

# Environmental Management Plan Guidelines



## Executive Summary

---

These Environmental Management Plan (EMP) Guidelines have been prepared to outline the format and content that the City of Wanneroo requires for EMP's lodged with the City for approval, together with the assessment process the City will follow, in order to better streamline the EMP approval process and ensure consistent decision-making within the City.

The EMP Guidelines have been endorsed by:



**EMILLE VAN HEYNINGEN**  
**MANAGER STRATEGIC LAND USE PLANNING AND ENVIRONMENT**



**PAS BRACONE**  
**MANAGER APPROVAL SERVICES**



**CRAIG WANSBROUGH**  
**MANAGER LAND DEVELOPMENT**

# Environmental Management Plan Guidelines

## Table of Contents

<b>Executive Summary</b> .....	2
<b>1. Application and Purpose of the Guidelines</b> .....	4
1.1 Application.....	4
1.2 How the Guidelines Work .....	5
<b>2. Preparation of an EMP</b> .....	6
2.1 When to submit an EMP.....	6
2.2 Process for submitting an EMP.....	6
2.3 Content and Minimum Information Requirements for EMP's.....	6
<b>3. Assessment of an EMP</b> .....	7
3.1 Process for assessing an EMP .....	7
3.2 Modifications or amendments to an endorsed EMP.....	7
<b>Figure 1: Process for the Assessment and Approval of EMP's</b> .....	8
<b>4. Monitoring and Compliance</b> .....	9
4.1 Purpose of monitoring .....	9
4.2 Process and timing of monitoring.....	9
<b>Figure 2: Process for the Monitoring and Review of EMP's</b> .....	10
<b>Appendix 1 – EMP Template</b> .....	11
<b>Appendix 2 – Implementation and Reporting Schedule Template</b> .....	22
<b>Appendix 3 – Conceptual Designs for Conservation and Wetland Areas</b> .....	32

# 1.0 Application and Purpose of the Guidelines

---

## 1.1 Application

The EMP Guidelines apply to all of the environmental management plans listed below:

### **Vegetation and Fauna Management Plan:**

Ensures the best practice management is employed during the land clearing stage of development. This involves minimising damage to vegetation retention areas and appropriately trapping and relocating fauna discovered during clearing.

### **Conservation Area Management Plan:**

Provides a framework and implementation plan for the management of designated conservation areas during construction, and provides detail on the ongoing maintenance activities to be undertaken. Appendix 4 demonstrates how Conservation Reserves can be designed in order to maximise retention of native vegetation.

### **Wetland Management Plan:**

Details the rehabilitation measures and management responsibilities to maintain and enhance the health of wetlands and associated vegetation during and post construction. Appendix 4 demonstrates how wetland buffers can be incorporated into the design of POS in order to maximise retention of riparian vegetation.

### **Karstic Features Management Plan:**

Identifies and sets out measures to preserve karstic features of ecological and environmental significance and aims to protect life and property from karst risk.

### **Dieback Management Plan:**

Ensures dieback is not spread during construction. These plans also identify areas susceptible to the spread of dieback.

### **Revegetation Plan:**

Outlines the methods, implementation, and ongoing management measures for revegetation that is required in response to development. These plans will generally be included within one of the above EMPs, however, where vegetation has been incorrectly removed or damaged, a separate Revegetation Plan may be requested.

These EMP Guidelines do not apply to the following Management Plans:

### **Bushfire Management Plan:**

Sets out the set back and management requirements for developments in response to potential bushfire threats. To be prepared in accordance with the Department of Fire and Emergency Services (DFES) and the Western Australian Planning Commission (WACP) *Guidelines for Planning in Bushfire Prone Areas Edition 3* (or latest revision/ equivalent guidelines).

### **Foreshore Management Plan:**

Outlines the City's expectations for foreshore development including assets, revegetation, drainage requirements, and management of foreshore areas. Note that the approval process for Foreshore Management Plans (FMPs) differs significantly from the process outlined in these guidelines. The City's FMP guidelines outline the specific requirements for the preparation of FMPs.

### **Urban Water Management Plan:**

Provides guidance on the urban water management issues that are required to be addressed at the subdivision stage of development. The Western Australian Planning Commission's 'Better Urban Water Management' (2008) document can provide guidance on better management and use of urban water resources. Further guidance on the preparation of Urban Water Management Plans can be found in the Department of Water and Environmental Regulation's 'Urban Water Management Plan Guidelines'.

## **1.2 How the Guidelines work**

The Guidelines are split into three parts:

**Preparation** – Preliminary consultation with the City, submitting the Plan, and process for submitting an EMP.

**Assessment** – Assessment and determination process of EMP's.

**Monitoring and Compliance** – Monitoring, reporting, and compliance requirements.

## 2.0 Preparation of an EMP

---

### 2.1 When to submit an EMP

An EMP may be required in the following instances:

- **As a requirement of a District Structure Plan or a Local Structure Plan:**

Listed as a provision of structure plan and prepared prior to subdivision or as a condition of subdivision.

- **As a condition of subdivision:**

The City may request a condition to be applied for the preparation/ implementation of an EMP at subdivision stage. (E.g. Conservation Area Management Plan to be prepared as a condition where subdivision contains or is adjacent to an area designated as Conservation POS).

Where an EMP is required by the State or Federal Government as part of an approval under their respective legislation, input should be sought from the City as the future land owner/ manager prior to final approval from the respective authority.

- **As a condition of Development Approval:**

The City may apply a condition for the preparation and implementation of an EMP in order to address potential or foreseen impacts of a proposed development.

### 2.2 Process for Submitting an EMP

Where an EMP is required, the following process should be followed when submitting the EMP:

- A pre-lodgement discussion with the City is recommended prior to submitting an EMP. This discussion will help to ensure the proponent and the City are in agreement on the scope, format and content of the document prior to drafting an EMP.
- A pre-lodgement meeting can be arranged by contacting the City's Approval Services team on 9405 5000.
- Following preliminary discussions with the City, an EMP should be submitted electronically through the City's online lodgement portal at the following web address:  
<http://www.wanneroo.wa.gov.au/onlinepaymentsandservices>
- Once received, the City will confirm the receipt of the EMP via an email to the submitter. The formal assessment process will then commence.

### 2.3 Content and Minimum Information Requirements for EMP's

**Appendix 1** of the EMP Guidelines provides detail on the required content and information for each type of EMP listed in these guidelines. Section 4 of **Appendix 1** provides detail on what each type of EMP needs to address as a minimum, noting that there are different requirements based on the type of EMP being produced. Please refer to **Appendix 1** in order to determine what information needs to be included in the EMP.

