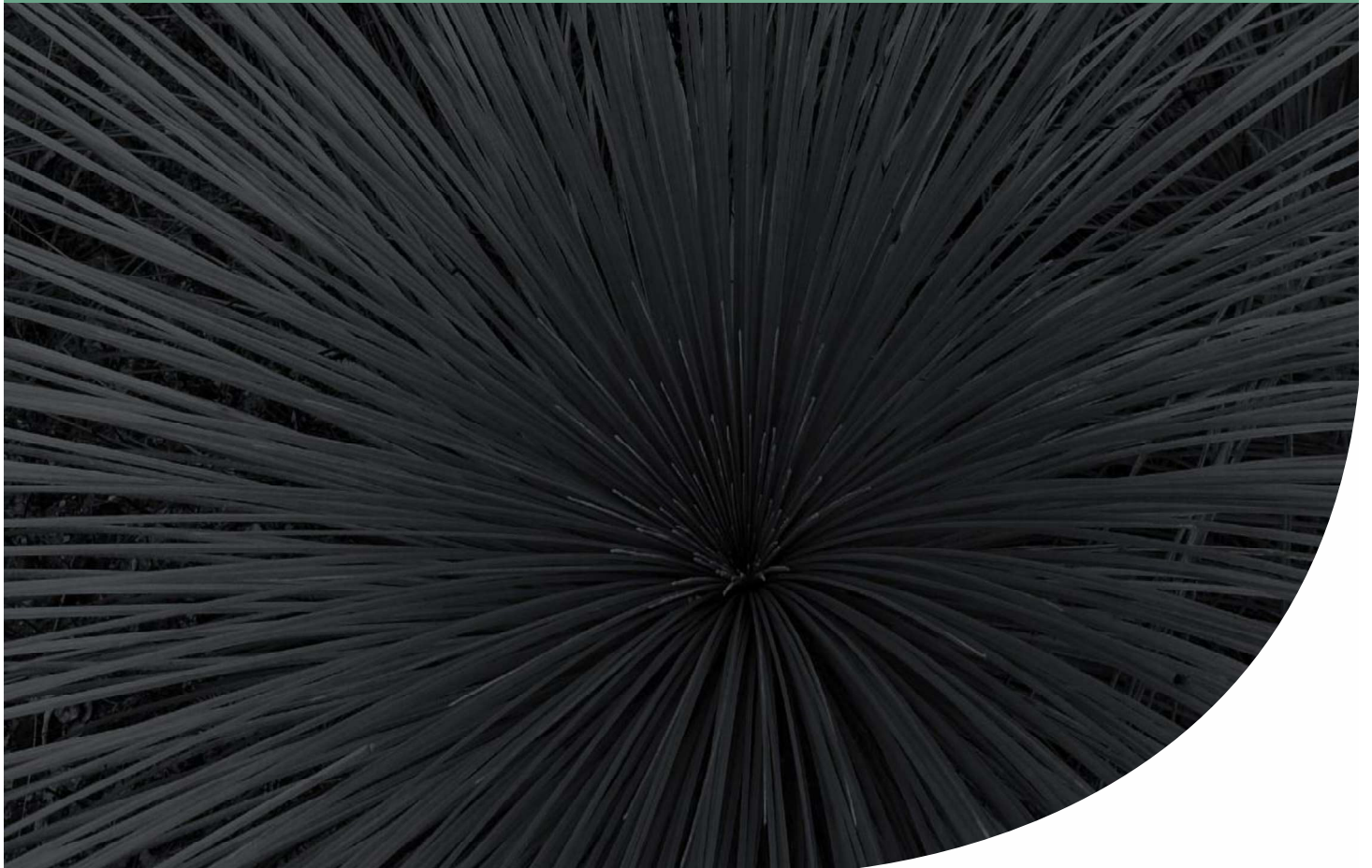


# Foreshore Management Plan Precinct A

Belmont Park Racecourse Redevelopment

Project No: EP21-034(03)

**Prepared for Golden Sedayu Pty Ltd  
February 2022**



# Foreshore Management Plan Precinct A

## Belmont Park Racecourse Redevelopment



## Document Control

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# Foreshore Management Plan Precinct A

## Belmont Park Racecourse Redevelopment



## Executive Summary

This Foreshore Management Plan (FMP) has been prepared to support the preparation, lodgement, and approval of a Local Development Plan (LDP) for the Precinct A area within the Belmont Park Racecourse Redevelopment (BPRR) Local Structure Plan (LSP) area. This FMP has involved the review and some modification to the landscape design for the foreshore reserve areas.

The key considerations associated with the purpose of this FMP ultimately results in the management of the foreshore reserve within Precinct A:

- This FMP has been prepared in accordance with the details and requirements of the BPRR LSP (and its specific implementation and operation provisions) and the BPRR LSP Foreshore Management Strategy (Emerge Associates 2011), with details provided in **Section 1** and **Section 2**.
- As part of preparing this FMP, full consideration has been given to the prevailing legislation, policies and guidelines of the Federal, State and relevant Local Government jurisdictions, with details provided in **Section 2.1**.
- Given the Precinct A foreshore reserve falls entirely within the Swan River Trust (SRT) Development Control Area (DCA) pursuant to the *Swan and Canning Rivers Management Act 2006* (SCRM Act), the SRT (through the Department of Biodiversity, Conservation and Associations (DBCA)) and the Town of Victoria Park will be key stakeholders in the approval of detailed designs for foreshore reserve works through the Development Approval process. This is addressed in numerous sections throughout this FMP.
- While this FMP provides specific direction on the overarching design and treatment of the entire foreshore reserve, the Development Approval process is the appropriate time for the preparation and review of detailed designs.
- This FMP has been based on a comprehensive body of existing background information and a number of Precinct A specific assessments, surveys and investigations to better understand the site conditions within the foreshore reserve. Details regarding this are provided in **Section 2.2** and **Section 2.3**.
- Concept designs (provided in **Section 3**, **Appendix A** and **Appendix F**) have been prepared and presented in this FMP for:
  - Landscape treatments across the entire Precinct A foreshore reserve (including hard and soft landscape treatments)
  - A 3.5 – 4 m dual use wide pathway along the full interface of the Precinct A foreshore reserve, enabling continuous connectivity through the foreshore reserve
  - An engineered landscape batter along the northern region of the site
  - Revegetation of the fringing vegetation.
- The concept design will be the basis for future detailed design and establishes the key design principles, but it is important to note that there may be some design refinements and modifications that will be addressed as part of the detailed design process.
- Details have been provided as to how the specific requirements of the FMS (that supported the LSP) will be accommodated through the implementation of this FMP. This is addressed in detail in **Section 4**.

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- Developer maintenance and management has been detailed and a process proposed to enable an appropriate developer and maintenance period termination with handover to the Local Government. This is detailed in **Section 5**.
- Following handover, this FMP has considered the minimum maintenance standards to be taken over by the Local Government. This is addressed in **Section 5.4**.

A detailed summary of how the requirements of the FMS will be addressed and ultimately implemented through this FMP is provided below in **Table ES1**.



## Foreshore Management Plan Precinct A

Belmont Park Racecourse Redevelopment



Table 1: Summary of FMP responses to FMS management principles and required outcomes

FMS principle	FMS required outcome	Application to Precinct A FMP and implementation
<b>Construction management</b>		
Minimise impacts on the values of the foreshore reserve during the construction of the adjacent BPRR development.	<ul style="list-style-type: none"> <li>Use temporary fencing to define Public/Foreshore Rehabilitation Zones and Restricted Access/Foreshore Rehabilitation Zones.</li> <li>Foreshore impacts should be limited to degraded areas within the Public/Active Recreation and Public/Passive Recreation Zones and should be undertaken in accordance with best practice (including the relevant licences, approvals and guidelines).</li> </ul>	<ul style="list-style-type: none"> <li>Precinct A incorporates Public/Foreshore Rehabilitation zones and Restricted Access/Foreshore Rehabilitation zones.</li> <li>The site has been historically modified through the placement of fill material, including dredge fill, uncontrolled fill and fly ash/cinders.</li> <li>Foreshore disturbance will involve the works required to construct the various foreshore features and facilities as identified in this FMP. Geotechnical pre-treatments, including pre-loading within the western region and concrete modular columns/high density compaction areas will be required within Precinct A prior to the commencement of construction.</li> <li>Construction activities associated with adjacent development lots will be generally managed to not encroach into the Precinct A foreshore reserve, such that any works required to be undertaken from the foreshore reserve will be contained within the works area as necessary.</li> <li>A temporary construction fence will be installed along the boundary of the foreshore reserve and intact vegetation (as required) during geotechnical treatments, and landscape treatments.</li> </ul>
Protect existing native vegetation during construction.	<ul style="list-style-type: none"> <li>Use temporary fencing to clearly delineate vegetation to be retained during construction.</li> </ul>	<ul style="list-style-type: none"> <li>Six native plant communities were identified within the Precinct A foreshore reserve.</li> <li>Trees identified for retention (as shown in <b>Figure 10</b>) include some remnant native trees and some non-endemic planted native trees, and will be clearly marked and individually identified (for ongoing tracking/monitoring purposes) prior to any earthworks or construction commencing.</li> </ul>
Minimise spread of weeds and disease during construction.	<ul style="list-style-type: none"> <li>Undertake a detailed weed assessment prior to works commencing.</li> <li>Minimise movement of existing soil and store soil close to source.</li> <li>If existing soil is required to be moved or removed, minimise dispersal of weed seed through pre-treatment or removal</li> <li>Only clean vehicles, tools, equipment and machinery should be brought onto site.</li> </ul>	<ul style="list-style-type: none"> <li>A weed assessment has been undertaken. Weed infestation is extensive across the Precinct A foreshore reserve area.</li> <li>Appropriate weed control methods may include both manual (hand weeding) and chemical (herbicide) based approaches.</li> <li>All contractors working within the foreshore will be subject to a site induction, which will outline the construction and environmental management requirements discussed in this FMP.</li> </ul>
Minimise impacts on fauna habitat during construction.	<ul style="list-style-type: none"> <li>No domestic animals are permitted on site by contractors during construction.</li> </ul>	<ul style="list-style-type: none"> <li>Domestic animals will not be permitted on site by contractors during construction.</li> <li>Restoration works will enhance the habitat values for native fauna.</li> <li>Construction will be managed to ensure activities do not significantly impact on water quality that would then impact adversely on aquatic fauna and associated habitat.</li> </ul>

# Foreshore Management Plan Precinct A

Belmont Park Racecourse Redevelopment



FWS principle	FWS required outcome	Application to Precinct A FMP and implementation
<p><b>Landforms and soils</b></p> <p>Restore the natural foreshore landform where possible and minimise landform disturbance.</p>	<ul style="list-style-type: none"> <li>Remove foreshore bunds to allow tidal incursion into areas where ecological restoration will occur.</li> <li>Remove existing drainage channels and replace with landscaped features for major event conveyance.</li> <li>Create gentle grade connections to development interface where batters are used.</li> <li>Avoid any significant filling within the 1 in 100 year floodway.</li> </ul>	<ul style="list-style-type: none"> <li>The pre-existing bund along the western periphery will be removed.</li> <li>The concept landscape design (see <b>Appendix F</b>) provides for gentle grades to development interface and avoids the need for filling within the 1 in 100-year floodway.</li> </ul>
<p>Minimise risks to human and ecological health due to potential soil contamination within the foreshore reserve.</p>	<ul style="list-style-type: none"> <li>Determine the requirement to remove or remediate soils based on the human and ecological health risk.</li> <li>Outline where and how soils will be removed or remediated but seek to minimise disturbance to the foreshore and the Swan River.</li> </ul>	<ul style="list-style-type: none"> <li>Detailed contamination investigations have been completed for the Precinct A area, which has identified contamination within the western region of the foreshore reserve.</li> <li>The western region has been classified as '<i>remediated for restricted use</i>' under the CS Act.</li> <li>A Remediation Action Plan (RAP) has been prepared and will be assessed by an accredited contaminated sites auditor prior to the development of Precinct A.</li> </ul>
<p>Ensure appropriate soils for revegetation and landscape treatments are used.</p>	<ul style="list-style-type: none"> <li>Undertake soil investigations to determine suitability of existing soil for plant growth.</li> <li>If soil is required to be replaced for landscaping, use soil that conforms to <i>AS4419 Soils for landscaping and garden use</i>.</li> </ul>	<ul style="list-style-type: none"> <li>Contamination is present within the western region of the foreshore reserve, comprising areas of flyash, dredge spoil and uncontrolled fill material.</li> <li>Areas undergoing restoration will undergo a visual assessment to ensure the removal of asbestos fragments from the soil.</li> <li>Areas nominated on the concept landscape design (see <b>Appendix F</b>) as being either 'turf' or 'landscape planting' areas will be subject to the provision of appropriate imported landscaping soil.</li> <li>Where there is existing soil acidity, these soils may need to be neutralised through a liming material.</li> </ul>
<p>Minimise soil disturbance, wherever possible.</p>	<ul style="list-style-type: none"> <li>Treat soil onsite, and ideally in situ if required.</li> <li>Only replace soil if it is unsuitable for plant growth and cannot be effectively treated.</li> <li>Only replace soil in areas where planting is required.</li> </ul>	<ul style="list-style-type: none"> <li>Soil removal/remediation are expected to occur within the Precinct A foreshore reserve, specifically within the western region.</li> <li>Within the non-accessible fringing foreshore and along the River's edge (where vegetation is present), a visual ACM inspection will be undertaken.</li> <li>Within the non-accessible fringing foreshore in areas where vegetation is 'degraded', soil will be excavated to a minimum depth of 0.1 mbgl, due to the existing presence of uncontrolled fill material. Imported heavy loamy clay will be reinstated to the current levels.</li> </ul>

# Foreshore Management Plan Precinct A

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FWS principle	FWS required outcome	Application to Precinct A FMP and implementation
<b>Bank stabilisation and treatments</b>		
<p>Limit disturbance to fringing vegetation.</p>	<ul style="list-style-type: none"> <li>Erosion control is unlikely to be required in areas of existing fringing vegetation.</li> <li>Where revegetation works are occurring in intertidal areas, stabilising techniques such as coir logs could be used to maximise revegetation success.</li> <li>Where fringing vegetation is required to be disturbed for beaches or boardwalks, bio-engineering and revegetation should be employed.</li> </ul>	<ul style="list-style-type: none"> <li>Disturbance to existing fringing vegetation is expected to be minimal given the proposed extent of works and inaccessibility onto the River's edge. The most intensive works (the construction of the landscape batter, dual-use pathways) will occur where there is little existing fringing vegetation.</li> <li>The foreshore reserve is well vegetated and situated on a point bar. Erosion and stability of the foreshore is therefore not of concern.</li> </ul>
<p>Utilise stabilisation techniques in high erosional zones.</p>	<ul style="list-style-type: none"> <li>Design and constructed revetments, walls or gabions along the eastern edges. Note: there is no intention to use gabion walls to support boardwalks or promenades.</li> <li>Incorporate vegetation and aesthetic features into stabilisation techniques, where possible.</li> </ul>	<ul style="list-style-type: none"> <li>A landscape batter is proposed within the northern region of the site, as shown in the cross sections provided in <b>Appendix A</b>.</li> <li>The non-accessible area of the foreshore (River's edge) will be subject to ecological restoration, with particular focus on the coastal saltmarsh TEC/PEC.</li> <li>Native species will be used to retain, enhance and rehabilitate the natural elements of the foreshore.</li> </ul>
<b>Rehabilitation/ecological restoration</b>		
<p>Retain and enhance remnant foreshore vegetation.</p>	<ul style="list-style-type: none"> <li>Retain remnant vegetation in a 'Good' to 'Very Good' condition.</li> <li>Undertake revegetation of foreshore areas using endemic species.</li> </ul>	<ul style="list-style-type: none"> <li>There are areas of vegetation identified as 'very good', 'very good – good' and 'good' within the Precinct A foreshore reserve.</li> <li>The 'subtropical and temperate coastal saltmarsh' TEC is present within the Precinct A foreshore reserve.</li> <li>Restoration of the foreshore reserve will create rehabilitated riverine vegetation with restored ecological function.</li> <li>Vegetation within the northern region of Precinct A will be protected with a habitat protection fence, to deter public access.</li> <li>Revegetation will be undertaken within the areas designated as 'native revegetation planting' on the concept landscape design using native plant species.</li> <li>Tree protection zones (TPZ) will be identified and where possible, protected in line with AS 4970-2009 <i>Protection of trees on development sites</i>. TPZs will be further detailed to support the future development application.</li> </ul>

## Foreshore Management Plan Precinct A

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FMS principle	FMS required outcome	Application to Precinct A FMP and implementation
<p>Increase resilience of existing native foreshore communities and those established.</p>	<ul style="list-style-type: none"> <li>Undertaken soil and landform amelioration where needed.</li> <li>Undertake weed control.</li> <li>Revegetation of foreshore vegetation using endemic species.</li> </ul>	<ul style="list-style-type: none"> <li>Revegetation will be undertaken within the areas designated as ‘native revegetation planting’ using native plant species as outlined in <b>Table 11</b>. Provenance considerations will also factor into revegetation works.</li> <li>Appropriate weed control will be undertaken.</li> </ul>
<p>Minimise impacts on existing environment.</p>	<ul style="list-style-type: none"> <li>Minimise ground disturbance.</li> <li>Use approved non-residual herbicides.</li> </ul>	<ul style="list-style-type: none"> <li>Ground disturbance will be generally limited to areas where foreshore construction is required for hardscape features.</li> <li>Appropriate weed control methods may include both manual (hand weeding) and chemical (herbicide) based approaches. Herbicide use will be avoided in close proximity to the river’s edge.</li> </ul>
<p><b>Fauna management and habitat creation</b></p>		
<p>Minimise impacts on fauna during construction.</p>	<ul style="list-style-type: none"> <li>No domestic animals to be permitted on site by contractors during construction.</li> <li>Temporary fencing of retained native vegetation during construction and access controls.</li> </ul>	<ul style="list-style-type: none"> <li>Domestic animals will not be permitted on site by contractors during construction.</li> <li>Restoration works will enhance the habitat values for native fauna.</li> <li>Construction will be managed to ensure activities do not significantly impact on water quality that would then impact adversely on aquatic fauna and associated habitat.</li> </ul>
<p>Minimise impacts on fauna.</p>	<ul style="list-style-type: none"> <li>Use permanent conservation fencing to minimise impacts from dogs in important habitat areas.</li> <li>Use educational material and signage to increase awareness of local fauna species and habitats.</li> </ul>	<ul style="list-style-type: none"> <li>The highest fauna habitat values are associated with the <b>woodland, river and fringing riverine vegetation</b>.</li> <li>It is acknowledged that the foreshore is an important habitat in itself and management measures will be undertaken to minimise impacts to fauna during construction. This will include the retention of trees and minimising physical disturbance within the river itself.</li> <li>A permanent habitat protection fence is proposed to be established along the length of the northern region of the foreshore reserve, providing inaccessibility and therefore, protection to the vegetation.</li> </ul>
<p>Improve fauna habitat.</p>	<ul style="list-style-type: none"> <li>Incorporate fauna habitat into revegetation through               <ul style="list-style-type: none"> <li>appropriate vegetation species selection.</li> <li>appropriate planting density.</li> <li>provision of woody debris for perching habitat.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Revegetation will be undertaken within the areas designated as ‘native revegetation planting’ in the concept landscape design (see <b>Appendix F</b>) using native plant species as outlined in <b>Table 11</b>.</li> <li>Restoration of the fringing foreshore will retain and enhance the natural elements of the foreshore.</li> <li>Woody debris will be retained and placed in the river adjacent to the foreshore to create perching habitat for aquatic species. This will be undertaken when suitable debris is available onsite and where it is safe and practical to do so.</li> </ul>
<p>Maintain fauna corridors.</p>	<ul style="list-style-type: none"> <li>Ensure a generally continuous strip of fringing vegetation around the site.</li> </ul>	<ul style="list-style-type: none"> <li>Revegetation will be undertaken within the areas designated as ‘native revegetation planting’ in the concept landscape design (see <b>Appendix G</b>) using native plant species as outlined in <b>Table 11</b>.</li> <li>Ecological restoration will occur along the Swan River’s edge, with four identified restoration areas.</li> </ul>

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FWS principle	FWS required outcome	Application to Precinct A FMP and implementation
<b>Water management and water sensitive urban design</b>		
Use of WSUD in stormwater treatment and use within the foreshore.	<ul style="list-style-type: none"> <li>No minor event storage in foreshore reserve (less than 1 year, 1 hour ARI event).</li> <li>Use of vegetated swales within foreshore to convey greater than 1 in 1 year, 1 hour ARI events through the foreshore.</li> </ul>	<ul style="list-style-type: none"> <li>The stormwater strategy prepared to support the Precinct A LDP and this FMP is based on no stormwater treatment (stormwater generated from up to the 1 year ARI event) being provided/required within the foreshore reserve.</li> <li>Large event conveyance will be provided for within the foreshore reserve likely through shallow swales/flow pathways, which will be planted with a mix of endemic species.</li> <li>Detailed design for stormwater management measures will be provided in the subdivision UWMMP and detailed landscape design.</li> </ul>
Minimise the extent of irrigation.	<ul style="list-style-type: none"> <li>Irrigation should only be required in the Public/Active Recreation and Public/Passive Recreation zones of the foreshore reserve.</li> </ul>	<ul style="list-style-type: none"> <li>The extent of irrigation will be limited within the Precinct D foreshore reserve area to the areas designated as being 'proposed turf and 'landscape planting' in the concept landscape design (see <b>Appendix F</b>).</li> </ul>
Use irrigation in the most efficient manner.	<ul style="list-style-type: none"> <li>Use water wise species including use drought hardy/tolerant turf species.</li> <li>Use water saving additives within soil media, where possible.</li> <li>Adopt xeriscaping principles where practical including the use of hydro-zoning.</li> </ul>	<ul style="list-style-type: none"> <li>Detailed landscape design will demonstrate the selection of water wise species, soil amendment and treatments to minimise water loss, and the adoption of xeriscaping and hydro-zoning principles.</li> <li>Application of fertilisers and nutrient treatments will only occur in 'proposed turf' and 'landscape planting' areas.</li> </ul>
<b>Formalised landscape treatments</b>		
Formalised landscape areas should minimise environmental impacts on the foreshore reserve.	<ul style="list-style-type: none"> <li>Formalised landscape areas should be located away from the edge of the foreshore and significant remnant vegetation.</li> <li>Formalised landscape areas should incorporate native species, where possible and suitable.</li> </ul>	<ul style="list-style-type: none"> <li>Formalised landscape treatment areas (as identified as 'landscape planting' and 'proposed turf' in the concept landscape design as contained in <b>Appendix F</b>) proposed within the Precinct D foreshore reserve area are situated away from the river's edge. They are separated from the river's edge by the ecological restoration of the River's edge as well as the dual-use pathway.</li> <li>Formalised landscape areas (the 'landscape planting' areas as shown in the concept landscape design as contained in <b>Appendix F</b>) will utilise endemic species, as described in <b>Table 11</b>: Indicative species list for revegetation</li> </ul>
Maximise public amenity and usage.	<ul style="list-style-type: none"> <li>Create a variety of recreation and open spaces to maximise usage.</li> <li>Use formalised landscape treatments to define foreshore use zones.</li> </ul>	<ul style="list-style-type: none"> <li>The concept landscape design (see <b>Appendix F</b>) has aimed to create a variety of recreation and open spaces and used formalised landscape treatments to define foreshore zones as is appropriate for the Precinct A foreshore reserve. A summary of the approach taken for the landscape concept design has been outlined in <b>Section 3</b>.</li> </ul>



## Foreshore Management Plan Precinct A

Belmont Park Racecourse Redevelopment



FMS principle	FMS required outcome	Application to Precinct A FMP and implementation
<p><b>Access</b></p> <p>Reduce impacts of access and parking on existing environment.</p>	<ul style="list-style-type: none"> <li>• Access pathways and parking should be located in areas to minimise landform and vegetation disturbance.</li> <li>• Parking should be located in high use areas to maximise use.</li> </ul>	<ul style="list-style-type: none"> <li>• The concept landscape design (see <b>Appendix G</b>) has provided for pathways and parking to minimise vegetation disturbance.</li> <li>• Public parking within Precinct A is to be provided primarily via embayed on-street car parking along the main boulevard, with a larger car park area located centrally near the thousand metre chute.</li> </ul>
<p>Maximise public access and use of the foreshore.</p>	<ul style="list-style-type: none"> <li>• Provide a network of pathways through the foreshore reserve.</li> <li>• Provide a hierarchy of pathways through the foreshore reserve.</li> <li>• Provide directional signage.</li> </ul>	<ul style="list-style-type: none"> <li>• The concept landscape design (see <b>Appendix G</b>) has provided for a network of pathways through the foreshore reserve. This includes dual-use pathway, strategic areas of boardwalk and the pathway arcs. These paths will provide various means to access and interact with the river's edge and integrate with adjacent POS within the Precinct A development area. Universal access is a key design requirement within the foreshore reserve and has informed the concept landscape design.</li> <li>• Directional signage will be provided for in detailed landscape design.</li> </ul>
<p>Provide safe and controlled public access to all areas within the foreshore.</p>	<ul style="list-style-type: none"> <li>• Provide strategic access to the water.</li> <li>• Ensure suitable sight lines for cycle and pedestrian pathway crossings and nodal points.</li> <li>• Provide access suitable for emergency vehicles (e.g. 3.5m to 4 m dual use path) around the internal boundary of the foreshore.</li> </ul>	<ul style="list-style-type: none"> <li>• Access to the water has been provided for at a number of locations within the Precinct A foreshore reserve, including the boardwalk, beaches and jetties.</li> </ul>
<p>Apply Crime Prevention through Environmental Design (CPTED) principles into the foreshore design.</p>	<ul style="list-style-type: none"> <li>• Design and place high use areas and activity spaces to maximise visibility and surveillance.</li> <li>• Provide clear guidance for the public through the foreshore reserve.</li> <li>• Adopt other CPTED principles where necessary.</li> </ul>	<ul style="list-style-type: none"> <li>• The landscape has been designed to incorporate low groundcovers and shrubs to maintain clear sightlines with no visual obstacles.</li> </ul>
<p>Use fencing to protect native vegetation and fauna.</p>	<ul style="list-style-type: none"> <li>• Conservation fencing adjacent to dual use path is required within North Park Precinct.</li> <li>• Temporary fencing should be used during construction to protect areas of retained native vegetation.</li> </ul>	<ul style="list-style-type: none"> <li>• Permanent habitat protection fencing is proposed within the northern region of the site, to protect the 'subtropical and temperate coastal saltmarsh' TEC in 'very good' condition.</li> <li>• Areas of intact remnant vegetation present along the River's edge will be restored and retained within the Precinct A foreshore reserve.</li> <li>• Temporary fencing will be used if deemed necessary to establish the 'native revegetation planting' areas.</li> </ul>

