

ROCKINGHAM INDUSTRY ZONE

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Prepared for: LandCorp
Report Date: 5 November 2013
Version: 7
Report No. 2011-29

The logo for PGV Environmental is located in the bottom right corner of the page. It features the letters 'PGV' in a large, bold, white sans-serif font. Below 'PGV', the word 'ENVIRONMENTAL' is written in a smaller, white, all-caps sans-serif font. The background of the logo area is a dark orange color with a subtle, curved white line above the text.

PGV
ENVIRONMENTAL

Contents

- Contents i
- List of Attachments iii
- Summary of Commitments iv
- 1 INTRODUCTION 1
 - 1.1 Background..... 1
 - 1.2 Purpose and Scope 2
 - 1.3 Proposed Subdivision Plan 2
- 2 EXISTING SITE DESCRIPTION 4
 - 2.1 Topography 4
 - 2.2 Geology and Soils 4
 - 2.3 Hydrology 4
 - 2.4 Wetlands 4
 - 2.5 Flora and Vegetation 5
 - 2.5.1 Flora 5
 - 2.5.2 Vegetation Types 5
 - 2.5.3 Vegetation Condition 6
 - 2.5.4 Threatened Ecological Community 6
 - 2.6 Fauna 6
- 3 ENVIRONMENTAL MANAGEMENT PRIOR TO CONSTRUCTION 7
 - 3.1 Retention of Native Vegetation..... 7
 - 3.2 Seed Collection and Propagation 7
 - 3.3 Salvaging Vegetation 7
 - 3.4 Fauna Trapping and Relocation Program 8
 - 3.5 Salvaging Fauna Habitat 8
 - 3.6 Interface between Development and the Conservation Area 8
- 4 ENVIRONMENTAL MANAGEMENT DURING CONSTRUCTION 9
 - 4.1 Clearing of Native Vegetation 9
 - 4.1.1 Mulching..... 9
 - 4.1.2 Clearing Procedures 9
 - 4.2 Native Fauna Management 9
 - 4.3 TEC Re-establishment..... 10
 - 4.3.1 Soil Preparation 10

4.3.2	Species List	10
4.3.3	Source.....	11
4.3.4	Planting.....	11
4.3.5	Weed Management.....	11
4.3.6	Completion Criteria	11
4.4	Landscaping.....	12
4.4.1	Species List	12
4.4.2	Source.....	14
4.4.3	Completion Criteria	15
4.5	Habitat Creation	15
4.6	Aboriginal Heritage Management during Construction.....	15
5	MONITORING AND REPORTING	17
5.1	Monitoring.....	17
5.2	Contingencies.....	17
5.3	Reporting.....	18
5.4	Review of the Management Plan	18
6	REFERENCES	19

List of Attachments

Tables

Table 1: TEC Species and Densities

Table 2: Landscaping Species

Figures

Figure 1: Regional Location

Figure 2: Site Boundary and Topography

Figure 3: Road Reserves in the Stage 1 Subdivision Plan

Appendices

Appendix 1: RIZ Structure Plan

Appendix 2: Ministerial Statement 836

Appendix 3: Notice of Approval (EPBC 2010/5337)

Appendix 4: Proposed Stage 1 Subdivision

Appendix 5: Proposed Road Cross Sections

Appendix 6: Proposed Drainage Plan

Summary of Commitments

Management Strategy	Management Measures	Timing	Responsibility
	Prior to Commencement of Construction		
Retention of Native vegetation Wetland Retention	The Subdivision Plan for the road reserves and service corridors will have minimal retention of native vegetation.	Subdivision Planning	LandCorp
	Areas of native vegetation to be retained will be adequately delineated on plans and on-ground to ensure minimum disturbance during construction.	Prior to Clearing	LandCorp
Seed Collection and Propagation	No full wetlands will be retained within the road reserves and service corridors. Small portions of wetlands may be retained where the proposed roads and service corridors cross.	Subdivision Planning	LandCorp
	The collection of local seed for use in rehabilitation or landscaping within the Development Area will be carried out prior to clearing works.	Prior to Clearing	LandCorp
Salvaging Vegetation	The seed stock will then be stored and utilised, as required, by LandCorp.	During Construction	LandCorp
Fauna Trapping and Relocation Program	The collection of Balgas (<i>Xanthorrhoea preissii</i>) will be undertaken and plants will be stored appropriately prior to transplanting to landscaped areas in the development.	Prior to Clearing	LandCorp
	In the areas of native vegetation to be cleared for the development LandCorp will implement a fauna relocation program prior to the clearing of the road reserves and service corridors.	Prior to clearing	LandCorp
Salvaging Fauna Habitat	Prior to clearing Tuart trees those potentially contain suitable hollows for Black Cockatoos will be marked so if appropriate hollows are present habitat can be harvested during construction from marked trees.	Prior to Clearing	LandCorp
	During Construction		
Interface between Development and Conservation Area	The Conservation Area will not be disturbed during construction and contractors will be made aware of the significance of the Conservation Area.	Prior to and during Construction	LandCorp
	Any damage to the fence around the Conservation Area will be reported immediately.	Prior to and during Construction	LandCorp/ Contractor
	Access points in the Conservation Area will be kept clear at all times.	Prior to and during Construction	LandCorp
Clearing of Native Vegetation	The location and limit of clearing of vegetation within all work areas will be clearly identified on site and delineated on appropriate plans to be supplied to contractors prior to the commencement of works	Prior to clearing	LandCorp

Management Strategy	Management Measures	Timing	Responsibility
Clearing of Native Vegetation	Native vegetation to be cleared will be removed in a systematic manner and stockpiled for mulching and/or chipping for later use in rehabilitation and landscaping works.	During Clearing	LandCorp
	The stockpiling of larger logs that may be suitable for rehabilitation works will be undertaken and will be used for site stabilisation and access control where appropriate.	During Clearing	LandCorp
	Cleared areas will be temporarily stabilised with water, hydro-mulch or other stabilising material as necessary until further works are implemented.	During Clearing	LandCorp
	No burning of cleared vegetation will be permitted at any stage during clearing or construction activities.	During Clearing	LandCorp
	No vehicles involved in clearing or earthworks and no soil or mulch from clearing activities will be permitted to be moved into the Conservation Area unless specifically authorised by LandCorp.	During Clearing	LandCorp
Native Fauna Management	The clearing contractor will complete a fauna induction program which will include fauna friendly clearing procedures.	During Clearing	LandCorp
	Larger trees (dead or alive) should be 'bumped' with machinery first then lowered if no fauna is spotted. Trees should not be pushed and cleared in one motion	During Clearing	LandCorp/ Contractor
	No clearing will be undertaken in spring to avoid nesting birds	During Clearing	LandCorp/ Contractor
	Native fauna injured during clearing should be taken to a designated veterinary clinic or the contractor should call DEC's Wild Care 24hr hotline (08) 9474 9055 for instruction	During Clearing	LandCorp/ Contractor
	Topsoil including weeds and much of the weed seed bank will be removed during construction.	During Construction	LandCorp
	Soil in the constructed swale will be treated with an environmentally friendly wetting agent.	During Construction	LandCorp
	Species used in the vegetation will be from the species lists provided.	During Construction	LandCorp
	Where ever possible seed will be sourced from the Development Area of the RIZ, where this is not possible tubestock will be sourced from specialist nurseries that collect local provenance seed and raise tubestock.	During Construction	LandCorp
	Drainage swales will be planted to replicate the strata of TEC vegetation	During Construction	LandCorp
	Tubestock will be planted in a semi-random fashion to ensure the final vegetation appears as natural as possible in areas that will replicate TEC FCT19.	During Construction	LandCorp
Revegetation	Vegetation will be established at the densities outlined in Table 1	During Construction	LandCorp
	Weed density will be assessed twice per year in autumn and late spring. Weed species will be treated with herbicide as required based on observations during site inspections.	Post Construction	LandCorp