## 3.0 Assessment of an EMP

---

### 3.1 Process for assessing an EMP

Once submitted for approval, the City will follow the assessment process set out in **Figure 1** for determining EMPs. The below information details each step of the assessment process:

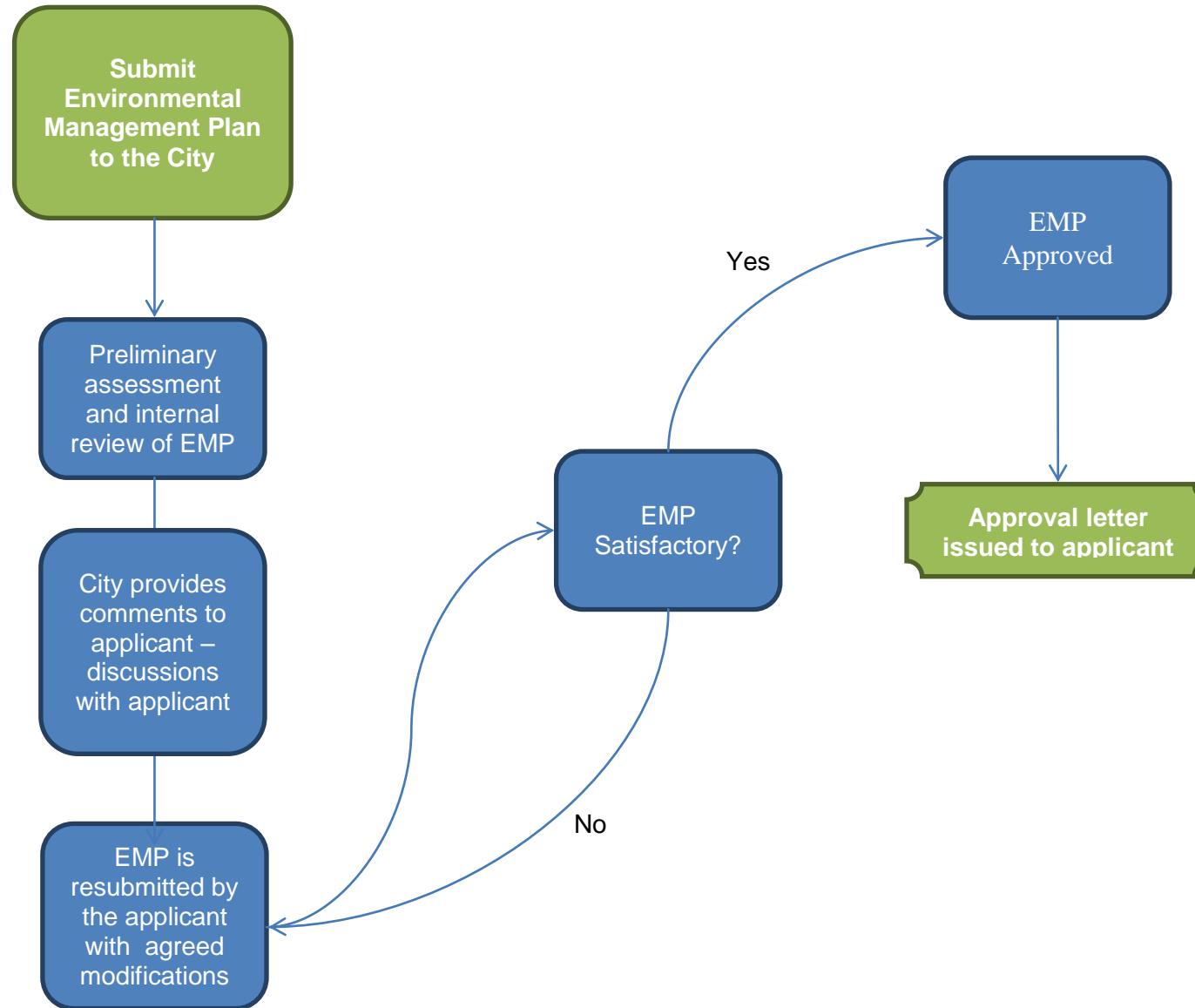
- 1) The City's Approval Services unit will take custody of the EMP once received from the proponent.
- 2) The EMP will be referred to relevant internal service units of the City for comment for a period of 14 days.
- 3) All internal comments will be collated and where changes are considered necessary, the City will request the proponent to amend the EMP to the City's satisfaction. Additional meetings with City staff may be required where detailed comments require discussion.
- 4) Where updates are required to an EMP, a new revised EMP will be submitted to the City's Approval Services team.
- 5) Once an EMP has been approved by the City, the applicant is to provide GIS data showing the location of the EMP's subject area to the City.

### 3.2 Modifications or amendments to an endorsed EMP

If the proponent wishes to amend or modify an endorsed EMP, that EMP should be treated as a new submission and the above assessment process will be followed.



Figure 1: Process for the assessment and approval of EMP's





## 4.0 Monitoring and Compliance

---

### 4.1 Purpose of monitoring

Once approved, EMPs will require applicants to undertake a range of actions and monitor the success of their implementation with the aim of meeting the specified selection criteria as per the approved EMP.

Accordingly, the City requires a comprehensive monitoring program to be outlined in the submitted EMP. Any such monitoring program should include parameters to be monitored, targets, performance indicators, completion criteria, timing and location of monitoring. More information on monitoring is included in Appendix 2.

The purpose of monitoring the site is to ensure that the completion criteria are being met, and to identify any issues that require alternative measures.

A key component of the monitoring will be the submission of monitoring reports to the City which will summarise actions undertaken to date, and will provide the City with an idea of how the works undertaken as outlined in the approved EMP are tracking against the completion criteria. Monitoring reports will be submitted annually, or as otherwise agreed in an approved EMP.

### 4.2 Process and timing of monitoring

The process as set out in **Figure 2** on page 10 should be followed for the monitoring and review of EMP's. The period of time for monitoring prior to handover should be a minimum of 2 years.

