach Estate is a residential development located approximately 30 kilometres (km) north-west of the Perth Central Business District, within the locality of Burns Beach in the City of Joondalup (CoJ). Peet Funds Management Limited (Peet) have been managing the development of the Burns Beach Estate since 2006. As part of this development, works were conditioned to occur in the adjacent coastal foreshore reserve (WAPC Ref: 160617). These works included the rehabilitation of coastal vegetation and construction of formal access routes as outlined in the *Foreshore Management Plan Burns Beach* (FMPBB) endorsed by the City of Joondalup and the Department of Planning and Infrastructure in March 2006 (Cardno BSD 2006). Subsequently, the southern and central portions of the Burns Beach Estate have been constructed and adjacent portions of the coastal foreshore reserve have been handed over to the City of Joondalup (referred to as stage 1 and stage 2 of the foreshore works). Peet now intend to progress the subdivision of the final northern portion of the Burns Beach Estate and associated third and final stage of coastal foreshore works (referred to as stage 3).

In 2021 Emerge Associates were commissioned by Peet to prepare an addendum to the FMPBB which set out the background and processes for the ongoing revegetation and restoration works with the foreshore reserve. As part of the approvals for this addendum the preparation of a Landscape Masterplan was required in order to confirm the procedures, location and construction for the beach access paths. This document aims to satisfy that requirement.

As such this document is to be read in conjunction to the addendum to the FMP submitted by Emerge Associates : Foreshore Management Plan Addendum, Burns Beach Foreshore Reserve Stage 3 prepared for Peet Funds Management Limited Doc No.: EP15-020(15)--021B SCM| Version: B as endorsed by the City of Joondalup.

1.2 Staging and Site Boundary

Stage 3 of coastal foreshore works will occur within the northern portion of the Burns Beach foreshore reserve as shown in **Figure 1** (herein referred to as the 'site'). The site is approximately 9.52 hectares (ha) in size and is bound by the yet to be constructed PSP to the east, the Indian Ocean to the west, parks and recreation reserved land to the north and the Stage 2 foreshore reserve to the south. Refer the Staging Plan over leaf.

Figure 1: Site Location

Project:	Foreshore Management Plan Addendum Burns Beach Foreshore Reserve Stage 3
Client:	Peet Funds Management Limited

Plan Number: EP15-020(15)–F41a
Drawn: GAR
Date: 29/03/2021
Checked: SCM
Approved: TAA
Date: 29/03/2021

N

0 50 100 150
Metres
Scale: 1:5,000@A4
GDA 1994 MGA Zone 50

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used.
© Landgate (2020). Nearmap image date: 04/01/2021

Figure 1: Staging Plan

1.3 Planning context

Subdivision approval for development adjacent to the southern portion of the site where stages 2 and 3 intersect has been received from the Western Australian Planning Commission (WAPC) (WAPC Ref: 156568). Condition 11 of the approval requires that '*Prior to the commencement of subdivision works the Burns Beach Foreshore Management Plan is to be revised and updated to ensure the protection and management of the sites environmental assets with satisfactory arrangements being made for the implementation of the approved plan*'.

A separate subdivision approval has been lodged for the remainder of Burns Beach Estate adjacent to the site (WAPC Ref: 160429), and it is likely that approval of this subdivision will contain a similar condition. This *Foreshore Management Plan Addendum* (the addendum) responds to the requirement to revise and update the FMPBB, as it provides site-specific management measures to ensure the overarching environmental outcomes specified in the FMPBB are achieved. The addendum is also likely to be required by the City of Joondalup as a condition of the development approval for construction of the PSP batters.

In addition to the planning approval requirement for a revision of the FMPBB, several separate planning guidance documents have published subsequent to the preparation of the original FMPBB that require consideration:

- *State Planning Policy 2.6 State Coastal Planning Policy (SPP 2.6)* (WAPC 2013)
- *State Coastal Planning Policy Guidelines* (DPLH 2020)
- *Joondalup Coastal Hazard Assessment* (M P Rogers & Associates 2016).

The preparation of SPP 2.6 and associated Guidelines and the *Joondalup Coastal Hazard Assessment* have resulted in the re-evaluation of the foreshore reserve adjacent to the Burns Beach Estate compared to that which is shown in the FMPBB and associated foreshore setbacks. This change is reflected in the updated site boundary shown in **Figure 1**. In addition to the updated site boundary, the extent of built infrastructure within the site has been reduced since the preparation of the original FMPBB, to reduce the extent of the environmental impacts within the foreshore reserve.

2 Design philosophy

The design philosophy that has driven the preparation from the time of the original FMPBB (Cardno BSD (2006)), has been the need to balance multiple objectives:

"the need to provide for recreational activities and to provide a sense of place for local residents and coastal area users, and; the need to ensure that the fragile coastal landforms and vegetation within the foreshore reserve are protected and maintained…

…Following extensive community consultation and liaison with the City of Joondalup it was established that beyond purely rehabilitating the vegetation of the foreshore one of the primary aims was to provide a practical and prescriptive framework to "…provide controlled access and recreation facilities within, and adjacent to, the foreshore reserve at Burns Beach."