Management Strategy	Management Measures	Timing	Responsibility
Revegetation	The success of the revegetation will be determined against the completion criteria in this plan.	Post Construction	LandCorp
Landscaping	Species to be used in Landscaped areas will be from the species list provided	During Construction	LandCorp
	Seed will be sourced from the subdivision area and local provenance tubestock will be used as much as possible in landscaping	During Construction	LandCorp
Habitat Creation	Hollows that are harvested from the development area will be installed into the Conservation Area. The hole in the bottom of each log will be closed with a piece of wood, tin or flywire and each log will contain a layer of 'potting mix' in the bottom. All logs will be attached to a tree with a chain and U bolts. Logs will be placed high enough in the tree to restrict access from the ground	During Construction	LandCorp
Aboriginal Heritage Management Plan	No known archaeological sites are present and therefore no management strategy is required for the development area. If any sites are identified an Aboriginal Heritage Management Plan will be prepared and submitted to the City of Rockingham.	If required	LandCorp
	LandCorp will ensure that the Site Manager is briefed by an archaeologist on the identification of materials that may constitute an archaeological site and of the requirements of the Aboriginal Heritage Act, 1972 regarding such sites.	Prior to clearing and construction	LandCorp
	LandCorp will ensure that the Site Manager is briefed by an archaeologist on the identification of materials that may constitute an archaeological site and of the requirements of the Aboriginal Heritage Act, 1972 regarding such sites.	Prior to clearing and construction	LandCorp
	The Protocol for a possible site discovery, provided in this management plan, will be part of the induction package for working on the site.	During Clearing and Construction	LandCorp/ Contractor
Monitoring and Reporting			
Monitoring	The revegetated drainage swales will be monitored annually for five years after the tubestock are planted.	Annually for five years after planting	LandCorp
	The monitoring will include fixed areas 100m in length within the drainage swale system with photo points every 100m of swale and one in each area of retained vegetation.	Annually for five years after planting	LandCorp
Contingencies	Any impact noted during the monitoring periods on retained vegetation will be investigated and this management plan will be updated to include any additional protocols required.	As required	LandCorp
Reporting	The results of the monitoring will be included in the annual monitoring report as required by the Rockingham Industry Zone Compliance Assessment Plan (PGV, 2012) and submitted to the OEPA	Annually	LandCorp

Management Strategy	Management Measures	Timing	Responsibility
Review of the Management Plan	If construction is not complete within 5 years this management plan will be reviewed in 2018.	2018	LandCorp

1 INTRODUCTION

1.1 Background

The Rockingham Industry Zone (RIZ) is undergoing development in accordance with the East Rockingham Industrial Park IP14 Structure Plan, the revised East Rockingham WWTP siting and associated service corridors, and the requirements under Ministerial Statement 863.

The Rockingham Industry Zone (RIZ) (also known as the Improvement Plan 14 (IP14) Area) is located about 40km south of the Perth Central Business District and approximately 2km northeast of Rockingham (Figure 1). The site is planned as an extension of the Kwinana Industrial Area to the north. The RIZ extends from the coast just north of the CBH Grain Terminal to the east to the Leda Nature Reserve and is generally bounded by Office Road to the north and Dixon Road to the south. The western-most portion of the RIZ is adjacent to Kwinana Beach (Cockburn Sound) (Figure 2).

The RIZ is covered by the Western Australian Planning Commission's (WAPC) Improvement Plan No.14 (IP14). Adopted in April 1988, IP14 was created in order to advance the planning, development and use of land for industrial purposes within the RIZ. Subsequently, the IP14 Structure Plan was adopted by the then Ministry for Planning in 1996. The existing IP14 Structure Plan (1996) has been refined in 2012 to reflect recent determinations by the WAPC and EPA (Appendix 1). The Structure Plan sets out the intended land uses and key road networks within the site. Its framework informs how future industrial lots may potentially be configured as part of future subdivision applications to the WAPC, whilst still being flexible enough to respond to the market needs of the private sector.

The proposal for the development of a portion of the RIZ (Figure 2) was assessed by the Environmental Protection Authority (EPA) as a Strategic Environmental Assessment (SEA). The SEA for the RIZ only included those portions of the RIZ with important environmental features. The SEA was approved by the Minister for the Environment in 2011 and revised under Section 45c of the *Environmental Protection Act 1986* in 2013 (Ministerial Statement 863) (Appendix 2).

LandCorp is currently preparing a subdivisions for the RIZ which includes the areas assessed under the SEA plus the balance of the land that did not contain important environmental features.

Schedule 1 of Ministerial Statement 863 (Appendix 2) that approved the SEA defines a subdivision as derived proposals. Key Characteristics of a Derived proposal includes the preparation of:

A Construction Environmental Management Plan to:

- *Retain, where practical, vegetation within the developed area;*
- *Include a fauna trapping and relocation program to be implemented in consultation with the DEC;*
- *Salvage potential breeding habitat for avifauna during clearing for integration into the Conservation Area; and*
- *Establish vegetation in road reserves using appropriate local native species to provide linkages between areas of remnant vegetation.*

The SEA was also referred and approved under the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999*, (EPBC 2010/5337). Approval of the project was granted subject to a number of conditions, one of which related to the clearing of Threatened Ecological Community 19 (TEC19) (Appendix 3). Condition 14a states that the developer must:

“Within 12 months of clearing any areas of TEC, 1.5ha for every 1ha of TEC cleared must be established on-site and protected in perpetuity”.

TEC19 occurs in the areas proposed for future subdivision and development. A total of 11.6ha of TEC may potentially be cleared.

1.2 Purpose and Scope

This Construction Environmental Management Plan (CEMP) has been prepared to meet the requirements of Ministerial Statement 863. The CEMP outlines strategies to ensure the construction of infrastructure in the RIZ meets environmental commitments and objectives for the development.

The CEMP includes specification of the responsibility and authority of organisations in relation to the CEMP during the construction phase of infrastructure within the road reserves (Figure 3). The management measures will ensure the activities associated with construction are planned to comply with relevant environmental legislation, approvals and standards. The activities addressed in the CEMP are:

- Clearing of vegetation;
- Earthworks;
- Installation of services:
 - Electricity;
 - Water;
 - Sewerage;
 - Gas; and
 - Telecommunications;
- Construction of roads; and
- Construction of stormwater drainage infrastructure.

The proposed subdivision plan is for the whole RIZ area and therefore this CEMP includes both SEA and non-SEA areas (Figure 2).

The establishment of the TEC as required by Condition 14a in the approval of the project under the EPBC Act is outlined in this CEMP.

The proposed subdivision plan is for the whole RIZ area and therefore this EMP includes both areas assessed in the SEA and areas not assessed in the SEA.

1.3 Proposed Subdivision Plan

Given the size of the project subdivisions will be designed to be flexible enough to respond to market needs and the varying land and operational requirements of industrial activities. The Structure Plan (Appendix 1), designates the following land uses in the RIZ:

- Heavy Industry;
- Heavy to General Industry Transition (5 to 10ha lots);
- General Industry (1 to 5ha lots);
- Light Industry;
- Service Commercial;
- Public Purpose; and
- Conservation Area (90ha).

The CEMP applies to the areas in which infrastructure will be installed rather than within the lots which will be dealt with in a separate Environmental Management Plan. In addition a Conservation Area Management Plan will be prepared for the 91ha Conservation Area.

Subdivision of Stage 1 is proposed on the western boundary of the RIZ to the north of Alumina Road (Figure 3). This subdivision has been prepared to provide industrial land to specific proponents that intend on developing the land in the near future. The lot size and shape has been designed to accommodate these proponents. The remainder of the RIZ will be subdivided in the future. The final size, orientation and shape of lots will be determined by the type of development that is to be located in the area.

Infrastructure will be in road reserves for Local and Distributor Roads. Typical cross sections for these roads have been prepared (Appendix 5). Local Roads will have a 30m road reserve with 10m of pavement, 2m of shoulder, a 2m path and 16m of drainage swale. The Distributor Roads will have 14m of pavement 5m of shoulder, 2.5m of path, a 2m low planting on the edge of the drainage swale that will be set aside to install shared services during the development of industries and 23.5m of drainage swale (Appendix 5).

Approximately 11.6ha of TEC as a worst case scenario will be cleared. The TEC is associated with wetland swales and the proposed subdivisions will incorporate wide drainage swales within the road reserves. These will be planted with species typical to TEC19 to satisfy Condition 14a of the EPBC approval and protected in perpetuity. The worst case scenario has been planned for and the proposed staged development of the RIZ allows for 17.4ha of drainage swales that can be planted to replicate the TEC. The drainage infrastructure will consist of long linear swales and will be planted in accordance with this CEMP. No private or shared services will be installed within the TEC swales to avoid disturbance to the vegetation and the swale's ecological function.

2 EXISTING SITE DESCRIPTION

2.1 Topography

The Rockingham Industry Zone is relatively flat with a variation in elevation from 0 to 9 metres Australian Height Datum (mAHD). The site contains a series of low ridges and intervening shallow swales associated with the Rockingham Becher Plain landform (Figure 2).

2.2 Geology and Soils

The Rockingham Industry Zone is located on the northern portion of the Rockingham-Becher Plain, a relatively recent feature of the Quindalup Dune System between Kwinana and Mandurah created as a result of coastline accretion caused by sea level fall over the last 6,400 years. The RIZ contains a series of shore-parallel ridges that show the early formation of the Point Peron peninsula between 5,000 and 6,000 years ago. The sequence of low ridges and swales is fairly continuous in part but in other areas is affected by existing development and land uses that have earth-worked the surface features of the landform (Coffey, 2010).