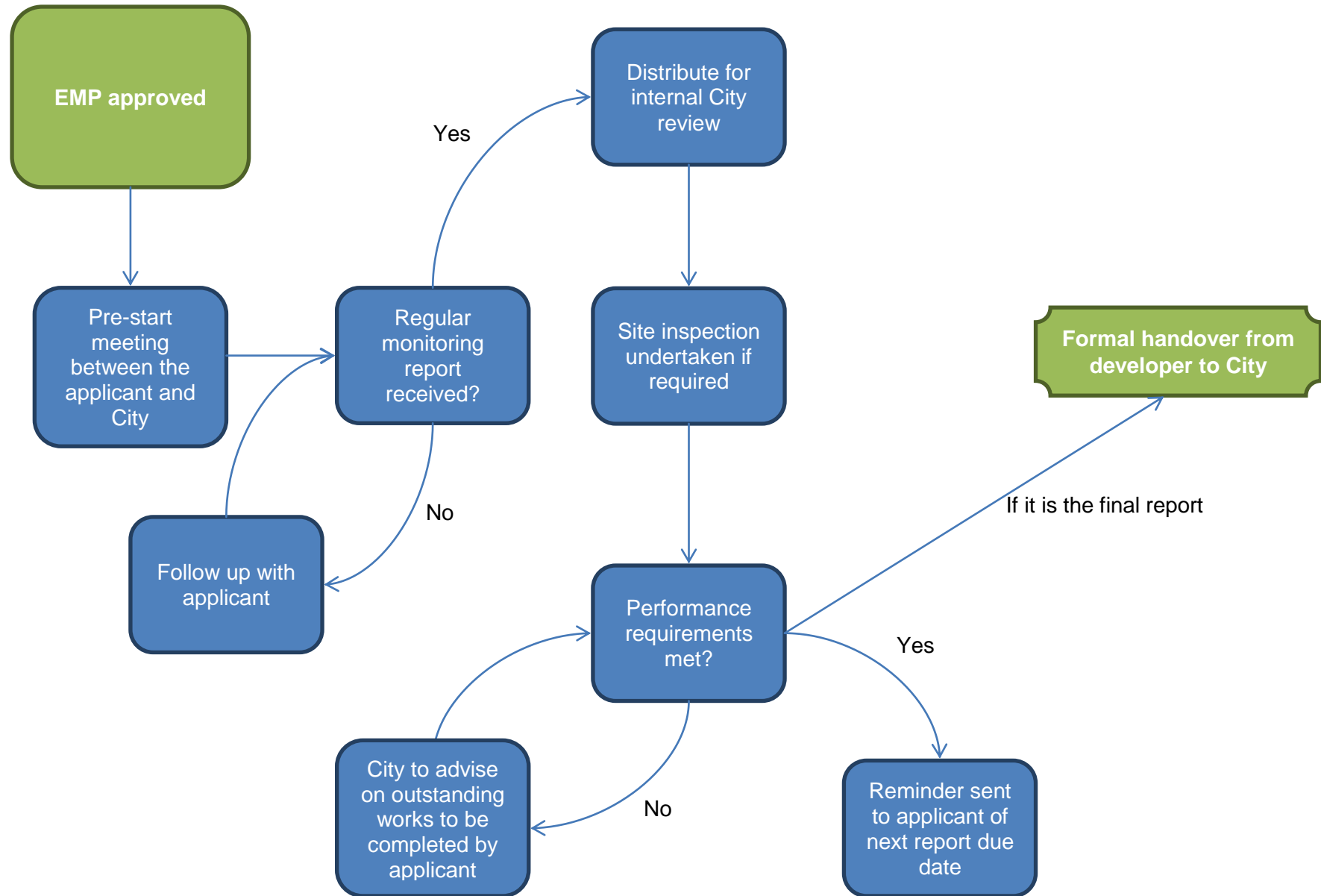
The monitoring results are to be detailed in a report that is to be provided by the proponent annually or at intervals as agreed by the City. Monitoring Reports are to be submitted electronically to the City's Land Development team. This can be arranged by contacting the team on 9405 5000.

Some actions will require photographic evidence to be provided to the City. In order to provide this evidence, a photo monitoring point will need to be established prior to the commencement of site works. Details of the photo monitoring point will need to be included in the EMP including location and methods (see Appendix 2 for more information on monitoring points).

The City will undertake the following measures to ensure that compliance to the management plan is being met:

1. Send reminders to consultants prior to the due date of the report.
2. File and review annual reports.
3. Review of annual reports may include referral to internal City Service Units and inspection as required.
4. Undertake site inspections to ensure monitoring reports are accurate and completion criteria are being met as per the approved management plan.

Figure 2: Process for the monitoring and review of EMP's



---

# Appendix 1 – Environmental Management Plan Template

---

The following template for EMPs sets out the minimum requirements for information to be provided within EMP's of various types.

This template applies to EMP's prepared as a condition of subdivision or as a requirement of a Local Structure Plan, and relates to the following types of Plans:

- Vegetation and Fauna Management Plans;
- Conservation Area Management Plans;
- Wetland Management Plans;
- Dieback Management Plans;
- Karstic Features Management Plans; and
- Revegetation Plans.

*[Environmental Management Plan template]*  
*[Title of Environmental  
Management Plan]*

[Organisation Name]  
[Title of Development Area or Proposal (i.e. Structure  
Plan Area or Subdivision)]  
[Date]  
[Document reference number]

---

# CONTENTS

1 - INTRODUCTION .....	14
1.1 Title and Scope of Proposal .....	14
1.2 Land details .....	14
1.3 Background .....	14
1.4 Purpose of the Plan.....	14
1.5 Objectives.....	14
2 - STATUTORY, PLANNING & POLICY CONTEXT .....	14
2.1 Compliance with guidelines, policy and legislation.....	14
2.2 Existing Approvals .....	14
3 - EXISTING ENVIRONMENT .....	15
4 - PLAN .....	16
4.1 Vegetation and Fauna Management Plan:.....	16
4.2 Conservation Area Management Plan:.....	16
4.3 Wetland Management Plan: .....	17
4.4 Dieback Management Plan: .....	17
4.5 Karstic Features Management Plan:.....	17
4.6 Revegetation Plan:.....	18
5 - IMPLEMENTATION .....	19
5.1 Implementation Schedule and Reporting .....	19
5.2 Monitoring.....	19
5.3 Completion Criteria.....	19
6 - APPENDICES .....	21
6.1 Approvals .....	21
6.2 Mapping .....	21
6.3 References .....	21
6.4 Incidents.....	21

---

## 1 - INTRODUCTION

---

*The introduction should provide a brief overview (1-2 pages) of the proposal, and include the following:*

### 1.1 Title and Scope of Proposal

*Include the title of the Structure Plan or development stage, and describe the area that the proposal applies to. This section should state who is preparing the Plan and who they are preparing it for.*

### 1.2 Land details

*Lot number, Title, Zoning, Structure Plan, subdivision number and Vesting including future vesting to be changed by the proponent where necessary.*

### 1.3 Background

*History of the proposal*

### 1.4 Purpose of the Plan

*What are the statutory requirements that the Plan is being prepared for? This can be as a condition of subdivision, as a requirement of a Structure Plan, or in accordance with a Ministerial Statement. Specify the objectives of the Plan (i.e. what it is intending to achieve. For example: creation of a conservation area, fauna management, revegetation etc.).*

### 1.5 Objectives

*What is the intended outcome of the Plan?*

---

## 2 - STATUTORY, PLANNING & POLICY CONTEXT

---

### 2.1 Compliance with guidelines, policy and legislation

*Briefly outline all statutory documents that are relevant to the proposal. Provide detail on how this Management Plan is complying with all relevant Local, State and Federal Government statutory requirements and approvals, including but not limited to approvals under the Environmental Protection Act 1986 and the Environmental Protection and Biodiversity Conservation Act 1999. Any relevant existing approvals should be included as appendices to the Management Plan.*

### 2.2 Existing Approvals

*Demonstrate alignment with existing approvals including state and federal approvals and any other approved Management Plans relevant to the site e.g. Bushfire Management Plans.*