Furthermore it was stated that

"Existing tracks through the foreshore can be consolidated and improved to provide designated access to the coast.

2.1 Goals and objectives

Consistent with Cardno BSD (2006), the overarching goals for the landscape component of works are to:

- provide amenity and local public open space at the interface of the Burns Beach Estate and the foreshore reserve
- provide access from the Burns Beach Estate through the foreshore reserve to the beach, whilst minimising the impact to existing vegetation
- ensure public access is appropriately contained within the access routes proscribed
- minimise disturbance to the coastal environment.

The following specific objectives are proposed to guide the landscape works and help to demonstrate that the landscape goals have been met:

- Construct at least two pedestrian paths through the foreshore reserve from Burns Beach Estate to the beach.
- Construct one emergency vehicle access track through the foreshore reserve from Beachside Drive to the beach. (Cardno BSD (2006)),

3 Existing environment

The site has high conservation significance, is part of Bush Forever site 322 and is an 'environmentally sensitive area' under the Environmental Protection Act 1986. Detailed information regarding the environmental context of the site is provided in the FMPBB (Cardno BSD 2006), with factors relevant to the beach access paths provided below.

3.1 Coastal Dune Movement

Coastal dunes are dynamic environments that are continually reshaped by erosion and depositional processes. The combination of wave and wind act to create parabolic dunes which are ostensibly mobile until stabilised by vegetation. Removal of vegetation can lead to erosion and the creation of blow outs. The construction of access paths and any revegetation works within the site must ensure landforms are stabilised effectively to allow vegetation to establish and secure dunes in the longer term.

3.2 Vegetation

Cardno BSD (2006) identified four plant communities, extensive weed and degraded areas as well as substantive areas of bare sand that do not support a native vegetation community occur in the foreshore reserve.

The vegetation condition of plant communities previously recorded within the foreshore reserve ranged from 'completely degraded' to 'excellent' (Cardno BSD 2006). Updated plant community and vegetation condition mapping for the site is provided in **Figure 2.**

Generally, vegetation in the site contains a low proportion of weed species. Some weed species previously recorded as being dominant in the foreshore reserve include **Pelargonium capitatum,*Tetragonia decumbens* and **Trachyandra divaricata* (Cardno BSD 2006) [1].

Figure 2: Vegetation Condition

4 Coastal Nodes and Access Points

Cardno BSD 2006. shows that two recreation nodes (POS 6 and POS 3 as identified in the Structure Plan) are to be developed in and adjacent to the foreshore reserve to encourage community use of the foreshore area. These recreation nodes are a critical element of the FMP and will facilitate the dual objectives of providing for community use and ensuring conservation of other parts of the foreshore reserve. The recreation areas that are situated within the foreshore reserve have been located in such a manner so as to avoid high conservation value areas. By providing areas within the foreshore reserve that are specifically for recreational use allows for an interface between the Public Open Space and foreshore reserve, and provides a hard boundary for recreational use and guided channels into the beach access paths provided through the foreshore reserve.

Whilst it must be noted that POS 6 has been an outstanding success in terms of the provision of a creating a highly popular community recreational node. It should also be noted that the developer has taken the option of relocating POS 3 so it no longer extends into the foreshore reserve. Nonetheless the intent remains to provide a beach access and lookout point from this location as is detailed in the attached plans.

These nodes and the adjacent pathways were proposed and developed with the principle of providing focussed usage in key areas which would enable greater protection and regeneration opportunities for the remaining areas.

The principles for the location of access tracks remain unchanged….

"Access to the foreshore reserve will be channelled and controlled to prevent dune and vegetation destabilisation. The key feature to achieve this will be the dual use path network and fencing. Historic unrestricted access to the foredune at Burn Beach has resulted in a number of uncontrolled access tracks to the beach. The beach access paths have been located on existing tracks where possible, and existing tracks not required for pedestrian access will be rehabilitated to return the areas to a stable vegetation community." (Cardno BSD 2006).

4.1 Beach Access Paths

The extent of landscape works and in particular the number of beach access paths is less than that shown in the original FMPBB. The original FMPBB indicated a series of paths at nominal locations that required site confirmation. The preferred route for each path was assessed as each stage as the adjacent development progressed. Each beach access path indicated on the original FMPBB was investigated on site, surveyed and assessed for accessibility and environmental impact. In some cases, coastal erosion has made access to the beach difficult. City of Joondalup officers were invited to inspect the proposed routes and, in some cases, it was jointly determined that the route was too steep or too circuitous to enable an appropriate design outcome in terms of the provision of ease of access, ease of maintenance, ensuring minimal impact to the existing vegetation and avoiding exposing areas of unvegetated dune.

As stated previously the intent has always been to follow the route of pre-existing (disturbed) paths where possible and to minimise disturbance of the existing vegetation and to repair any disturbance. The existing paths are also a very good guide as to the most desirable routes for pedestrians to take through the undulating landscape. This has seen a successful outcome in the Stage 1 areas and it is intended to follow this same approach for future stages. No landscape works or access paths have as yet been undertaken beyond the Stage 1 foreshore reserve.