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FMS principle	FMS required outcome	Application to Precinct A FMP and implementation
<b>Amenities and structures</b>		
Public facilities should be located appropriately and in accordance with defined landscape zones.	<ul style="list-style-type: none"> <li>• The location of public facilities should aim to maximise their use.</li> <li>• Public facilities should be located away from the river's edge and significant areas of remnant vegetation (except for lookouts, boardwalks and beaches).</li> </ul>	<ul style="list-style-type: none"> <li>• Public facilities proposed within the Precinct A foreshore reserve includes three jetties, the boardwalk, the beaches, and foreshore plaza. These have been located in close proximity to the Precinct A development footprint to maximise their usage.</li> <li>• Public facilities within the Precinct A foreshore reserve have been located away from the river's edge, except for those specifically intended to be close to the river's edge (i.e. the boardwalk, jetties, etc.).</li> <li>• Fringing vegetation will be inaccessible to the public.</li> </ul>
Public facilities should be useable and sustainable.	<ul style="list-style-type: none"> <li>• Consider the cost effectiveness of installation, ongoing replacement and maintenance for amenities and structures.</li> <li>• Robust design to minimise the effects of inundation, vandalism or weathering.</li> <li>• Local availability for quick and cost effective replacement or parts.</li> </ul>	<ul style="list-style-type: none"> <li>• Detailed landscape design will allow for the detailed consideration (by the developer but also the ToVP) of the specific selection of materials and construction methodologies to ensure that public facilities are both usable and sustainable.</li> </ul>
Public facilities should be easy to maintain.	<ul style="list-style-type: none"> <li>• Robust appropriate fixing methods to prevent theft but allow maintenance.</li> <li>• Non-metal, galvanised and powder coated finishes to maximise lifespan.</li> </ul>	<ul style="list-style-type: none"> <li>• Detailed landscape design will allow for the detailed consideration (by the developer but also the Local Government) of the short and long term maintenance requirements.</li> <li>• Handover of foreshore reserve to Local Government will be facilitated by the preparation of a 20-year Service and Asset Management Plan (see <b>Section 5.3.5</b> and <b>Section 5.4</b>).</li> </ul>
<b>Beaches</b>		
Minimise environmental impacts of beaches within the foreshore reserve.	<ul style="list-style-type: none"> <li>• Locate beaches to reduce maintenance required outcomes (i.e. replenishment).</li> <li>• Use hard edges to define beaches.</li> </ul>	<ul style="list-style-type: none"> <li>• Two beaches are proposed to be established within the northern region of the foreshore reserve.</li> <li>• An appropriate buffer is proposed to include adjacent rock work to limit sand movement.</li> </ul>
<b>Interface management</b>		
Interfaces should be publicly accessible and clearly delineated.	<ul style="list-style-type: none"> <li>• Interface between zones should be clearly articulated to limit, control and direct access as required.</li> </ul>	<ul style="list-style-type: none"> <li>• The provision of the promenade along the full extent of the foreshore reserve interface with adjacent development areas provides for both clear delineation and public access.</li> <li>• The provision of a dual use path ensures controlled access within the Precinct A foreshore reserve.</li> </ul>



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FMS principle	FMS required outcome	Application to Precinct A FMP and implementation
<p>Manage interfaces between zones to minimise maintenance within the foreshore reserve.</p>	<ul style="list-style-type: none"> <li>Use manageable edges to define revegetation and formalised landscape areas.</li> </ul>	<ul style="list-style-type: none"> <li>Manageable edges such as a paved or hard edge (or pathways) have been used to provide a defined edge between 'landscape planting' and 'proposed turf' areas and 'native revegetation planting' in the concept landscape design (see <b>Appendix F</b>). This will be reflected in the detailed design.</li> </ul>
<p>Address development levels into the foreshore reserve</p>	<ul style="list-style-type: none"> <li>Use appropriate interface management techniques to tie in development levels including:               <ul style="list-style-type: none"> <li>Battering (planted or turfed).</li> <li>Walling.</li> <li>Steps.</li> </ul> </li> <li>All structures should be consistent with the relevant standards:               <ul style="list-style-type: none"> <li>Maintenance slopes (1:6 for grass / 1:3 for planting).</li> <li>Disability and access standards.</li> <li>Safety Standards (wall fall heights etc).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Proposed indicative development levels across the foreshore reserve interface with the Precinct A development area and across the foreshore to the river's edge have been provided in the concept landscape design (see <b>Appendix F</b>), and a set of indicative cross-sections.</li> <li>Detailed landscape design will be generally consistent with these indicative cross-sections.</li> </ul>
<p><b>Fire management</b></p>		
<p>Minimise the fire risk within the foreshore reserve.</p>	<ul style="list-style-type: none"> <li>Apply fire management principles within the North Park Precinct.</li> <li>Adopt fire sensitive landscaping and revegetation principles including:               <ul style="list-style-type: none"> <li>Ensuring tree crowns do not overlap buildings.</li> <li>Ensuring large planted trees are a minimum of 10 m apart.</li> <li>Using fire-retardant species, where appropriate.</li> </ul> </li> <li>Provide adequate rubbish bins to reduce cigarette butt fires.</li> <li>Provide adequate access for emergency vehicles through the dual-use path network.</li> <li>Provide access to water for fire-fighting purposes adjacent to the foreshore reserve.</li> </ul>	<ul style="list-style-type: none"> <li>The site is not within a declared 'bushfire zone'.</li> <li>Fire hydrants will be available within the adjacent public road reserves.</li> <li>Provision of emergency access allowed for through the foreshore reserve through the dual use pathway.</li> </ul>

# Foreshore Management Plan Precinct A

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FMS principle	FMS required outcome	Application to Precinct A FMP and implementation
<b>Pest management</b>		
Control mosquito populations within the foreshore reserve.	<ul style="list-style-type: none"> <li>Undertake landform modification (if possible) to reduce mosquito breeding within the site e.g. filling depressions.</li> <li>Address mosquito management for unavoidable mosquito populations breeding within estuarine fringes.</li> </ul>	<ul style="list-style-type: none"> <li>An ephemeral waterbody is currently present within the foreshore reserve. The ToVP undertakes mosquito control in numerous areas in an effort to reduce mosquito populations during the breeding season.</li> <li>Note that this FMP relates to the foreshore reserve only and is not intended to address any regional nuisance mosquitoes associated with the Swan River.</li> </ul>
Avoid creation of new mosquito habitat.	<ul style="list-style-type: none"> <li>Ensure irrigation and stormwater systems do not pond water for more than 72 hours.</li> <li>Any constructed water bodies should be appropriately managed to reduce mosquito breeding habitat.</li> </ul>	<ul style="list-style-type: none"> <li>An ephemeral waterbody and stormwater swales will be present within Precinct A. These will be designed to avoid the creation of mosquito breeding habitat.</li> <li>The detention of stormwater for treatment purposes (i.e. the 1 year ARI event) will occur outside the foreshore reserve in adjacent public open space and road reserve, and the detailed design for these features will ensure that mosquito breeding habitat is not created. This will be detailed in the UWMP to support subdivision.</li> <li>Lighting and irrigation design elements will be specifically considered as part of detailed design to minimise potential nuisance insect impacts.</li> </ul>
Monitor pests to determine if active pest management is required.	<ul style="list-style-type: none"> <li>Include pest monitoring as part of the overall monitoring program for the foreshore reserve.</li> <li>If necessary, undertake active pest management for pest species.</li> </ul>	<ul style="list-style-type: none"> <li>An ephemeral waterbody and stormwater treatment features will be present within Precinct A. These will be designed to avoid the creation of mosquito breeding habitat.</li> <li>Any impacts from foxes, rats, cats and rabbits will be evaluated through the construction and maintenance phases of the project and pest management measures implemented when (and if) required.</li> </ul>
Reduce suitability of the foreshore reserve for urban pests	<ul style="list-style-type: none"> <li>Provide adequate rubbish and litter disposal areas to reduce food sources.</li> </ul>	<ul style="list-style-type: none"> <li>Rubbish and litter disposal facilities to be provided for within foreshore reserve facilities.</li> </ul>
<b>Education and Aboriginal heritage</b>		
Promote cross-cultural awareness and Indigenous heritage through the project.	<ul style="list-style-type: none"> <li>Use interpretive signage, educational material and native plant species to communicate the Aboriginal heritage of the site and local area.</li> <li>Provide Aboriginal heritage inductions for personnel involved in works in the foreshore reserve.</li> </ul>	<ul style="list-style-type: none"> <li>Interpretive signage to be included at specific vantage points within the Precinct A foreshore reserve area.</li> <li>Aboriginal heritage inductions to be provided for personnel involved in works packages within the foreshore reserve.</li> </ul>

## Foreshore Management Plan Precinct A

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FMS principle	FMS required outcome	Application to Precinct A FMP and implementation
<p>Comply with Section 18 approval requirements under the <i>Aboriginal Heritage Act 1972</i>.</p>	<ul style="list-style-type: none"> <li>Adopt cultural material contingency plans for the discovery of any Aboriginal heritage material.</li> </ul>	<ul style="list-style-type: none"> <li>Cultural material contingency plans for the discovery of any sensitive Aboriginal cultural materials will be accommodated in the various works packages.</li> </ul>

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Precinct A Local Development Plan

### Appendix B

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LSP Implementation (Development Planning Strategies 2013)

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Section 18 Approval



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### **Appendix E**

Review of Relevant Marine Aspects of Landscape Plan (MP Rogers & Associates 2021)

### **Appendix F**

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### **Appendix G**

Tree Assessment (Emerge Associates 2021b)

# Foreshore Management Plan Precinct A

## Belmont Park Racecourse Redevelopment



## 1 Introduction

### 1.1 Project background

This Foreshore Management Plan (FMP) has been prepared to support the preparation and lodgement of a Local Development Plan (LDP) for Precinct A of the Belmont Park Racecourse Redevelopment (BPRR) Local Structure Plan (LSP) area. This report has been prepared on behalf of Golden Sedayu Pty Ltd (the developer) and will guide the planning, statutory approvals, development/restoration works, and long-term management of the Swan River foreshore reserve situated within Precinct A (herein referred to as 'the foreshore reserve').

As shown in **Figure 1**, the BPRR LSP area is situated on a low-lying alluvial peninsula along the middle reaches of the Swan River estuary system, 3 kilometres east of the Perth Central Business District. Precinct A extends across the northern region of the BPRR LSP area and comprises Lot 102 and Lot 1002.

For the purpose of this FMP, the foreshore reserve (also referred to as 'the site') incorporates the portions of Lot 102 and Lot 1002 which are reserved for 'Parks and Recreation' under the Metropolitan Region Scheme (MRS) and Town of Victoria Park (ToVP) Town Planning Scheme (TPS) No. 1. This includes the area identified as the Development Control Area (DCA) of the *Swan and Canning Rivers Management Act 2006* (SCRM Act), as shown in **Figure 1**.

Lot 102 is currently owned by the developer whilst Lot 1002 is owned by the Burswood Park Board. Subdivision will be sought to allow for the establishment of development lots, road reserves, foreshore reserve and public open space (POS). The resultant subdivided foreshore reserve will be ceded to the Crown, with the long-term management of the foreshore reserve (following the developer handover period) to be vested with the ToVP.

The Precinct A foreshore reserve encompasses 8.97 ha of the BPRR LSP area, extending approximately 1.5 km metres (m) long and between 40 m to 85 m wide. Historical information has identified that the site has been alternatively used for the placement of fill material, incorporating a mixture of dredge spoil, construction and demolition material, as well as material of unknown origin. As a result of these historic works and other disturbances, the foreshore has been significantly modified from its natural riverine setting and currently provides limited opportunities for public access and use.

The LDP and associated landscape plan expands upon the planning framework established by the BPRR LSP and illustrates the design of the foreshore reserve, as well as the associated treatments to be implemented throughout the life of the project.

### 1.2 Document purpose and scope

This FMP has been prepared as a subsidiary framework to the Foreshore Management Strategy (Emerge Associates 2011b) that forms part of the BPRR LSP. The Foreshore Management Strategy (FMS) established the overall vision and objectives for the broader BPRR foreshore reserve area and

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## Belmont Park Racecourse Redevelopment



provides the key principles on which the future precinct-specific FMPs would be based. This FMP provides specific detail about the intended treatment and management of the foreshore reserve specific to Precinct A, consistent with the principles and objectives identified in the FMS. The FMS is discussed further in **Section 2.1.4.4** and is responded to in detail as part of this FMP in **Section 4** and **Section 5**.

This FMP will be relevant for the following stages of the overall development process:

- **LDP:** the Precinct A LDP establishes the planning framework for further development within Precinct A. The LDP and associated spatial layout plans have been included in **Appendix A**. This FMP has been prepared in parallel with the LDP and ultimately supports the LDP. The relevant aspects of the Precinct A LDP are discussed in **Section 3**.
- **Subdivision:** the subdivision process is the mechanism to create separable land tenure for the foreshore reserve to enable it to be ceded to the Crown. It is the process that triggers detailed consideration of the works within the foreshore reserve (alongside servicing the subdivision and creating roads etc.) which is all tied to the creation of new titles and clearances for the new titles.
- **Development Approval** for works within the foreshore reserve: given the foreshore reserve falls within the DCA pursuant to the SCRM Act and also within an MRS 'Parks and Recreation' reserve, Development Approval for foreshore works will be required.
- **Foreshore works implementation:** the works undertaken within the foreshore reserve will be undertaken in accordance with the details contained within **Section 5**.
- **Maintenance and handover of foreshore reserve by developer:** developer monitoring, maintenance and ultimate handover to the Local Government will be undertaken in accordance with the details contained within **Section 5.4**.
- **Maintenance:** the ongoing maintenance of the foreshore reserve will be guided by the principles contained within **Section 5.3**.

### 1.3 Stakeholder consultation

As part of preparing this FMP, the project team attended meetings with the Town of Victoria Park and DBCA to establish the context set by the FMS and understand resultant expectations for the FMP at a finer scale of detail. It is expected that there will be additional stakeholder consultation as apart of finalising this FMP for implementation.

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## 2 Background

### 2.1 Legislative, policy and planning framework

The proposed management of the foreshore reserve needs to be cognisant of the relevant and prevailing legislation and policy framework. The legislation, policies and guidelines that are relevant to the design approach and future management of the foreshore are described further in this section.

#### 2.1.1 Legislation

##### 2.1.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal mechanism for the Commonwealth government to play a role in the protection and management of nationally and internationally important flora, fauna, ecological communities and heritage places, defined in the EPBC Act as Matters of National Environmental Significance (MNES). Under the EPBC Act, a person must not take an action that has, will have, or is likely to have a significant impact on any MNES without approval from the Australian Government Environment Minister.

The Threatened Ecological Community (TEC) 'Subtropical and Temperate Coastal Saltmarsh', which is listed as 'Vulnerable' pursuant to the EPBC Act, occupies 3.59 ha and includes saltmarsh vegetation, adjacent bare substrate tracks, and non-native vegetation in accordance with the TEC conservation advice. In addition, there are some potential habitat trees and limited foraging habitat for black cockatoos. The EPBC Act is therefore a relevant consideration for development within Precinct A, although there are not expected to be a risk of significant impacts to any listed MNES.

##### 2.1.1.2 Part IV Environmental Protection Act 1986 (WA)

Under Part IV of the *Environmental Protection Act 1986* (EP Act), the Environmental Protection Authority (EPA) is responsible for assessing the impacts of both projects (referred to as 'proposals') and land use planning frameworks (planning schemes and scheme amendments) on the environment and providing advice to the Minister for the Environment on these.

Proposals are referred and potentially assessed under *Section 38* of the EP Act, while all planning schemes and scheme amendments are referred and potentially assessed under *Section 48* of the EP Act. The EPA considers the environmental impacts the proposal or planning scheme amendment may have on environmental values as part of setting a level of assessment. If likely to have a significant impact on the environment, the EPA may decide to formally assess a proposal or planning scheme, which may subsequently result in statutory conditions being placed on the Minister for the Environment's approval for proposals or being recommended to the responsible planning authority for the particular schemes and/or scheme amendments.

An MRS amendment covering Precinct A (as part of the broader BPRR area) was referred to the EPA who subsequently determined that the proposed scheme amendment did not require formal

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environmental assessment under Part IV of the EP Act (1159/41) (**Appendix B**). From correspondence dated 17 December 2008, the EPA advised that the Scheme Amendment was ‘not assessed – advice given under Section 48A(1) (no appeals)’. The EPA provided informal advice indicating that an FMP should be prepared as a condition of subdivision to the satisfaction of the Western Australian Planning Commission (WAPC) and the Swan River Trust (SRT)<sup>1</sup>.

Subsequent to this (and more recently) an amendment to ToVP’s TPS No. 1 to amend scheme text to enable redevelopment of the Belmont Park Racecourse site was referred to the EPA. On the 5 June 2012, the EPA determined that the amendment did not require assessment by the EPA. It suggested that the FMS being prepared at that time should be prepared to the satisfaction of the SRT, which has subsequently occurred.

On the above basis, future development undertaken in accordance with the MRS and TPS zoning will not require referral to the EPA. This is the case for development proposed by the Precinct A LDP.

#### 2.1.1.3 Planning and Development Act 2005 (WA)

The *Planning and Development Act 2005* (PD Act) establishes specific controls over planning at a metropolitan and local level as well as establishing controls over the subdivision of land. The PD Act intends to provide for an efficient and effective land use planning system in the State and promote the sustainable use and development of land.

With respect to the BPRR site, amendments to both the MRS and ToVP’s TPS No. 1 to facilitate the proposed development within Precinct A have been undertaken. In accordance with the TPS requirements, a local structure plan has also been prepared and adopted by the ToVP and endorsed by the WAPC. The BPRR LSP establishes the statutory requirement for the preparation of the Precinct A LDP, the Precinct A FMP (this document), and the implementation of the Precinct A FMP. The implementation schedule as taken from the BPRR Structure Plan (Development Planning Strategies 2013) has been included for reference as **Appendix C** and the relevant aspects of the BPRR LSP are discussed further in **Section 2.1.4.2**.

All future subdivision and development within Precinct A will occur in accordance with various requirements of the PD Act and specifically:

- Subdivision will need to be approved by the WAPC, which will facilitate the creation of individual development lots, the foreshore reserve, road reserves, areas of POS, and also the installation of services (such as sewer and reticulated water) and construction of hard infrastructure (such as roads).
- Development Approval will be required for the construction of residential and potential commercial buildings within the development lots.

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<sup>1</sup> The role and functions of the Swan River Trust (SRT) were merged with the Department of Parks and Wildlife (DPaW) on 1 July 2015. DPaW created a new River and Estuaries Division which would take on some of the responsibilities for the SRT. On 1 July 2017, DPaW merged with the Botanic Gardens and Park Authority, Rottnest Island Authority and the Zoological Parks Authority to form the Department of Biodiversity, Conservation and Attractions (DBCA). Within this document, historic documents and approvals are referenced to the SRT, while future approval processes reference DBCA. The SRT board will still be responsible for providing recommendations to the Minister for the Environment on Development Applications, however will be supported by the DBCA.

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- Survey strata schemes may be put in place for some of the residential and commercial buildings, and will cover the management of common property.
- Development Approval will be required for landscape works and construction within the foreshore reserve.

This FMP has been prepared to support the above processes within Precinct A, and to guide associated foreshore management and landscape treatments. In this way, the PD Act provides the primary statutory framework for the implementation of the FMP from the approval of the Precinct A LDP through to the ceding of the foreshore reserve by the existing landowner to the Crown, and handover of management through vesting to the ToVP.

#### 2.1.1.4 Swan and Canning Rivers Management Act 2006 (WA)

The SCRM Act came into effect on 25 September 2007 establishing a specific framework for the protection and management of the Swan and Canning rivers. This legislation established the Swan Canning Riverpark and targets for river use and environmental health. The legislation also modified the planning approval assessment process and increased the role of the SRT and opportunities for public involvement in planning and decision-making. The Precinct A foreshore falls within the SCRM Act established Development Control Area (DCA) and the DCA aligns with the existing MRS 'Parks and Recreation' reserve boundary.

In accordance with the SCRM Act, the SRT (through the DBCA) will be centrally involved in assessing any Development Approval applications for works within the DCA and will make recommendations to the Minister for the Environment to ultimately approve or refuse such applications. The SRT (through the DBCA) is bound by the SCRM Act to consult with the relevant local government for the application, and also consider submissions made by local governments in relation to the application (by providing a copy of its draft and then final assessment report), and the final report to the Minister must include all submissions and the SRT's (DBCA) comments on those submissions. SRT (through the DBCA) and the Local Government are therefore key stakeholders in relation to the review and endorsement of the content of this FMP and for future applications for Development Approval to implement aspects of this FMP.

Accordingly, this FMP is the primary mechanism to guide the future Development Approval processes for foreshore works within the DCA, and detailed design drawings to secure Development Approval will be prepared by the applicant and then subsequently assessed by the SRT (DBCA) in accordance with this FMP for any works occurring within the foreshore reserve.

#### 2.1.1.5 Aboriginal Heritage Act 1972 (WA)

The *Aboriginal Heritage Act 1972* (AH Act) protects all Aboriginal sites whether or not they are known and/or registered under the AH Act. As outlined in the FMS, Precinct A is known to contain the mapped extent of two registered Indigenous heritage sites (DPLH 2021). The details of these registered sites are as follows:

- Site ID # 3536: Swan River
- Site ID # 15914: Burswood Island Burial.

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A Section 18 approval to disturb known sites was obtained by the Western Australian Turf Club (WATC) as the previous owner of the site. Following a change in ownership of the land, detailed ethnographic investigations and consultation were undertaken to support a new notice pursuant to Section 18 of the AH Act regarding the BPRR project being lodged with the then Department of Indigenous Affairs (DIA, now Department of Planning, Lands and Heritage) in December 2013. This notice involved the full development of the entire BPRR LSP area, with aspects of this development extending into the Swan River (and associated foreshore area). In response to this notice, the Minister for Aboriginal Affairs confirmed in April 2014 that the proposed development of the BPRR LSP area will not impact upon any Aboriginal sites within the meaning of Section 5 of the AH Act.

For ease of reference a copy of the recently obtained Section 18 approval for the entire BPRR project has been included within **Appendix D**. This approval was obtained after the endorsement of the BPRR LSP and FMS and was based on the intended full implementation of development associated with the BPRR LSP.

Aboriginal heritage significance, the requirements of the AH Act and the most recent Section 18 approval have all been considered within this FMP.

#### 2.1.1.6 Jetties Act 1926 (WA)

The *Jetties Act 1926* (Jetties Act) provides for the construction, maintenance, and preservation of jetties, and to make better provision for securing and regulating their use and management.

Three jetty structures have been proposed within the Precinct A foreshore reserve. Their future approval, construction and ongoing maintenance will be governed by the Jetties Act and also future Development Approval requirements.

#### 2.1.2 Policies

##### 2.1.2.1 Western Australian Planning Commission

The WAPC prepares and adopts State Planning Policies (SPPs) under statutory procedures set out in Part 3 of the PD Act. The policies that are relevant to the site are:

- *SPP 2.9 Water Resources* (WAPC 2006a): Ensures the protection and appropriate management of water resources in Western Australia through protecting, conserving and enhancing water resources, ensuring the availability of suitable water resources to maintain essential requirements for biological life and to maintain and improve the quality and quantity of water resources. The policy also aims to assist in the management and sustainable use of water resources.

As part of implementing SPP 2.9, the *Better Urban Water Management* (WAPC 2008b) framework was developed. This framework is a key consideration for stormwater management within the land use planning process. A Local Water Management Strategy (LWMS) has been historically prepared to support the endorsed BPRR LSP. Stormwater management considerations have been integral in the preparation of the Precinct A LDP and this FMP. In addition, an Urban Water Management Plan (UWMP) will be required to address subdivision requirements that will arise as a condition of subdivision. The UWMP will provide extensive detail and engineering design on the stormwater



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management measures being implemented through the subdivision process. Relevant stormwater management considerations for the management of the foreshore reserve have been contained within this FMP.

- *SPP 2.10 Swan Canning River System* (WAPC 2006b): This policy provides a regional framework for the preparation of precinct plans, a consistent and integrated planning and decision-making framework and ensures that activities, land use and development maintain and enhance the health, amenity and landscape values of the river, including its recreational and scenic values. The policy is based on a series of guiding principles that have been jointly developed by the WAPC and (former) SRT which are:
  - Maintaining the river and its setting as a community resource.
  - Securing public access to the river.
  - Maintaining a sense of place.
  - Providing opportunities for water transport.
  - Protecting the natural environment.
  - Protecting fringing vegetation.
  - Minimising dredging and channel disturbance.
  - Implementing responsible stormwater management practices.
  - Response to river function, topography and landscape.
  - Conserving the cultural and natural heritage of the river and its setting.
  - Promoting sensitive design and built form to complement the river landscape.
  - Encouraging appropriate development.
  - Creating and maintaining foreshore reserves.
  - Creating linkages and natural vegetation corridors.
  - Recognition or sense of place of the river.

SPP 2.10 has been considered as part of preparing the FMS that supports the endorsed BPRR LSP and also this FMP. This policy will be relevant when Development Approval applications for foreshore works are being assessed by WAPC, SRT (DBCA) and the Local Government.

A revised draft of SPP 2.9 was published for public comment in August 2021. The intent of the draft is to deliver greater clarity for water-related provisions, as well as simplify the current water-related policy framework to ensure consistency with the State Government's current planning reform. Once this is gazetted, the draft and guidelines will supersede SPP 2.9 (WAPC 2006a) and SPP 2.10 (WAPC 2006b).