---

### 3 - EXISTING ENVIRONMENT

---

*This should provide a description of the existing values and limitations over the site, supported by relevant data and mapping. Values should be site specific and may include but are not limited to the following:*

- a) Climate and rainfall – using the latest available data sourced from the Bureau of Meteorology.
- b) Vegetation – vegetation type (complexes), species list, location of threatened and/ or priority ecological linkages, presence of Banksia Woodlands, and vegetation condition in accordance with the Vegetation Condition Rating included in **Appendix 1**). To be supported by a flora survey and to include weed mapping for proposed conservation areas.
- c) Fauna – species list and numbers observed. To be supported by a fauna survey.
- d) Land use – historic and current land uses as well as adjacent and proposed land uses.
- e) Geography – location landform and topography.
- f) Geology – include information on karstic features.
- g) Soils – including the presence of acid sulphate/ dieback and surface and groundwater hydrology (soil type and descriptions are included in **Appendix 1**).
- h) Heritage – Aboriginal and European heritage site details including location, protection measures and outcomes of the Heritage Survey.
- i) Potential Risks – consideration of any potential environmental impacts or risks over the site.

*All of the above should include relevant mapping where applicable.*



---

## 4 - PLAN

---

*This section will provide detail on how the natural environment will be managed in response to the proposed development. The following should be included as a minimum for all types of Plans:*

- Detail on meetings/ discussion with City prior to drafting the Plan.
- Infrastructure – signage, fencing, pedestrian access, emergency vehicle and maintenance access, fire management, detail on any other infrastructure as approved by the City (e.g. lookouts, benches etc.).
- Unauthorised access – Identification of potential and active access points and ongoing review of management methods to control unauthorised access.
- Vegetation cleared, retained, significant tree locations, presence of Banksia Woodland/ Carnaby Habitat.
- Control of pest and weed species.
- Seed collection.
- Compliance with fire management requirements.
- Relevant associated mapping of all spatial data.

*The minimum information requirements for each of the types of EMP's are outlined below.*

### 4.1 Vegetation and Fauna Management Plan:

- Detailed Plan showing: final ground levels and contours, location and function of POS, location of significant trees, and vegetation to be retained;
- Justification for the removal of native vegetation in good or better condition;
- Detail of fauna management, including containment, options for trapping and relocating, population control, and staged/ directional clearing. Fauna management shall consider fauna displacement in the broader context of available fauna habitat in the immediate and surrounding areas;
- Information on feral pest management (e.g. rabbits, foxes and cats) which is to be conducted as early as possible in the development process;
- Detail on seed collection, propagation, and where applicable, transplanting of vegetation;
- Detail on how the environmental impacts of the proposed development will be minimized;
- Detailed Plans showing vegetation type and condition, the proposed subdivision layout, and landscape plans;
- A detailed report with clear recommendations pertaining to the retention of native vegetation; and
- Where a vegetation, flora or fauna survey has not been conducted previously, or where an existing survey is more than 5 years old, one should be conducted with the results included in the Vegetation and Fauna Management Plan.

### 4.2 Conservation Area Management Plan:

- A design that enhances and protects the natural environment, while encouraging human interaction with it through controlled access, signage, and revegetation;
- An overall framework detailing the management of designated Conservation Reserves prior to, during, and after construction. Management measures should include fire, weeds, dieback, fauna protection, revegetation and controlled access;

- 
- An Implementation and Management Schedule showing appropriate completion criteria to be met by the developer prior to handover of a Conservation Reserve to the City, and the relevant timeframes for each criterion. A report that details the relative success of the Plan's implementation against the completion criteria is to be prepared annually and provided to the City's Land Development team;
  - Lifecycle and type of non-natural assets with associated mapping showing locations of these assets in addition to 'As Constructed' drawings to the satisfaction of the City; and
  - In the absence of a Bushfire Management Plan approved by the City on advice from DFES, consultation with DFES should be undertaken and included in the Plan.

#### **4.3 Wetland Management Plan:**

- An overall framework detailing the management of the wetland to be undertaken prior to, during, and after construction of surrounding development. Management measures should include fire, weeds, dieback, fauna protection, revegetation and controlled access;
- Site specific investigations and consultation with the Department of Biodiversity Conservation and Attractions to confirm wetland boundaries, classification and management category; and
- Sufficient detail on the establishment, restoration and enhancement of wetland buffers.

#### **4.4 Dieback Management Plan:**

- Should be clear on whether the plan relates to the construction phase, or ongoing management of a site (or both);
- Potential impacts of dieback being transported to or from the site;
- Provide detail of the rationale and methodology for determining the level of risk associated with dieback over the site (likelihood and impact);
- Define the risk area including areas that are clean and able to be protected from dieback infestation;
- Note any flora of conservation significance;
- Access management strategy, explaining how the site will be accessed to avoid contamination of this or other sites;
- Hygiene control measures such as cleaning stations (to clean footwear and vehicles entering and exiting the site), use of dieback free construction materials, road and access closures where necessary, information through signs and education of current and future residents;
- Detail on how dieback will be managed within rehabilitation sites as required.

#### **4.5 Karstic Features Management Plan:**

- Detailed recommendations pertaining to the management, avoidance and protection of karstic features in response to proposed development;
- Information and associated mapping on karst locations and severity of the potential risk to development and life;
- Detailed site investigations including geophysical techniques for proposals located within areas of high karst risk.

---

#### 4.6 Revegetation Plan:

- Detailed site plan clearly showing the location and extent of areas to be revegetated, existing vegetation, and vegetation that is proposed to be (or has been) removed;
- Details on site preparation such as weed control and site stabilization (mulching, brushing, and matting for example), as well as ongoing management of weeds and where applicable, disease;
- Detailed information on the species to be planted, including growth form, density, and whether they will be planted as tubestock or seed mix;
- A table showing precise details of the revegetation program and a schedule of actions that will occur over time in order to meet the proposed survival rate and completion criteria.

*All of the above Plans should include maps indicating what the Management Plan is proposing including infrastructure, planting and clearing.*

---

## 5 - IMPLEMENTATION

---

### 5.1 Implementation Schedule and Reporting

*A comprehensive implementation schedule, as shown in **Table 1** of the Environmental Management Plan Guidelines needs to be included within the Management Plan.*

*An implementation schedule should address the following key stages of development:*

- Pre works – seed collection, weed management, fauna management, and installation of temporary fencing.
- During works – construction management actions such as ongoing fauna and weed management, as well as the construction of permanent fencing, revegetation works, and the installation of any approved infrastructure; and
- Post works – ongoing maintenance and management of a site prior to handover to the City and might include any combination of the above actions in addition to any other actions necessary to achieve the completion criteria, such as ongoing inspection of constructed assets.