Three new beach access paths (east-west alignment paths) are proposed to be constructed on existing access tracks. The locations of which are shown in **Figure 4**. These have been spaced so as to achieve a maximum distance of 400 metres between beach access paths. Where existing grades allow, these access paths will be constructed from coloured bitumen. In some areas that are less disturbed or existing grades are more extreme, the construction of bitumen paths would require significant earthworks and therefore impacts on the foreshore reserve. In these areas elevated boardwalk type paths will be adopted to be sensitive to these constraints and minimise construction impacts. Conceptual elevations of these boardwalks are shown below in **Figure 4**.

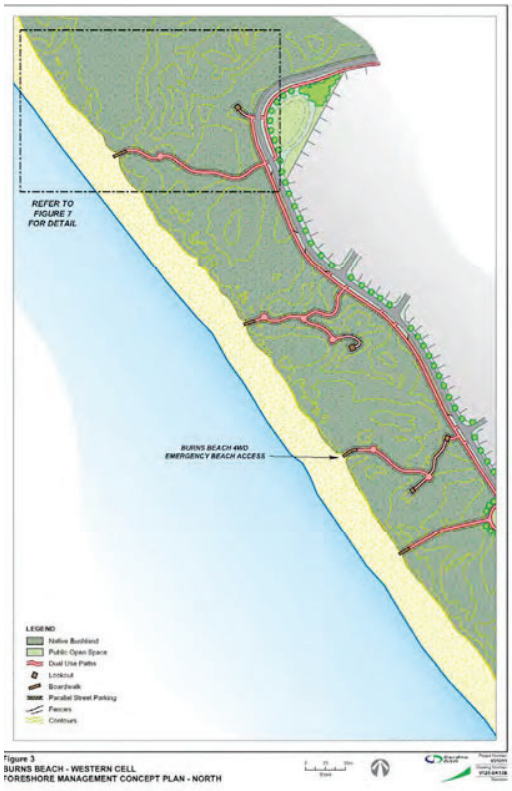
Boardwalks will be adopted in areas where foreshore condition or grades require sensitive approaches, and these will be determined at the point of preparing detailed works plans for the development. Sections of bitumen path will be used for these where appropriate, however it is envisaged that the traversing of the foredune down to the beach will be achieved through a boardwalk structure in order to minimise disturbances and provide a structure that will withstand this dynamic environment. Seating and shade structures will be provided at the point where the beach access extends from the dual use path, and where appropriate may incorporate public art. A conceptual cross-section indicating how the beach access and junction points with lookout will be constructed is shown in **Figure 4**.

4.2 Emergency and Maintenance Access to Foreshore Reserve

The premise for the provision of a maintenance and emergency vehicle access track remains unchanged from the original FMPBB (Cardno BSD 2006)

"Based on discussions with the City of Joondalup, emergency access is an important consideration for beach areas within the area. Emergency access to the beach will not be possible from the existing Burns Beach site (to the south of the Structure Plan area). Based on analysis of the grades within the foreshore and the degree of undulation, a four wheel drive emergency access will be provided immediately north of POS 3. This access point was selected following a field visit, with the City of Joondalup Conservation Advisory Committee, based on its relatively flat grades and it already being a significantly established four wheel drive access track. This access would be provided alongside a pedestrian beach access path, and would be fitted with a "log and chain" structure to provide long-term stability. "

The current proposal provides for an emergency vehicle track utilising the same degraded track. The surface of the track is proposed to be crushed limestone with a binding agent as originally agreed with City of Joondalup. This detail is however to be reconfirmed with the City.



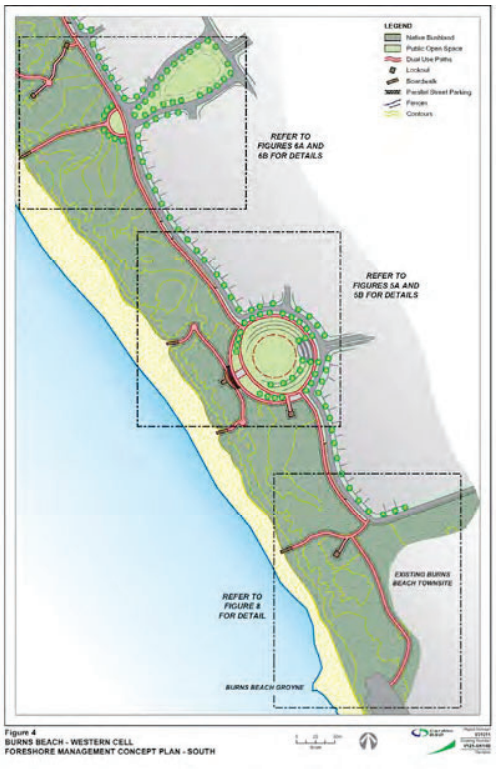


Figure 3: Original Foreshore Management Concept Plan – from the approved FMPBB (Cardno BSD 2006) showing indicative landscape elements