### 2.1.2.2 Department of Biodiversity, Conservation and Attractions (incorporating former Swan River Trust)

The SRT has prepared a number of policy documents that relate to the foreshore reserve at the site. Given the site falls within the SCRM Act DCA, the SRT (through the DBCA) will provide advice on this FMP and play a role in the assessment of Development Approval applications for associated foreshore reserve works. The following SRT (now DBCA) policies have been considered as part of preparing this FMP and will guide the future assessment of Development Approval applications arising from works specified in this FMP:

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- *Policy 42 – Planning for the land use, development and permitting affecting the Swan Canning Development Control Area*
- *Policy 44 – Planning for jetties in the Swan Canning Development Control Area*
- *Policy 45 - Planning for miscellaneous structures and facilities in the Swan Canning Development Control Area*
- *Policy 48 – Planning for development setback requirements affecting the Swan Canning Development Control Area*
- *Policy 49 – Planning for stormwater management affecting the Swan Canning Development Control Area*
- *Policy 50 – Planning for dewatering affecting the Swan Canning Development Control Area*
- *Swan River Trust Guideline SRT/A3 – Pesticide use within the Swan Canning Riverpark*

#### 2.1.2.3 Environmental Protection Authority

The EPA has a range of policies and guidance statements on many aspects of environmental protection. These policies have been considered as part of the associated historic MRS and TPS scheme amendment processes and therefore, while generally applicable to environmental issues, are not considered in detail as part of this FMP.

#### 2.1.2.4 Town of Victoria Park

The ToVP is the relevant local authority who will be ultimately assessing and adopting the Precinct A LDP and reviewing and approving this FMP. The following ToVP policies are relevant for this FMP:

- *P254 – Remnant Native Vegetation*: this policy is relevant to Precinct A and the associated foreshore reserve areas within the BPRR LSP area. Endemic plant species will be used in planting areas within the site and is outlined further in **Section 4.7** of this FMP.
- *P255 – Tree Management*: this policy provides for the management of trees within the Crown Land parks and public spaces managed by the Town.

#### 2.1.3 Guidelines and other relevant documents

##### 2.1.3.1 Town of Victoria Park

The ToVP prepared a *Foreshore Access and Management Plan (FAMP)* (ToVP 2015), which identifies the Precinct A area for future residential land use and as a future major activity node, and recognises that any future development within the broader BPRR foreshore area should consider and allow for continuous pedestrian access. This will utilise a mixture of pathways and boardwalks as a means of accessing the river and preserving the existing endemic vegetation (ToVP 2015). It is also noted that future residential development in the BPRR area should consider the future need for water taxi/boat access and mooring along the foreshore.

The FAMP establishes the following key aims for development within ToVP foreshore areas:

- Improvement to access.
- Improved maintenance accessibility.
- Methods to prevent habitat fragmentation.
- Methods to prevent erosion.

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- Improvements to foreshore infrastructure (e.g. river walling).

#### 2.1.3.2 Department of Biodiversity, Conservation and Attractions (incorporating former Swan River Trust)

The SRT's *Best Management Practices for Foreshore Stabilisation* (SRT 2009) aims to improve foreshore stabilisation works through increasing land managers' knowledge regarding best practices and improving appropriate management responses for foreshore stabilisation. These guidelines have been considered and are discussed further in **Section 3** and **Section 4**.

#### 2.1.3.3 Department of Planning, Lands and Heritage

*Planning Bulletin 92 Urban Water Management* (WAPC 2008a) provides the State Government policy in relation to the urban water management framework, which includes the requirement for the following:

- A District Water Management Strategy, to be submitted in support of a District Structure Plan, local planning strategy or region scheme amendment.
- A Local Water Management Strategy (LWMS), to be submitted in support of a LSP or TPS amendment.
- An Urban Water Management Plan/s, to be submitted at the subdivision stage.

This framework emphasises the application of Water Sensitive Urban Design (WSUD) to manage the way in which water within an urban context is utilised. This type of design aims to minimise the impact of urbanisation on the natural water cycle.

In the case on the Precinct A Area:

- A LWMS has been prepared to support the BPRR LSP.
- An UWMP will be prepared to support the subdivision process, and is expected to be a conditional requirement of the subdivision approval.

Notwithstanding the above, the urban water management framework established in the LWMS and the likely requirements of the UWMP has been accommodated in the preparation of this FMP.

#### 2.1.4 Site specific planning context

##### 2.1.4.1 General summary

As a summary to the information contained within **Section 2**, the following provides a brief timeline on the historic planning context for the BPRR area and specifically for Precinct A as it relates to the foreshore reserve:

- 2006 - An MRS amendment for the BPRR area was referred to the EPA. The EPA advised that the MRS amendment would be formally assessed under Part IV (Section 48A) of the *Environmental Protection Act 1986* and required the preparation of an Environmental Review. The amendment was withdrawn, terminating the EPA's assessment of the MRS amendment.

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- 2008 - A second MRS Amendment was referred to the EPA following an extensive consultation process with the various regulatory authorities including the SRT. The MRS amendment was referred to the EPA, who determined that the amendment did not require formal assessment. As part of this MRS amendment, the 'Parks and Recreation' reserve was amended to reflect the current reservation boundary, and SRT amended the DCA boundary to reflect this.
- 2011 – Development Planning Strategies (DPS), on behalf of the proponent, prepared and submitted an LSP for the broader BPRR area to the ToVP. Various investigations and documentation supported this application including a LWMS (Emerge Associates 2011d) and the FMS (Emerge Associates 2011b).
- 2012 – The BPRR LSP was formally adopted and endorsed by ToVP and the WAPC respectively.
- 2021 – The Precinct A LDP was prepared for submission to ToVP.

As a summary to the information contained within **Section 1.3**, the future planning context for the site involves:

- This FMP, prepared in parallel with the Precinct A LDP, was lodged with the ToVP, with review and input to be provided by SRT (DBCA).
- Subdivision applications will be lodged with WAPC.
- Individual applications for Development Approval to construct residential and commercial buildings within the individual lots will be lodged with ToVP.
- Individual applications for Development Approval to implement stages of foreshore works will be lodged and assessed by SRT (DBCA) and ultimately approved by the Minister for the Environment with key advice and input to this process being provided by the Local Government.
- Survey strata schemes may be established for some residential and commercial properties, which will include arrangements for the management of common space and other facilities.

#### 2.1.4.2 Local structure plan (LSP)

The BPRR LSP sets out the pattern for development and land use across the broader BPRR area, which will guide the future subdivision and development of the BPRR site. The LSP proposes to create a diverse residential community within Precinct A, and accordingly shapes the precinct's key design characteristics around this. Precinct A will incorporate a mix of residential developments at a scale, density and location that respond to the opportunities afforded by its situation. The community will have access to a range of recreational experiences via canoes / kayaks, pedestrian and cyclist paths and parkland spaces.

With reference to the foreshore, the primary focus of the LSP for development within the site and specifically Precinct A is to create an area that supports rehabilitated riverine vegetation, restored ecological function and an amenable and useable system of open space which encourages outdoor activity and interaction with nature. The objective of the local POS in Precinct A is to extend the river and foreshore landscape into the residential areas, maximise connectivity with the river and provide views to the site from the river.

The foreshore reserve will form an integral part of Precinct A, maximising recreational opportunities and providing a place for the community to access and enjoy the Swan River (Development Planning Strategies 2013). The following key considerations are noted within the LSP regarding Precinct A:

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- Retaining and enhancing vegetation and fauna habitat in 'very good' condition within an accessed controlled area.
- The western and largest part of the foreshore in Precinct A will provide open spaces for passive and active recreation and revegetation of the fringing vegetation.

#### 2.1.4.3 LSP landscape strategy

A Landscape Strategy (Emerge Associates 2011c) was prepared to support the BPRR LSP. The overall landscape approach for the entire BPRR area foreshore reserve aimed to balance the needs for river edge stabilisation, storm water management, habitat creation, foreshore restoration and controlled human activity, including informal active and passive recreation linked to community benefit, education and appreciation.

The Landscape Strategy established the following for Precinct A:

- An opportunity to provide native vegetation rehabilitation along the river's edge.
- Opportunity to utilize existing topography in creating wetland habitat.
- Creation of conservation area-controlled access points.
- Cultural edutainment, creating opportunities for indigenous people.
- A large shopping map, hotel, restaurants and private residences all within a short walking distance of the inlet and Swan River. The restaurants and commercial spaces will flank and spill out into an associated plaza space providing further activation.
- Avenues of shade trees will flank the edge of the plaza space, as well as surrounding streetscapes.
- Market and craft stalls will attract visitors.
- Plaza space will offer public day mooring facilities and river ferry access.

The Landscape Strategy also established 'Foreshore Use Zones' around the BPRR site foreshore reserve. These zones included the following:

- Public/Active Recreation
- Public/Passive Recreation
- Delineated Public/Passive Recreation
- Private/Passive Recreation
- Delineated Public/Urban Courtyard
- Public/Urban Precinct
- Public/Foreshore Rehabilitation
- Restricted Access/Foreshore Rehabilitation.

The Precinct A foreshore reserve will incorporate the following:

- Public/Active Recreation
- Public/Passive Recreation
- Delineated Public/Passive Recreation
- Public/Foreshore Rehabilitation
- Restricted Access/Foreshore Rehabilitation.

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These zones reflect the historical modification and the various natural values within the Precinct A foreshore reserve.

#### 2.1.4.4 LSP foreshore management strategy (FMS)

The FMS prepared for the BPRR LSP (Emerge Associates 2011b) outlines the overall objectives for the foreshore areas within the BPRR area, including the site, and sets the framework for this FMP as outlined previously in **Section 1.3**.

In respect to Precinct A (referred to as the 'West Park' Precinct and the 'North Park' Precinct) the FMS notes the following key considerations:

- Due to the large size of the western region of Precinct A, the focus of this area is to provide open space for passive and active recreation, as well as revegetation of the fringing vegetation.
- Vegetated swales would convey large stormwater runoff events from the residential areas in this western region through to the Swan River. The swale would be relatively shallow and wide, and its surface will be comprised of suitable native landscaping and plants.
- Boardwalks and elevated boardwalks over revegetation are proposed.
- Batters will not be required in the foreshore reserve. Given the width of the western foreshore, the slopes necessary to tie in the natural foreshore level are not expected to be steep.
- Due to the large size of the western reserve and the degraded nature of the vegetation, active recreation opportunities are proposed.
- A 3.5 m dual-use path extends across the western region. A 2.1 m wide pedestrian footpath network will separate the fringing vegetation from more active and passive recreation areas.
- Due to the presence of 'Very Good' remnant vegetation to the north, the purpose of this area is to retain and enhance vegetation and fauna habitat within an access and controlled area.
- There would be a large elevation difference between the residential area and the foreshore within the northern region, which would be addressed by retaining walls and other structures to minimize batter intrusion.
- A 3.5 m dual-use path extends across the northern region and joins with the 2.1 m pedestrian only pathway, which then forms a 4 m dual use pathway around the eastern portion of the site.
- To further protect the conservation area within the northern region of the site, a dog proof fence extending 1.5 m high is proposed along the pedestrian/cycle route, protecting waterfowl feeding and breeding areas within the reserve.

The foreshore management and implementation framework provided in **Section 5** of the FMS has provided the primary basis for the implementation framework for this FMP.

#### 2.1.4.5 Part V Environmental Protection Act 1986

Administered by DWER, Part V of the EP Act provides a basis for environmental regulation and compliance. Specifically, Part V encourages the promotion of best practice and waste minimisation and aims to ensure that the operation of certain industrial facilities and activities protect the environment through the application of works approvals, licences, registrations and clearing permits.

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On 8 September 2021, Emerge Associates lodged clearing permit CPS 9424/1 with DWER on behalf of the applicant. The clearing permit was lodged to facilitate the pre-development works required to commence the BPRR, as the overall development footprint (28.05 ha) contained 3.33 ha of native vegetation (Emerge Associates 2021a). On 5 November 2021 DWER requested additional information to enable finalisation of the clearing permit process and identified that the development footprint should be modified to reduce impacts to the TEC and fringing vegetation within the site. Through a revision of the proposed geotechnical site preparation works, the overall development footprint has been reduced (Emerge Associates 2021b). Further details have been provided in **Section 4.2.1**.

## 2.2 Existing foreshore environment

### 2.2.1 Climate and weather

The site is located within the Perth Metropolitan region, which is described as having hot, dry summers and moderately wet, mild winters. Since 1970, there has been an approximate 16% decline in the April to October rainfall within the southwest of Australia, with the May to July rainfall seeing the largest decrease at 20%. In conjunction with this, Australia's climate has warmed by approximately 1°C since 1910, for both surface air temperature and sea surface temperature (BoM 2020).

Approximately 5 km west of the site is the Bureau of Meteorology (BoM) Perth Metro weather station (009225), which has been recording data since 1994. Climatic conditions of the site have been summarised and presented in **Plate 1**.

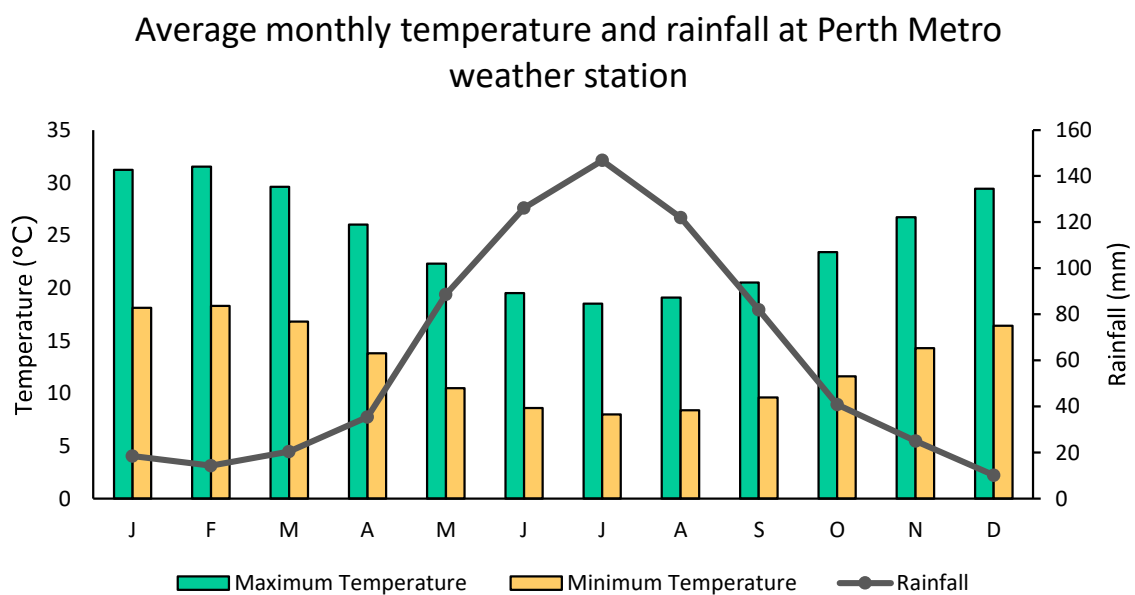


Plate 1: Average climatic conditions (Perth Metro weather station 1994-2021) (BoM 2022)



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Wind rose data has been collected from the Perth Airport weather station (009021) from 1944 to the maximum extent of the records in 2016. The data indicates that winds experienced during the summer months are most intense during the afternoon (3 pm) compared to the morning (9 am) and primarily originate from the south-west, as described within **Plate 2**. Autumn and winter experience varied wind strength and direction, though winter has recorded higher intensity winds from the north-east during the morning, compared to the afternoon (**Plate 3** and **Plate 4**). Whilst spring has observed calmer conditions during the morning, afternoon winds are most intense from the south-west and west (**Plate 5**).

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## Belmont Park Racecourse Redevelopment

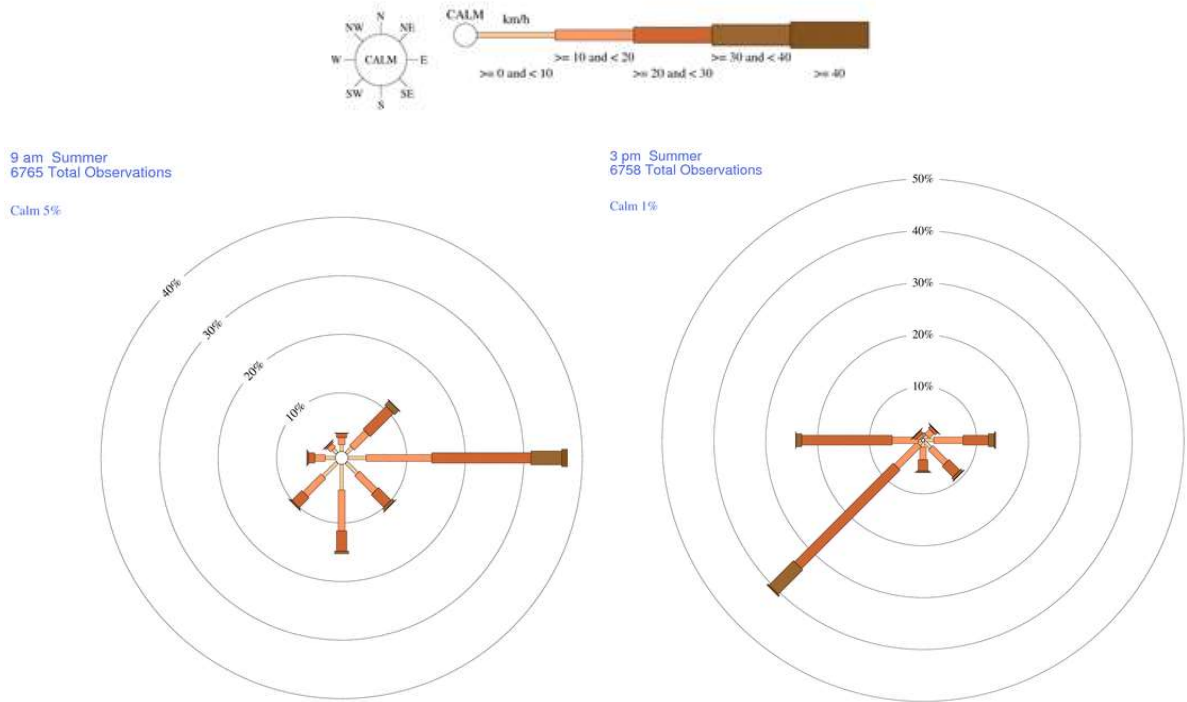


Plate 2: Wind speed and direction rose for summer at 9 am and 3 pm, recorded at the Perth Airport weather station.

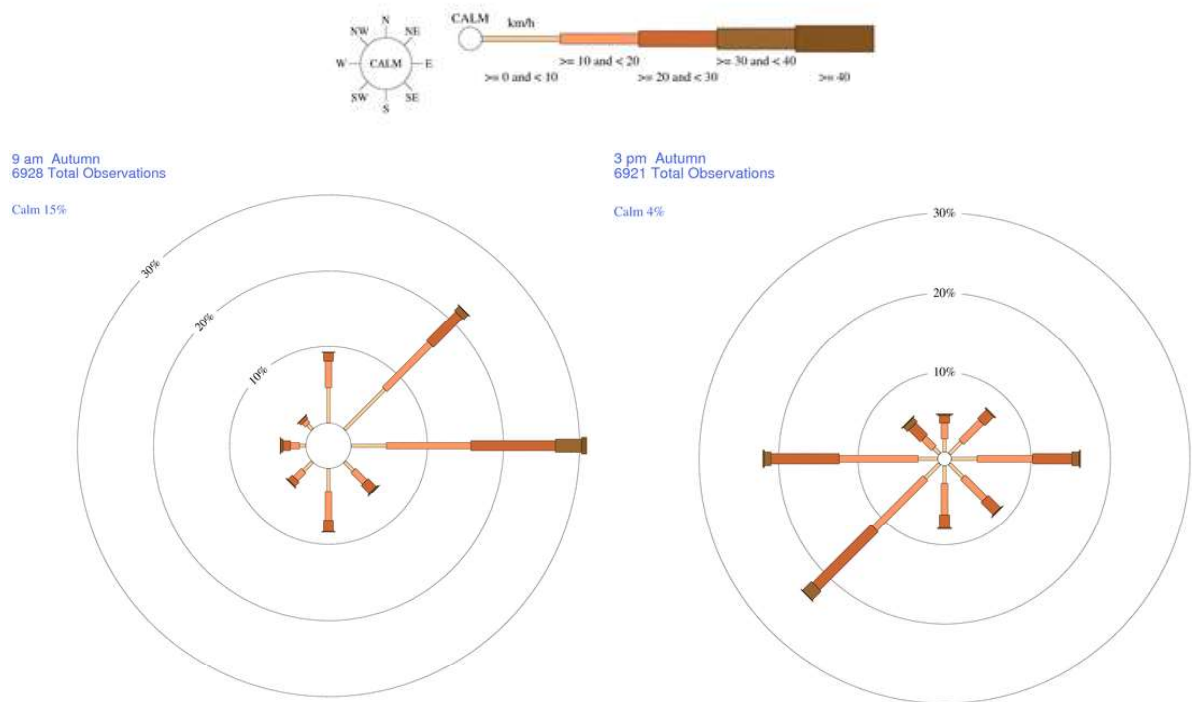


Plate 3: Wind speed and direction rose for autumn at 9 am and 3 pm, recorded at the Perth Airport weather station.

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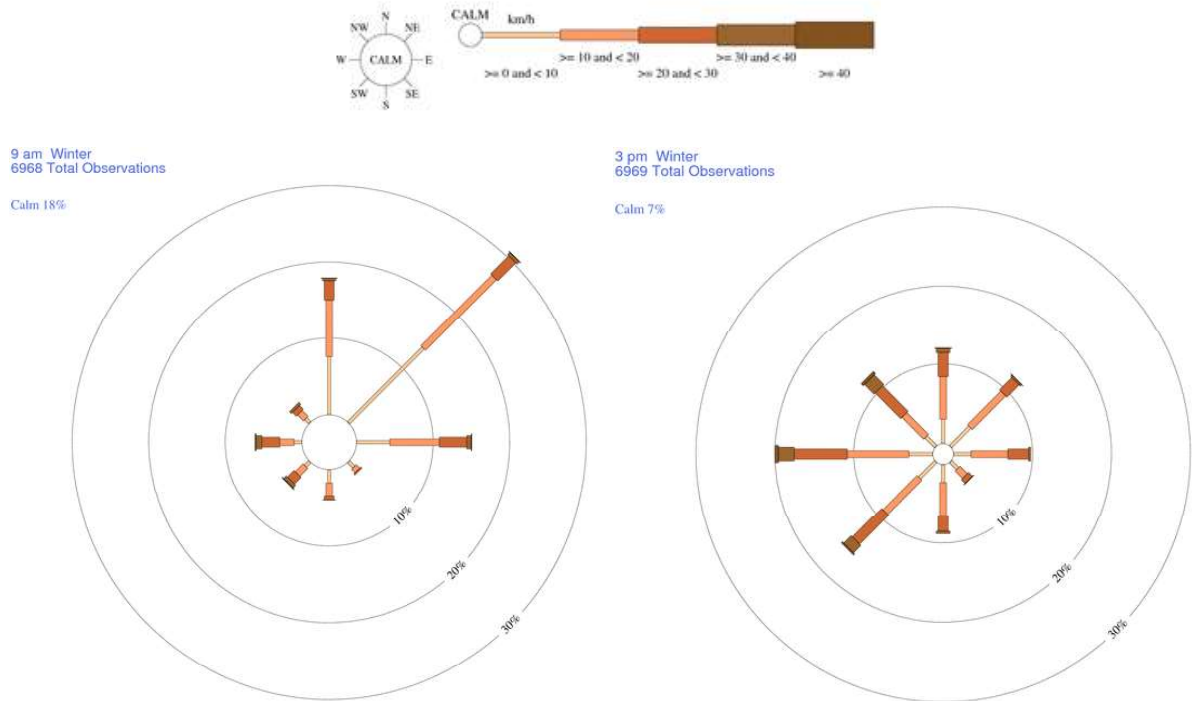


Plate 4: Wind speed and direction rose for winter at 9 am and 3 pm, recorded at the Perth Airport weather station.

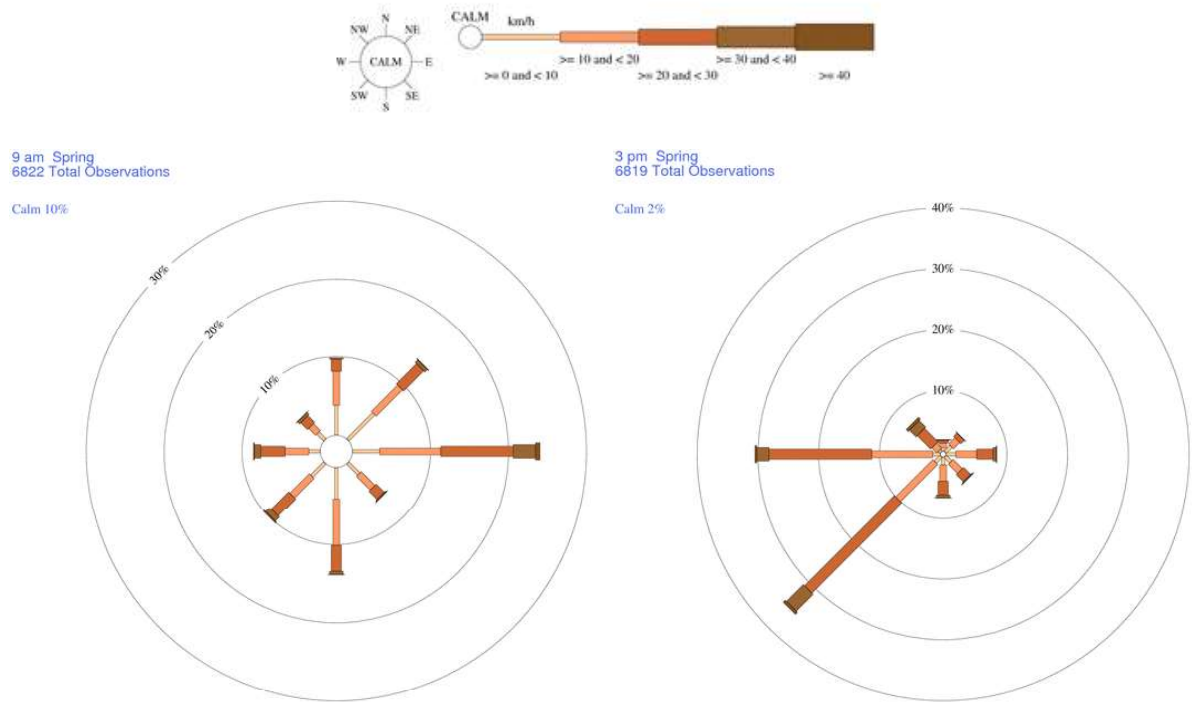


Plate 5: Wind speed and direction rose for spring at 9 am and 3 pm, recorded at the Perth Airport weather station.