2.3 Hydrology

Groundwater occurs at a shallow depth under the site and has a general movement westwards towards the coast. Monitoring of the groundwater levels in 2005 showed a seasonal range in groundwater levels between 0.9m in April up to 1.7m AHD in September. The dry condition of the wetlands could be the result of a drying climate which has seen a local drop in water levels of approximately one metre since 1992 (Coffey, 2010).

The groundwater is alkaline with pH ranging from 8.30-8.77. The shallow groundwater is predominantly fresh (<1,000mg/L) apart from one bore located on the southern boundary which has a salinity of 4900mg/L, influenced possibly by saline water from Lake Cooloongup (Coffey, 2010).

2.4 Wetlands

A total of 38 wetlands occur in the RIZ (Coffey, 2010). Of these 14 wetlands are contained in the Conservation Area and 24 wetlands are located in the development area. Of the 24 wetlands that are in the development area of the RIZ 19 are Conservation Category, due primarily to the presence of FCT19 identified as a Threatened Ecological Community (TEC), and five are Resource Enhancement.

The wetlands are predominantly located in linear swales and range in length from 60m – 1.05km long. The vegetation within the wetlands is a mix of dampland and sumpland type vegetation, with the most common tree species being *Melaleuca raphiophylla* and *Banksia littoralis*. *Melaleuca huegelii* is also present in many wetlands indicating the limestone substrate of some swales. Five wetlands were identified with Tuart (*Eucalyptus gomphocephala*) as a dominant tree species.

The wetlands are groundwater dependent rather than perched wetlands relying on rainfall or surface runoff. The water levels have never been recorded shallower than 1.1m from the surface in the last five years.

2.5 Flora and Vegetation

2.5.1 Flora

A flora survey of the RIZ was undertaken by ATA Environmental between 2002 and 2005 (ATA, 2006) as well as Trudgen and Weston (1998).

A combined total of 166 plant species were recorded from the RIZ in both studies. Of the 166 plant species recorded, 98 were native and 68 were introduced. No Declared Rare or Priority listed flora has been recorded within the vicinity of the RIZ. No Declared Rare or Priority Flora species or Commonwealth Listed species were identified during the Vegetation and Flora Assessment (ATA, 2006).

2.5.2 Vegetation Types

A total of 21 vegetation associations were mapped by ATA (2006) on the RIZ as follows:

Dryland Flats

- *Eucalyptus gomphocephala* (Tuart) Woodland
- *Eucalyptus gomphocephala*/ *Acacia rostellifera* Woodland
- *Acacia rostellifera* Tall Shrubland
- *Eucalyptus gomphocephala*/ *Melaleuca huegelii* Open Woodland
- *Melaleuca huegelii*/ *Acacia rostellifera* Tall Open Shrubland
- *Melaleuca huegelii*/ *Hakea prostrata* Tall Shrubland
- *Xanthorrhoea preissii*/ *Avena fatua* Shrubland

Dryland Ridges

- *Acacia rostellifera*/ *Hakea prostrata* Shrubland
- *Xanthorrhoea preissii*/ *Acacia saligna*/ *Hakea prostrata* Shrubland
- *Hakea prostrata* Shrubland
- Wetland Swales
- *Melaleuca huegelii* Low Woodland
- *Melaleuca raphiophylla*/ *Melaleuca huegelii*/ *Gahnia trifida* Low Woodland
- *Melaleuca raphiophylla*/ *Acacia rostellifera*/ *Gahnia trifida* Low Woodland
- *Melaleuca raphiophylla*/ *Banksia littoralis* Low Woodland
- *Melaleuca raphiophylla*/ *Banksia littoralis*/ *Melaleuca huegelii* Low Woodland
- *Melaleuca raphiophylla*/ *Acacia rostellifera*/ *Melaleuca huegelii* Low Woodland
- *Banksia littoralis*/ *Acacia rostellifera* Low Woodland
- *Eucalyptus gomphocephala*/ *Melaleuca raphiophylla* Woodland
- *Xanthorrhoea preissii* Shrubland.

Wetland Flats

- *Melaleuca raphiophylla*/ *Gahnia trifida* Low Open Woodland
- *Melaleuca raphiophylla*/ *Banksia littoralis*/ *Acacia rostellifera*/ *Melaleuca huegelii* Low Open Woodland (ATA, 2006).

The 21 vegetation associations were considered to represent the following four Floristic Community Types:

1. Floristic Community Type 17 – *Melaleuca raphiophylla* – *Gahnia trifida* seasonal wetlands (also recorded with *E. gomphocephala*) recorded in the southern portion of the site.
2. Floristic Community Type 19b – Woodlands over Sedgeland in Holocene Dune Swales.
3. Floristic Community Type 29b – *Acacia* shrublands on taller dunes.
4. Floristic Community Type 30c2 – Quindalup *Eucalyptus gomphocephala* and/or *Agonis flexuosa* woodlands (ATA, 2006).

2.5.3 Vegetation Condition

The condition of the vegetation was assessed according to the condition rating scale of Bush Forever (Government of WA, 2000). Overall there is a high weed density in the vegetation within the RIZ. Particularly weedy and degraded areas are in the north of the RIZ and to the west of Mandurah Road (ATA, 2006).

Vegetation that was considered to be in Good to Very Good condition was recorded in the area west of Patterson Road in the vicinity of the rail loop and in the southeast corner of the site between Day Road and Mandurah Road and between Mandurah Road and the railway line on the eastern boundary. The majority of the Development Area of the RIZ is in Degraded to Completely Degraded condition (ATA, 2006).

2.5.4 Threatened Ecological Community

The Rockingham Industry Zone contains the Threatened Ecological Community (TEC) FCT19b – *Sedgeland in Holocene Dune Swales*. The vegetation classed as FCT19b is a TEC at the State and Commonwealth level. The Conservation Area contains 18ha of TEC19b while the development area contains 13ha.

2.6 Fauna

The RIZ contains woodland and shrubland habitat that may be used by a number of fauna species listed under Commonwealth and State government legislation requiring special protection including the Southern Brown Bandicoot Rainbow Bee-eater Carnaby's Black Cockatoo and Possibly the Carpet Python (Coffey Environments, 2009).

A tree survey of the RIZ identified a few Tuarts with hollows but the likelihood of these being utilised by Carnaby's Black Cockatoos for breeding was considered to be low due to the size of the hollows. The frequency of fires and general growth habit of the Tuart trees indicates the future development of breeding hollows in the next fifty years is extremely unlikely.

The Peregrine Falcon, Southern Brush-tailed Phascogale and Western False Pipistrelle may utilise the RIZ, but this is considered unlikely given the disturbed nature of the habitat, its closeness to light illuminated industry and its size (Coffey Environments, 2009).

The unusual spider species *Teyl 'waldockae'* occurs in the area in dune swales. This species is not listed by Western Australian or Commonwealth legislation (Coffey Environments, 2009).

3 ENVIRONMENTAL MANAGEMENT PRIOR TO CONSTRUCTION

3.1 Retention of Native Vegetation

The installation of services and the construction will require extensive earth-works and thus the retention of native vegetation will be minimal in road reserves. Some vegetation may be retained in areas adjacent to the road reserves within lots. Any areas of native vegetation that are identified to be retained in/or adjacent to the road reserves will be adequately delineated to ensure minimum disturbance to these areas. This will be done by accurate pegging and clearly demarcating with surveyor tape on site for areas to be cleared. The location and limit of clearing of vegetation within all work areas will be clearly identified on appropriate plans prior to construction. The plans will be supplied to contractors and personnel prior to commencement of works.

3.2 Seed Collection and Propagation

The collection of local seed material for the use in the re-establishment of TEC in the drainage swales and for general landscaping will be carried out prior to clearing works. Seed collection will target the following species:

- *Eucalyptus gomphocephala*;
- *Banksia littoralis*;
- *Melaleuca raphiophylla*;
- *Acacia rostellifera*;
- *Melaleuca huegelii*;
- *Gahnia trifida*;
- *Lepidosperma gladiatum*;
- *Baumea juncea*;
- *Muehlenbeckia adpressa*; and
- *Hardenbergia comptoniana*.

The seed stock will be harvested, processed and stored by an appropriate seed collection company until being passed to an accredited nursery to raise tubestock to be used in the revegetation on the site.

3.3 Salvaging Vegetation

The collection of Balgas (*Xanthorrhoea preissii*) will be undertaken prior to clearing as required for landscaping. Plants will be excavated in the correct manner to ensure survival and stored appropriately prior to transplanting to landscaped areas in the development. These will be replanted in road reserves and potentially as part of the landscaping for individual industrial developments.