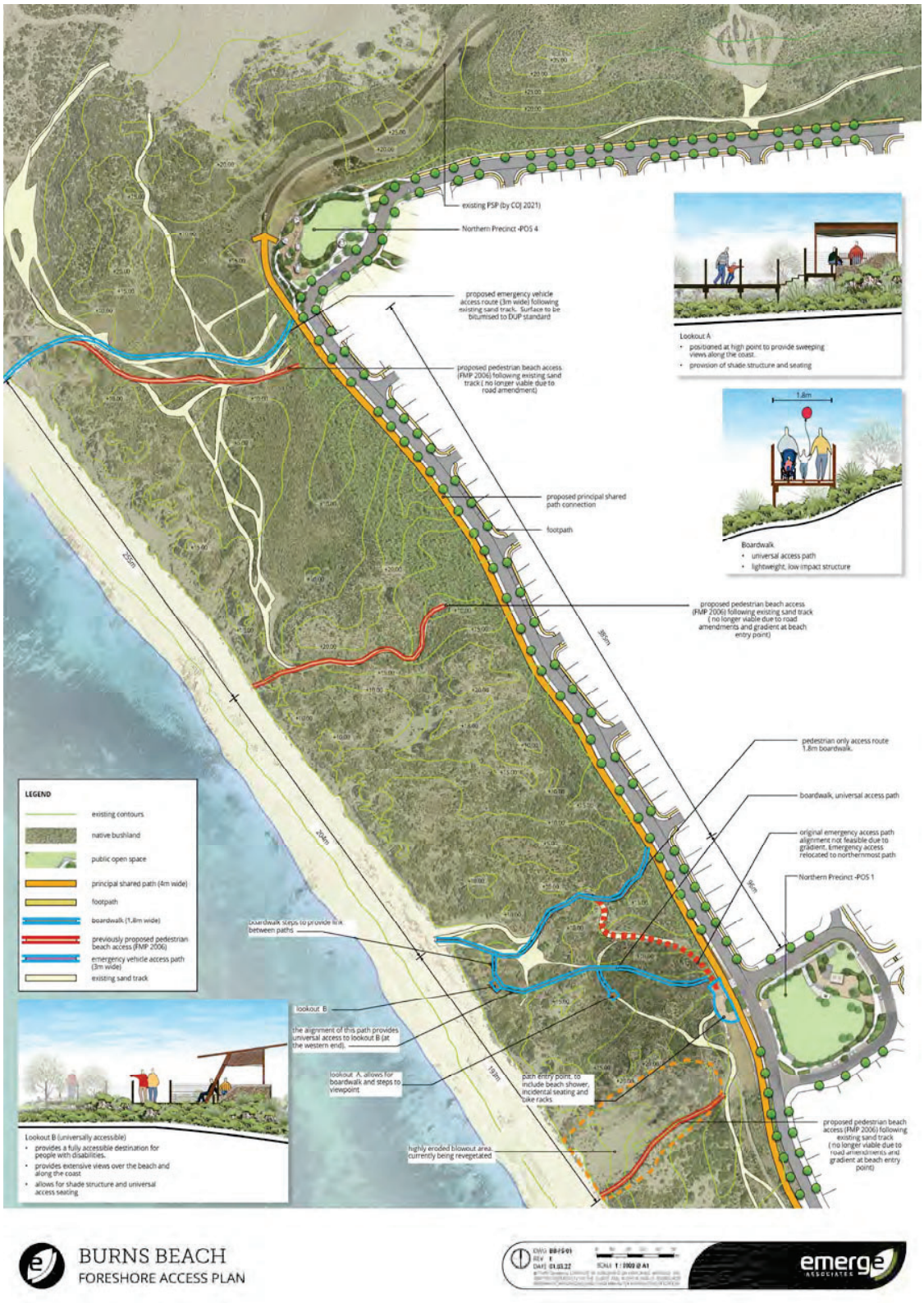


Figure 4: Foreshore Access Plan 2022– Updated Plan showing indicative landscape elements