*Implementation of an EMP should also include, where applicable, any necessary stakeholder consultation and involvement.*

### 5.2 Monitoring

*In order to ensure that implementation is in accordance with the approved Plan, the proponent is required to undertake ongoing monitoring of the site. For the purpose of keeping accurate records and tracking compliance with the approved EMP, a photo monitoring point(s) is/ are required to be established prior to the commencement of site works. This will be marked with a survey peg and will serve as the location from where photographic evidence of actions will be recorded.*

*The implementation of the approved Plan should be monitored by the proponent and demonstrated through the provision of reports to the City. The frequency and level of reporting is to be agreed with the City through approval of the EMP and will be based on the amount and scope of work to be completed and the completion criteria to be met.*

*Successful monitoring will also include necessary contingencies should monitoring results not be satisfactory. In addition, monitoring should include details on any complaints received and the response to those complaints, as well as reporting any incidents as well as overall performance of the plan as it is being implemented.*

### 5.3 Completion Criteria

*This section of the Plan will provide a comprehensive list of the actions to be completed, and the standards to which actions are completed and assets are handed over to the City.*

*A final report will be required prior to handover that will address how the implementation of the approved Plan has been undertaken. Completion criteria and the final report addressing how these have been met shall include the following as a minimum:*

---

Obligations for management – include information on the obligations of the developer to manage the site. This should include any relevant supplementary maintenance and Local Government responsibilities where applicable, and where agreed by the City.

Practical completion – minimum City of Wanneroo expectations at handover include but are not limited to:

- The proponent must refer to the City's Local Planning Policy 4.3: Public Open Space, for information pertaining to the City's expectations at handover for infrastructure.
- All approved Asset Data and As Constructed Drawings must be submitted to the City for inclusion in the City's Asset Register.
- Detail on the infrastructure that has been installed including but not limited to fencing, access, signage and other infrastructure such as lookouts and benches where agreed by the City.
- An adequate and reasonable representation of revegetation across the site needs to be provided to the City prior to handover. Multiple survey quadrats need to be presented in order to demonstrate species diversity, coverage, condition and survival rates for areas subjected to revegetation works.
- Vegetation quality should be in a better condition than it was prior to construction. The approved Plan should include the intended final vegetation quality as agreed by the City.
- Acceptable weed cover should be demonstrated through on site observation (such as quadrats or flora surveys). Ongoing weed management actions should be demonstrated in the final report.
- The site should be free of all rubbish including building materials.
- All assets are to be in a condition that is acceptable to the City and installed to the City's satisfaction (as per approved drawings).
- Fauna shall have been adequately managed in accordance with approved Plan so that no fauna remains landlocked, and so that cumulative off-site impacts of habitat removal are minimised.

---

## **6 - APPENDICES**

---

### **6.1 Approvals**

*Supporting documentation including statutory environmental approvals (state and federal) and any relevant planning approvals.*

### **6.2 Mapping**

*Include all relevant mapping.*

### **6.3 References**

*This is to include references to literature and related Plans.*

### **6.4 Incidents**

*Detail explaining how incidents and non-compliance with the approved Plan will be communicated to the City and how they will be addressed.*

# Appendix 2: Implementation and Reporting Schedule Template

**Legend:**

- Required for the specified Management Plan
- Required only where agreed by the City and specified in Management Plan
- Not required for specified Management Plan

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
<b>Pre – Construction</b>											
Submission and Approval of Engineering Plans in accordance with approved Management Plan.	Prior to site works.	Engineering Plans to be in accordance with approved documents – EMP, LSP, LWMS, DA etc.  Site inspection – discuss key points in the Engineering Plans.	Approval Letter and stamped drawings.	CoW to respond within 6 weeks of Officer receiving submission.  Dependant on approval/ non-approval of Engineering Plans.	Site inspection if required.	○	•	•	-	○	○
Submission and Approval of Landscaping Plans in accordance with approved Management Plan.	Prior to site works.	Landscaping Plans to be in accordance with approved documents – Engineering Plans, EMP, LSP, LWMS, DA etc.  Site inspection – discuss key points in the Landscaping Plans.	Approval Letter and stamped drawings.	Note that Engineering Plans must be approved prior to Landscaping Plans being assessed.  The City prefers the submission of Landscaping Plans within 4 weeks of Engineering Plans being approved.	Site inspection if required.	○	○	○	-	-	•
Monitoring		Establish photo monitoring points and quadrats for the purpose of revegetation and weed coverage monitoring.  Monitoring Program to be established and agreed with the City	Map showing locations in approved EMP.	As per approved monitoring plan/ schedule agreed with the City.	Nil.	○	•	•	-	-	•



Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
Waste management	Prior to site works and ongoing.	Removal, transport and appropriate disposal of dumped rubbish, construction materials, asbestos and other contaminated waste at an approved facility in accordance with environmental and health regulations.	<p><u>Litter/ general waste</u> Before and after date stamped photographs and/ or invoices for disposal.</p> <p><u>Asbestos</u> Provision of validation report in accordance with environmental and health regulations for the removal of asbestos.</p> <p><u>Contaminated Waste</u> Provision of contaminated waste docket in accordance with environmental and health regulations for the removal of contaminated waste.</p>	To be included in the annual report commencing from approval of EMP.	Potential CoW audit of works as required.	•	•	•	-	-	•
Temporary Fencing and signage of conservation and rehabilitation areas to prevent unauthorised access.	To be installed pre construction and prior to clearing occurring adjacent to the proposed POS. To be removed during construction of Conservation POS.	<p>Using surveying techniques locate areas of native vegetation to be retained in conservation areas and install fencing and signage around these areas.</p> <p>Regularly inspect fencing and signage and provide maintenance where required including any additional measures for the prevention of unauthorised access.</p> <p>Replace fencing around conservation areas with adequate long-term fencing.</p> <p>Replace signage around conservation areas with park name signage in accordance with LPP 4.3.</p>	Date stamped photographs at agreed photo monitoring points and mapping showing location of fencing and signage.	Evidence provided within 4 weeks of installation of fencing/ signage and also to be included in the annual report commencing from approval of EMP.	Potential CoW audit of works as required.	•	•	•	-	-	•