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The key climatic and weather considerations for the Precinct A LDP and this FMP include:

- **Hot summers:** indicates the need for shade to provide amenity within public/recreation areas in the summer months.
- **Strong summer and spring winds:** need to provide shelter from wind, particularly during the summer and spring months when the public use of the foreshore reserve will be high, which will coincide with intense afternoon winds.
- **Construction stormwater management:** given the close proximity to the Swan River, management of stormwater runoff from construction areas will be required, particularly during winter.

### 2.2.2 Geology

Regional soil information detailed in the *1:50 000 Environmental Geology Series* (Gozzard 1986) indicates the natural geological setting of the site comprises clayey silt (MC1) categorised as yellow/brown to strong brown, blocky, mottled, soft, with variable clay content, dispersive in part, and of alluvial origin. The geomorphological classification given to the development area by Gozard (1986) indicates the development area is located within a river floodplain.

Based on the results of geotechnical investigations completed across Precinct A (Coffey 2011), the site is underlain by the Guildford formation consisting of silt and sand layers within the north-east of the site, whilst the north and north-west portions are underlain by cohesive alluvial deposits known as Swan River Alluvium (SRA) which comprise soft, highly compressible soils. Below this is the Mullaloo Sandstone and Kings Park formation of consolidated sandstones and shales, located at a level of approximately reduced level (RL) -25 m Australian Height Datum (AHD).

The resulting surface of the Guildford formation decreases from east to west beneath the SRA, from 0 m within the centre of the site, to approximately 20 m near the western edge of the site (Golder Associates 2011).

The Precinct A foreshore reserve has historically been covered with fill material, comprising dredge fill, uncontrolled landfill and fly ash, which vary in depth from 1 m to 4 m thick (Emerge Associates 2016) (Emerge Associates 2015a). The history of the site has been, summarised as follows:

- Early fill placed in the eastern and central areas of the wider development area in the late 1800s to early 1900s, the origin of this fill is unknown. This fill is present only within the northern racetrack chute portion of the site.
- Dredge fill generated by dredging the Swan River, encountered to a maximum depth of 3.4 metres below ground level (mbgl) across the wider development, including the site.
- Uncontrolled fill containing construction and demolition (C&D) material was placed in the south-western corner of the site in the mid-1980s. Fibre cement material (FCM) (including asbestos) has been encountered to depths of 2.45 mbgl and in layers of up to 2.20 m thick.
- Fly ash/cinders believed to have been placed in an uncontrolled fashion and allowed to consolidate from 1950s to 1980s. Fly ash/cinders fill have been encountered to maximum depths of 4.0 mbgl in layers of up to 2.35 m thick in the south-western corner of Precinct A.

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### 2.2.3 Topography and soils

#### 2.2.3.1 Topography

Precinct A is naturally low-lying, however historic modifications within and adjacent to the area, associated with the racetrack and deposition of fill material has resulted in significant ground level modifications to what was naturally occurring. Geological mapping by Gozzard (1986) indicates that the 1-in-100 year flood level extends across much of Precinct A.

The current surface elevation varies from RL 0.5 m to approximately RL 3.0 m AHD, grading from the existing racetrack towards the Swan River.

A bund is present near the foreshore extending from the south-west corner of the site to approximate current location of the racetrack chute, and from the chute part way along the northern boundary. The bund is at an elevation of approximately 1.5 mAHD and was constructed using dredge material to prevent continual flooding of the inland area at high tide and reduce the rate of surface water runoff.

Available bathymetric contours indicate that the river adjacent to the site drops from 0 mAHD at the shoreline to almost -4 mAHD in the centre of the channel. Topographic contours for the site and bathymetric contours for the adjacent river are shown in **Figure 2**.

#### 2.2.3.2 Soils

Landform and soil mapping undertaken by Churchward and MacArthur (1980) indicates that the subject site is found within the Swan soil association and is described as 'alluvial terraces with red earths and duplex soils' (Churchward and McArthur 1980). The landform of the site is generally that of a low-lying alluvial peninsula.

Previous investigations undertaken to support the BPRR LSP indicate that the site and broader BPRR area have been filled with imported fill from the late 1800s onwards to develop the racecourse, and as such the soil conditions at the surface are not the naturally occurring soil profiles.

#### 2.2.3.3 Potential contamination of soils

The land use for the LSP area is the racecourse and associated activities, which have been present in the area since the early 1900s. A number of investigations have been previously completed to support the BPRR LSP. The previous work included geotechnical investigations and a preliminary contaminated site investigation which involved an assessment of soil conditions, groundwater conditions and to a limited extent Acid Sulfate Soil (ASS).

The foreshore reserve was reported to the former Department of Environment and Conservation (DEC) (now Department of Water and Environment Regulation (DWER)) in May 2007 and was classified as '*Possibly contaminated - investigation required*' under the *Contaminated Sites Act 2003* (the CS Act). The classification was based on the findings of investigations conducted by the WATC's environmental consultants (Bowman Bishaw Gorman (BBG), later becoming RPS), between 2003 and 2007.

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Following the submission of additional technical information to DWER, the foreshore within the western region of the site was reclassified as '*Remediated for restricted use*' under the CS Act, whilst the northern region of the site was reclassified as '*not contaminated*'. The western foreshore is therefore restricted to its current land use of carpark/hardstand, vacant land and racetrack chute. Investigations identified that uncontrolled fill and dredge fill extends across the site, and fly ash is present within the southwestern portion of Precinct A. Metals (aluminium, barium, boron, copper, nickel, manganese, lead, vanadium and zinc), hydrocarbons (such as from petrol/diesel), pesticides (dieldrin), sulfate and phosphorous were found present in soils at concentrations exceeding the relevant Ecological Investigation Levels as published in the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (the NEPM) and the derived site-specific ecological investigation levels. In addition, asbestos containing material (ACM) and fibrous asbestos, generally related to uncontrolled fill, were present in soils at quantities in excess of those specified in the *Guidelines for the Assessment, Remediation and Management of Asbestos Contaminated Sites in Western Australia* (DoH 2021) (see **Figure 3**).

Despite the identification of contaminated soil, investigations confirm that the concentration of chemical contaminants do not pose a significant risk to human health or the environment. Based on the infrequent presence of ACM in the uncontrolled fill, remedial targets for the site will be set for surface contamination criteria, consistent with the DoH guideline. The imported fill thickness is intended to ensure that there is no visible ACM within 10 cm of the soil.

A Remedial Action Plan (RAP) has been prepared and will be assessed by an accredited contaminated sites auditor prior to the development of Precinct A. The RAP will ensure that the future use of the foreshore reserve and by extension, the development area, is suitable for the proposed land use.

#### 2.2.3.4 Acid Sulfate Soils

Acid Sulfate Soils (ASS) are well known to exist in low-lying coastal areas but are also prevalent in other areas of the Swan Coastal Plain, typically in association with wetland areas. Typical environmental conditions required for ASS to develop include saturated soil conditions (creating an anoxic environment), the presence of sulfate and iron and the presence of a source of organic matter to promote the microbial activity necessary to drive sulfate reduction.

A number of these considerations are applicable to the BPRR area and the wider Burswood Peninsula area are classified as having a 'Class 1' ASS risk level by the DER (now DWER), which indicates a 'high to moderate risk of ASS being present within 3.0 m of the natural surface'.

Regional information and historical site investigations indicate that both natural soils and a number of the fill types are potentially ASS. Site observations have identified a number of indicators suggesting the presence of conditions favourable for the formation of ASS, and hence confirm the probable presence of Potential Acid Sulfate Soils (PASS) in both natural and dredge fill soils at the site. There were also indicators for the potential presence of ASS, such as the presence of an iron stained and salt scarred area within the north-west of Precinct A.

Within the western region of Precinct A, existing soil acidity was identified in the dredge fill whilst potential acidity was largely identified in natural soils although groundwater pH remained largely

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within what would be considered a normal range for an estuarine environment. There is currently no evidence to indicate the site has been impacted by ASS however management of soils on-site will be required during earthworks to ensure that ASS impacts do not eventuate as soils are exposed (Emerge Associates 2016).

Within the northern region of Precinct A, existing soil acidity was identified in the dredge fill, with low levels of potential acidity. Analysis indicates that the presence of net acidity exceeds the DER assessment level indicating treatment of the dredge soil that remains above the water table is required (Emerge Associates 2015a).

#### 2.2.4 Hydrological setting

##### 2.2.4.1 Pre-development drainage conditions

As detailed in the LWMS prepared to support the BPRR LSP (Emerge Associates 2012), there is a system of underground pipes and open surface drains across the BPRR area, historically installed to maintain the racecourse in a serviceable condition during winter. Stormwater generated from the racecourse grandstand, buildings and parking areas, and wash water from the race day stables is currently discharged to the constructed irrigation pond located within the centre of the racecourse (Emerge Associates 2012). Overflow from this irrigation pond discharges into the Swan River through a series of pipes crossing through the BPRR area to the river, most of which are located to the south-west and to the north. Within the northern region of Precinct A, there are two open drains that discharge into the Swan River (see **Figure 4**).

The flat topography, together with the presence of low permeability fill materials on the site, results in ponding of surface water from winter rainfall in a number of areas. This ponding can be up to depths of around 0.5 m in winter but are typically dry in summer. Surface water runoff rates are low due to the flat topography, vegetation and the presence of bunding/artificial banks to the north and west of the site.

##### 2.2.4.2 Swan River water levels

MP Rogers & Associates have undertaken a technical assessment to support this FMP and the Hassell Landscape Concept Plan, dated 15 July 2021 (MP Rogers & Associates 2021). The Swan River estuary is the dominant hydrological feature of the site. The estuary is subject to marked seasonality, which controls the salinity of the system. This seasonality is a result of the short winter rainfall patterns, a small tidal range and the landform of the estuary (Hodgkin and John 1986). The water levels of the Swan River estuary undulate in response to a range of factors, including ocean influences and seasonal and flood flows.

In terms of ocean influences, water levels in the Swan River near the Precinct A area are influenced on a daily and seasonal basis by tides and then by pressure induced surges in response to storm events. The Department of Transport (DoT) measures water levels at Barrack Street Jetty, located approximately 5 km downstream from Precinct A, which indicates the daily tidal range is typically about 0.4 m during spring tides around 0.1 m during neap. The Mean Higher High Water (MHHW) level has been determined to be 0.28 mAHD and the Mean Lower Low Water (MLLW) level has been



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determined to be -0.29 mAHD. The Highest Astronomical Tide (HAT) has been determined at 0.55 mAHD. During extreme storm events the surge can exceed 1 m above the astronomical tide level, with the highest water level recorded at 1.17 mAHD in 2003 due to the passing of a significant winter cold front (MP Rogers & Associates 2017).

River flows in the Swan River are generally restricted to the winter months following characteristic seasonal rainfall. Historic work undertaken by the former Water Authority of Western Australia in 1985 resulted in flood mapping for the Swan River system. This mapping was digitised and is now administered by DWER and the historically determined floodway for the Swan River relative to the Precinct A foreshore reserve is shown in **Figure 5**.

In 2013, DoW (now DWER) engaged URS to update the currently available flood level information for the lower river and estuary areas (URS 2013). This provides information to evaluate the 100-year ARI water level in proximity to the Swan River. Precinct A is located within 300 m of the nearest data point generated from this work (Sw13). The data estimated the 100-year ARI water level at Precinct A in 2110 (including a 0.9 m sea level rise at Fremantle) at approximately 3.1 mAHD (MP Rogers & Associates 2017). Development levels and flooding has therefore been considered with the proposed development, whereby fill material will be imported to development areas to provide separation from the flood level. Further information has been provided within the engineering report (MP Rogers & Associates 2021) attached as **Appendix E**.

#### 2.2.4.3 Groundwater

Groundwater generally flows in a northerly direction, migrating from the centre of the peninsular towards the Swan River. Depth to water is expected to be between 0.5 m and 3.5 across Precinct A.

Detailed groundwater monitoring has been undertaken in 2012, 2014 and 2015, the results of which have been tabulated and summarized in **Table 2**, specifically from monitoring wells located within the foreshore reserve of Precinct A. The variations observed during monitoring can be attributed to the respective locations of the wells and the soil types at their location (Emerge Associates 2015a, 2016). The location of each monitoring well has been illustrated on **Figure 2**.

Table 2: Groundwater levels recorded within the site

Date	Groundwater level (mAHD)						
	MW01	MW02	MW05	MW07	MW09	MW10	MW35
February 2012	n/a	0.205	-0.02	-0.320	0.358	0.096	n/a
May 2012	1.208	0.372	0.469	0.365	0.373	0.546	n/a
August 2012	1.273	0.425	0.543	0.443	1.143	0.975	n/a
September 2014	1.536	0.501	0.597	0.484	0.009	0.926	0.937
March 2015	1.056	-0.087	-0.334	-0.185	0.242	-0.104	-0.009

It is noted that the groundwater flow inferred from levels measured in March 2015 were notably different than those inferred from the August 2012 and September 2014 data. It is expected the different groundwater flow patterns indicate the winter and summer patterns with the flow in winter

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(August 2012 and September 2014) illustrating a more defined flow direction toward the river whilst the summer flow pattern (March 2015) is less defined.

#### 2.2.4.4 Shoreline geomorphology and stability

The Precinct A foreshore represents the point bar, which is the area within the inner (convex) bend of the Swan River. River energy in this area is significantly lower and cannot carry as much sediment, resulting in deposition rather than erosive forces.

Based on investigations undertaken by (MP Rogers & Associates 2017), the shoreline stability is likely to be influenced by two main drivers, inclusive of river hydraulics and wave action. Watercraft freestyle driving, wave jumping and surfing is prohibited within the adjacent Swan River, as defined within the *Navigable Waters Regulations 2005*. This therefore reduces the impact of generated boat wash on the riverbank, which could ultimately cause landform erosion and damage to the riparian vegetation (Baker 2010). Field observations undertaken in January 2022 further identified and confirmed that the foreshore is well vegetated, and the erosion and overall stability of the foreshore is not of concern (see **Plate 6**, **Plate 7**, **Plate 8**).



*Plate 6: Western region of the foreshore reserve, showing dredge bund and fringing vegetation*

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*Plate 7: Northern region of the foreshore reserve, showing the limited vegetation values*



*Plate 8: North-eastern region of the foreshore reserve, showing the TEC vegetation and fringing vegetation.*



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## 2.2.5 Flora and vegetation

### 2.2.5.1 Flora communities

A botanist and an environmental consultant from Emerge visited the site on 14 June 2021 to conduct a flora and vegetation survey. The site was traversed on foot and the vegetation composition and condition was recorded (Emerge Associates 2021c).

Seven plant communities were identified within the Precinct A foreshore reserve, one of which consists of non-native vegetation. Non-native vegetation occupies the majority of the site, accounting for 53.6% of the reserve. Plant community **Jk** extends along the periphery of the foreshore and is subjected to seasonal inundation. **SqT** is primarily associated with the ephemeral wetland to the west, with a minor patch along the north. **VjCo**, **Co** and **EcJk** represent 4% of the total vegetation with the foreshore and are found as scattered patches amongst the non-native flora (refer to **Table 3** and **Figure 6**).

Table 3: Description and extent of plant communities identified within the site

Plant community	Description	Area (ha)
<b>Co</b>	Low closed forest of <i>Casuarina obesa</i> over scattered * <i>Washingtonia robusta</i> and * <i>Cortaderia selloana</i> .	0.10
<b>EcJk</b>	Low open forest of * <i>Eucalyptus camaldulensis</i> over open rushland to rushland of <i>Juncus kraussii</i> subsp. <i>australiensis</i> over open to closed tussock grassland of * <i>Cynodon dactylon</i> and * <i>Cenchrus clandestinus</i> .	0.14
<b>Er</b>	Low open forest to open woodland of <i>Eucalyptus rudis</i> over sparse rushland of <i>Juncus</i> spp. over grassland to closed grassland of * <i>Cynodon dactylon</i> and * <i>Cenchrus clandestinus</i> .	0.30
<b>Jk</b>	Closed rushland <i>Juncus kraussii</i> subsp. <i>australiensis</i> over open forland to forland of <i>Salicornia quinqueflora</i> and <i>Suaeda australis</i> .	2.10
<b>SqT</b>	Scattered <i>Casuarina obesa</i> (or absent) over open to closed shrubland <i>Salicornia quinqueflora</i> and <i>Tecticornia</i> spp. with open rushland of <i>Juncus kraussii</i> subsp. <i>australiensis</i> (or layer absent).	0.45
<b>VjCo</b>	Low open woodland to woodland of <i>Casuarina obesa</i> over tall closed shrubland of <i>Viminaria juncea</i> over tussock grassland * <i>Cenchrus clandestinus</i> and * <i>Polypogon monspeliensis</i> .	0.12
<b>Non-native</b>	Heavily disturbed areas comprising weeds with occasional native rushes and forbs and planted vegetation. Minor cleared areas and tracks were included in this community.	4.80

During the field survey, a total of 17 native and 46 non-native (weed) species were recorded within the site and the wider Precinct A and Precinct B area. These represent 22 families and 60 genera (Emerge Associates 2021c). The dominant families containing native taxa were Chenopodiaceae (five native taxa and one weed taxa), Myrtaceae (three native taxa and one weed taxa) and Fabaceae (three native taxa and five weed taxa). The family containing the most taxa was Poaceae (no native and 12 non-native species).

The majority of the vegetation present is in a 'degraded' or 'completely degraded' condition, accounting for 5.52 ha, or 68.92% of the foreshore reserve. Plant community **Jk** and **SqT** accounts for

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all the vegetation in 'good' condition (0.24 ha), primarily sited adjacent to the ephemeral wetland in the western portion of the foreshore. The portion of 'very good' habitat is extensive along the Swan River's edge, which is comprised of plant community **Jk** and occupies 1.86 ha of the foreshore reserve. An abundance of this community is located within the northern region of the foreshore, as shown on **Figure 7**.

#### 2.2.5.2 Threatened and priority ecological communities

TECs are afforded direct statutory protection at a State level under the BC Act and BC Regulations. Ecological communities are listed under Section 27(1) and 33 of the BC Act. Their significance is also acknowledged through other state environmental approval processes such as 'environmental impact assessment' pursuant to Part IV of the *Environmental Protection Act 1986* (EP Act) and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.

The following Threatened Ecological Communities (TECs) and Priority Ecological Communities (PECs) were identified within the site:

- 'Subtropical and temperate coastal saltmarsh' TEC
- 'Subtropical and temperate coastal saltmarsh' PEC.

The coastal saltmarsh TEC is classified as 'vulnerable' as per the conservation advice for the community (TSSC 2013). Under Section 18 of the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), impacts to 'vulnerable' communities are not listed as a prohibited action. Under Section 67 of the EPBC Act, a controlled action is one which would otherwise be prohibited under Part 3 (including Section 18) without receiving approval from the federal Department of Agriculture, Water and the Environment (DAWE). Given this, impacts to threatened ecological communities that are classified as 'vulnerable' are not considered to be a significant impact, and therefore no referral to DAWE is required. Ms V. Hush (DAWE) confirmed via email on 2 September 2021 that impacts to the coastal saltmarsh TEC do not require a referral pursuant to the EPBC Act.

A total of 3.59 ha coastal saltmarsh TEC was mapped within the site, which also represents the state listed coastal saltmarsh PEC (P3). The coastal saltmarsh TEC/PEC occurs on the perimeter of the site as shown in **Figure 8**.

#### 2.2.5.3 Floristic communities

Plant communities **Jk**, **SqT** and **ErMCoJk** were determined to represent FCT 16 'highly saline seasonal wetlands'. This FCT has been described as 'poorly reserved' (known from a single A class National Park or Nature Reserve) and 'vulnerable' (a community likely to move into the endangered category in the near future if the casual actors continue operating) (Gibson *et al.* 1994).

Samples within the **Jk**, **SqT** and **ErMCoJk** vegetation grouped with Gibson *et al.* (1994) sites representing FCT 16 in the cluster with 30-58% similarity. All other plant communities were too degraded and comprised too few native species to infer an FCT.

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#### 2.2.6 Fauna and fauna habitat

In conjunction with the flora and vegetation survey, a botanist and an environmental consultant from Emerge visited the site on 14 June 2021 to conduct a fauna survey. The site was traversed on foot and fauna habitats were described and mapped based on the identified plant communities, the dominant flora species, and the vegetation type present (Emerge Associates 2021c).

Due to the significant historic disturbance that has occurred within the site and the removal of most native vegetation, the fauna habitat values have been significantly compromised. Overall, the site encompasses four fauna habitats, as described within **Table 4** and **Figure 9**.

Table 4: Fauna habitats present within the site

Habitat type	Description	Area (ha)
<b>Woodland</b>	Woodlands to open forests <i>Eucalyptus rudis</i> , * <i>Eucalyptus camaldulensis</i> , * <i>Eucalyptus</i> spp. and <i>Casuarina obesa</i> over non-native grasslands.	0.67
<b>River</b>	Open water forming part of the Swan River	0.45
<b>Fringing riverine vegetation</b>	Open to closed formland, rushland and shrubland fringing the Swan River and subject to varying levels of inundation	3.05
<b>Grassland</b>	Dense non-native grassland with scattered trees and shrubs	4.80

The highest fauna habitat values within the site are associated with the **woodland, river and fringing riverine vegetation**.

One priority fauna species, *Isodon fusciventer* (quenda) (P4), was recorded in the site from indirect foraging evidence. Characteristic foraging holes attributed to quenda were recorded within a patch of the woodland habitat in the western portion of the site. Quenda are commonly encountered within urban and suburban areas of Western Australia's southwest (DBCA 2017), occupying dense scrubby, often swampy, vegetation with dense cover up to one metre high (DEC 2012). However, since the quenda is known to persist within the Perth metropolitan region, it is unlikely that the site specifically provides significant habitat for the species.

An additional 21 fauna species of conservation significance are considered likely or possible to occur within the site, of which 20 species are birds and one is a mammalian species. Notwithstanding this, the site mainly provides habitat for common and widespread fauna species, with the species recorded in the application area being generally common and widespread on the Swan Coastal Plain.

Two black cockatoo species have the potential to occur in the site: Carnaby's Black Cockatoo and the Forest Red-tailed Black Cockatoo. Given the site is outside the known range of Baudin's Black Cockatoo, it is unlikely to occur within the site. The vegetation present within the site does not represent significant foraging habitat for these two species, as no primary food plants and only scattered secondary food plants were recorded within the site. A total of 10 potential breeding habitat trees were recorded within the reserve, none of which contain hollows suitable for use by breeding black cockatoo species. There are no known Carnaby's black cockatoo breeding locations within 12 km of the application area (Johnstone *et al.* 2011), and the forest red-tailed black cockatoo are also less likely to breed on the Swan Coastal Plain, with the preferred breeding habitat located in

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the south-west forests (DoEE 2008). As there are no known breeding locations within the vicinity of the site, it is not considered to support breeding habitat significant to either of the black cockatoo species. There was also no evidence of roosting activity such as droppings, feathers or branch clippings observed during the field survey.

#### 2.2.7 Environmental weeds

The site survey identified 46 non-native (weed) species, with grass species dominating the site and the wider Precinct A and Precinct B area. Within the site, Couch (*Cynodon dactylon*) was common close to the shoreline, up to the high tide line. Kikuyu Grass (*Cenchrus clandestinus*), Pampas Grass (*Cortaderia selloana*) and Common Sowthistle (*Sonchus oleraceus*) were more frequent further away from the waterline (Emerge Associates 2021c).

One species listed as a declared pest (C3) pursuant to the *Biosecurity and Agriculture Management Act 2007* (BAM Act), *Tamarix aphylla* (athel pine), was recorded within the site. Multiple athel pine individuals were recorded throughout the site and occur as groups of plants and scattered individual trees. Athel pine is also listed as a Weed of National Significance (WoNS) (Emerge Associates 2021c).

#### 2.2.8 Disease

There are no known issues associated with plant diseases within the site.

#### 2.2.9 Bushfire

The site is not designated as 'bushfire prone' in accordance with the state-wide *Map of Bush Fire Prone Areas* produced by the Office of Bushfire Risk Management (OBRM). On this basis, there is no requirement to consider bushfire hazard and risk in accordance with the *State Planning Policy 3.7 Planning in Bushfire Prone areas* (WAPC 2015) and the *Guidelines for Planning in Bushfire Prone areas Version 1.1* (WAPC and DFES 2017).

### 2.3 Cultural and social values and use

#### 2.3.1 Aboriginal heritage values

The Swan River and its foreshores are recognised not only for their mythological significance to Aboriginal people, but also as historic food, resources and occupational areas (DPLH 2021, Landgate 2021). Aboriginal occupation of sites along the Swan River dates back at least 38,000 years, with the river functioning as both a valuable source of food and for meeting places, particularly at recognised crossing points. There are a number of recognised Aboriginal Heritage sites within the vicinity of the foreshore reserve including the Swan River itself.

The foreshore reserve approach has been formulated in consultation with Indigenous traditional owners. The Environmental Assessment and Justification Report (Emerge Associates 2011a) outlines the known Indigenous sites relevant to the BPRR area and outlines ethnographic investigations that have been undertaken to inform the LSP.



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#### 2.3.2 Non-Indigenous heritage values

There are no non-indigenous heritage sites within the site. Nearby the site, there are two heritage sites as listed by the Heritage Council of WA (and the Town of Victoria Park), including Old Burswood Canal and the Burswood Casino to the south of the Graham Farmer Freeway. These sites will not be relevant for the implementation of this FMP.