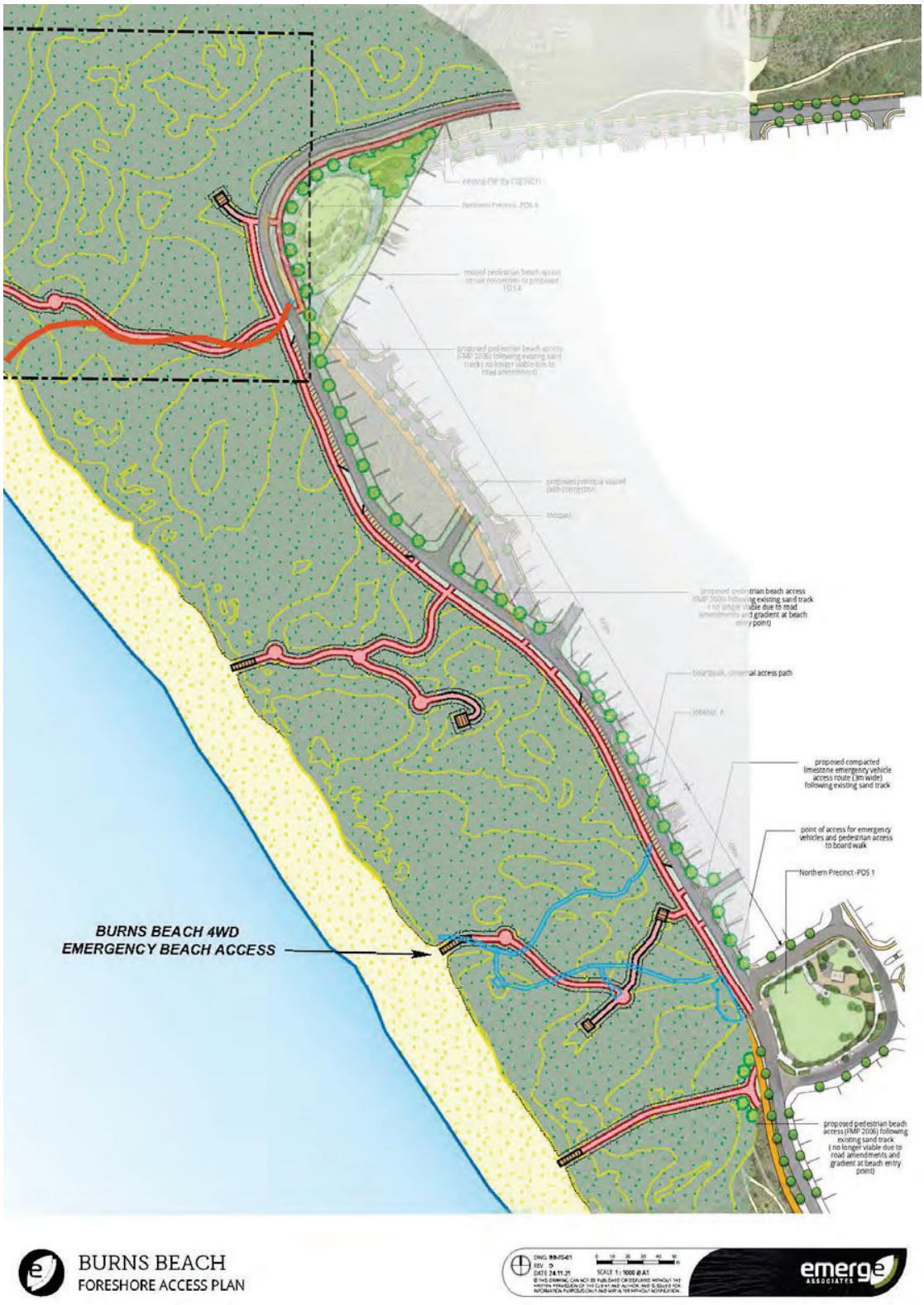


Figure 5: Overlay of 2006 proposal with 2022 proposal.

4.3 Lookouts

Consistent with Cardno BSD 2006 areas with lookout potential will be developed in consultation with the City of Joondalup. A number of potential sites have been identified from topography and landform (as shown in **Figure 3**). Educational signage highlighting natural features of the area will be developed in these areas.

Within FMPBB(Cardno BSD 2006) lookouts were proposed:

- Within the southern recreation node at POS 6
- Within the northern recreation node at POS 3
- At locations within the foreshore reserve linked with the dual use path network; and
- At strategic locations along the beach access paths

It was further noted that these lookouts will also incorporate shade structures where appropriate, and construction materials will be considered mindful of the windy and salty environment.

The current proposals are indicated on Figure 3 and in summary:

- Ramped universal access to a lookout from Northern Design Precinct POS 1 (formally known as POS 3)
- Ramped universal access to a lookout at the path commencement point at Northern Design Precinct POS 1 (formally known as POS 3)
- Ambulant accessible lookout midway along disabled path noted in point one.
- Further Lookouts will be provided outside the foreshore reserve within Northern Design Precinct POS 4 (formally known as POS 1)

The project team worked closely with City of Joondalup officers in previous stages to ensure universal access was allowed to the greatest extent possible. However this is challenging terrain which presents limitations on the extent of ramped access. Importantly a key inclusion for the Stage 3 works include incorporation of a full universal access to a foreshore lookout. This has been reviewed on site and it is feasible to have a ramped access at 1:20 from Stage 3 (POS 1) to a lookout located with 20m of the foredune (at a location overlooking the beach). We believe this would be a great asset for the community. A further ambulant access is proposed to a high point which will provide views along the coast from one of the higher points.

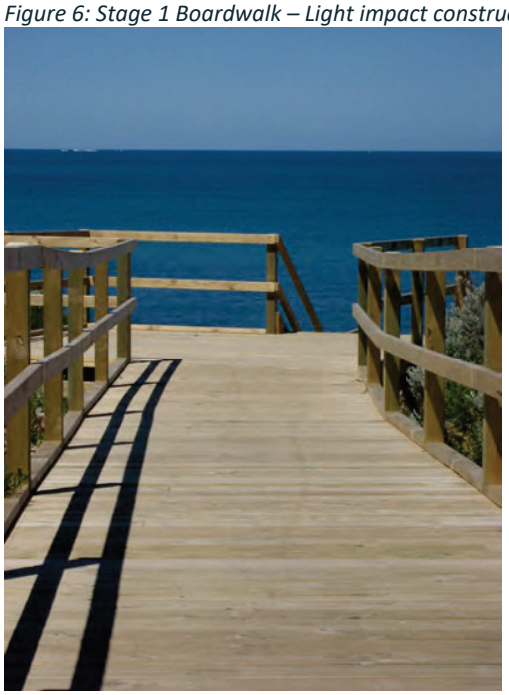
4.4 Previous landscape works

Landscape works have previously been undertaken within stage 1 of the foreshore reserve. These works were undertaken between December 2006 and January 2008 and involved the construction of the southern extent of the PSP connecting through to the Burns beach town site, and the construction of a boardwalk to provide beach access. An area of public open space (Beachside Park) was developed adjacent to the stage 1 boundary during the same period. These facilities have been handed over and are currently being maintained by the City of Joondalup.