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
Control the spread of weeds within the area of native vegetation to be retained in conservation POS.	Pre-construction.	Areas of vegetation to be retained in conservation POS should be assessed for weed abundance and mapped accordingly.  Undertake ongoing weed management of the conservation POS areas. Aiming for less than 10% weed coverage over the site.	Date stamped photos at agreed photo monitoring points showing indicator dye or invoice from contractor.  Must provide mapping showing location and type of weeds present.	To be included in the annual report commencing from approval of EMP.	Heavily weed infested areas or non-compliance with agreed weed management may result in increased frequency of reporting and/ or extended maintenance period.	○	•	•	-	-	•
Seed Collection and vegetation management.	Several seasons prior to development  Include in Local Structure Plan.	Build-up of local provenance seed collection over several seasons from the development area. Seed collected in accordance with industry standards.  Seed collection of species that are able to be propagated  VFMP and FMP only – selection and availability of advanced trees needs to be considered prior to development and harvesting of vegetation ie Grass Trees and Zamia Palms.  Propagation to occur during construction of POS.  Set up of agreed monitoring criteria within proposed POS and in accordance with approved Management Plan.  Where a Flora Survey has not previously been conducted, one shall be conducted at a suitable time of year that most accurately records the species and community types on site.	Provide evidence from seed collection specialist of ability to propagate the seed collected.  Copies of valid licences and processes to be provided.  Schedule of seed collected – amount and species.  Provide evidence of advanced trees and harvested vegetation.	To be included in the annual report commencing from approval of EMP.	Potential CoW audit of works as required.	○	•	•	-	-	•
Unauthorised Access	Pre-construction and ongoing.	Early identification of potential and active access points.  Identification and ongoing review of management methods to prevent unauthorised access in consultation with the City.  Ongoing communication of any reoccurring issues with City Rangers.  Must be provided in accordance with approved documents.	Date stamped photographs and mapping showing location.	To be included in the annual report commencing from approval of EMP.	Potential CoW audit of works and ongoing consultation with the City as required.	•	•	•	•	•	•

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
Fauna Management	Pre-construction and ongoing.	<p>Undertake reconnaissance to determine fauna present on ground prior to site works (fauna survey ground-truthing).</p> <p>Install fauna proof fencing around entire perimeter of the relevant development stage prior to site works. Fauna proof fencing should be a minimum height of 1.8 metres, pegged into the ground with taught wire to keep the bottom of the fence flush with the ground.</p> <p>Mustering or trapping and Relocation – fauna relocated offsite. Offsite impacts remain the responsibility of the developer. Need to consider cumulative impacts of habitat removal.</p> <p>Feral animal control</p> <p>Culling – prior to on ground works and with advice and approval from DPaW</p> <p>Fauna must be managed in accordance with the approved Vegetation and Fauna Management Plans.</p> <p>Information relating to populations (including sustainability of populations within subject area and adjacent, culling/ relocation areas), methodology and location should be included.</p>	<p>Date stamped photographs and mapping showing location of fencing.</p> <p>Report on fauna trapped by suitably qualified and licenced expert and in accordance with DPaW advice.</p>	To be included in the annual report commencing from approval of EMP.	Potential CoW audit of works and ongoing consultation with the City as required.	•	•	•	-	-	○
Fire mitigation works.	Pre-construction and ongoing.	Must be in accordance with relevant legislation including State Planning Policy 3.7, guidelines and approved Bushfire Management Plans.	Demonstrated compliance with SPP 3.7.	To be included in the annual report commencing from approval of EMP.	Potential CoW audit of works and ongoing consultation with the City as required.	•	•	•	-	-	•
<b>Construction</b>											
Waste management	During site works and ongoing.	Removal, transport and appropriate disposal of dumped rubbish, construction materials, asbestos and other contaminated waste at an approved facility in accordance with environmental and health regulations.	<p><u>Litter/ general waste</u> Before and after date stamped photographs and/ or invoices for disposal.</p> <p><u>Asbestos</u> Provision of</p>	To be included in the annual report commencing from approval of EMP.	Potential CoW audit of works as required.	•	•	•	-	-	•

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
			validation report in accordance with environmental and health regulations for the removal of asbestos.  <u>Contaminated Waste</u> Provision of contaminated waste docket in accordance with environmental and health regulations for the removal of contaminated waste.								
Temporary fencing, gates and signage replaced with permanent fencing, gates and signage.	At start of POS construction works.	Resurvey POS property boundary and reinstate permanent fencing with controlled access points in accordance with approved Landscaping Drawings, Detailed Area Plans, and Management Plans.  Regularly inspect fencing and signage and provide maintenance where required including any additional measures for the prevention of unauthorised access.  Temporary signage will be removed once permanent signage has been installed.	Date stamped photographs showing installed permanent, gates fencing and signage.	Included in first report following installation of permanent fencing, gates and signage.	Potential CoW audit of works as required.	•	•	•	○	-	•
Control the spread of weeds within the area of native vegetation to be retained and revegetation areas in conservation POS.	Construction.	Refer to information in preconstruction.  Include weeding of constructed verges surrounding Conservation POS.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	○	•	•	-	-	•
Seed Collection and vegetation management.	From pre-development through to construction of POS and as required.	Build-up of local provenance seed collection over several seasons from the development area. Seed collected in accordance with industry standards.  Seed collection of species that are able to be propagated	Refer to information in preconstruction and also include propagation invoice.	Refer to information in preconstruction.	Refer to information in preconstruction.	○	○	○	-	-	○

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
		VFMP and FMP only – selection and availability of advanced trees needs to be considered prior to development and harvesting of vegetation ie Grass Trees and Zamia Palms.  Propagation of collected seed to occur during construction of POS.									
Unauthorised Access	Construction and ongoing.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	•	•	•	○	-	•
Fauna Management	Construction and ongoing.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	•	•	•	-	-	○
Fire mitigation works	Construction and ongoing.	Must be in accordance with relevant legislation including State Planning Policy 3.7, guidelines, approved Bushfire Management Plans, and conditions of planning approval.  Actions may include but are not limited to clearing and pruning for fire and maintenance access tracks, installation of formalised tracks as per specifications (see Emergency Vehicle and Maintenance Access section below).  Formal community education and awareness of fire mitigation works in accordance with SPP 3.7.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	•	•	•	-	-	•
Emergency Vehicle and Maintenance Access Tracks	Construction and ongoing.	Fire Access Tracks to be installed in accordance with approved Bushfire Management Plan. In the instance a BMP does not require a track to be installed, the minimum requirement is a 3 metre wide formalised access track.	Date stamped photographs showing installed tracks.	Included in first report following installation of tracks.	Potential CoW audit of works as required.	○	•	•	-	-	○
Revegetation works	Construction and ongoing.	Planting areas are to be planted in a manner that imitates natural regeneration as closely as possible;  A variety of species to the satisfaction of the City is to be used throughout the planting area, ensuring a mixture of species and structure (upper, middle and lower storey species) is achieved over the site;  Completion Criteria for revegetation works are to include a minimum survival rate and weed	Date stamped photos and relevant data of revegetation site in accordance with approved success criteria monitoring.  Must provide mapping showing location	Included in first report following revegetation works.	Potential CoW audit of works and ongoing consultation with the City as required.	○	○	○	-	-	•

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
		<p>coverage based on the characteristics of the site and to the satisfaction of the City;</p> <p>Species lists for revegetation shall be based on the species recorded in Flora Surveys conducted over the site. Planting shall reflect, as close as possible, the species found in adjacent or most closely located vegetation communities; and</p> <p><u>Site Preparation (Dryland Areas):</u></p> <p>Stabilisation measures and wind break fencing only where required;</p> <p>Ripping and rotary cultivation will not be accepted as site preparation measures unless previously agreed by the City; and</p> <p>Weed control to consist of targeted manual and/ or chemical removal as agreed by the City.</p> <p><u>Site Preparation (Coastal Areas):</u></p> <p>Stabilisation measures in foreshore areas should consist of 600 GSM coir mesh and stainless steel pins for areas with slopes (especially those adjacent to paths and tracks);</p> <p>Brushing material of a suitable type can be used as the sole stabilisation technique in relatively flat areas, or in conjunction with coir-mesh matting;</p> <p>Both of the above methods of foreshore stabilisation should be used in conjunction in areas where there are existing, informal tracks that need to be rehabilitated, and where there is unwanted public access; and</p> <p>Wind break fencing should be used where there is excessive sand drift. The City has a standard drawing for this, which should be used (TS 01-11-0).</p> <p><u>Site Preparation (Wetland Areas):</u></p> <p>Weed control to consist of typha control in January and timed with flowering. This should continue on an annual basis;</p> <p>Where there is a dense monoculture of typha, spraying should be undertaken followed by a brush cut and manual removal of the typha after 3-4 weeks. From this stage typha should be</p>	of revegetation.								