3.4 Fauna Trapping and Relocation Program

In the areas of native vegetation to be cleared for the construction of roads and installation of services a fauna relocation program will be implemented prior to the clearing of vegetation for construction. The clearing covered by the CEMP in the context of the whole RIZ site is going to be minimal. It is expected that most species will be able to relocate naturally to other areas of bushland within the RIZ have areas of bushland nearby for refuge however fauna trapping and relocation is a requirement of Ministerial Statement 836.

The fauna relocation program will concentrate on reptiles including the Carpet Python. Reptiles are normally most active in late spring and during summer and reptile collection during these seasons would be most successful. A one day systematic active search is suggested for areas scheduled to be cleared on the RIZ. The relocation of reptiles will occur as close to the planned clearing date as possible to minimise the chance of reintroduction from surrounding areas. Active searching would include digging out holes, removing bark from logs and trees, turning over rocks and sorting through leaf litter with rakes. This strategy is likely to only capture a limited assemblage of vertebrate fauna in any area as many species are cryptic and not readily caught by active searches.

Any fauna trapped or caught during the program will be relocated as directed by officers from the Department of Environment and Conservation's Wildlife Branch. The location selected by the Department of Environment and Conservation is generally an appropriate Department of Environment and Conservation managed nature reserve, in this case the Conservation Area that is to be managed by the DEC in the future or Leda Reserve.

3.5 Salvaging Fauna Habitat

Tuart trees that are to be removed within the road reserves and service corridors that are identified as having hollows will be marked prior to clearing.

3.6 Interface between Development and the Conservation Area

The boundary between the Conservation Area and the development is shown in Figure 3. General Industry with Lots ranging between two and five hectares will be created to the west. The Water Corporation Water Treatment Plant is immediately to the north and existing Wool Scouring Plant is to the east. There are no services or roads to be located on the northern, Western or southern boundary. Chesterfield road is proposed to extend to the north-eastern corner of the Conservation Area.

Construction vehicles will not be able to access the Conservation Area for any purpose other than those expressly endorsed by LandCorp. The contractors will be advised of the significance of the Conservation Area and restrictions to accessing the site. Any damage to the 1.8m fence around the Conservation Area (whether as a result of construction or damage from a third party) will be reported to LandCorp immediately. Routes to the access points of Conservation Area will be accessible to fire and emergency vehicles at all times.

4 ENVIRONMENTAL MANAGEMENT DURING CONSTRUCTION

4.1 Clearing of Native Vegetation

4.1.1 Mulching

Mulched material can make a substantial contribution to the on-site seed bank and when re-spread in the relatively short term (i.e. within six months) and is usually very successful in aiding the re-establishment of vegetation. Cleared native vegetation will be used to generate chipped mulch material. Mulch will be used in areas requiring stabilisation and rehabilitation in the RIZ. Mulching of cleared native vegetation will be conducted concurrently with clearing works. The mulched material will be stockpiled close to the source of mulch for reuse within the immediate proximity, where appropriate.

4.1.2 Clearing Procedures

The Site Engineer will require contractors and nominated subcontractors to adhere to the following clearing procedures within the development area:

- Native vegetation to be cleared will be removed in a systematic manner and stockpiled for mulching and/or chipping for later use in rehabilitation and landscaping works.
- Larger logs that may be suitable for rehabilitation works in the Conservation Area will be stockpiled and used for site stabilisation and access control where appropriate.
- Cleared areas will be temporarily stabilised with water, hydro-mulch or other stabilising material as necessary until further works are implemented.
- No burning of cleared vegetation will be permitted at any stage during clearing or construction activities.
- No vehicles involved in clearing or earthworks and no soil or mulch from clearing activities will be permitted to be moved into the Conservation Area unless specifically authorised by LandCorp. This will reduce the potential for introduction of any pathogens or weeds to the Conservation Area.

4.2 Native Fauna Management

The clearing contractor will complete a fauna induction program. This program will include information regarding appropriate clearing process to minimise the possibility that fauna are injured or killed and to aid in the relocation of fauna to nearby trees if required.

As much as possible, clearing will be undertaken on a staged basis and will be undertaken in the following manner:

- Larger trees (dead or alive) should be 'bumped' with machinery first then lowered if no fauna is spotted. Trees should not be pushed and cleared in one motion.
- No clearing will be undertaken in spring to avoid nesting birds.
- Native fauna injured during clearing should be taken to a designated veterinary clinic or the contractor should call DEC's Wild Care 24hr hotline (08) 9474 9055 for instruction.

4.3 TEC Re-establishment

4.3.1 Soil Preparation

The creation of the drainage swales will require the removal of the topsoil and a quantity of undersoil to create the correct swale morphology and depth to watertable. The maximum depth to groundwater is ideally less than 1.8m for the successful creation of TEC 19. Drainage swales in the subdivision area have been designed to be 1.8m above groundwater level in summer and 1.1m in winter which is optimal to establish species to re-establish TEC19.

The subdivision area at the RIZ is very weedy and the seed bank in the topsoil is likely to be mostly weeds and therefore will not be suitable for use in the swales to be revegetated.

Any soil required to be replaced on the bed of the swale to improve seedling establishment will be sourced the subsoil of other excavated swales. Soil will be prepared with environmentally friendly wetting agent where appropriate.

4.3.2 Species List

Typical species found in TEC 19 are in Table 1 with typical minimum densities to which each species will be planted in the drainage swales.

Table 1: TEC Species and Densities

Life Form	Species	Location	Planting Density	Minimum Finished Density*
Small Trees	<i>Banksia littoralis</i>	Bed and Bank	30 per 100m	24 per 100m
	<i>Melaleuca huegelii</i>	Bed and Bank		
	<i>Melaleuca raphiophylla</i>	Bed and Bank		
Shrubs	<i>Acacia rostelifera</i>	Bank	150 per 100m	120 per 100m
	<i>Spyridium globulosum</i>	Bank		
	<i>Xanthorrhoea preissii</i>	Bank		
Sedges	<i>Gahnia trifida</i>	Bed	1 per 4m ²	1 per 5m ²
	<i>Ficinia nodosa</i>	Bed	2 per 1m ²	8 per 5m ²
	<i>Lepidosperma longitudinale</i>	Bed		
	<i>Baumea juncea</i>	Bed		
Climbers	<i>Clematis linearifolia</i>	Bed and Bank	10 per 100m	8 per 100m
	<i>Muehlenbeckia adpressa</i>	Bed and Bank		
	<i>Hardenbergia comptoniana</i>	Bed and Bank		
Groundcover	<i>Kennedia prostrata</i>	Bed and Bank	20 per 100m	16 per 100m

* based on 80% survival of planted tubestock according to the completion criteria

The planting densities are based on the pattern observed within natural TEC 19 vegetation in the RIZ. The sedges will be planted at the base of the drainage swale (*Gahnia trifida*, *Lepidosperma gladiatum* and *Baumea juncea*). The tree species *Banksia littoralis*, *Melaleuca raphiophylla* and *Melaleuca huegelii* will be planted mostly on the edges of the bed but also occasionally in the middle of the bed of the swale. *Xanthorrhoea preissii* shrubs will be planted at the bottom of the bank of the swale. The other two shrubs, *Acacia rostelifera* and *Spyridium globulosum* as well as the

climbers (*Muehlenbeckia adpressa*, *Clematis linearifolia* and *Hardenbergia comptoniana*) and Groundcover (*Kennedia prostrata*) will be planted on the banks of the swale.

The planting densities use a mix of a rate per square metre for the sedges together with the number of plants per 100m length of TEC replacement area for the other species. The reason for this is firstly that the species will not be planted uniformly throughout the TEC replacement area, making it hard to measure density per square metre of TEC replaced. Secondly the width of the TEC replacement area could vary depending on road type. As the depth of the TEC swale will be set, the variation in width will only occur in the bed. Therefore a rate per square metre for the sedges in the bed covers the variable widths of the swale.

4.3.3 Source

Seed will be sourced from the subdivision area wherever possible. Where this is not possible tubestock will be sourced from specialist nurseries that collect local provenance seed and raise tubestock.

4.3.4 Planting

All drainage swales will be planted to replicate the strata of the TEC vegetation. The sedges will be planted at the base of the drainage swale (*Gahnia trifida*, *Lepidosperma gladiatum* and *Baumea juncea*), with *Banksia littoralis*, *Melaleuca raphiophylla* and *Melaleuca huegelii* at the edge of the base and slopes of the drainage swale. The climbers (*Muehlenbeckia adpressa*; and *Hardenbergia comptoniana*) will be planted on the sides of the swale and *Acacia rostellifera* and *Xanthorrhoea preissii* planted on the outer edges of the swale. Tubestock will be planted in a semi-random fashion to ensure the final vegetation appears as natural as possible. Tubestock will be used in all cases unless mature *Xanthorrhoea preissii* are available from the cleared areas to be used in the revegetation.