#### 2.3.3 Community use values

Currently, the foreshore reserve is comprised of cleared open ground with a mix of native and exotic flora species. There are currently no hardstand or recreational structures present onsite, however, the existing racecourse track chute extends from the central region of Precinct A to the northern boundary of the foreshore.

The foreshore reserve is generally inaccessible and does not accommodate any form of recreational use. The proposed development adjacent to the site and broader BPRR area is an opportunity to facilitate improved access to and usage of the river, and the use of the foreshore for passive recreation which is not currently supported by the existing condition of the foreshore reserve.

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## 3 Foreshore Design

### 3.1 Vision and objectives

As outlined in the FMS (Emerge Associates 2011b), the vision for the foreshore reserve across the entire BPRR LSP area is to:

*Create an area that supports rehabilitated riverine vegetation, restored ecological function and an amenable and useable system of open space which encourages outdoor activity and interaction with nature.*

The principles in the FMS focus on naturalistic restoration of the existing degraded areas with a strong focus on endemic plant species. The overall design approach should balance the needs for river edge stabilisation, storm water management, habitat creation, foreshore restoration and controlled human activity, including informal passive recreation linked to community benefit, education and appreciation.

The primary objectives for the entire BPRR LSP foreshore reserve as outlined in the FMS (Emerge Associates 2011b) and to be adopted by default this FMP include:

1. Retaining and enhancing natural elements of the foreshore, such as remnant foreshore vegetation and the influence of the Swan River estuary.
2. Rehabilitation of degraded areas through soil/landform amelioration, weed control and planting of endemic plant species.
3. Creating functional and useable open spaces for the enjoyment of the entire community and local residents that is fit for its iconic location.
4. Creating a framework for the management of recreational use that does not impact on the natural values of the Swan River.

More specifically, the key principles that have guided the design and management approach for the Precinct A foreshore reserve include the following:

- Protect remnant riparian vegetation associated with the Swan River.
- Provide public access and amenity along the foreshore reserve.
- Restore riparian vegetation including TEC in bare or currently weed infested areas.

### 3.2 Local development plan

The *Burswood Peninsular: Belmont Park Racecourse Precinct A Local Development Plan* (Element 2021) was prepared on behalf of Golden Group Development Pty Ltd in October 2021. Referred to as the Precinct A LDP, its purpose is to:

*Coordinate and guide the development of Precinct A by expanding upon the planning framework established by the Structure Plan. Development controls within this Local Development Plan seek to facilitate a mix of residential developments at varying scales, densities and locations in response to the opportunities afforded by the Precinct's interfaces with the Swan River and Belmont Racecourse.*

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The Precinct A LDP will guide the future decision-making processes for development when considering applications for Development Approval, and also informs public realm design standards related to the subdivision approval process. The report further clarifies the expectations of the Local Government in relation to any future development undertaken by any party (not just Golden Group Development Pty Ltd) within Precinct A. The landscape concept plan and associated cross sections have been provided in **Appendix A**.

The vision established for the Precinct A LDP is as follows:

*Development of Precinct A will embrace the Swan River and seamlessly integrate new homes into the landscape. While maximising riverside views and encouraging wellness, the precinct holds elegant, generously sized homes with multiple, flexible layouts. The Precinct will be connected to allow for places for habitation, social interactions and chance meetings for its residents.*

### 3.3 Landscape concept

The landscape concept plan illustrates a combination of hard and soft scape strategies deployed throughout the foreshore reserve, which ultimately aim to support the existing and new community and regenerate the natural environment.

Hardscape strategies will include the establishment of pathways, boardwalks, jetties, shelter structures, fencing, and limestone headwalls, with the aim of supporting:

- Resilient and attractive furniture and public structures.
- Universal access, where appropriate.
- Strong connection to the River.
- The protection of wildlife present within the foreshore vegetation.

Softscape strategies, however, will include the establishment of turf spaces, bioretention swales, and the establishment of native species, with the aim of supporting:

- An attractive and pleasant recreational setting.
- Native vegetation that restores the riparian zone and the Coastal Saltmarsh TEC.

#### 3.3.1 Intent and level of detail

The concept landscape plans prepared by Hassell (2021) provide a conceptual framework for the implementation of this FMP (see the open space management strategy provided as **Appendix F**). These will guide the preparation of detailed engineering design and landscape design that will be prepared as part of the subdivision process. The assessment and approval of these detailed designs by both the ToVP (as part of subdivision) and SRT (through DBCA) (as part of Development Approval) will likewise be guided by the Precinct A LDP and FMP.

The foreshore engineering works required to be undertaken across the reserve has been further described in **Section 4**.

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### 3.3.2 Design approach

The proposed foreshore landscape design was created with the intent to support community living within the natural environment. The design principles adopted to support Precinct A design have been provided within **Table 5** (Hassell 2021), which simultaneously responds to the foreshore reserve and the adjacent development space.

Table 5: Precinct A Design Principles

Place	Environment	Connection
<ul style="list-style-type: none"> <li>• Create a beautiful and enticing landscape experience for residents and the broader community.</li> <li>• Balance landscape character and community activation to ensure the environment is peaceful and in keeping with its locale.</li> <li>• Provide opportunities for river engagement for fishing, bird watching and small boat mooring.</li> <li>• Ensure the landscape is comfortable for people.</li> <li>• Create places to sit, contemplate and view the environment.</li> <li>• Tell stories of place – natural, aboriginal and post settlement.</li> <li>• Create a safe and inviting environment for all.</li> <li>• Explore opportunities for river's edge interventions (beaches, jetties, boardwalks).</li> </ul>	<ul style="list-style-type: none"> <li>• Re-establish a landscape rich in native flora and fauna.</li> <li>• Retain native plant communities.</li> <li>• Regenerate degraded native plant communities.</li> <li>• Light touch approach to the river's balancing nature, access and stability.</li> <li>• Minimising amount of fill required</li> <li>• Rational solution to geotechnical/contamination issues.</li> <li>• Integrate nature systems approach to dealing with stormwater.</li> <li>• Minimise amount of irrigation and fertiliser requirements.</li> </ul>	<ul style="list-style-type: none"> <li>• Create a legible and easy to navigate landscape experience for the residents and wider community.</li> <li>• Integrate a shared pathway around the peninsula connecting to Precincts B and D as part of the DBCA River Park Trail.</li> <li>• Ensure the landscape is easily accessible by all promoting activity based movement (walking, running, cycling).</li> <li>• Integrate vehicles sensibly within the streetscape ensuring pedestrian pathways are well designed.</li> <li>• Ensure service and maintenance access is accommodated.</li> </ul>

To inform the detailed landscape design, a tree assessment was undertaken in June 2021 (Emerge Associates 2021d) within the foreshore reserve (**Appendix G** and as shown on **Figure 10**). The foreshore reserve will be landscaped as a parkland setting, which will include the retention of suitable trees and the planting of new native trees that will allow open views and clear access underneath. It is the intention to retain as many trees as practically possible given the immediate amenity benefits that they will provide. Where trees are proposed to be removed, this has been based upon their 'low' or absent value, which considers health, structure and origin. **Section 4.6** outlines the proposed tree retention outcomes for the foreshore reserve area, which will be further detailed as part of the future development application to support foreshore development works.

The concept design for the foreshore (**Appendix A**) includes provision for the following hard engineering works/treatments:

- Landscape batter with dry stacked rock to stabilise the slope.
- Small areas of boardwalk
- Recreational jetty providing opportunity to launch and moor personal watercraft
- A paved dual use path at the interface of the foreshore reserve, adjacent development area
- Two new beach areas with limestone headwalls

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The proposed landscape treatments for the foreshore reserve are intended to improve public access and connectivity to the river. Universal access will be provided through the foreshore reserve, and it is anticipated that wayfinding signage will be established, which will provide additional detail on the exact universal access provisions and direction.

As detailed within the local development plan (Element 2021) the foreshore will provide public access across its entire length through the use of paths and boardwalks, whilst respecting the environmental sensitivity of the Precinct A foreshore. Within the site, an area referred to as the 'non-accessible foreshore area' is delineated along the Swan River's edge. This area will be separated from public usage areas and will undergo ecological restoration. The primary approach for this area is to reinstate and re-establish the native vegetation to maximise fauna habitat and ensure the overall riparian values are maintained and further enhanced.

#### 3.3.3 Ecological restoration

The non-accessible foreshore area will be subject to ecological restoration, with particular focus on the coastal saltmarsh TEC/PEC. Generally, restoration will occur between the Swan River and the dual use path, excepting the beach areas, as shown in **Figure 11**. Restoration will aim to enhance existing native vegetation and restore native vegetation in disturbed areas, providing ecological function and fauna habitat. The restoration approach is detailed in **Section 4.7**.

#### 3.3.4 Pathways

The concept landscape design incorporates pedestrian and cycling pathways, which are proposed to enhance the existing comprehensive regional network along the Swan River as well as manage public access to maximise the retention of fringing vegetation. A 3.5 m wide dual-use pathway is proposed throughout the foreshore reserve adjacent to the Swan River, and ultimately progresses unbroken to the larger area connecting to Precinct B and Precinct D in the south. The provision of these pathways are consistent with the outcomes of the FAMP (ToVP 2015), which sets out a requirement for continuous pedestrian access around the Belmont Park foreshore, utilising a mixture of pathways and boardwalks. Pathway arcs are primarily proposed to extend across the western region of Precinct A, connecting the upper level (urban development) to the river outlook nodes.

The dual-use pathway varies in elevation across the reserve, from approximately +1.0 mAHD to +1.8 mAHD. Historical investigations have identified that the lower path should be situated at +1.5 mAHD at a minimum, to prevent the access being flooded during extreme events.

Pathway levels will be resolved as part of a detailed design.

#### 3.3.5 Boardwalk

The foreshore concept plan illustrates the presence of three boardwalks within the reserve, all of which provide connection to the jetties. Each boardwalk is proposed to accommodate pedestrian access and will not accommodate any form of vehicular access. Within the western portion of the foreshore reserve, a boardwalk is proposed to extend across the ephemeral water body and complimenting vegetation to provide access to the Swan River.

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The boardwalk decks vary in elevation between approximately +1.30 mAHD to +1.50 mAHD. At this level, the boardwalk may flood during high water levels as well as extreme events (river floods or extreme storm surges).

The extent of the boardwalk and indicative cross-sections are contained in the landscape concept design (see **Appendix F**).

Boardwalks will be specifically addressed in detailed design drawings supporting future applications for Development Approval and will not be constructed without a specific Development Approval authorisation.

#### 3.3.6 Jetties

The foreshore concept plans show three jetties within the foreshore reserve. Whilst the proposed jetties are currently conceptual, MP Rogers & Associates (2021) has considered their intended design for pedestrians and fishers.

The jetties are located outside the marked boating channel and key areas and are therefore unlikely to cause a significant impact on boating. The lowest of these jetties are shown around +1.0 mAHD, indicating that the structures will occasionally be impacted during high water levels as well as extreme events (river floods or extreme storm surges).

The proposed locations for jetties and their integration into the landscape design are contained in the concept landscape design (**Appendix F**).

Jetties will be specifically addressed in detailed design drawings supporting future applications for Development Approval and will not be constructed without a specific Development Approval authorisation.

#### 3.3.7 Landscape batter

A landscape batter comprising dry stacked limestone boulders interspersed with vegetation is proposed along the northern interface of the foreshore reserve. This will be used to minimise/remove the requirement of fill material, due to the presence of the floodway (see **Figure 5**). Informal and stepped access should connect the foreshore to the townhouses and provide universal access via a ramp and/or sloping pathway. As required, retaining walls may be used around the stairways.

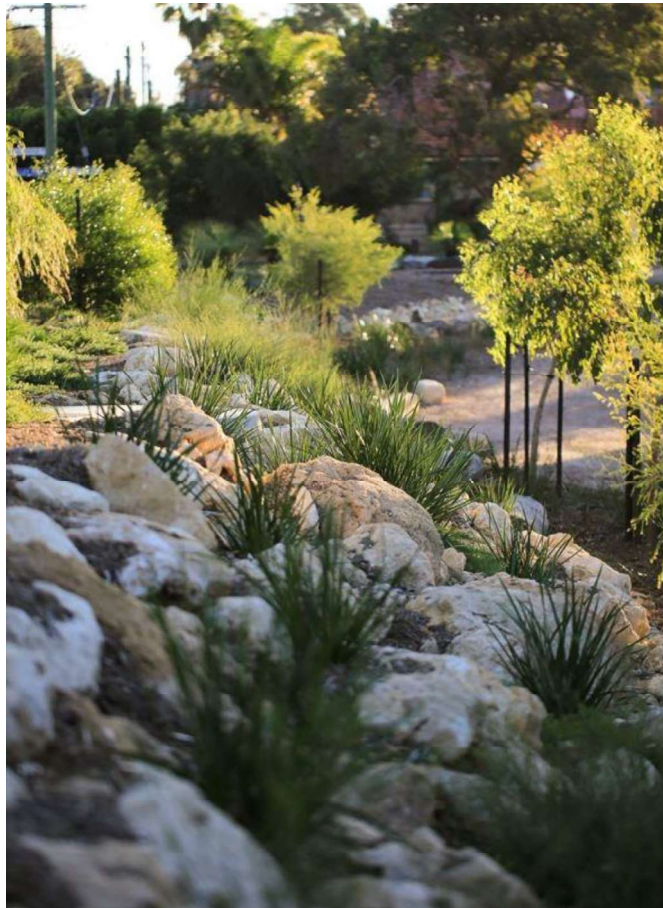
The landscape batter will be specifically addressed in detailed design drawings supporting future applications for Development Approval and will not be constructed without a specific Development Approval authorisation.

**Plate 9** provides an illustrative example of the proposed batter within the Precinct A foreshore reserve.



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*Plate 9: Reference of the proposed landscape batter within the northern region of the foreshore reserve*

### 3.3.8 Beaches

Two beaches are proposed within the northern region of the Precinct A foreshore. As described in **Section 4.3.1**, the MP Rogers & Associates (2021) report has specified that the beaches will need to be designed at a flat grade to prevent loss of material (approximately 1V:15H from -1 to +1 mAHD) with an appropriate buffer (MP Rogers & Associates 2021). The buffer will include adjacent rock work to limit sand movement. Beach access will be provided through steps connecting to the dual use path network.

The two beaches will be specifically addressed in detailed design drawings supporting future applications for Development Approval and will not be constructed without a specific Development Approval authorisation.



## 4 Management Elements

The FMS (Emerge Associates 2011b) provides a framework for the key considerations to be addressed within precinct level FMPs. The key considerations were termed 'management elements'. These management elements provided background and further likely design and management requirements for the following:

- Construction management
- Landform and soils
- Bank stabilisation and treatments
- Rehabilitation/ecological restoration
- Fauna management and habitat creation
- Water management and water sensitive urban design
- Formalised landscape treatments
- Access
- Amenities and structures
- Beaches
- Interface management
- Bushfire management
- Pest management
- Education and Indigenous heritage.

Each of the management elements are addressed below, in terms of:

- The key requirements for the FMP as identified in the FMS.
- The key design considerations already adopted in the Precinct A LDP and FMP.
- Required implementation responses in terms of detailed design, construction, maintenance and handover.

Each of the management elements and the associated responses or future management requirements as adopted or outlined respectively within this FMP are summarised in **Table ES1** within the Executive Summary of this document. This summary can be used to plan for and track the implementation of the FMP.

### 4.1 Fauna management and habitat control

The non-accessible areas will be subject to restoration (refer **Section 4.7**) and will provide habitat for fauna. During construction works areas of native vegetation to be retained will be protected with temporary fencing (refer **Section 4.2.2**).

Where possible, woody debris and perching habitat will be placed within the restoration areas to provide habitat for fauna. This will be undertaken when suitable debris is available onsite and where it is safe and practical to do so.

The existing native vegetation, particularly the **woodland** and **fringing riverine vegetation**, provide shelter and foraging habitat for a variety of fauna, particularly bird species. Restoration works, as

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described in **Section 4.7**, will enhance these habitat values. The species and densities proposed within **Section 4.7** currently occur within the site and will enhance the existing fauna habitat values.

Any potential impacts to fauna species will be addressed through applicable environmental approvals to support development, as required. Construction will be managed to ensure activities do not significantly impact on water quality that would then impact adversely on aquatic fauna and associated habitat.

## 4.2 Construction management

### 4.2.1 Disturbance

Intensive geotechnical pre-treatment is required within the site, which was the primary consideration for development works extending outside the development areas and into the foreshore reserve when the FMS was prepared.

On 8 September 2021, Emerge Associates lodged clearing permit CPS 9424/1 with DWER on behalf of the applicant. The clearing permit was lodged to facilitate the pre-development works required to commence the BPRR, as the overall development footprint (28.05 ha) contained 3.33 ha of native vegetation. Specifically, the application described the intention of pre-loading fill material within the development area to allow for the consolidation of the sediments prior to construction occurring. This fill would be required to remain in place for approximately 18 months prior to the commencement of development (Emerge Associates 2021a).

On 5 November 2021 DWER requested additional information to enable finalisation of the clearing permit process and identified that the development footprint should be modified to reduce impacts to the federally listed TEC and fringing vegetation within the site. Through a revision of the proposed geotechnical site preparation works, the overall development footprint has been reduced from 28.05 ha to 26.38 ha. The revised approach incorporates concrete modular columns (CMC) which reduces the area required for clearing through the consolidation of sub-surface material without the need for pre-loading. This approach has been applied to the north-eastern portion of the application area, allowing for the reduction in the proposed clearing footprint (Emerge Associates 2021b). The extent of proposed clearing within the western portion of the application area is based on the geotechnical approach of using pre-loading fill to consolidate sub-surface sediments (as proposed within the initial application), with further investigations to determine whether this approach is suitable, with the application area likely to be further reduced at the time of clearing. Upon refinement, the application proposes to remove 2.53 ha of native vegetation, a reduction of 24.02% from the initial application. This has also resulted in a reduction to the coastal saltmarsh TEC and a reduction in the amount of vegetation in 'good' or better condition being impacted (Emerge Associates 2021b).

A development application for the northern region of the site has also been submitted to ToVP on 8 September 2021 to commence site works, which is currently under assessment by ToVP and DPLH (Emerge Associates 2021a). **Figure 12** further illustrates the extent of the geotechnical treatment within Precinct A.

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Due to the nature of the proposed works within the site, dewatering will not be required. During the installation of the sewer line within the road reserve in the adjacent development footprint, dewatering will likely be necessary however, this will be situated away from the foreshore reserve. Any dewatering will therefore need to be managed within the development area and accompanied with an Acid Sulfate Soils Dewatering Management Plan (ASSDMP).

Individual construction sites will need to be managed to avoid uncontrolled stormwater discharge and the loss of rubbish/litter offsite and into the foreshore reserve, and construction within development lots will be controlled through the separate Development Approval process for residential and commercial buildings.

Notwithstanding this, the construction of the dual use path, beaches, boardwalk, and other hardscape treatments will require extensive construction activities within the Precinct A foreshore reserve. The location and nature of these features are outlined in **Section 3.3** and the required works for these will be addressed in detailed design and as part of Development Approval applications. The primary management considerations associated with these construction activities will be:

- Retaining existing trees within with the Precinct A foreshore reserve wherever possible (and in accordance with **Figure 10**).
- Minimising direct impacts to the Swan River through minimising the construction footprint.
- Avoiding significant indirect impacts to the Swan River through sedimentation, primarily through the controlled construction of the edge treatments and appropriate stabilisation of foreshore reserve areas during construction works, particularly if these occur during winter.

#### 4.2.2 Temporary fencing

There are areas of intact remnant vegetation present within the site and therefore, temporary fencing will be delineated during geotechnical site works (see **Figure 12**) to facilitate preparation of the soil, and during the landscape works (see **Figure 14**) to facilitate the establishment of hardscape features.

Furthermore, trees identified for retention within the foreshore reserve will be clearly flagged prior to the commencement of construction works, individually identified, and a register maintained of these trees. Temporary fencing will be established around the TPZ to ensure the ground is protected from being compacted or disturbed from heavy machinery. Any trees that require removal (due to tree health and/or safety reasons) will be carefully removed individually with chainsaws and smaller machinery/equipment. Woody debris from these trees will be considered for placement within the foreshore reserve.

#### 4.2.3 Site induction

The relevant aspects of this FMP, and foreshore management requirements generally will need to be addressed as part of inductions for the following parties:

- **Contractors undertaking construction and/or remediation river edge treatments:** this is to focus on the extent of works (or limitations thereof) and particular requirements to minimise

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direct impacts through construction works and indirect impacts on the Swan River through sedimentation.

- **Contractors undertaking works within the adjacent development area as part of subdivision works:** this is to focus on the extent of works (or limitations thereof) and particular requirements to avoid impacts on the foreshore reserve.
- **Contractors undertaking landscape works (both hard and soft):** this is to focus on how landscape works need to be undertaken to minimise impacts on the foreshore reserve, properly implement landscape treatment works, and avoid impacts on the Swan River.
- **Contractors undertaking works within individual development lots:** this is to focus on the requirements to limit the works and any associated impacts arising from work to within the development lots.

#### 4.2.4 Construction environmental management plan

Following finalisation of the detailed landscape design process, a development approval application will be lodged with the WAPC and ToVP to allow for implementation of landscape works within the foreshore reserve. It is anticipated that the subsequent approval conditions will include a requirement for the preparation and implementation of a Construction Environmental Management Plan to support landscaping works within the foreshore reserve. This requirement will then be specified in all construction contracts applicable to the foreshore reserve for implementation.

#### 4.2.5 Access management

In addition to the above, the management of public access will be a key consideration during construction. It will be important to establish and maintain access within Precinct A (and the foreshore) throughout construction, while still maintaining safety for foreshore users. Access management will be addressed through condition/s of development approval, and will consider traffic management, pedestrian and cycle access during the relevant construction phase.

### 4.3 Landform and soils

#### 4.3.1 Landform modification

Within the foreshore reserve of Precinct A, the topography is proposed to be altered through the introduction of fill material. The concept landscape design contained within **Appendix F** illustrates the final landform compared to the pre-existing contours.

Current surface levels will be modified to achieve the surface necessary for public access and use. This varies across the precinct, from approximately 1.5 mAHD at the foreshore reserve boundary grading to approximately 3.5 mAHD at the development area boundary within the western park. The pre-existing dredge bund along the western periphery will also be removed to allow for tidal inundation of the riverine edge and encouragement of reed and sedge growth (Emerge Associates 2011c).

A landscape batter with dry stacked rock to stabilise the slope will be established within the northern park zone. The purpose of this batter is to minimise the requirement of fill in the floodway zone.

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Two beaches shall be provided within the northern park, which will need to be designed at reasonably flat grades to prevent loss of material (approximately 1V:15H from -1 to +1 mAHD) with an appropriate buffer (MP Rogers & Associates 2021). The buffer will include adjacent rock work to limit sand movement. Additional sand may be added to the beach to increase the usability of the area.

The extent of the mapped Swan River floodway within Precinct A (DWER 2021) is shown in **Figure 5**. The floodway is primarily restricted to the Swan River's edge along the western park, whilst the floodway encompasses the entire foreshore reserve in the northern park. Whilst fill material will be placed within the reserve, the effect this will have on the topography will be minimal. Therefore, the landform modifications are not considered to significantly impact on the previously determined extent of the floodway.

The proposed modification is therefore necessary to ensure the completed foreshore reserve is accessible and suitable for the intended high levels of public access and usage. The proposed final foreshore slopes are shown conceptually in the foreshore concept design contained in the open space management strategy (see **Appendix F**) and will need to be maintained to provide for safe and universal access.

#### 4.3.2 Soil remediation contamination

Multiple site investigations have been completed across the BPRR area (inclusive of Precinct A) as detailed below:

- *Preliminary Acid Sulfate Soil Investigation – Belmont Park Racecourse Redevelopment* (Emerge Associates 2011e)
- *Preliminary Site Investigation – Belmont Park Racecourse Redevelopment* (Emerge Associates 2011f)
- *Ground Gas Investigation: Perth Riverfront – Lot 102* (Emerge Associates 2015b)
- *Detailed Site Investigation – Perth Riverfront Precinct A (West)* (Emerge Associates 2016)
- *Detailed Site Investigation – Perth Riverfront Precinct A (North)* (Emerge Associates 2015a).

As described in **Section 2.2.3.3**, the western region of the reserve was classified as 'Remediated for restricted use' under the CS Act in October 2019. A remediation approach has been established to ensure the foreshore reserve is suitable for public purposes.

The fringing foreshore area will be inaccessible to the public, will maintain existing foreshore levels and retain high quality endemic vegetation. Due to the presence of uncontrolled fill material with the occasional ACM fragments within this area, exposed surfaces will need to be validated. Where existing vegetation is present an ACM assessment will be required (i.e. visual and shallow test pits) to determine the presence and extent of ACM fragments. Based on the results, manual removal (i.e. emu pick) of the ACM fragments may be proposed to remediate these areas and achieve the remedial target for ACM. Final visual ACM inspection will be undertaken to validate the remediation, including closely spaced transects (10 m spacing) conducted in perpendicular directions. The visual inspection will comprise two inspection passes at 90° to each other. In areas that do not currently support vegetation, fill material will be excavated to a minimum depth of 0.1 mbgl. These materials

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can be contained in the preloading area if their geotechnical properties are suitable. Imported heavy loamy clay will be reinstated to the current levels and revegetated with native plant species.

The remainder of the western foreshore reserve located adjacent to the urban development will be readily accessed by the public, incorporating turf and landscape planting beds. This area will be raised with imported fill to the residential area (approximately 4 mAHD). The uncontrolled fill will be contained, and the accessible ground surface will be free of visible ACM. It is expected that some areas will require excavation below 1.6 mAHD, in the uncontrolled fill layer. Excess material will be managed and contained at an appropriate depth in the fill areas. The interface between the uncontrolled fill and the imported fill will be separated with a warning barrier (geotextile or similar) and will be located at a minimum depth of 0.8 mbgl.