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
		<p>wiped with chemical and can be left in situ;</p> <p>During the management and removal of typha, other weed species will need to be monitored and controlled for the entire duration of the management of the site by the Developer; and</p> <p>Weeds will need to be controlled by hand or by using selective herbicide to ensure that planted natives are not impacted by weed control works.</p> <p><u>Planting Densities (Conservation Areas):</u></p> <p>For conservation areas where there is an existing overstorey a planting density of at least 1 plant per 2 square metres will be accepted;</p> <p>For conservation areas where there is no existing overstorey and the site is primarily bare, a planting density of at least 2 plants per square metre will be accepted; and</p> <p>Trees should be planted at a density of at least 1 tree per 3 square metres.</p> <p><u>Planting Densities (Coastal Areas):</u></p> <p><i>Spinifex longifolia</i> and <i>Spinifex hirsutus</i> are to be planted at a minimum rate of 2 to 4 plants per square metre; and</p> <p>All other species to be planted in foreshore reserves are to be planted at a minimum rate of 1 plant per square metre.</p> <p><u>Planting Densities (Wetland Areas):</u></p> <p>Wetland basins and wetland banks shall be planted at a minimum of 2 plants per square metre and should consist primarily of sedges and reeds depending on water depth. For example, <i>Baumea</i>'s and <i>Schenoplectus</i> within inundated areas and <i>Juncea</i>'s in areas that are inundated for a short period of time or not at all; and</p> <p>The riparian zone further away from a water body shall be planted at a minimum of 1 plant per square metre and should include woody species such as <i>Melaleuca</i>'s and <i>Eucalyptus rudis</i>.</p>									



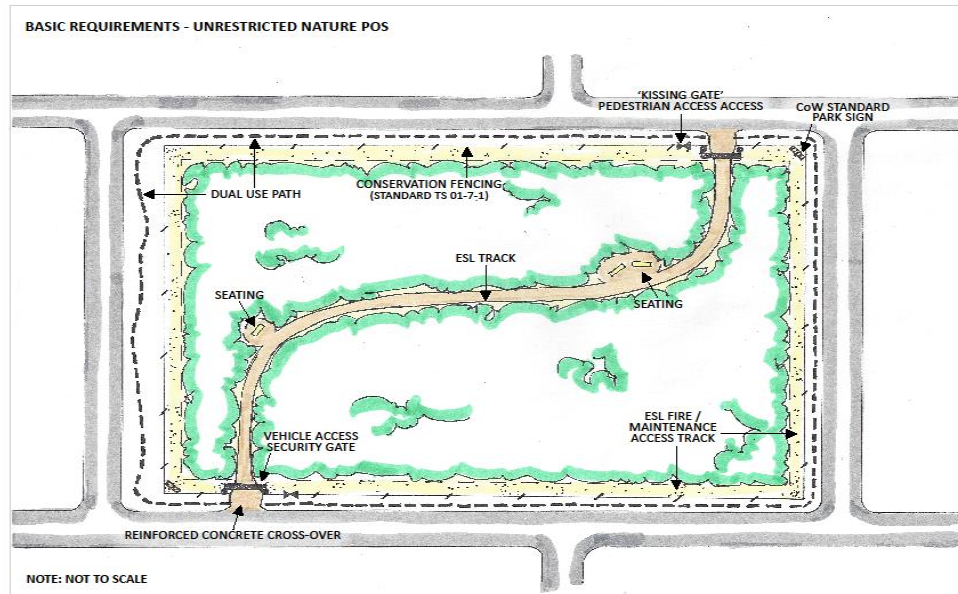
Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
Assets	Construction and ongoing.	<p>Suitable assets to install in conservation reserves include Lookouts, benches, boardwalks, and information shelter (large parks).</p> <p>Assets that will not be accepted in conservation reserves include exercise equipment, lights, gazebos, picnic tables, barbecues, bmx tracks, nature play, irrigation lines and landscaped areas.</p> <p>Suitable materials are restricted to recycled plastics (or similar), concrete and metals (aluminium only in foreshore) suitable to the subject environment.</p> <p>Refer to FMP Guidelines for asset specifications in foreshore areas.</p>	<p>Date stamped photographs showing installed assets.</p> <p>'O-Spec' in accordance with City requirements.</p>	Included in first report following installation of assets.	Potential CoW audit of works as required.	○	●	●	○	○	○
<b>Post – Construction</b>											
Waste management	Post construction works and during maintenance period.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	●	●	●	-	-	●
Weed Management	Post construction works and during maintenance period.	<p>Refer to information in preconstruction.</p> <p>Include weeding of constructed verges surrounding Conservation POS.</p>	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	○	●	●	-	-	●
Revegetation works	Post construction works and during maintenance period.	<p>Ongoing revegetation works including infill planting to ensure attainment of completion criteria.</p> <p>Seed collection and propagation works is to be included as part of ongoing revegetation requirements.</p>	Refer to information in preconstruction and also include propagation invoice.	Refer to information in preconstruction.	Refer to information in preconstruction.	○	●	●	-	-	●
Unauthorised Access	Post construction works and during maintenance period.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	●	●	●	○	-	●
Fauna Management	Post construction works and during maintenance period.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	●	●	●	-	-	○

Action	Timing	Description of Works	Evidence of Completion	Target/ Action Date - Reporting	Further Action Required?	Vegetation & Fauna	Conservation Area	Wetland	Dieback	Karstic Features	Revegetation
Fire mitigation works	Post construction works and during maintenance period.	Refer to information in construction.	Refer to information in preconstruction.	Refer to information in preconstruction.	Refer to information in preconstruction.	•	•	•	-	-	•
Maintenance and replacement of assets	Post construction works and during maintenance period.	Assets include fencing, signage, gates, emergency vehicle and maintenance access tracks, lookouts, benches, boardwalks, and information shelters.  Assets to be maintained to ensure no risk to public safety and include condition rating.	Date stamped photographs (before and after maintenance works) showing maintenance works or replacement of assets and written description of works undertaken.	To be included in the annual report.	Refer to information in construction.	○	•	•	-	-	○
Monitoring	Post construction works and during maintenance period.	Ongoing data provided from established quadrats.  Vegetation Condition.  Revegetation and completion criteria.  Weed coverage and completion criteria.	Mapping.  Date stamped photos.	Final report demonstrating how all completion criteria have been adequately met in accordance with the approved Plan.	Potential CoW audit of works and ongoing consultation with the City as required prior to handover.	•	•	•	•	•	•

# Appendix 3: Conceptual Designs for Conservation and Wetland Areas

The following drawings demonstrate potential designs that allow for maximum retention of native vegetation and high viability for Conservation and Wetland areas created through subdivision works.