Mulch will be laid down on bare sandy areas between the planted tubestock to suppress weeds and reduce dust.

Infill planting will be undertaken one and two years after the initial tubestock is planted if the established vegetation does not reach the completion criteria outlined in this report.

4.3.5 Weed Management

Weed density will be assessed twice per year in autumn and late spring. Necessary weed control will be determined during the weed inspections. Each separate area will be assessed individually for the presence and severity of weed re-establishment. Weed species will be treated with herbicide as required based on observations during site inspections.

The main aim of the weed control program is to prevent weed seed set; therefore the site weed inspection schedule will be continually audited to determine whether an increase or decrease in the frequency of inspections is necessary in order to achieve this aim.

4.3.6 Completion Criteria

The following completion criteria for the re-creation of the TEC have been determined:

- Rehabilitation works initially achieve a minimum species richness of 80% of the species list that has been determined to be typical of the TEC FCT19 (Table 1);

- The surviving density of trees, shrubs, sedges, climbers and groundcovers to be at least 80% of the planting densities shown in Table 1 at two years of implementation or contingencies must be undertaken (See Section 5.2); and
- The density of weeds not to exceed 5% coverage within the two year monitoring period.

Annual monitoring will assess the vegetation against these criteria. Monitoring will cease when the rehabilitation reaches these criteria or after five years, whichever is longer.

4.4 Landscaping

There will be some areas of road reserves that will not be landscaped to recreate the TEC as shown in the typical road cross section 4 (Appendix 5). These areas will not require specific contouring and can be planted with a more diverse mix of species.

4.4.1 Species List

In areas of landscaped vegetation that are not intended to represent TEC FCT19 the species to be used are outlined in Table 2.

Table 2: Landscaping Species List

Life Form	Species
Trees	<i>Agonis flexuosa</i> WA Peppermint Tree
	<i>Casuarina equisetifolia</i>
	<i>Callistemon</i> 'Kings Park Special'
	<i>Eucalyptus gomphocephala</i> Tuart
	<i>Eucalyptus ficifolia</i> Red Flowering Gum
	<i>Eucalyptus decipiens</i>
	<i>Eucalyptus foecunda</i>
	<i>Jacaranda mimosifolia</i> Jacaranda
	<i>Melaleuca raphiophylla</i> Swamp Paperbark
	<i>Pyrus calleryanna</i> Callery Pear
	<i>Pyrus nivalis</i> Snow Pear
<i>Sapium sebiferum</i> Chinese Tallow	
Feature Trees	<i>Macrozamia riedlei</i> Zamia Palm
	<i>Xanthorrhoea preissii</i> Grass Tree
	<i>Xanthorrhoea brunonis</i>
Shrubs	<i>Acacia truncata</i>
	<i>Agonis flexuosa</i> 'nana'
	<i>Alyogyne huegelii</i>
	<i>Banksia littoralis</i>
	<i>Banksia nivea</i> (syn <i>Dryandra nivea</i>)
	<i>Baumea juncea</i>
	<i>Beaufortia aestiva</i> 'Summer Flame'
	<i>Comesperma virgatum</i>
	<i>Callistemon</i> 'Endeavor'
<i>Callistemon</i> 'Great balls of Fire'	

Life Form	Species
Shrubs	<i>Calothamnus quadrifidus</i> One Sided Bottle Brush
	<i>Callistemon</i> 'Little John'
	<i>Eremophila glabra</i>
	<i>Eremophila glabra</i> 'Kalbarri Carpet'
	<i>Grevillea</i> "Carpet Crawl"
	<i>Grevillea</i> 'Bronze Rambler'
	<i>Grevillea</i> 'Sea Spray'
	<i>Grevillea</i> 'Bon Fire'
	<i>Grevillea preissii</i> Spider Net Grevillea
	<i>Grevillea</i> 'Gin Gin Gem'
	<i>Grevillea</i> 'Superb'
	<i>Grevillea hookeriana</i>
	<i>Gahnia trifida</i>
	<i>Hakea prostrata</i>
	<i>Hakea varia</i>
	<i>Hibbertia hypericoides</i> Yellow Buttercups
	<i>Hibbertia racemosa</i> Stalked Guinea Flower
	<i>Hibbertia cuneiformis</i>
	<i>Jacksonia furcellata</i>
	<i>Leucopogon parviflorus</i>
	<i>Leucopogon australis</i>
	<i>Logania vaginalis</i>
	<i>Melaleuca incana</i> 'Nana'
	<i>Melaleuca</i> 'Little penta'
	<i>Melaleuca huegelii</i> Chenille Honey Myrtle
	<i>Melaleuca nesophila</i>
	<i>Melaleuca lateritia</i>
	<i>Melaleuca lanceolata</i>
	<i>Melaleuca teretifolia</i>
	<i>Melaleuca viminea</i>
	<i>Olearia</i> 'Little Smoke'
	<i>Olearia axillaris</i>
	<i>Orthrosanthus laxus</i> nana Dwarf Morning Iris
	<i>Patersonia occidentalis</i> Purple Flag
	<i>Phyllanthus calycinus</i>
	<i>Rhagodia baccata</i> subsp. <i>Baccata</i>
	<i>Rhodanthe chlorocephala</i> var <i>rosea</i>
	<i>Rhodanthe chlorocephala</i> var <i>splendida</i>
	<i>Samolus junceus</i>
	<i>Samolus repens</i>
<i>Scaevola crassifolia</i> 'Flat Fred'	
<i>Scaevola nitida</i> 'Sapphire Skies' Sapphire Skies	
<i>Scaevola albida</i> 'Super Clusters' Supper Clusters	

Life Form	Species
Shrubs	<i>Scaevola anchusifolia</i>
	<i>Scaevola thesioides</i>
	<i>Scaevola</i> 'Pink Perfection'
	<i>Spyridium globosa</i>
	<i>Stypandra glauca</i>
	<i>Templetonia retusa</i> Cockies Tongue
	<i>Thryptomene baeckeacea</i> (prostrate)
	<i>Thysanotus patersonii</i>
	<i>Trachymene coerulea</i>
	<i>Westringia fruticosa</i> prostrate
	<i>Westringia dwarf</i> 'Wild River' Wild River
Sub-shrubs	<i>Anigozanthos flavidus</i> Red Tall Red Kangaroo Paw
	<i>Anigozanthos flavidus</i> Yellow Tall Yellow Kangaroo Paw
	<i>Anigozanthos</i> 'Bush Pearl' Kangaroo Paw
	<i>Conostylis aculeata</i> Prickly Conostylis
	<i>Conostylis candicans</i> Grey Cottonheads
	<i>Dianella caerulea</i> Paroo Lily
	<i>Dianella revoluta</i> Flax lily
	<i>Lomandra maritima</i>
Sedges	<i>Carex appressa</i>
	<i>Ficinia nodosa</i>
	<i>Lepidosperma angustatum</i>
	<i>Lepidosperma gladiatum</i>
	<i>Lepidosperma longitudinale</i>
	<i>Lepidosperma squamatum</i>
Herbs	<i>Adriana quadripartita</i>
	<i>Centella asiatica</i>
	<i>Lobelia tenuior</i>
Climbers	<i>Clematis linearifolia</i>
	<i>Clematis pubescens</i>
	<i>Hardenbergia comptoniana</i> Native Wisteria
	<i>Hardenbergia</i> 'Pink Spray'
	<i>Kennedia coccinea</i>
	<i>Kennedia prostrata</i>
	<i>Muehlenbeckia adpressa</i>

4.4.2 Source

Seed will be sourced from the subdivision area and local provenance tubestock will be used as much as possible in landscaping. All other stock to be used in the lots will be certified disease free prior to being used in landscaping areas.

4.4.3 Completion Criteria

In landscaped areas completion will be determined by the City of Rockingham in accordance with the Landscape Plan.

4.5 Habitat Creation

Hollows logs that are harvested from the development area will be installed on trees in the Conservation Area. The hole in the bottom of each log will be closed with a piece of wood, tin or flywire and each log will contain a layer of 'potting mix' in the bottom. All logs will be attached to a tree with a chain and U bolts. Logs will be placed high enough in the tree to restrict access from the ground.

Trees selected to have a hollow log will be assessed as suitable if they are mature, contain a fork that could be used as an anchor point for the chain and are unlikely to fall due the extra weight associated with the log.