With respect to the potential remediation requirements for the western foreshore reserve in Precinct A, the investigations to date have confirmed:

- The only identified contamination which requires management/remediation is the presence of ACM in the soils that form part of the fill material (fly ash, dredge fill and uncontrolled fill).
- Investigations to date confirm that the concentration of chemical contaminants in the soil do not pose a significant risk to human health or the environment. There is currently no evidence to indicate the site has been impacted by ASS however management of soils on-site will be required during earthworks to ensure that ASS impacts do not eventuate as soils are exposed.
- Groundwater beneath the site generally has a slightly acidic pH although does not appear to have been acidified to a significant degree by dredge fill and is brackish to saline. A number of metals, inorganics and nutrients exceeded the adopted assessment levels for human health (domestic non-potable and NPGU) ecological (FW and MW) receptors across the site however there was no significant risk identified with regards to human health and ecological receptors.

Contamination within the northern foreshore reserve of Precinct A is minimal and does not require remedial works. **Figure 3** identifies the extent of contamination and **Figure 13** identifies the soil remedial works.

#### 4.3.3 Soil suitability for plant growth

Soils identified as being detrimental or restrictive to plant growth will need to be treated to allow productive plant growth.

Uncontrolled fill material has been historically placed over the site, consisting of fly ash, dredge fill and uncontrolled fill. However, as detailed in **Section 4.3.2**, there is no current risk to the environment from chemical impacts. There is evidence of existing soil acidity in the dredge fill and potential acidity has been largely identified in natural soils. Therefore, these soils may need to be neutralised through a liming material.

The removal of surface material and importation of clean fill will further ensure a suitable medium for plant growth. This will be in accordance with the requirements detailed in the *Landfill Waste and Classification Guidelines 1996 (as amended 2019)*.

The formalised softscape treatments are proposed to ensure the following:

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- Installed softscapes (including plants) remain healthy and achieve high survival rates.
- Plants require minimal irrigation inputs (i.e. soils retain moisture).
- Plants require minimal fertiliser inputs.

#### 4.4 Stabilisation and treatment

The foreshore reserve within Precinct A is stable and not subject to erosion, as detailed within **Section 2.2.4.4**. The fringing foreshore is proposed to be revegetated, which has been described in **Section 4.7**.

#### 4.5 Water management and water sensitive urban design (WSUD)

##### 4.5.1 Stormwater management

Emerge Associates (2012) prepared and submitted a LWMS for the wider BPRR LSP, which forms the basis for the water management strategies across the site and Precinct A foreshore.

The stormwater drainage concept, as described in **Appendix F**, illustrates the conveyance of treated water into the foreshore reserve through POS green fingers from the adjacent urban development footprint. The drainage collection and conveyance system will include vegetated swales within road medians and/or biofiltration swales within green spaces abutting the residential properties and integrated with other features such as a pedestrian pathway. The biofiltration swales are proposed to be 0.3 m – 0.5 m deep, planted with native vegetation and underlain by soils capable of treating pollutants. Widths will vary pending available land area. In some areas sub-surface water storage may be used to ensure that the first 15mm of runoff is managed within the site. These would be located beneath road medians or the pedestrian pathway and will utilise stormtech or ecoaid cells or another similar product. Where utilised, runoff entering the underground chambers will be pre-treated with a gross pollutant trap or similar and will then detain frequent runoff event stormwater runoff. Water managed within the subsurface storage will either infiltrate into the underlying soils and migrate via soil and/or subsoil drain towards the foreshore, or for higher flows there may be high level overflow via culvert to the foreshore boundary.

There will be no stormwater basins located within the foreshore reserve. Conveyance of water that has been treated within the site prior to discharge to the foreshore will be required through the foreshore area and this will likely be shallow swales/flow pathways that will generally be planted with a mix of endemic trees (including retained trees where applicable) shrubs, grasses and reeds, such as Sea Rush (*Baumea juncea*) and Marsh Club-rush (*Bolboschoenus caldwellii*) (Hassell 2021) (**Appendix F**). The vegetated flow pathway will provide increased 'roughness' that will assist in managing peak flow rates leaving the site to those experienced in the pre-development environment and details in the LWMS.

Stormwater runoff generated within the foreshore reserve will be managed consistent with a riverine foreshore area, in that it will gradually flow towards the Swan River via sheet flow over vegetated surfaces.



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The approach to urban water management will be documented in an UWMP, as per the requirements of *Better Urban Water Management* and other relevant guidelines, which will demonstrate compliance with the overarching LWMS (Emerge Associates 2012).

#### 4.5.2 Irrigation management

Irrigated areas within the Precinct A foreshore reserve area will occur within the northern foreshore and the central foreshore and to a much lesser extent, the southern foreshore.

The landscape concept design shows the following planting areas, and the irrigation needs for these areas are also summarised below:

- **POS (Landscape planting beds):** irrigation will adopt a general 'waterwise' approach using appropriate species selection. There is the possibility that in some of these areas irrigation will only be used for establishment, or application rates significantly reduced once plants have been established.
- **POS (Proposed turf):** irrigation will be required to establish and maintain these areas.
- **Native revegetation planting:** given the more natural approach for planting in this area (a revegetation approach) irrigation will not be required in this area, except for potentially as part of establishment should extremely dry seasonal conditions prevail.

##### 4.5.2.1 Irrigation water source

Groundwater will be used to satisfy irrigation requirements within the Precinct A foreshore reserve and will be extracted from the Leederville aquifer and/or the superficial aquifer. DWER have historically granted a groundwater licence from the Leederville aquifer, however this licence requires renewal and will be obtained prior to construction.

##### 4.5.2.2 Irrigation management

The non-accessible area, which makes up a large portion of the site, will be targeted for revegetation and restoration. These areas have minimal irrigation requirements as they will adopt endemic plant species and intend to be a natural treatment of the river's edge.

The areas shown on the landscape concept as 'lawn' will support turfed areas and will have the highest irrigation demands. These areas have been targeted to be away from the river edge and in areas that are easily accessed for ongoing maintenance and management. All other areas are either hardscaped which require no irrigation or 'landscape planting' areas, which have a reduced irrigation demand (compared to turfed areas). Application of fertilisers and nutrient treatments will only occur in 'proposed turf' and 'landscape planting' areas. Restoration areas along the River's edge will not be fertilised.

As part of the detailed landscape design, an irrigation system design will be prepared which will also consider the need (if any) for groundwater treatment prior to its use in irrigation.

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#### 4.6 Remnant vegetation and individual trees for retention

Remnant native vegetation and native trees located within the non-accessible area and outside of the clearing permit area will be retained. In addition, trees within POS areas will be retained where possible.

A total of 73 trees were recorded within the Precinct A foreshore reserve area (Emerge Associates 2021d). Twelve of these trees are *Tamarix aphylla* (athel tree), which is listed as a 'declared pest' under the *Biosecurity and Agriculture Management Act 2007* and are not proposed for retention.

Of the 61 remaining trees, 29 are proposed to be retained, with 23 located within the non-accessible area and six within the POS area. The 23 trees to be retained were identified as being of 'moderate' and low' retention value.

The proposed tree retention outcomes are detailed in **Table 6** and shown in **Figure 10**. All trees proposed to be retained have been affixed with a numbered metal tag, which provides a unique number for each tree to be referred to throughout the detailed design and development process, minimising potential risks of confusion and resultant accidental clearing.

The retention of existing trees will maximise amenity within the foreshore reserve, soften areas utilising hardscape features, provide shade, and minimise landscape costs by reducing the need for imported established trees. Tree retention outcomes within the foreshore reserve area will be further detailed as part of the future development application to support foreshore development works.

Table 6: Proposed Precinct A foreshore reserve area tree retention outcomes

Retention value	Proposed retention	Proposed removal	Total
High	0	3 (5%)	3
Moderate	14 (23%)	19 (31%)	33
Low	15 (25%)	10 (16%)	25
<b>TOTAL</b>	<b>29 (48%)</b>	<b>29 (48%)</b>	<b>61</b>

Any trees removed from the foreshore reserve area are intended to be replaced at a minimum ratio of 3 trees planted for every 1 tree removed, with any replacement trees to be accommodated in the detailed landscape design, in similar locations to the trees to be removed.

Tree protection zones (TPZ) will be identified and where possible, protected in line with AS 4970-2009 *Protection of trees on development sites*. The establishment of TPZs will be further detailed as part of the detailed landscape design to support the future development application. AS 4970-2009 TPZ requirements suggest that there is to be no disturbance within a TPZ. As this is unlikely to be possible for all trees within the site, other measures will be used to minimise the disturbance to existing trees, including the use of a specialist arboricultural site support and advice during construction.

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The developer proposes to implement a tree procurement strategy, whereby native trees are grown and held by a nursery, specifically for this project and can be utilised (as mature replacements) to replace any dead or damaged trees.

### 4.7 Ecological restoration

As outlined in **Section 2.2.5**, the site contains native vegetation including areas of the coastal saltmarsh TEC/PEC. Existing native vegetation within the non-accessible foreshore area will be retained and enhanced through native planting and/or weed control, as appropriate. Areas of non-native vegetation will be enhanced through weed management and native planting.

#### 4.7.1 Objectives and targets

Ecological restoration is targeted within the non-accessible foreshore which supports high fauna and vegetation values, and will meet the overarching FMP vision of creating rehabilitated riverine vegetation with restored ecological function (**Section 3.1**). Objectives 1 and 2 of the FMP specifically apply to restoration. Targets associated within each objective are outlined in **Table 7**. These targets are based on conditions within existing vegetation in very good condition and characteristics of the coastal saltmarsh TEC outlined in the conservation advice (DSEWPaC 2013).

Table 7: Restoration objectives and targets

Objective (Section 3.1)	Targets
1. Retaining and enhancing natural elements of the foreshore	Protect and enhance coastal salt marsh vegetation such that: <ul style="list-style-type: none"> <li>• understorey cover comprises <math>\geq 50\%</math> key native saltmarsh species (e.g. <i>Juncus kraussii</i>, <i>Salicornia</i> spp. and <i>Tecticornia</i> spp.)</li> <li>• weed cover <math>&lt; 5\%</math></li> <li>• landform is stable</li> </ul>
	Protect and enhance native woodland vegetation such that: <ul style="list-style-type: none"> <li>• native species understorey cover is <math>\geq 50\%</math></li> <li>• weed cover <math>&lt; 5\%</math></li> <li>• landform is stable.</li> </ul>
2. Rehabilitation of degraded areas	Restore coastal salt marsh vegetation such that: <ul style="list-style-type: none"> <li>• understorey cover comprises <math>\geq 50\%</math> key native saltmarsh species (e.g. <i>Juncus kraussii</i>, <i>Salicornia</i> spp. and <i>Tecticornia</i> spp.)</li> <li>• weed cover <math>&lt; 5\%</math></li> <li>• landform is stable.</li> </ul>

#### 4.7.2 Restoration areas

Restoration areas are defined within the site to assist in coordinating management. The restoration areas were defined based on existing plant community and vegetation condition, proposed clearing extent and proposed future levels (which in turn determined the appropriate future vegetation type). Details of each restoration area are provided in **Table 8** and the locations of restoration areas are shown in **Figure 11**.

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Table 8: Criteria and extent of each restoration area

Restoration area	Criteria	Area (ha)	Applicable objective (Table 7)
Coastal saltmarsh – 1	Existing vegetation in very good condition	1.73	1
Coastal saltmarsh – 2	Existing vegetation in good and degraded condition	0.12	1
Coastal saltmarsh – 3	Areas with a suitable landform for coastal saltmarsh vegetation in which existing vegetation will be cleared during earthworks	1.11	2
Woodland – 1	Existing vegetation in degraded condition	0.24	1

### 4.7.3 Input categories

Each restoration area is further classified based on input categories. Assigning input categories assists in the selection of management methods and helps to ensure the intensity of management applied within each restoration area is appropriate for existing values and threats. Three input categories have been applied to restoration areas within the site:

- ‘Low’ which comprises areas currently supporting native vegetation in ‘very good’ or better condition which will not be cleared during earthworks.
- ‘Targeted (infill)’ which comprises areas currently supporting native vegetation in ‘good’ and ‘degraded’ condition which will not be cleared during earthworks.
- ‘Intensive’ which comprises areas that currently support non-native vegetation that will not be cleared during earthworks and also areas which will be cleared during earthworks.

The methods proposed for each input category are shown in **Table 9**.

Table 9: Methods proposed for each input category

Input category	Methods		
	Landform preparation/stabilisation	Revegetation	Weed control
Low	-	-	✓
Targeted (infill)	-	✓ (infill)	✓
Intensive	✓	✓	✓

A summary of input category assigned to each restoration area is shown in **Table 10** and **Figure 11**.

Table 10: Restoration areas and applicable input categories

Restoration area	Input category		
	Low	Targeted (infill)	Intensive
Coastal saltmarsh – 1	✓		
Coastal saltmarsh – 2		✓	
Coastal saltmarsh – 3			✓

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Restoration area	Input category		
	Low	Targeted (infill)	Intensive
Woodland – 1		✓	

#### 4.7.4 Landform preparation and stabilisation

Ultimately the existing and installed vegetation will provide stabilisation of the Swan River banks. In the interim, works will be undertaken within some restoration areas to stabilise the landform, as required and described in **Section 4.3-4.4**. these works will be undertaken prior to revegetation and weed control and will aim to ensure a stable landform with an appropriate level of seasonal inundation dependent on the vegetation present or species proposed to be planted. The landform will also take into consideration fauna habitat such as provision of well-circulated embayments and lagoons that provide breeding habitat for fish or prawns and foraging habitat for wading birds. It will also ensure that areas of standing water are not created that may provide breeding habitat for mosquitoes.

Actions to create an appropriate landform for ecological restoration may include the following, as appropriate to each restoration area:

- Installation of a temporary silt barrier.
- Excavation of *in situ* fill and weedy soil out of foreshore within restoration areas.
- Installation of dry stacked rock at the estuary edge of the landform.
- Installation of jute matting or mesh from dry stacked rock to landward edge of landform.
- Mechanical soil ripping will be undertaken in areas cleared of vegetation to loosen the soil prior to tubestock planting.
- Return of clean native soils (clay loam material associated with the River) and fill to height required so that landform interacts with high to very high tidal range as appropriate.
- Verify that estuary tides distribute across the landform and pond in appropriate places but do not result in sustained ponding such that mosquito breeding may occur.

#### 4.7.5 Revegetation

Tubestock will be installed in restoration areas subject to targeted (infill) and intensive inputs.

The primary species that will be installed as tubestock are *Juncus kraussii* and samphire (*Salicornia* spp. and *Tecticornia* spp.). These species are endemic and currently occur in the site. Other species suitable for planting within restoration areas are listed in **Table 11**. An experienced restoration contractor can advise of appropriate substitutes if availability of tubestock listed in **Table 11** is limited for some species.

Planting densities will aim to meet the cover targets (refer **Table 7**). Densities will be dependent on cover of existing vegetation, where present. For example, restoration areas subject to intensive inputs will likely require installation of at least four plants/square metre (m<sup>2</sup>). Trees will only be required to be planted in woodland areas with open or no canopy cover. An experienced

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revegetation contractor will be able to advise on appropriate densities for each area based on a site inspection.

Table 11: Indicative species list for revegetation

Life form	Species	Restoration area	
		Coastal saltmarsh	Woodland
Tree	<i>Eucalyptus rudis</i>		✓
	<i>Casuarina obesa</i>		✓
	<i>Melaleuca cuticularis</i>		✓
	<i>Melaleuca raphiophylla</i>		✓
Shrub	<i>Salicornia</i> spp.	✓	
	<i>Tecticornia</i> spp.	✓	
	<i>Suaeda australis</i>	✓	✓
	<i>Atriplex hypoleuca</i>	✓	✓
	<i>Viminaria juncea</i>		✓
Rush	<i>Juncus kraussii</i>	✓	✓
	<i>Juncus pallidus</i>	✓	✓
Sedge	<i>Bolboschoenus caldwellii</i>	✓	
Herb	<i>Samolus repens</i>	✓	
	<i>Lobelia alata</i>	✓	✓

An accredited specialist revegetation nursery will be engaged to propagate the plants. Provenance considerations will also factor into revegetation works, including the collection of seed from the site and nearby areas where possible and suitable.

Tubestock be installed in a mixed mosaic pattern using a deep planting method. For example, tubestock grown to 300 mm tall can be planted with only 50 - 75 mm of stem showing above the soil surface (WAPC 2003). This positions the roots closer to water supplies and decreases water loss in hot and dry conditions. Deep planting will also help to prevent herbivory from resulting in the death of seedlings, which can easily re-sprout if the top of the plant is removed. The actions outlined in **Section 4.7.4** installed will provide further physical and herbivory protection for the growing seedlings.

Where required, tubestock will be planted over three seasons. Supplementary planting will be undertaken if the density objective is not achieved after two years.

#### 4.7.6 Weed control

Weeds were assessed as part of the *Flora, Vegetation and Fauna Assessment* (Emerge Associates 2021c) during the June 2021 site inspection (refer **Section 2.2.5** and **Section 2.2.7**).



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Weed control may be required in restoration areas prior to planting to prepare the site and reduce competition between weeds and establishing native plants. Weed control will also likely be required following planting in all restoration areas and in restoration areas not subject to planting, to suppress weeds below the objective of <5% cover and reduce competition with establishing native plants. Weed cover will be monitored twice a year, and if required, weed control will be undertaken at least twice a year in autumn and spring.

Weed control methods will be determined following an inspection of the site. Appropriate weed control methods may include both manual (hand weeding) and chemical (herbicide) based approaches. Hand weeding can be successful for certain species and when weed abundance is relatively low. When weed cover is higher a broad-spectrum herbicide formulation may be applied as a spot spray, taking care to avoid off target impact to native plants. Alternatively, if grass or bulbous weeds are prevalent a selective formulation may be applied.

Herbicides will only be applied by a Department of Health licensed pest management technician and in accordance with APVMA permit 13333 and manufacturer's instructions as provided on product label. A licensed pest management technician will be consulted on what suitable approaches would be based on information obtained during a site inspection.

#### 4.8 Formalised landscape treatments

The concept landscape design (see **Appendix F**) shows the intended landscape treatments across the Precinct A foreshore reserve area. Given the amenity needs of the site, formalised landscape treatments will involve the following:

- Areas of turf (referred to as passive lawn) across the western extent of the foreshore area.
- Formalised bed plantings, art gardens and playgrounds (referred to as nature play) across the western extent of the foreshore area.

The specific species to be utilised in the 'landscape planting' areas will be determined during the detailed landscape design process in close consultation with ToVP.

Generally, the vast majority of species used in areas of landscape planting within the foreshore reserve are proposed to be native and likely to be endemic to the Swan Coastal Plain, with the proposed planting species list is provided in **Section 4.7.5**.

#### 4.9 Access

##### 4.9.1 Pathway locations

A pathway system and public access has been considered for the full length of the Precinct A foreshore reserve area, and includes the following:

- A 3.5 m dual-use pathway that extends through Precinct A, connecting to Precinct B and Precinct D.
- Pathway arcs connecting the upper level to the river outlook nodes

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- Boardwalks that extend from the pathways to the river's edge.

The proposed locations of these features are shown on the conceptual landscape design contained in **Appendix F**. The civil and marine engineering requirements to accommodate these within the Precinct A foreshore reserve area have also been considered. The design considerations to accommodate access through the Racecourse Precinct have also been accommodated in the concept design, with the provision of an engineered edge and boardwalk structure connecting through to Precinct D.

The proposed landscape treatments for the foreshore reserve are intended to provide an environment that is easily and safely navigated. It is anticipated that wayfinding signage will be provided at the entry to Precinct A from Precinct B, and repeated through the length of the main street. The conceptual landscape design and associated path network provides for universal access, which is a key design requirement within the foreshore reserve. This includes appropriately graded topography up to the urban development area, the provision of ramps, and the provision of stair access at key and appropriate locations.

#### 4.9.2 Pathway construction details

The proposed pathway construction details have been summarised previously in **Section 3.2** and will be specifically addressed as part of detailed landscape design associated with the subdivision process and associated Development Approval process for hard works within the Precinct A foreshore reserve.

#### 4.9.3 Lighting

The lighting plan for the foreshore reserve will be addressed as part of the detailed design and Development Approval process, incorporating the following principles:

- Minimisation of light spill so that fauna, community enjoyment, vessel navigation and visual amenity are not unacceptably affected, consistent with the requirements of DBCA Policy 45 – *Planning for miscellaneous structure and facilities in the Swan Canning Development Control Area* and in consideration of the *Guide on the Limitation of Effects of Obtrusive Light from Outdoor Lighting Installations* (2003).
- Light spill to the river and vegetation will be no more than 0.01-0.03 lux (moonlight) to ensure no adverse ecological impacts.

It is anticipated that a Lighting Plan will be required as a condition of Development Approval, which will document the lighting design with regard to lighting locations, setbacks, direction, illumination, timing and efficiency.

#### 4.9.4 Security

Crime Prevention Through Environmental Design (CPTED) have been considered within the concept landscape design. The landscape has been designed to incorporate low groundcovers and shrubs to maintain clear sightlines with no visual obstacles.

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#### 4.9.5 Fencing

Habitat protection fencing will be delineated along the Swan River's edge within the northern region of Precinct A separating the dual-use pathway and public open space from the conservation area, which supports water bird breeding and feeding areas. Details regarding the type of material used to construct the fencing will be provided within the Development Application.

No other access control fencing is proposed within the Precinct A foreshore reserve.

#### 4.10 Amenities and structures

The proposed facilities within the Precinct D foreshore reserve area have been outlined in **Section 3** and are shown generally in the landscape concept design contained within **Appendix F**.

Construction and maintenance of proposed facilities will also be addressed as part of detailed landscape design associated with the subdivision process and associated Development Approval process for hard works within the Precinct A foreshore reserve.

#### 4.11 Beaches

Two beaches are proposed to be constructed within the northern region of Precinct A, with details provided within **Section 3.3.8** and **Section 4.3.1**.

#### 4.12 Urban interface

##### 4.12.1 Foreshore reserve interface

The concept landscape design provides specific consideration of the interface between the development area and the foreshore reserve. This is demonstrated in the provided cross sections through the proposed foreshore reserve, contained in **Appendix F**. Whilst the interface changes across the reserve, how this is managed is a key consideration for both the architectural design within the adjacent development area and the landscape design for the foreshore reserve.

Along the western region of the site, an area of POS and an upper-level pathway that connects to the townhouses defines the edge of the foreshore reserve. Due to the proposed importation of suitable heavy loamy clay in the western region of the site, the topography will increase from current levels to approximately 4.0 mAHD. Therefore, the final ground levels within this area will be consistent with those of the adjacent development footprint. Within the central northern region of the site, a foreshore plaza is proposed, which will comprise shelter structures, bike racks, bench seating, trees and public access to the beaches. The ramp and stairs will provide the interface between the urban plaza and foreshore beach. Across the northern extent, a landscape batter will be constructed along the interface of the reserve, which will accommodate the +2.90 mAHD difference between the reserve and the development footprint. Informal stepped access will connect the foreshore to the townhouses, which may also be integrated with retaining walls.

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Whilst the final floor levels of buildings within the adjacent development footprint have not yet been finalised, this will be resolved as part of the subdivision condition clearance and detailed building design processes. Furthermore, the design of future buildings to be established in the development zone are intended to achieve a positive interface with the foreshore.

No building structures from the adjacent urban development will extend into the foreshore reserve.

#### 4.12.2 Interface between landscape treatments and revegetation areas

As shown in the concept landscape design, the interface between the non-accessible areas (revegetation) and other landscape treatments is addressed through the provision of a dual use path (along the western region) or other maintenance barrier, such as a habitat protection fence (along the northern region). This will provide clear delineation between these areas for future management and maintenance.

#### 4.13 Bushfire

Given areas within Precinct A are not declared 'bushfire prone' the application of State Planning Policy 3.7 (SPP 3.7) *Planning in Bushfire Prone Areas* and *Guidelines for Planning within Bushfire Prone Areas Version 1.1 (WAPC and DFES 2017)* will not be relevant for this FMP.

Emergency access can be gained via the following locations:

- On the eastern edge of the site, the dual-use pathway and pedestrian boardwalk can provide access for light vehicles. Emergency access, however, can be gained across the racetrack for larger vehicles, such as fire trucks.
- Windan Bridge located on the western portion of the BPRR area can be used.

Fire hydrants will be located and available within the adjacent public road reserves.

#### 4.14 Pest fauna

##### 4.14.1 Mosquito control

An ephemeral waterbody will be retained and maintained within the western region of the Precinct A foreshore reserve, which may exacerbate the population of insects with aquatic larvae, such as mosquitos. Currently, the ToVP undertakes mosquito control by spraying roadside gullies, stormwater drains and other areas, in an effort to reduce mosquito populations during the breeding season. The stormwater treatment features and ephemeral waterbody will be designed to avoid the creation of mosquito breeding habitat and will be documented in the UWMP.

Certain landscape design elements, such as lighting and irrigation, have the potential to exacerbate existing nuisance insect issues within the foreshore reserve. As such, these design elements will be considered as part of detailed design to minimise potential nuisance insect impacts.

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#### 4.14.2 Other pests

Miscellaneous pest management will be administered by the developer whilst the foreshore reserve is under their control prior to handover. This will primarily involve preventative measures to avoid the introduction and prevalence of vermin pests, such as rats, cats and foxes. Such measures include the provision of adequate rubbish and litter disposal facilities, in addition to frequent emptying and servicing of these facilities.

#### 4.15 Education and indigenous heritage

A segment of the foreshore will be designated to allow for an interactive visitor attraction. This will form part of a larger strategic tourism framework for the site and will also tie in with the sites Aboriginal Heritage and storytelling process. The Visitor Interpretation Precinct shall encompass a visitor centre which will be the main hub for this precinct, allowing water borne activities to be undertaken.

Interpretive signage within the foreshore reserve will be informed by the *Interpretation Plan* for the Marli Riverpark, prepared by the Swan River Trust in 2014, which identifies Belmont Park Racecourse as a suitable interpretation node (Swan River Trust and National Trust of Australia (WA) 2014).

The Section 18 approval issued in 2014 does not have any conditional requirements attached (see **Appendix D**).