**Figure 3 – Conservation Public Open Space Concept**



**Figure 4 – Conservation Public Open Space Interface Concept**

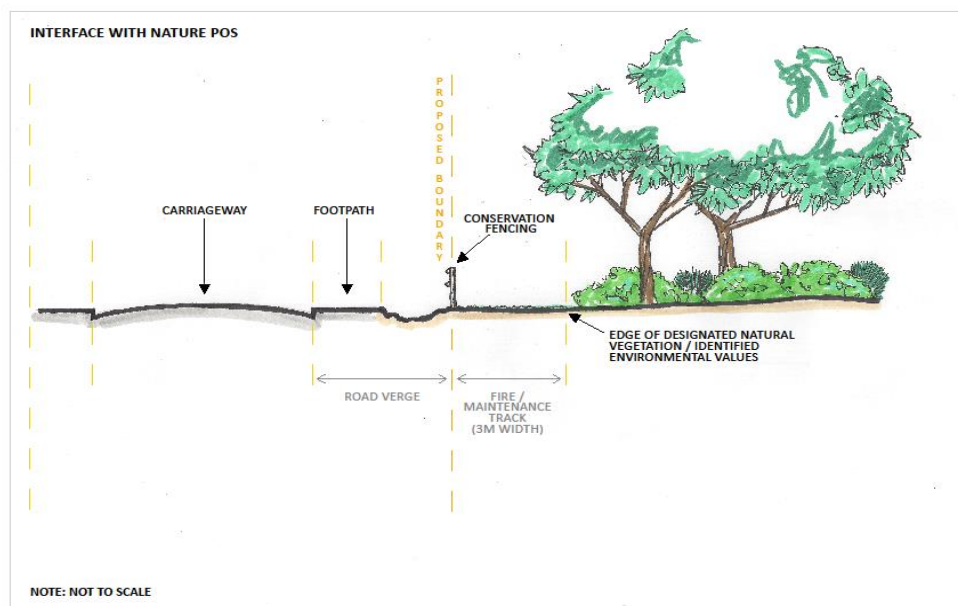
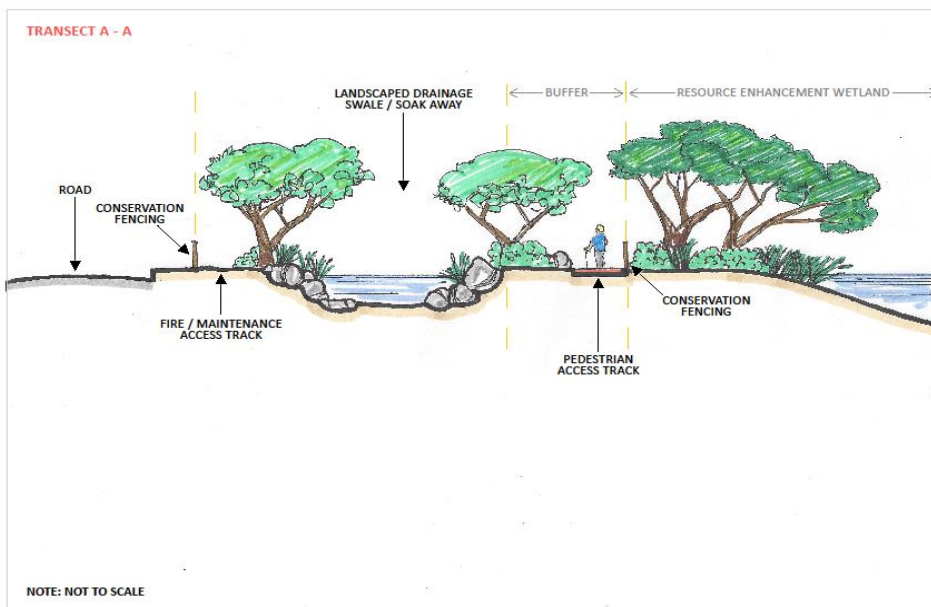


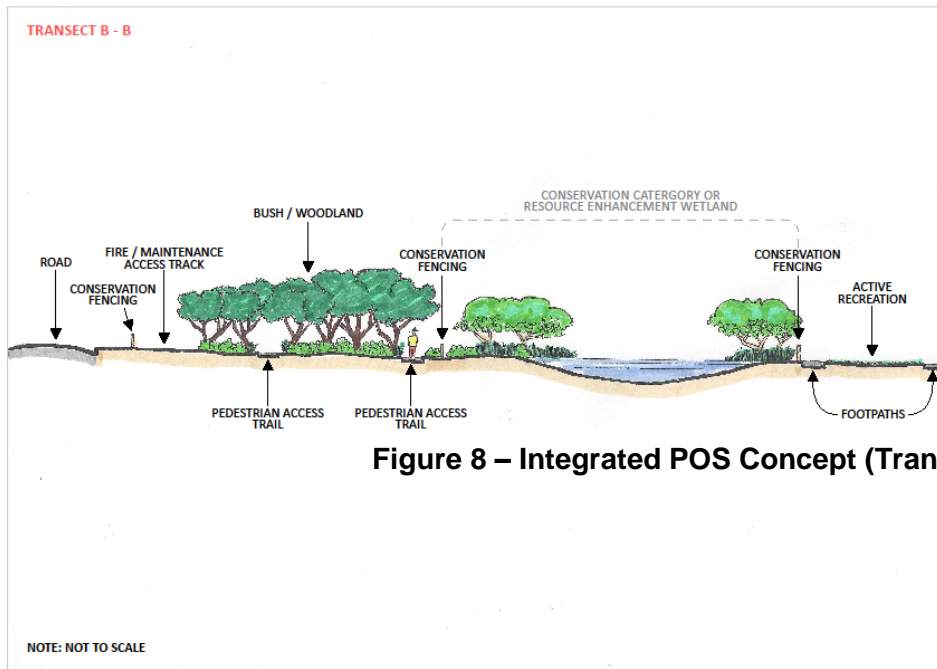
Figure 5 – Integrated Public Open Space Concept



Figure 6 – Integrated POS Concept (Transect A)



**Figure 7 – Integrated POS Concept (Transect B)**



**Figure 8 – Integrated POS Concept (Transect A)**