4.6 Aboriginal Heritage Management during Construction

The RIZ has been surveyed by an archaeologist however during construction there is a potential for buried artefacts to be disturbed.

LandCorp will ensure that the Site Manager is briefed by an archaeologist on the identification of materials that may constitute an archaeological site and of the requirements of the *Aboriginal Heritage Act, 1972* regarding such sites. All contractors working on the site will be made aware of their responsibilities with regards to the discovery of Aboriginal Heritage sites through induction training.

If there is any possibility that an Aboriginal site has been found during construction works, the following steps will be taken:

1. All work must stop in the immediate area. The potential site should be identified in such a way that avoids any damage after works have ceased. This may include taping or temporary fencing to isolate and restrict access immediately.
2. The site supervisor is to be notified immediately.
3. The site supervisor is to notify the project manager immediately after being notified.
4. The Project Manager is to consult suitably qualified personnel to determine the appropriate course of action. This may require contacting an archaeologist.
5. If the archaeologist reports that there is no evidence that the area is of significance then this report will result in the Project Manager authorising work to recommence.
6. For isolated artefact finds, the archaeologist may recommend putting the material to one side to be recorded by an archaeologist at a later date on site.
7. If the archaeologist reports that there is evidence that the area is of significance this report will result in the Project Manager consulting with relevant authorities to determine the management of the site in accordance with all appropriate Legislation, Criterion and Guidance.

8. If skeletal material is found, the Project Manager must contact the Police and the Coroner's Office. The police treat any uncovered skeletal material as a crime scene until proven otherwise.
9. If the skeletal material is found to be of Aboriginal origin, the find will be reported to the DIA and dealt with appropriately by the DIA.
10. The archaeologist will report to the Project Manager regarding the re-commencement of works (except in the situation of the discovery of skeletal remains).
11. The Project Manager will ensure that each incident is recorded including the date of discovery, steps taken upon discovery, photographs (if possible) and the outcome.

5 MONITORING AND REPORTING

5.1 Monitoring

Areas of re-created TEC 19 will be monitored annually for 2 years after the tubestock are planted in accordance with Condition 14 (b) of Environmental Approval. After 2 years, the Department of Planning and Wildlife (formerly DEC) will be consulted. If the completion criteria are not met in 2 years, further monitoring will be undertaken until such time as the completion criteria are met. The monitoring will be undertaken by sampling 100m per kilometre of established swale or 10% for less than 1km. The location of the area monitored will be recorded and each monitoring period will be undertaken in the same area each year. Additional permanent photo points spaced at every 100m will be established.

Permanent monitoring areas allow for the empirical measurement of native vegetation cover, weed cover and species diversity. The fixed areas will be sampled in spring (between September and October) each year. Each corner peg co-ordinate will be recorded when the monitoring area is established. All species (planted and weeds), their density, foliage cover and general health will be recorded and compared to previous years and the completion criteria.

Photo points allow a visual comparison of changes in vegetation structure and composition over time which will aid in monitoring revegetation success as well as the rate of natural regeneration in remnant areas. Photo-points will be established prior to undertaking any works onsite so that a true baseline condition picture can be recorded.

Photo-points will be marked with white-tipped timber surveying pegs which are flagged with pink tape and labelled on the side from which the photograph is taken. GPS coordinates and compass bearings will be recorded for each photo-point. Photo-points will be visited on an annual basis in spring. Photos should be taken from behind the photo-point, from as far back as necessary to include peg in the centre and bottom 20% of the photo. Photos will be taken from a standing position, with the camera held in front of the photographer's face, without zooming.

Photos will be compared to previous years and included in the annual monitoring report.

Monitoring will cease after 2 years or when the rehabilitation reaches completion criteria, whichever is longer.

5.2 Contingencies

In the event that the revegetated areas do not meet the completion criteria during the spring monitoring, weed control and infill planting will be undertaken in the following autumn.

Any impact noted during the monitoring periods on retained vegetation such as a decline in tree health or an increase in weeds within the road reserves and service corridors will be investigated. The investigation will determine the cause and/or weed vectors. This management plan will be updated to include any additional protocols required and damaged vegetation will be rehabilitated.

5.3 Reporting

The results of the monitoring will be included in the annual monitoring report as required by the *Rockingham Industry Zone Compliance Assessment Plan* (PGV, 2012) and submitted to the OEPA.

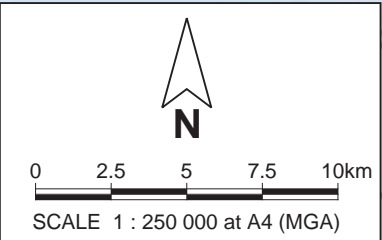
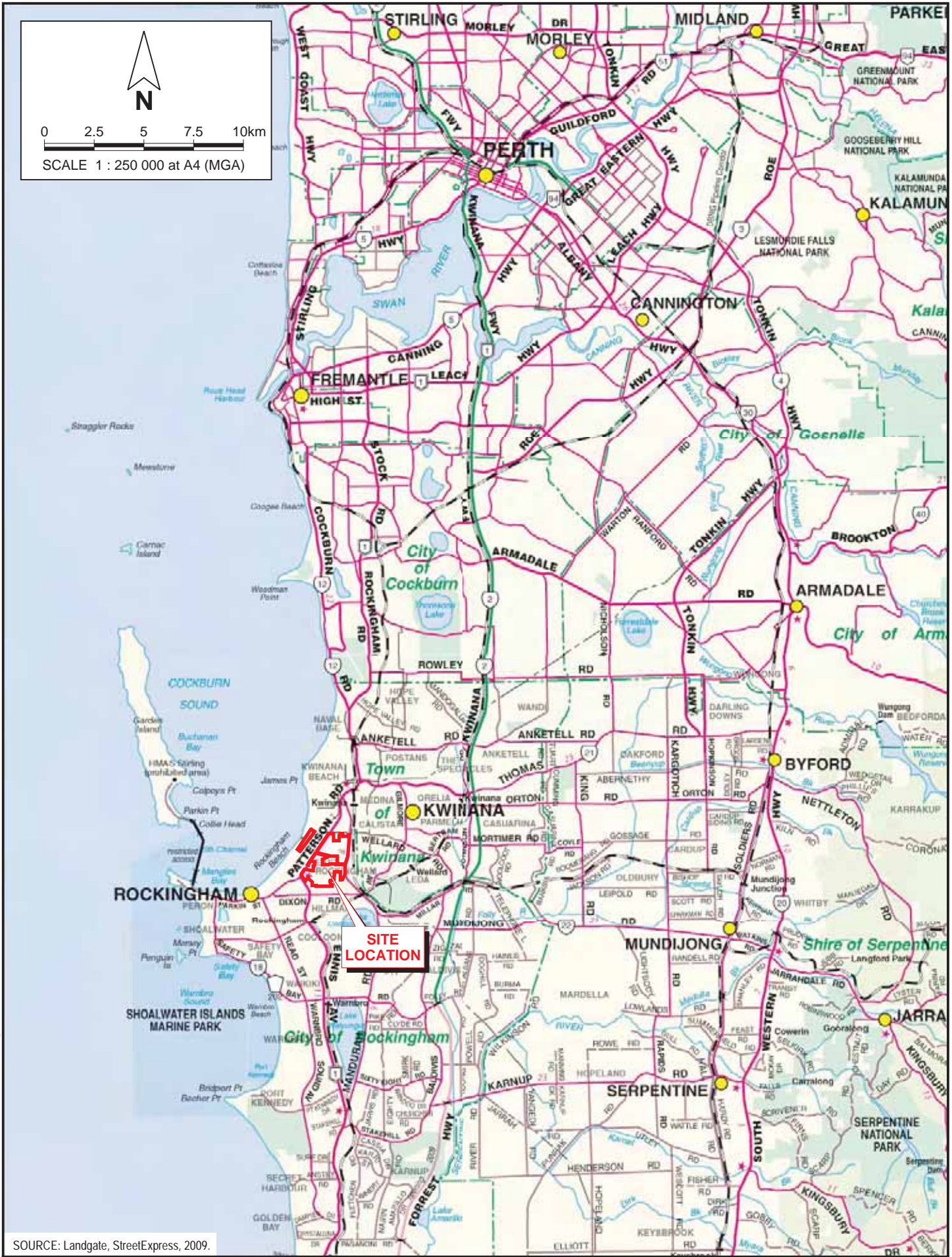
5.4 Review of the Management Plan

This management plan has been prepared to cover the construction phase of roads and drainage infrastructure and the installation of services. It is anticipated that this will be complete in 5 years and therefore this management plan will no longer be required. If construction is not complete within 5 years this management plan will be reviewed in 2018.