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## 5 Implementation

The Precinct A LDP provides for significant residential and commercial development that will be undertaken over a number of years. Given the capital intensity of such development, implementation will be undertaken in stages to spread capital needs and to match market demand for the residential and commercial properties/product created through development.

This section outlines the Precinct A development process and how this relates to the implementation of this FMP.

### 5.1 Site works

#### 5.1.1 Subdivision

As indicated previously, the key first step in the Precinct A development process involves progressing a subdivision application. This is important for two key reasons:

- It is the process through which the entire Precinct A area is physically prepared for subsequent development in a coordinated and controlled manner, including undertaking bulk earthworks, the provision of services to the entire precinct including water, wastewater, power and telecommunications, and the construction of internal public roads. It is also the process through which the treatment of POS areas and other reserves (such as the foreshore reserve) are landscaped and treated to a standard agreed by the local government and other key stakeholders.
- From a legal and administrative viewpoint, it creates the separable tenure for individual development sites from areas of POS, foreshore and road reserves, through which development sites can then be built on (or sold), and reserves can be treated appropriately and then ceded to the Crown (and vested with authorities including local government for management).

#### 5.1.2 Earthworks

The western region of Precinct A has been classified as *'remediated for restricted use'* in accordance with the CS Act, due to the presence of asbestos, metals, hydrocarbons, pesticides, sulfate and phosphorus in soils at concentrations exceeding the relevant Ecological Investigation Levels as published in the *National Environmental Protection (Assessment of Site Contamination) Measure 1999* (the NEPM). The presence of contamination has been found in limited and isolated locations and are not considered to pose an unacceptable risk to human health, the environment or environmental values. The earthworks strategy to be implemented as part of the future Precinct A subdivision process will therefore involve undertaking any remedial works identified as being required and then the importation of clean fill to achieve minimum lot levels governed by groundwater, major stormwater events and the Swan River flood levels. Any imported fill will be clean and uncontaminated (including free of weeds).

The ultimate cut to fill levels will be determined through detailed design, with specific consideration placed on interface management and tree retention. Any bulk earthworks for the development of



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the site will terminate at the development boundary and are likely to be completed separate to the foreshore works.

As outlined previously in **Section 2.2.2**, the Precinct A area is within the Swan River Alluvium zone (north and west) as well as the Guildford formation sands (north-east). Geotechnical pre-treatment is therefore proposed across the site to ensure the land is structurally adequate for the proposed development. This will involve pre-loading material and concrete modular columns/high density compaction, as described in **Section 4.3.1** and **Figure 12**. Geotechnical pre-treatment is an intensive process and can have both direct physical and indirect (i.e. groundwater quality) impacts on both the foreshore and Swan River, therefore appropriate management will be required.

Currently, the earthworks strategy does not require significant excavations, dewatering or other activities that could have potentially significant impacts on the foreshore reserve or Swan River. While subdivision works will largely be excluded from the foreshore reserve, there will be a requirement for significant works within the foreshore reserve associated with the restoration of the coastal saltmarsh and woodland areas, the construction of the landscape batter and possibly retention walls, the dual-use pathway, boardwalk and pathway arcs. These will possibly be undertaken at the same time as subdivisional earthworks, or may be undertaken strategically at a later stage, however the access to the foreshore reserve by earthworks activities will need to be carefully controlled and managed.

#### 5.1.3 Servicing

Following earthworks the subdivision process will involve the installation of services, including power, telecommunications, gas, and reticulated water and wastewater. The majority of these services are installed at a relatively shallow depth and will therefore be installed into previously placed clean fill. Wastewater will require the installation of a gravity sewer and a wastewater pump station, which will require deep excavation and dewatering. The gravity sewer and wastewater pump station are to be situated outside of the foreshore reserve. Any dewatering will be undertaken under a dewatering licence pursuant to the *Rights in Water and Irrigation Act 1914*, and managed to avoid dewatering impacts on the foreshore reserve and/or the Swan River.

#### 5.1.4 Urban water management

The subdivision stage is also the process whereby urban water management (including stormwater management) considerations are planned in detail and delivered through subdivision works. This will ensure that urban water management is undertaken in a coordinated manner taking into consideration the public roads and other reserves, and sets criteria for the future development of individual lots. This will be articulated in an UWMP, which is required to be prepared in accordance with a condition of the subdivision approval.

A stormwater management strategy has been devised for the Precinct A area that has been accommodated in the development layout shown in the Precinct A LDP and this FMP. This strategy is consistent with the overarching LWMS (Emerge Associates 2011d) and involves the following:

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- All stormwater treatment requirements (stormwater generated from events less than the 1-year ARI event) will be provided for within the development area, either within surface swales within road reserves, in subsurface infiltration structures within road reserves, or within areas of POS. No stormwater treatment will occur within the foreshore reserve.
- All larger stormwater events (stormwater generated from events greater than the 1-year ARI event) will be conveyed via the road reserve to managed discharge points through the foreshore reserve and appropriately discharged to the Swan River.
- Conveyance of stormwater through the foreshore reserve will coincide with locations where road reserve or POS is adjacent to the foreshore reserve. Conveyance will most likely be through flat vegetated swales.

#### 5.1.5 Contamination

A memorial stating '*Remediated for restricted use*' has been placed on the western region of Precinct A, as discussed in **Section 2.2.3.3**.

Multiple site investigations have been completed across the BPRR area (inclusive of Precinct A) as detailed below:

- *Preliminary Acid Sulfate Soil Investigation – Belmont Park Racecourse Redevelopment* (Emerge Associates 2011e)
- *Preliminary Site Investigation – Belmont Park Racecourse Redevelopment* (Emerge Associates 2011f)
- *Ground Gas Investigation: Perth Riverfront – Lot 102* (Emerge Associates 2015b)
- *Detailed Site Investigation – Perth Riverfront Precinct A (West)* (Emerge Associates 2016)
- *Detailed Site Investigation – Perth Riverfront Precinct A (North)* (Emerge Associates 2015a).

A Remedial Action Plan (RAP) has been prepared and will be assessed by an accredited contaminated sites auditor prior to the development of Precinct A. The RAP will ensure that the future use of the foreshore reserve and by extension, the development area, is suitable for the proposed land use.

#### 5.1.6 Title creation

Following the satisfaction of all conditions associated with the subdivision approval, it is usual practice for individual titles (for both the lots and reserve areas) to be legally created. This process often requires either the completion of all necessary physical works to the satisfaction of the relevant authority, or an agreement to delay physical works that can involve financially bonding any works that remain outstanding.

## 5.2 Foreshore works staging

As indicated in **Section 5.1.5**, from an on-ground works management (in adjacent development lots) and from a capital management point of view, it is desirable to stage the works proposed within this FMP across the foreshore reserve. The works outlined in this FMP are substantial and capital intensive. In addition, it is ideal to complete foreshore works once adjacent development activities

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are largely complete and there is less potential for development and construction works to impact on or damage completed foreshore works.

Conversely, there will be a desire from the developer to maximise marketable amenity in the foreshore reserve as early as possible, and a need from the Local Government viewpoint to ensure that there is sufficient surety in place to rely on foreshore works being completed and in a suitable state for ongoing maintenance before the developer exits the site.

The staging of the foreshore construction is required to avoid damage to the area during the adjacent construction. The developer will undertake full detailed foreshore design upfront for the entirety of Precinct A as part of the first Development Approval application for works, in order to provide a clear understanding of works staging, consistency of finishes and any bonding arrangements.

The detailed landscape designs will be included as part of the Development Approval application, which will be lodged with the ToVP and DPLH. A letter detailing how the detailed landscape designs are compliant with the FMP will also be provided as part of the application.

Pursuant to MRS Clause 30A(2), the Development Approval application will be referred to the DBCA for consideration, whom will provide written advice on the application to DPLH, including any conditions to be imposed by an approval. The WAPC will make a determination of the application with regard to the DBCA advice. Once a Development Approval is issued, development works within the foreshore reserve will be implemented in accordance with the approval and associated conditions.

## 5.3 Maintenance

### 5.3.1 Developer maintenance and framework

As outlined in **Section 5.3.1**, the subdivision ‘developer’ is ultimately responsible for the implementation of foreshore works in accordance with this FMP. The following section outlines the process through which this will occur from the preparation of detailed landscape design for the foreshore reserve through to handover of the foreshore reserve to the management responsibility of the Local Government.

Item 1 of the BPRR LSP outlines the following in **Table 12** (Development Planning Strategies 2013) in relation to the developer management and maintenance responsibilities and ultimate ceding of the foreshore reserve, which is also contained within **Appendix C**.

*Table 12: BPRR LSP implementation provision regarding ceding of the foreshore reserve*

Item	Scope	Implementation/timing	Responsible party	Clearing authority
Cede Foreshore Reserve	Cede Foreshore to the State	Developer progressively undertakes foreshore ‘management elements’ aligned with the development of the BPRR Precincts. Developer retains management and maintenance responsibility for all infrastructure and other elements within the public realm of the foreshore	Developer	DoP

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Item	Scope	Implementation/timing	Responsible party	Clearing authority
		<p>reserve within the said precinct until two years after the sale of the last dwelling unit within the precinct.</p> <p>At the time of handover the developer is to provide to the Town a 20 Year Service and Asset Management Plan, developed in accordance with the Town's Asset Management Strategy, for all Parks, Buildings, Roads and Drainage and associated infrastructure within the relevant precinct of that part of the Foreshore Reserve.</p> <p><i>Note: This will not include the portion of the foreshore reserve that is currently occupied by the racetrack within Lot 101.</i></p>		

This BPRR LSP item establishes a conservative fallback for the base expectation for the management and maintenance period for the Precinct A foreshore reserve and provides a conservative backstop position should the ongoing management and maintenance requirements not be clear to the Local Government or be deemed unreasonable and/or excessive. However, given the staged approach for foreshore works and handover, which is tied to the development of adjacent development areas, the Local Government will be collecting rates from completed dwellings as works proceed, which will not be an insubstantial rate base given the development within Precinct A. Given this, it is considered reasonable that a shorter period of maintenance be allowed for within this FMP.

Therefore, should ongoing management and maintenance requirements be clearly determined and demonstrated by the developer to be within the reasonable realms of the Local Government's open space maintenance framework and budgeting provisions, then an earlier ceding period may be jointly negotiated between the developer and the Local Government. In general subdivision circumstances it is common practice that public open space areas are maintained for two (2) summers after practical completion and then handed over for ongoing management and maintenance to the relevant local government. This is an important context for this situation and given rates will be immediately collected by the Local Government from completed dwellings, it is proposed that an alternate maintenance period of between two and five years be subject to consideration as circumstances evolve.

The following section outlines broadly the process that will be adopted to ensure a clear and transparent process to facilitate the ultimate ceding of the foreshore reserve.

#### 5.3.2 Detailed landscape design and approvals

The adoption/approval of this FMP will be undertaken in accordance with the BPRR LSP, and is likely to be implemented through a condition attached to the subdivision approval.

In addition, and as outlined earlier within this FMP, it is usual for detailed landscape design to be prepared and approved by the relevant local government as part of the conditional subdivision approval process. In this particular case any works within the foreshore reserve will also need to be subject to a separate Development Approval process, which would need to be supported by detailed landscape design.

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The following maintenance elements/considerations shall be addressed through the detailed landscape design, construction and post-construction maintenance phases.

#### 5.3.2.1 Plant selection

Plant selection for amenity areas will favour those species known to be pest resistant, non-invasive, endemic, long lived, tolerant of the site conditions and not routinely affected by disease or fungi. For areas undergoing revegetation, the species proposed have been identified in **Section 4.7.5**, which will be suited for the environment.

#### 5.3.2.2 Herbaceous plant species

The use of herbaceous species and sub-shrubs will be kept to a minimum. Wherever used, replacement shrubs or ground covers will be installed prior to handover to the local authority.

#### 5.3.2.3 Turf management

Turf areas will be designed to facilitate ease of mowing utilising normal turf mowing equipment. Areas of projected heavy wear will be paved or subject to deterrent fencing or level changes. Turf areas will generally be located and planned to provide 'single operation' mowing (i.e. lack of comers, no steep gradients and access ramps to level changes). Access to the lawn areas in the foreshore will be via the dual-use pathway.

#### 5.3.2.4 Irrigation management

The irrigation systems will be designed to meet local authority adoption requirements. Where possible, the landscape will be designed to minimise irrigation requirements.

#### 5.3.2.5 Weed control

Within formalised landscape areas, primary weed control will be achieved through chemical sanitation of the growing medium prior to, at, or immediately following planting. Chemical control will involve the application of propriety weed control products that are suitable for use in proximity to the riverine environment and be to the satisfaction of SRT (DPAW) and the Local Government.

Subsequent regular weed removal will be achieved through physical, chemical and thermal control within the maintenance contracts. Planted beds will be mulched to suppress weed growth and seed invasion. It is expected that effective weed control will also be achieved through the maturing shrub and groundcovers closing canopy.

#### 5.3.2.6 Tree management

Species and stock sizes will be selected for ease of long-term maintenance. Where appropriate root barriers will be installed where conflicts with paving and services can be anticipated.

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#### 5.3.2.7 Boardwalk and jetties

Boardwalk elements will be maintained in good working order sufficient for safe public use and shall be designed and specified to ensure robust performance commensurate with the setting, including being able to withstand periodic inundation of saline water during storm events.

The specific monitoring and maintenance requirements for the boardwalk and jetties are dependent upon the final design, and as such will be specified as part of the detailed design process. The completion of such requirements can be conditioned as part of future approvals if required.

#### 5.3.2.8 Lighting

Lighting will be checked regularly for working function and luminaire replacement undertaken as required to maintain good working order. Vandalism will be remediated as appropriate to maintain safe working order and function.

#### 5.3.2.9 Barbecues

Barbecues will be maintained in good working order and cleaned regularly to ensure safe public use.

#### 5.3.2.10 Play equipment and street furniture

Play equipment and street furniture will be checked regularly for damage and remedial action taken as necessary to protect the asset and ensure its continued safe use.

### 5.3.3 Landscape works and practical completion

Practical completion relates to when landscape construction works have been completed in accordance with that outlined in the approved FMP and detailed landscape design, and is the point at which the maintenance/management period will commence.

Upon reaching practical completion of the landscape construction works, an inspection would be arranged and attended by a developer representative (usually the project landscape architect) and the relevant Local Government officers to view the completed landscape works. Following this inspection, the landscape architect would issue to the Local Government the following:

- A list of items requiring completion.
- As-constructed landscape and irrigation drawings.
- Details including capital costs of all physical assets for inclusion in the Local Government's asset register.
- An annual maintenance schedule and estimate of annual maintenance costs that will apply for the length of the developer maintenance/management period.

Maintenance standards adopted within the annual maintenance schedule by the developer are to be to minimum levels of Local Government service as are likely to be agreed between the developer and the Local Government at the time of handover/ceding.

Following practical completion, the developer is expected to:



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- Carry out any remedial work noted during the practical completion inspection without delay
- Undertake maintenance of the foreshore reserve as agreed with the Local Government and documented in this FMP and reflected in the annual maintenance schedule.

#### 5.3.4 Developer maintenance and management period

As outlined previously, the developer foreshore reserve maintenance period will be for a minimum of between two (2) and five (5) years following practical completion and will include those tasks outlined in this FMP and the annual maintenance schedule. The maintenance period will commence on the date of practical completion, with the first year typically considered an establishment period, followed by a year of landscape establishment.

The annual maintenance schedule will be reviewed and updated each year based on the previous year's maintenance and will be provided to the Local Government with details regarding the previous 12-month actual maintenance costs and the budgeted forward 12-month costs.

#### 5.3.5 Maintenance period completion and handover

Twelve months prior to the expiration of the maintenance period (whatever that is agreed to be) the developer will make contact with Local Government officers to initiate the preparation of the 20 Year Service and Asset Management Plan. This would be prepared by the developer and provided to ToVP for review, and incorporate:

- As-constructed irrigation drawings to include changes made to the system during the maintenance period.
- Details of the areas requiring ongoing maintenance.
- A detailed review of the annual maintenance scheduling and budgeting information prepared and submitted to Local Government over the developer's maintenance/management period.
- Detailed ongoing maintenance specifications.
- An ongoing 12-month maintenance schedule and estimate of annual maintenance costs.

Following the adoption of a finalised 20 Year Service and Asset Management Plan, a date will be set for a final inspection of the foreshore reserve area. Following the handover inspection and prior to the handover date, the developer will be expected to:

- Rectify any defects noted during the handover inspection and others that may become evident prior to the handover date.
- Seek written confirmation that the Local Government accepts responsibility for maintenance and liability for the location requested.

#### 5.3.6 Foreshore reserve maintenance strategy

A Foreshore Reserve Maintenance Strategy will be prepared for the Precinct A foreshore reserve to satisfy the requirements of Item 8 – Maintenance in the BPRR LSP Operation and Implementation framework (see **Appendix C**). This will also form the basis of the 20 Year Service and Asset Management Plan to be prepared at the time areas of the foreshore are handed over to the Local Government.

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#### 5.4 Post-handover maintenance and management

Post-handover maintenance and management of the foreshore reserve will be undertaken by the Local Government, excepting any elements or areas that are covered by alternate arrangements.

The extent of post-handover maintenance and management undertaken by the Local Government will ultimately be at the discretion of the Local Government and its own prevailing practices and policies, however the Local Government may choose at its discretion and/or responding to the needs and interactions with the local community or wider constituents to vary its maintenance and management framework for the Precinct A foreshore reserve area.

The 20 Year Service and Asset Management Plan (for the foreshore reserve as discussed previously in **Section 5.3.5**) will be a key framework to guide the Local Government's ongoing maintenance and management. This will ensure that the maintenance needs of the Precinct A foreshore reserve are clearly understood before handover occurs.

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## 6 References

### 6.1 General references

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## Foreshore Management Plan Precinct A

### Belmont Park Racecourse Redevelopment



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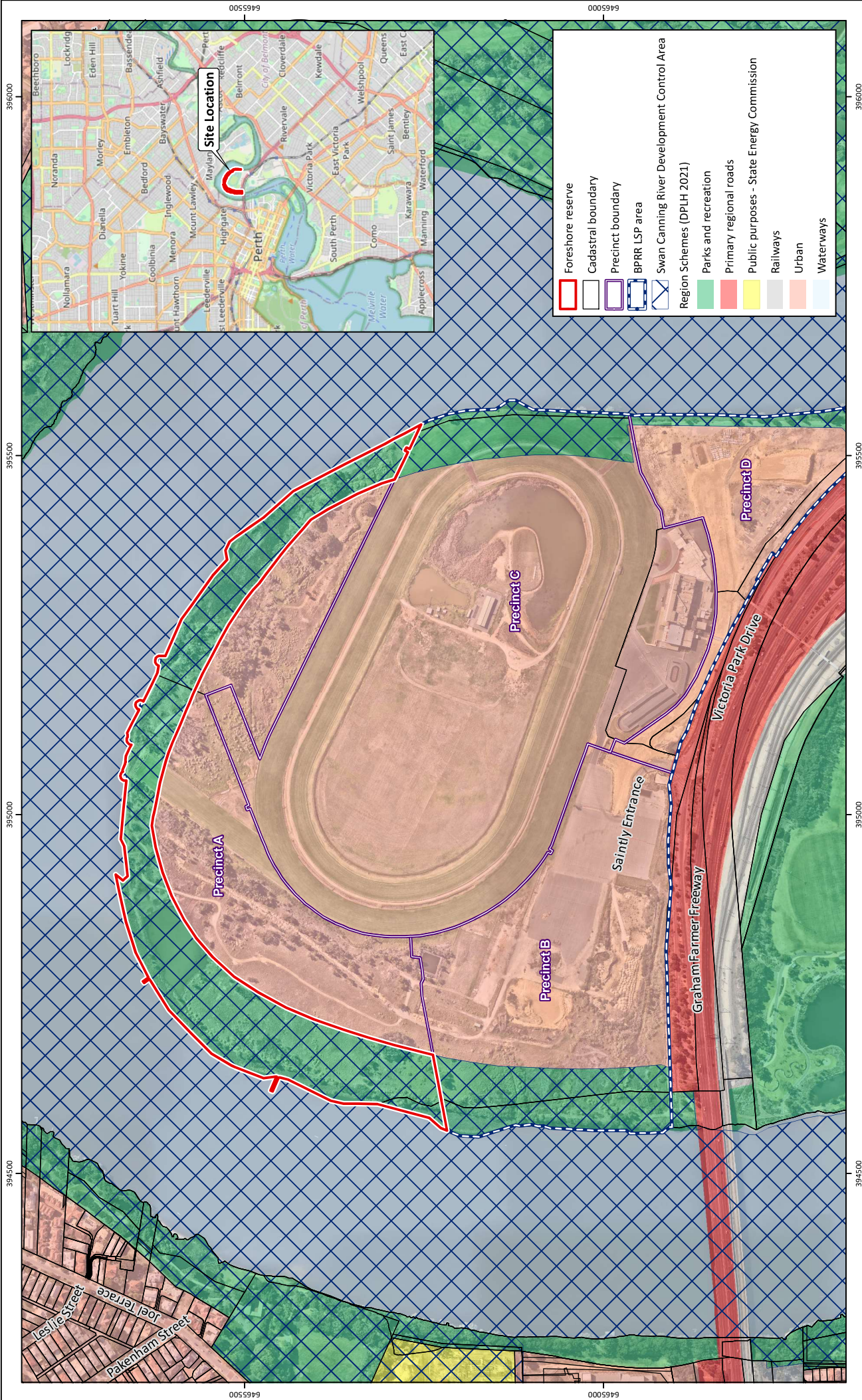
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**Figure 1: Location Plan**

**Project:** Foreshore Management Plan  
Belmont Park Racecourse Redevelopment - Precinct A

**Client:** Golden Sedayu Pty Ltd

**Plan Number:** EP21-034(03)-F05

**Drawn:** GAR

**Date:** 11/01/2022

**Checked:** SJB

**Approved:** JDH

**Date:** 04/02/2022

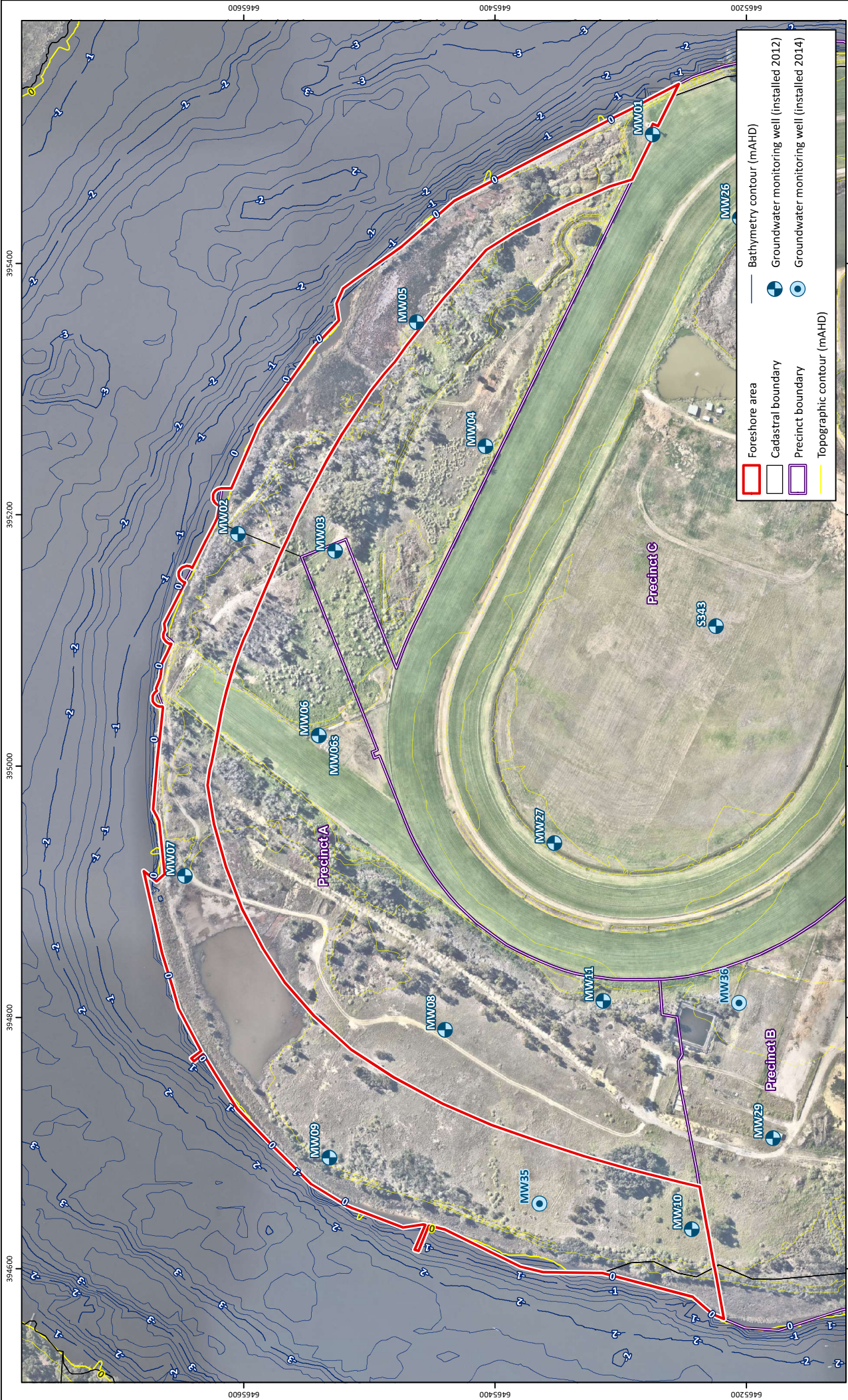
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ASSOCIATES

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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 (2021). Nearmap Imagery date: 25/04/2021





**Figure 2: Existing Topography, River Bathymetry, and Groundwater Monitoring Well Locations**

**Project:** Foreshore Management Plan  
Belmont Park Racecourse Redevelopment - Precinct A

**Client:** Golden Sedayu Pty Ltd

**Plan Number:** EP21-034(03)-F08

**Drawn:** GAR

**Date:** 11/01/2022

**Checked:** SIB

**Approved:** JDH

**Date:** 04/02/2022

Scale: 1:4,000@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 (2021). Nearmap Imagery date: 25/04/2021.