Access through the stage 2 dunal area was thoroughly investigated on a number of occasions between 2008 and 2016 (including site visits with City of Joondalup officers) however due to the extensive foreshore erosion and the preference to avoid disturbance around the significant

blowout areas it was not deemed possible. The figure 4 below indicates overlays the access path plan from FMPBB 2006 (Cardno BSD 2006) and the current proposal.

Figure 6: Stage 1 Boardwalk – Light impact construction over undulations and vegetation



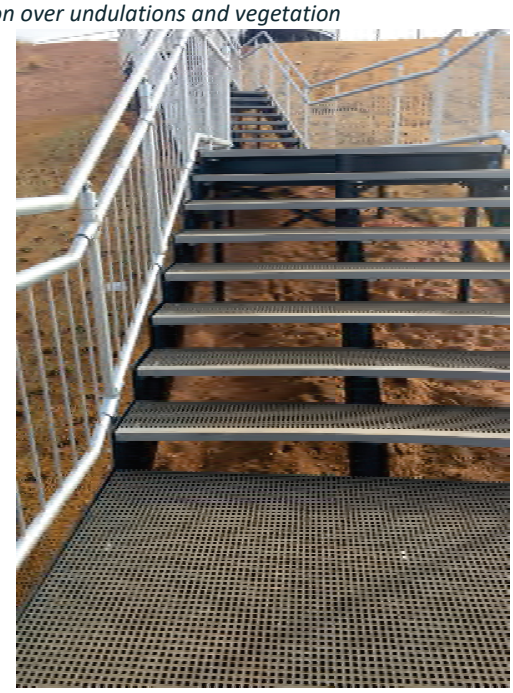


Figure 7: Stage 1 Boardwalk – treated pine construction. As per CoJ suggestion FRP (Fibre Reinforced Plastic) as per image above right is to be considered as an alternate material to enhance longevity