6 REFERENCES

- ATA Environmental (2006). *East Rockingham Industrial Park (IP14 Area) – Flora and Vegetation Survey*. Report No. 2002/06.
- Coffey Environments (2009) *Rockingham Industry Zone Fauna Risk Assessment* Report Number EP2005/55
- Coffey Environments (2010) *Rockingham Industry Zone Strategic Environmental Assessment (Previously known as IP14 Area)* Report Number EP2005/58
- Government of Western Australia (2000) *Bush Forever – Keeping the Bush in the City*. Volume 1: Policies, Principles and Processes. Perth, WA.
- Trudgen, M. E. (1988). *A Report on the Flora and Vegetation of the Port Kennedy Area*. Unpublished report prepared for Bowman Bishaw and Associates, West Perth.

FIGURES



SOURCE: Landgate, StreetExpress, 2009.



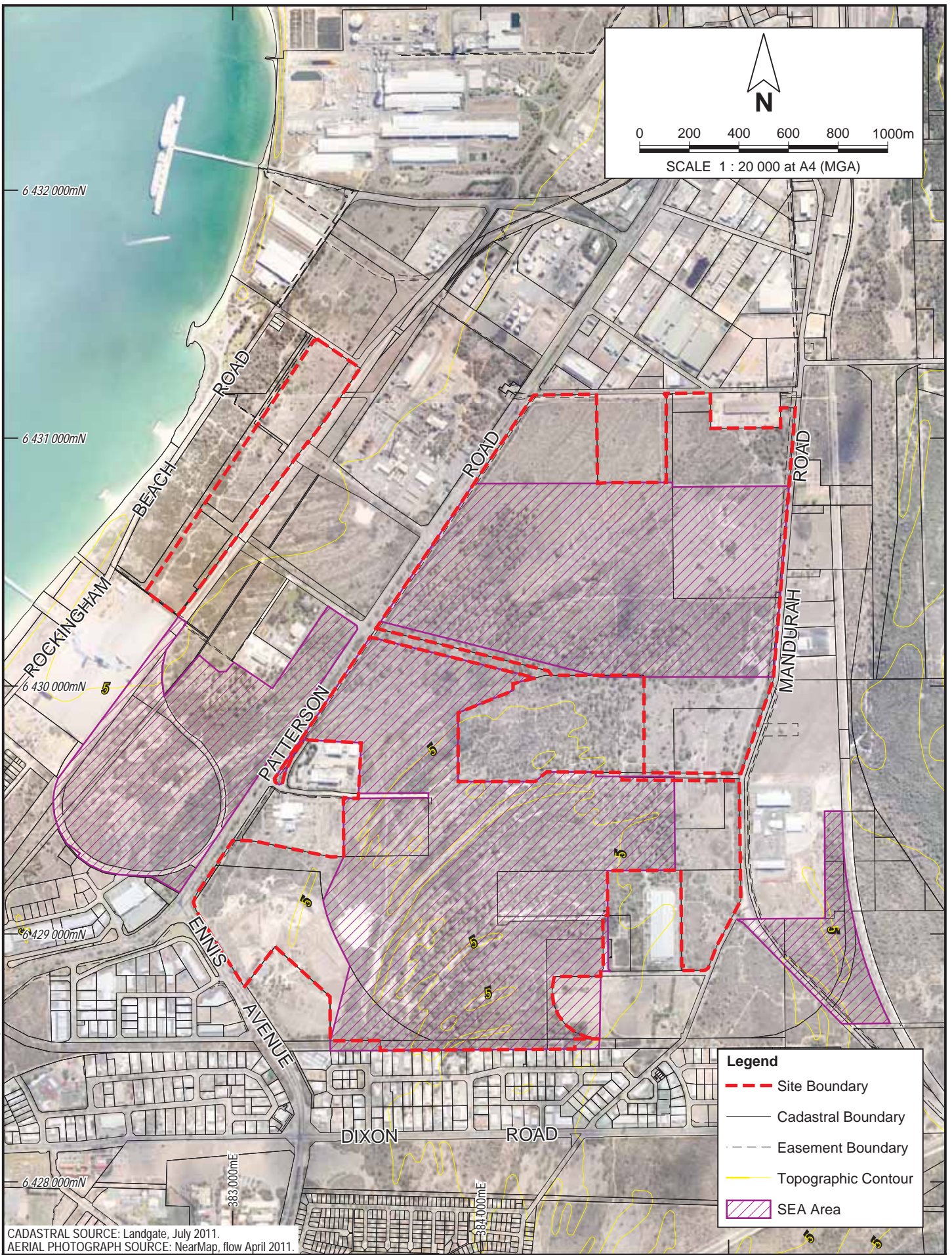
Landcorp
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
RIZ

Drawn: J. Hams	Date: 20 Jul 2012
Job: 100101	Revision: A

REGIONAL LOCATION

Figure 1

PINPOINT CARTOGRAPHICS (08) 9562 7136 100101-01.dgn



PINPOINT CARTOGRAPHICS (08) 9562 7136
100101:002.dgn

pgv ENVIRONMENTAL

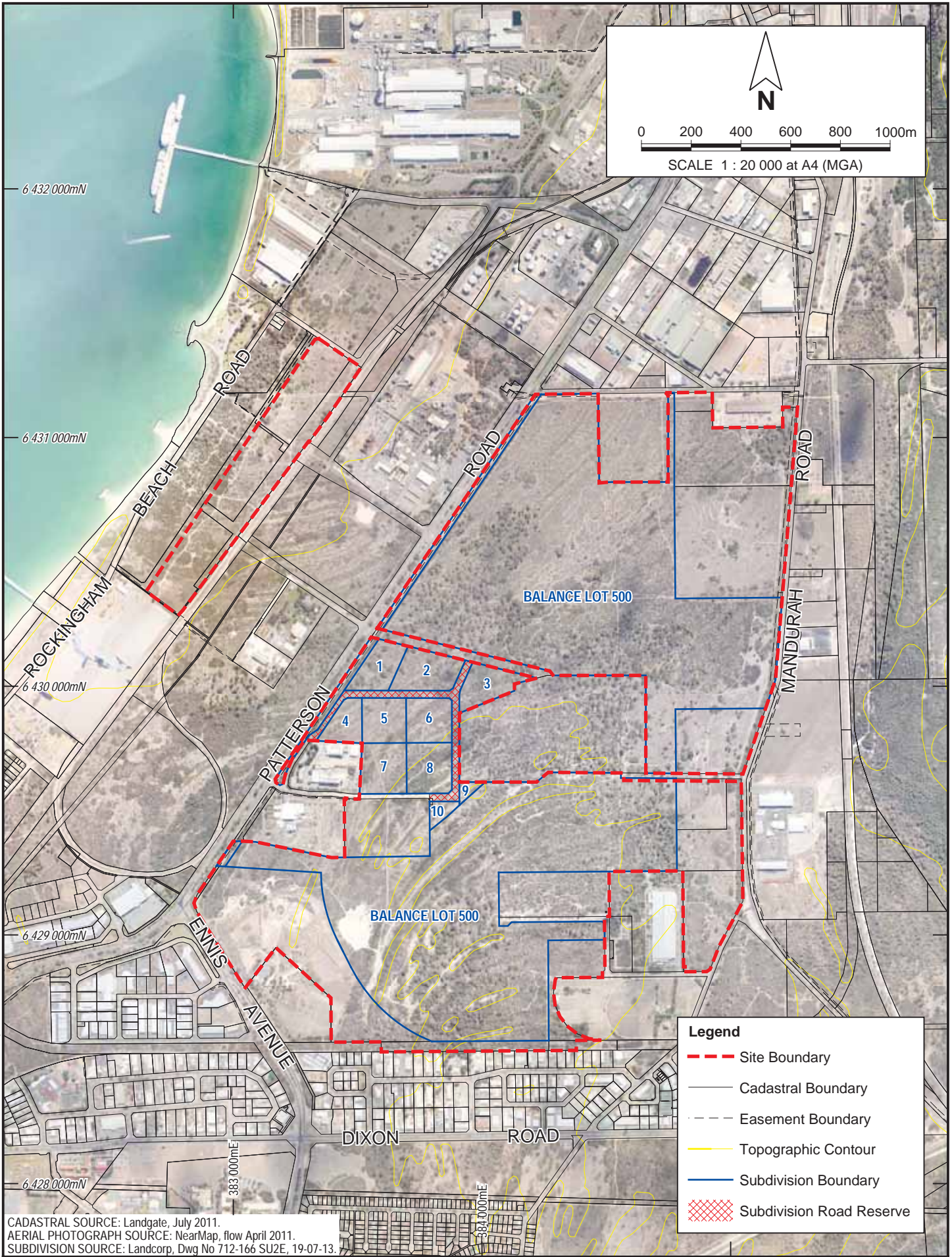
Drawn: J. Hams
Job: 100101

Date: 14 Oct 2013
Revision: A

Landcorp
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
RIZ

SITE BOUNDARY AND TOPOGRAPHY

Figure 2



N

0 200 400 600 800 1000m

SCALE 1 : 20 000 at A4 (MGA)

Legend

- - - Site Boundary
- Cadastral Boundary
- Easement Boundary
- Topographic Contour
- Subdivision Boundary
- Subdivision Road Reserve

CADASTRAL SOURCE: Landgate, July 2011.
 AERIAL PHOTOGRAPH SOURCE: NearMap, flow April 2011.
 SUBDIVISION SOURCE: Landcorp, Dwg No 712-166 SU2E, 19-07-13.