Foreshore area  
 Cadastral boundary  
 Precinct boundary  
 Inferred extent of fly ash  
 Inferred extent of uncontrolled fill



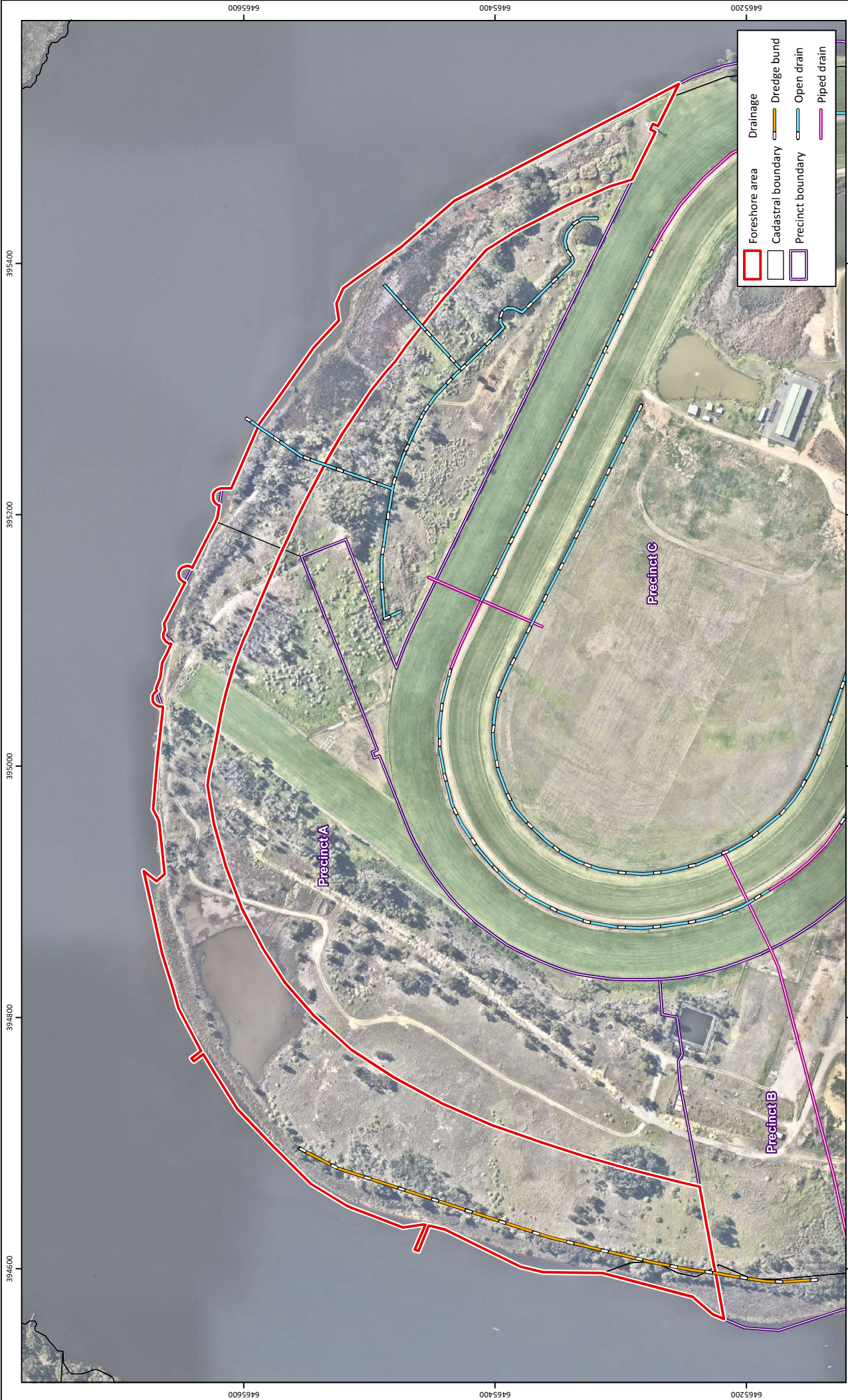
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Plan Number: EP21-034(03)-F11  
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 Date: 11/01/2022  
 Checked: SIB  
 Approved: JDH  
 Date: 04/02/2022

**Figure 3: Site Contamination**  
 Project: Foreshore Management Plan  
 Belmont Park Racecourse Redevelopment - Precinct A  
 Client: Golden Sedayu Pty Ltd

While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used ©Landgate (2021). Nearmap Imagery date: 25/04/2021





	Foreshore area		Drainage
	Cadastral boundary		Piped drain
	Precinct boundary		Open drain
			Dredge bund



0 50 100 150  
Metres  
Scale: 1:4,000@A4  
GDA 1994 MGA Zone 50



Plan Number: EP21-034(03)-F07  
Drawn: GAR  
Date: 11/01/2022  
Checked: SIB  
Approved: JDH  
Date: 04/02/2022

**Figure 4: Site Drainage**

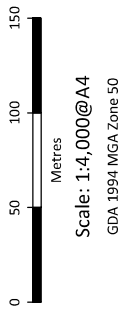
**Project:** Foreshore Management Plan  
Belmont Park Racecourse Redevelopment - Precinct A  
**Client:** Golden Sedayu Pty Ltd

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- Foreshore area
- Cadastral boundary
- Precinct boundary
- 1 in 100 Floodplain mapping
- Flood fringe
- Floodway



**Plan Number:** EP21-034(03)-F09  
**Drawn:** GAR  
**Date:** 11/01/2022  
**Checked:** SIB  
**Approved:** JDH  
**Date:** 04/02/2022

**Figure 5: Extent of 100 Year Floodway**

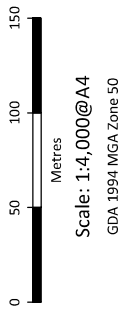
**Project:** Foreshore Management Plan  
 Belmont Park Racecourse Redevelopment - Precinct A  
**Client:** Golden Sedayu Pty Ltd

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Foreshore area	PI	Plant community
Cadastral boundary	Co	SqT
Precinct boundary	EcJk	VCo
	Er	Non-native
	ErMColk	Cleared
	Jk	Water



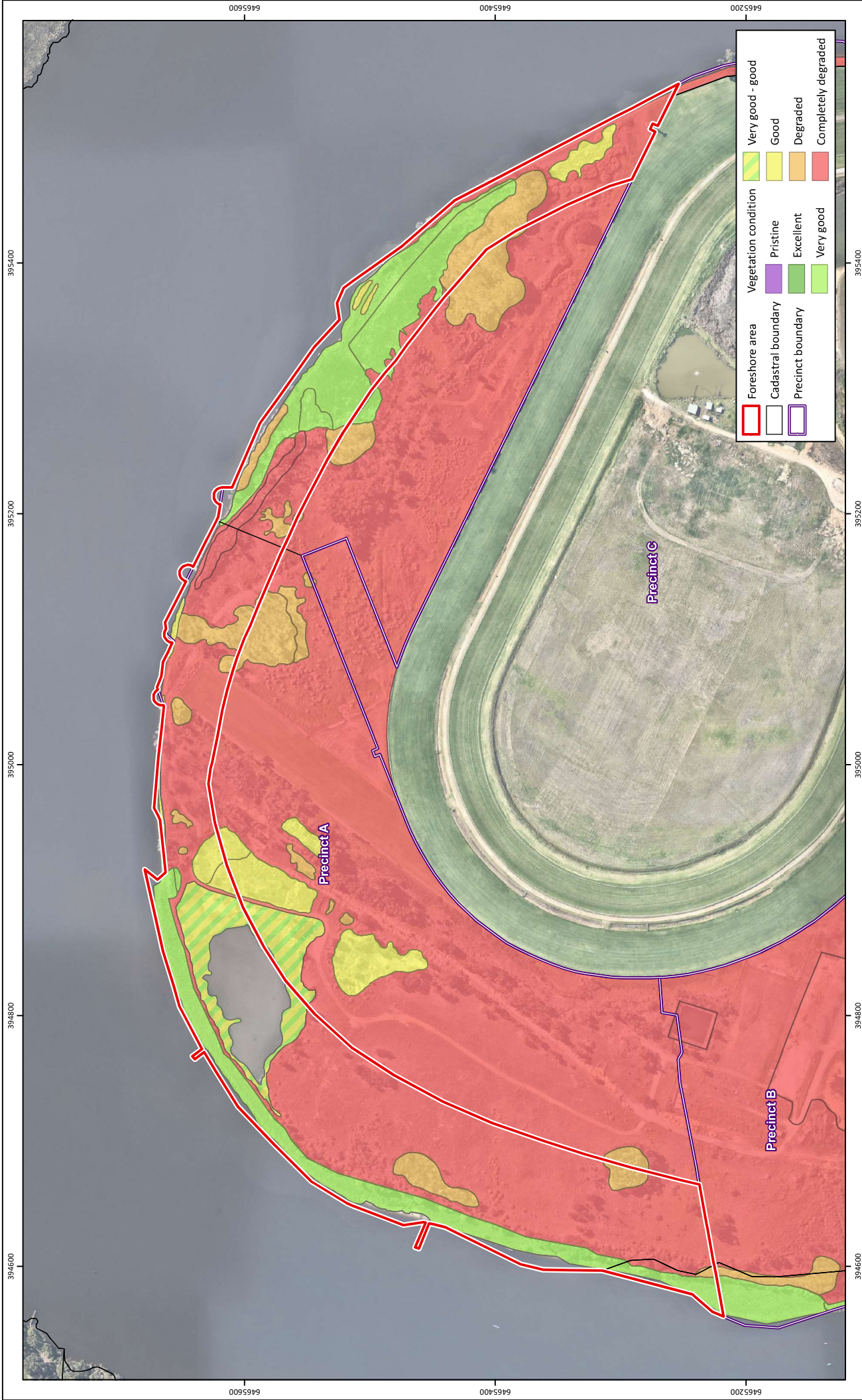
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 Checked: SIB  
 Approved: JDH  
 Date: 04/02/2022

**Figure 6: Plant Communities**

**Project:** Foreshore Management Plan  
 Belmont Park Racecourse Redevelopment - Precinct A  
**Client:** Golden Sedayu Pty Ltd

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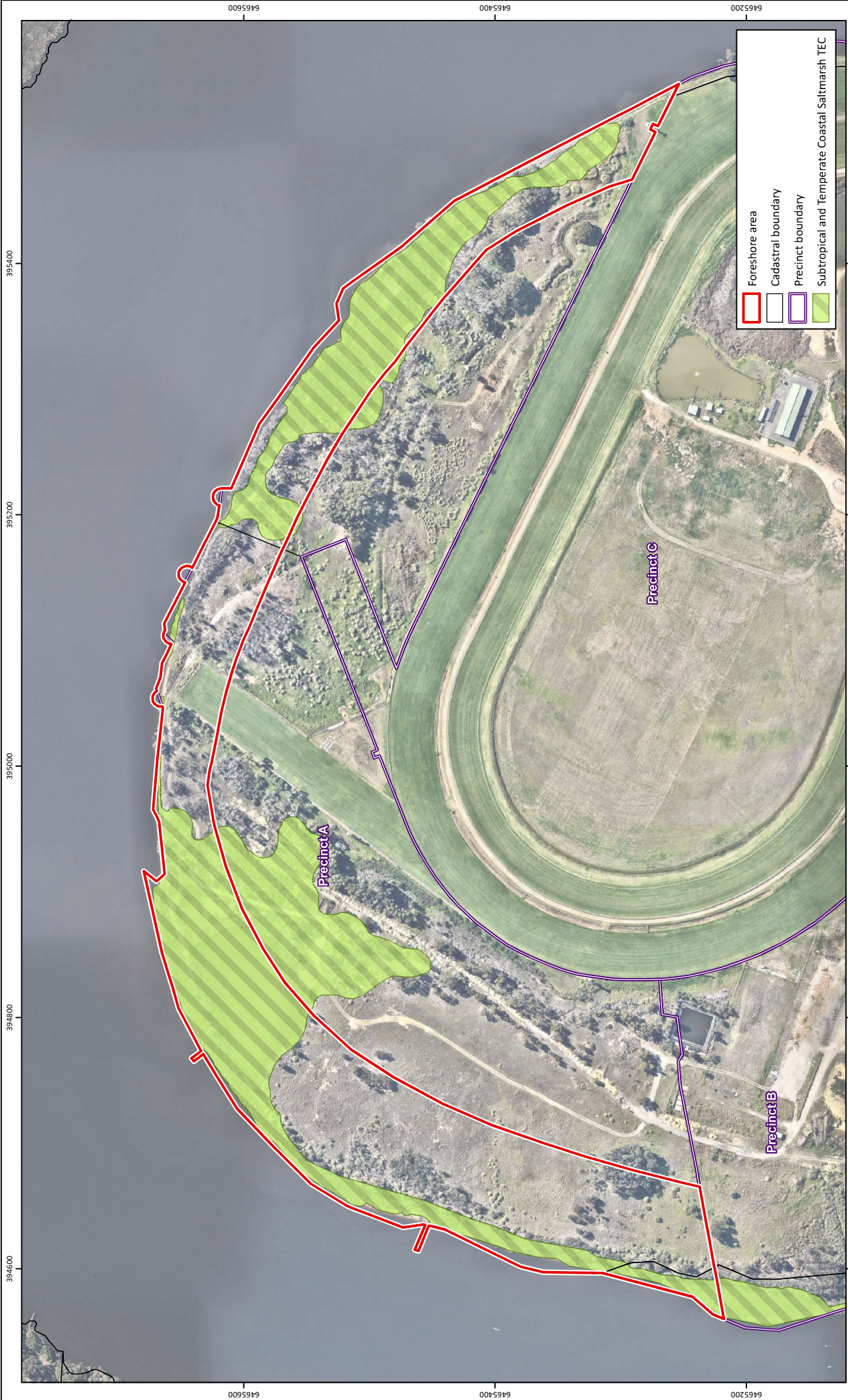
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**Approved:** JDH  
**Date:** 04/02/2022

**Project:** Foreshore Management Plan  
 Belmont Park Racecourse Redevelopment - Precinct A  
**Client:** Golden Sedayu Pty Ltd

**Figure 7: Vegetation Condition**

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- Foreshore area
- Cadastral boundary
- Precinct boundary
- Subtropical and Temperate Coastal Saltmarsh TEC



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GDA 1994 MGA Zone 50



**Plan Number:** EP21-034(03)-F16  
**Drawn:** GAR  
**Date:** 27/01/2022  
**Checked:** SIB  
**Approved:** JDH  
**Date:** 04/02/2022

**Figure 8: Threatened and Priority Ecological Community**

**Project:** Foreshore Management Plan  
Belmont Park Racecourse Redevelopment - Precinct A  
**Client:** Golden Sedayu Pty Ltd

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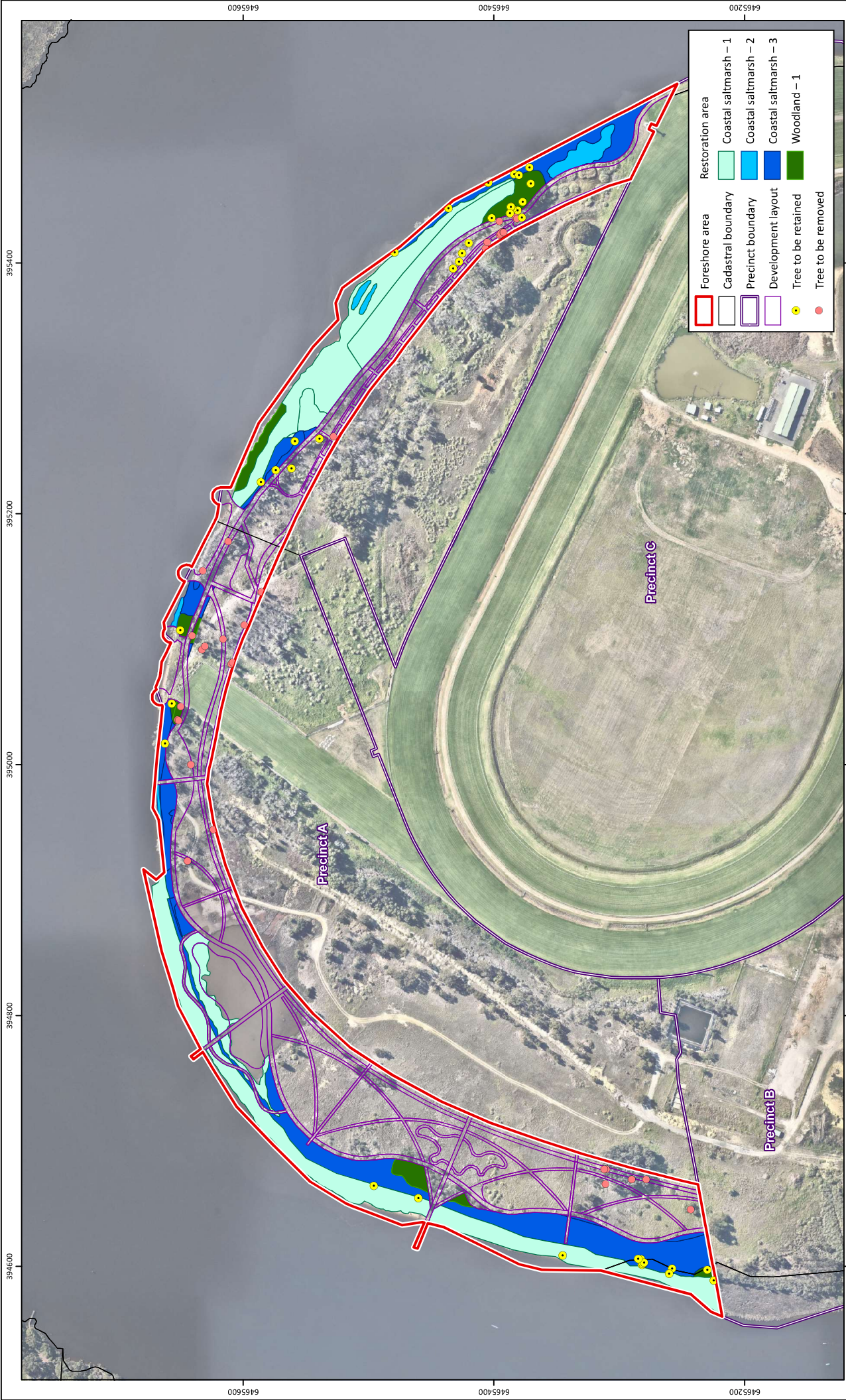






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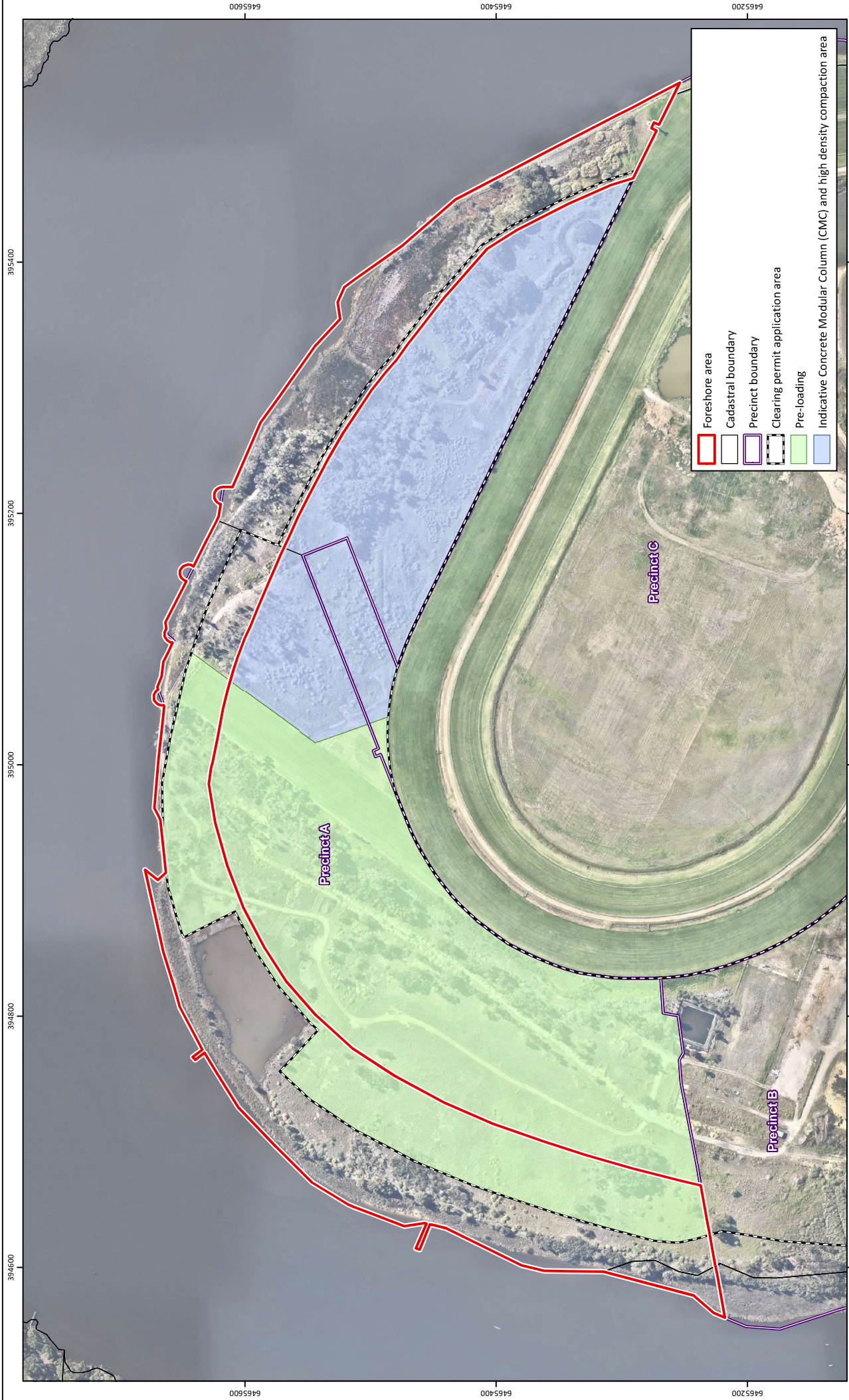
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**Project:** Foreshore Management Plan  
 Belmont Park Racecourse Redevelopment - Precinct A  
**Client:** Golden Sedayu Pty Ltd

**Figure 11: Foreshore Restoration Areas**

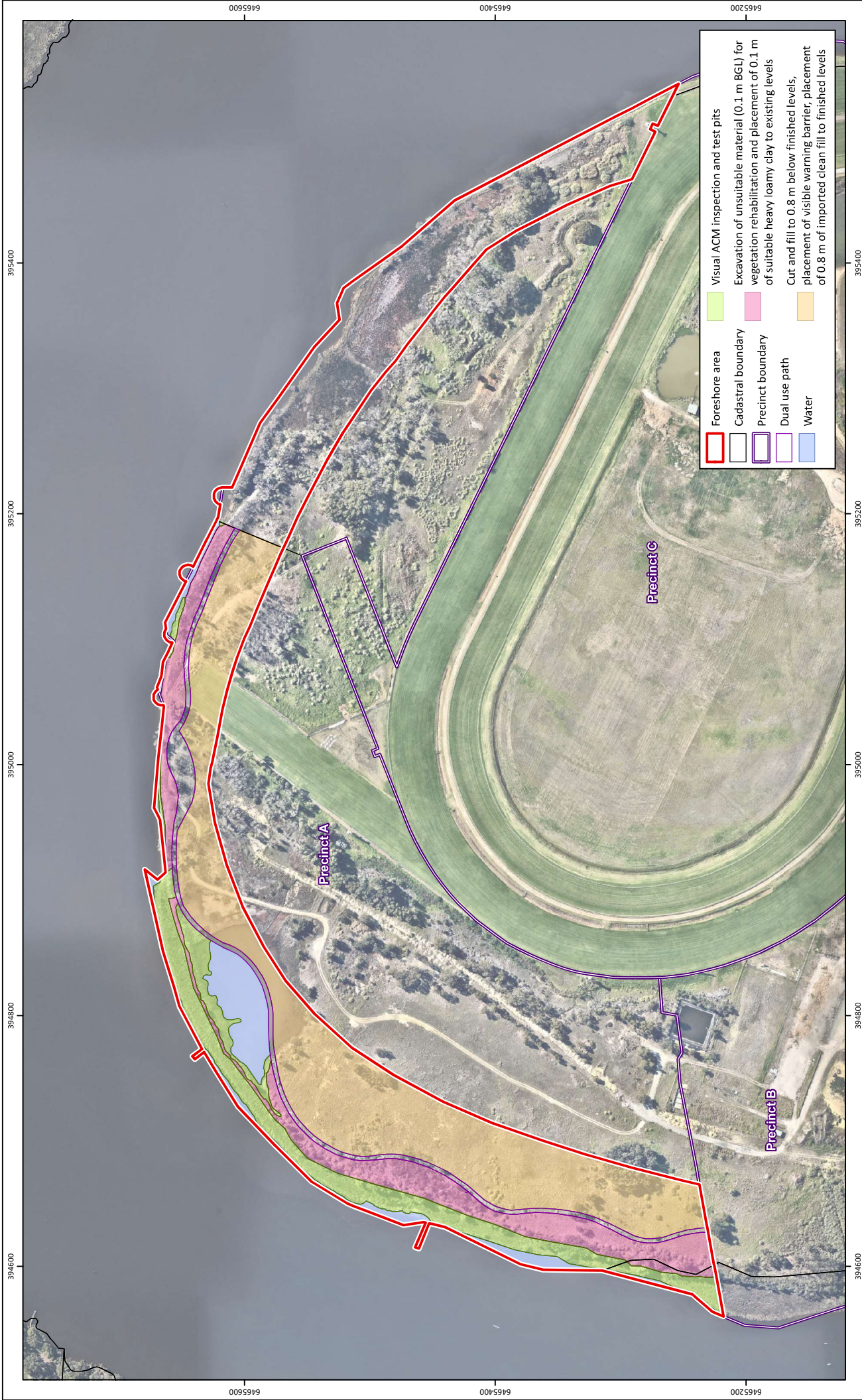
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