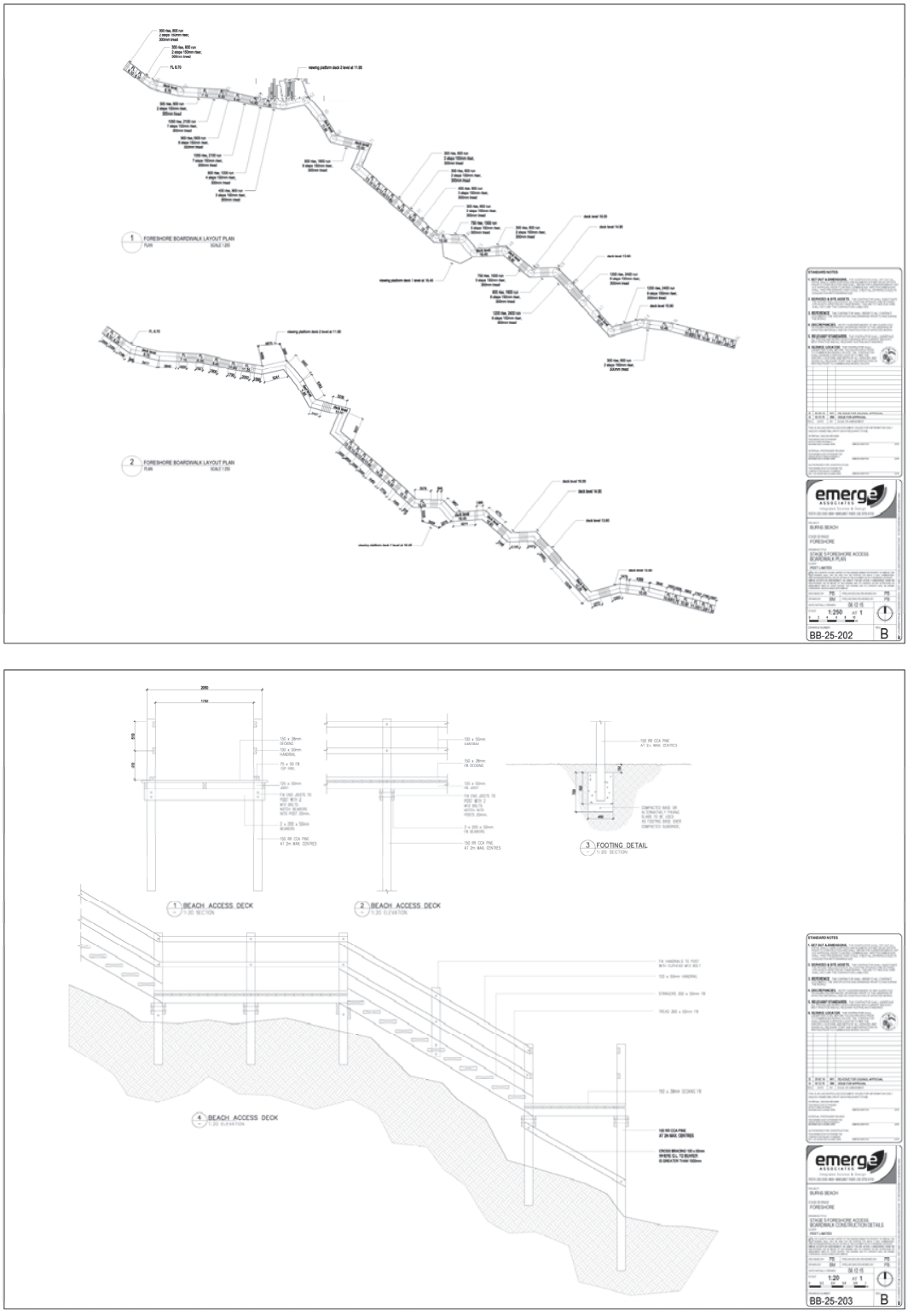


Figure 8: Example of Boardwalk setout and construction detailing (from earlier Stage 2 approval 2015-16). A similar set of detailed plans would be prepared for each landscape stage.

Figure 9: Stage 1 Dual Use Path – 3m wide red asphalt. Note limestone kerb to control minor drainage and galvanized wire and treated pine fencing to all sides(unless otherwise contained).

4.5 Controlling Access

As per the works conducted in earlier stages all beach access paths are to be fenced on both sides unless otherwise contained. This measure together with continuous fencing along the beachside road boundary ensures that the entire foreshore area is fenced to exclude uncontrolled pedestrian and vehicular access. The type and standard of fencing is as per the image above.

Maintenance and vehicular access will be controlled via the use of standard, lockable, galvanised steel swing gates to the approval of City of Joondalup.

5 CONSTRUCTION MANAGEMENT AND IMPACT MINIMISATION

While the various structural elements within the foreshore are outlined above, it will be important to ensure that the construction of all of these elements is conducted in such a manner so as to avoid or minimise any disturbances and impacts on the foreshore reserve area. When taking into account the considerable restoration and rehabilitation program that the developer is proposing to undertake, it is in their best interests to ensure that the areas requiring ongoing works are minimised, and therefore that construction impacts are tightly monitored and controlled.

5.1 Construction Design Principles

All access paths are planned to avoid disturbance to existing vegetation, work to existing contours, minimise earthworks and construction access and laydown.

5.2 Construction Planning

Before any works are carried out in the foreshore reserve area, detailed plans and specifications will be prepared by the developer to guide the construction process (during the subdivision application and subsequent condition clearing process). These detailed plans and specifications will be consistent with the contents of this document noting however the alignments are schematic in nature until site proofing is undertaken. It is during this process that specific details of infrastructure facilities will be determined, and factors such as the placement of boardwalk paths instead of hard pavement will be finalised.

As part of the construction process, areas will be surveyed and verified before any ground disturbing activities commence, which will ensure that construction will be limited to those areas to which they are required and intended. Also during this process, factors such as ensuring that drainage is appropriately managed and the minimisation of road/path/construction batters will be incorporated into the designs, and will be consistent with the above principles.

5.3 Construction Vehicle and Personnel Access

During the foreshore works period, vehicles and personnel access will be restricted to the direct works areas, and not allowed to have uncontrolled access into other areas of the foreshore reserve. Any machinery required for works within the foreshore reserve (access path/boardwalk construction) will be brought into the reserve via existing tracks, and there will not be any clearing outside the works areas to facilitate vehicle stand-by or equipment lay down areas. Where possible all vehicles and construction materials will be stored within the development area and not within the foreshore reserve.

5.5 Construction Dieback Management

In some coastal areas, dieback management during works has proved to be a significant issue, particularly if the coastal reserve includes Banksia species. In this situation, there are no Banksia woodland areas contained within the foreshore reserve area, however, there are Banksia woodland areas in the wider development area. Therefore it will be important to maintain an appropriate level of access control and vehicle hygiene procedures during the subdivision and foreshore works program to ensure that any vehicles that have been used in the development area are cleaned of potentially contaminated soil before entering the foreshore reserve.

A range of Phytophthora species occur within the City of Joondalup, the 'City of Joondalup Staff and Contractors Pathogen Hygiene Procedure' will be implemented to avoid the spread of pathogens.

The introduction of limestone to construct the emergency vehicle access path has the potential to introduce Phytophthora species, as such all material is to be certified as sterile prior to being delivered to site.

5.6 Post-Construction Rehabilitation

As mentioned previously, all areas disturbed during the works program will be rehabilitated as part of the foreshore restoration and rehabilitation program. On this basis it will be in the developer's best interests to minimise the areas disturbed during the works program.

6 Implementation

The extension of Beachside Drive and the PSP is expected to occur between July and December 2021. Revegetation will commence the following year in May or June 2022 (start date may be subject to change, and is dependent on the onset of winter rain). However, some restoration actions may be completed prior to or immediately following the earthworks and civil works associated with the road batters are completed including landform stabilisation, fencing, signage and weed control. Once the earthworks program is known, preliminary tasks such as ordering of native plant tubestock and respreading or stockpiling of topsoil material will be completed to ensure sufficient plant stock is available in time for installation in autumn/winter 2022.

Landscape works will be staged to coincide with the progressive subdivision of the northern development precinct. The timing for construction of landscape elements (access paths , boardwalks, lookouts) will be confirmed with the City of Joondalup as part of development approval. However, all landscape elements are expected to be completed within the two-year management period adopted for restoration works. The detailed design of each element will be considered at the time and works completed to the satisfaction of the City.

6.1 Timeline for Restoration Works

The following timeline is as per the addendum to the FMP submitted by Emerge Associates : Foreshore Management Plan Addendum, Burns Beach Foreshore Reserve Stage 3 prepared for Peet Funds Management Limited Doc No.: EP15-020(15)--021B SCM| Version: B

"This addendum will be implemented for a minimum of two years from tubestock planting (year 1) and monitored for at least two year (years 1-2). Provided the objectives have been met, the site will be handed over to the City of Joondalup at the end of year 2 to be managed for conservation in perpetuity.

The tasks that will be completed within the site are summarised below:

- *Recover and respread or stockpile topsoil*
- *Apply landform stabilisation as required*
- *Install fencing and signage*
- *Order tubestock*
- *Submit development application for landscape elements*
- *Undertake weed control*
- *Plant tubestock in late autumn/winter*
- *Undertake supplementary weed control (as required).*
- ***Construct landscape elements as per specific development approval.***
- *Monitor site to evaluate performance against objectives*
- *Undertake contingency actions if required*
- *Repeat over the two-year implementation period (revegetation across years 1 and 2).*
- *Report outcomes to City of Joondalup and hand over site once objectives are met after a minimum of two years."*

6.2 Timeline for Landscape Elements

As per the abovementioned restoration works the intention is for the Landscape Works (access path, lookouts) to be implemented within two years. Provided the objectives have been met, the site will be handed over to the City of Joondalup at the end of year 2 to be managed in perpetuity.

The tasks that will be completed within the site are summarised below:

- Submit schematic alignment of access paths and lookouts for CoJ approval (this report),
- Invite CoJ to walk the path alignments and agree to any site-specific amendments
- Conduct survey pickup to verify and apply to plans
- Submit plans and detailed construction dwgs to CoJ for approval (submit for MRA DA approval if deemed required)
- following approval tender, engage contractor and construct.
- Invite CoJ to attend site meetings during construction and sign off at PC.
- Commence 2 years maintenance and Defects Liability period following PC.
- Handover facilities to CoJ following satisfactory joint inspection at completion of 2 year maintenance period.

Foreshore Landscape Masterplan Report

Burns Beach, WA

Appendix A

Emerge Associates Foreshore Access Plan

existing PSP (by COJ 2021)

Northern Precinct -POS 4

proposed emergency vehicle access route (3m wide) following existing sand track. Surface to be bitumised to DUP standard

proposed pedestrian beach access (FMP 2006) following existing sand track (no longer viable due to road amendment)

proposed principal shared path connection

footpath

proposed pedestrian beach access (FMP 2006) following existing sand track (no longer viable due to road amendments and gradient at beach entry point)

pedestrian only access route 1.8m boardwalk.

boardwalk, universal access path

original emergency access path alignment not feasible due to gradient. Emergency access relocated to northernmost path

Northern Precinct -POS 1

boardwalk steps to provide link between paths

lookout B

the alignment of this path provides universal access to lookout B (at the western end).

lookout A. allows for boardwalk and steps to viewpoint

path entry point. to include beach shower, incidental seating and bike racks

highly eroded blowout area. currently being revegetated

proposed pedestrian beach access (FMP 2006) following existing sand track (no longer viable due to road amendments and gradient at beach entry point)

25m

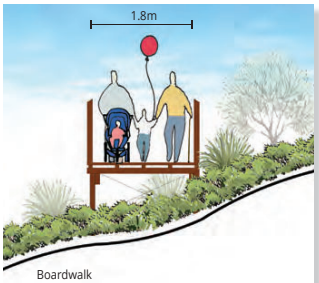
204m

193m

385m

96m

Lookout A
- positioned at high point to provide sweeping views along the coast.
- provision of shade structure and seating



Boardwalk
- universal access path
- lightweight, low impact structure

LEGEND

- existing contours
- native bushland
- public open space
- principal shared path (4m wide)
- footpath
- boardwalk (1.8m wide)
- previously proposed pedestrian beach access (FMP 2006)
- emergency vehicle access path (3m wide)
- existing sand track

Lookout B (universally accessible)
- provides a fully accessible destination for people with disabilities.
- provides extensive views over the beach and along the coast
- allows for shade structure and universal access seating

BURNS BEACH
FOREHORE ACCESS PLAN

DWG **BB-FS-01**
REV **E**
DATE **01.03.22**

0 10 20 30 40 50 m

SCALE **1 : 1000 @ A1**

emerge ASSOCIATES