PINPOINT CARTOGRAPHICS (08) 9562 7136 100101-03.dgn

pgv ENVIRONMENTAL

Drawn: J. Hams Date: 14 Oct 2013

Job: 100101 Revision: A

Landcorp
 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
 RIZ

ROAD RESERVES IN THE SUPERLOT SUBDIVISION PLAN

Figure 3

APPENDIX 1

RIZ Structure Plan

EAST ROCKINGHAM INDUSTRIAL PARK IP-14 STRUCTURE PLAN (MARCH 2013)

LEGEND:

- Improvement Plan 14 Boundary
- Local Government Authority Boundary
- Cadastral (existing)
- Conceptual subdivision design
- Railway (existing)
- Possible future rail
- ERWWTP Buffer (SCA)
- Water Corporation Inlet Corridor
- Service Corridor
- SEA Boundary

INDUSTRIAL PRECINCT

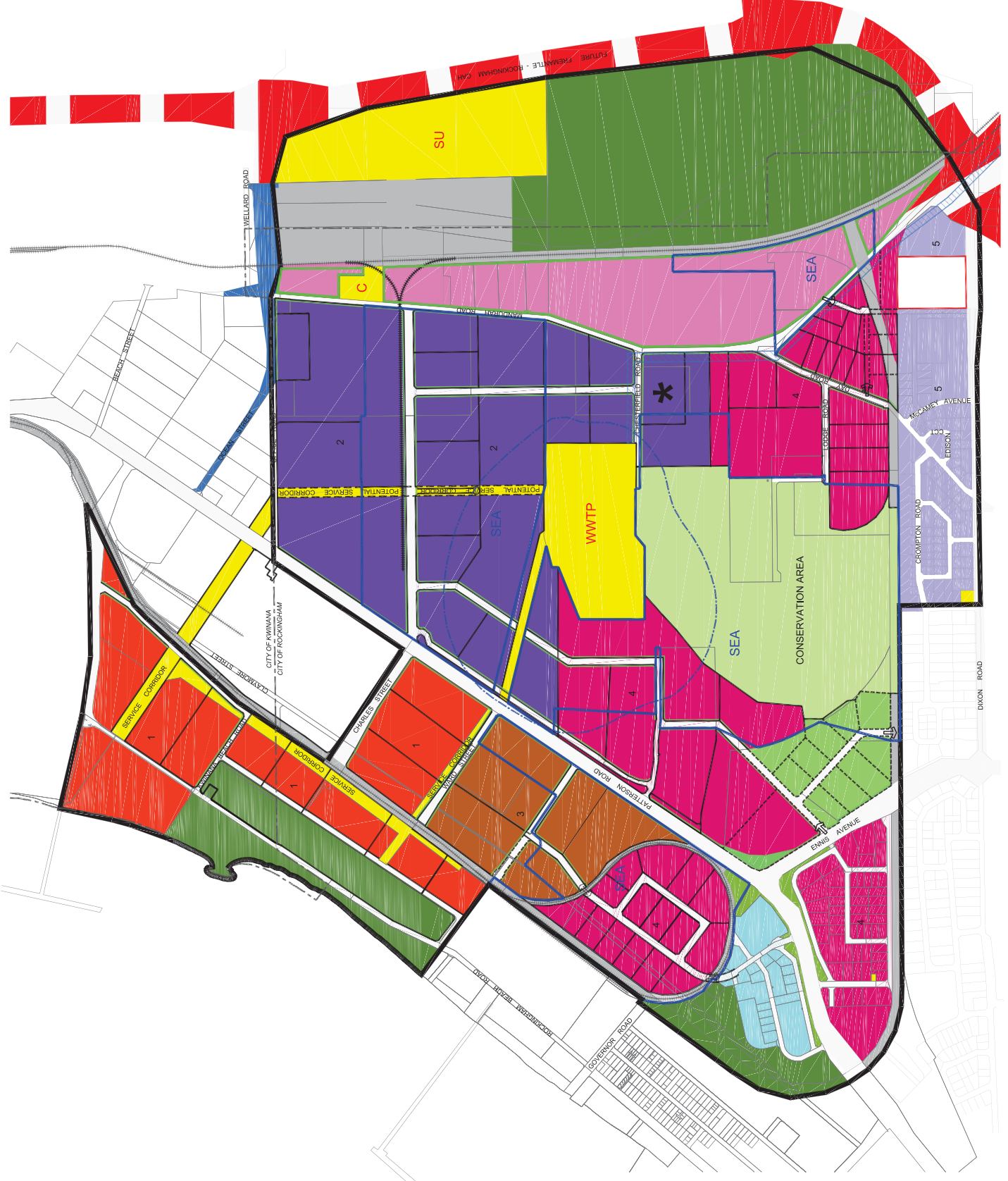
- PRECINCT 1 Port Related Industry
- PRECINCT 2 Environmentally Acceptable Heavy Industry
- PRECINCT 3 Advanced Materials Park
- PRECINCT 4 General Industry
- PRECINCT 5 Light Industry
- SPECIAL USE - Garden Industrial Precinct

OTHER LAND USES

- Controlled Access Highway
- Other Regional Road Reserve
- Existing Rail or Rail Reserve
- Service Commercial
- Public Purposes - denoted as follows:
 - SU Special Uses
 - C Cemetery
 - WMWTP Waste Water Treatment Plant
 - Conservation Area
 - Parkland Buffer
 - Public Open Space (Disused Rubbish Tip) Reserve for Recreation
 - Landscaped Strip
 - Special Use: Caravan Park

OTHER

- Proposed Local Amenity Node (Chesterfield Inn heritage site and surrounds)
- Possible access



APPENDIX 2

Ministerial Statement 863

STATUS OF THIS DOCUMENT

This document has been produced by the Office of the Appeals Convenor as an electronic version of the original Statement for the proposal listed below as signed by the Minister and held by this Office. Whilst every effort is made to ensure its accuracy, no warranty is given as to the accuracy or completeness of this document.

The State of Western Australia and its agents and employees disclaim liability, whether in negligence or otherwise, for any loss or damage resulting from reliance on the accuracy or completeness of this document.

Copyright in this document is reserved to the Crown in right of the State of Western Australia. Reproduction except in accordance with copyright law is prohibited.

Published on: 26 May 2011

Statement No. 863

**STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(PURSUANT TO THE PROVISIONS OF THE
ENVIRONMENTAL PROTECTION ACT 1986)**

**ROCKINGHAM INDUSTRIAL ZONE STRATEGIC ENVIRONMENTAL
ASSESSMENT (FORMERLY IP14)**

Proposal: The strategic proposal is to identify a development footprint for future industrial development over a 339 hectare area of the Rockingham Industrial Zone, while retaining an area as a conservation reserve.

The strategic proposal and identification of derived proposals is further documented in schedule 1 of this statement.

Proponent: Landcorp

Proponent Address: Level 3
Wesfarmers House
40 The Esplanade
Perth WA 6000

Assessment Number: 1534

Report of the Environmental Protection Authority: Report 1390

The strategic proposal and future proposals referred to in the above report of the Environmental Protection Authority may be implemented. The implementation of the proposal shall be subject to the following conditions and procedures (subject to the Minister for Environment's identification of relevant conditions under section 45A(3) of the *Environmental Protection Act 1986*):

1 Proponent Nomination and Contact Details

1-1 The proponent for the time being nominated by the Minister for Environment under sections 38(6) or 38(7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal.

1-2 The proponent shall notify the Chief Executive Officer of the Department of Environment and Conservation of any change of the name and address of the proponent for the serving of notices or other correspondence within 30 days of such change.

2 Time Limit of Authorisation for Strategic Proposal

2-1 The authorisation provided for in this statement to request a derived proposal under section 39B(1) of the *Environmental Protection Act 1986* shall lapse and be void 20 years after the date of this statement.

3 Time Limit of Authorisation for a Derived Proposal

3-1 The authorisation to implement a derived proposal provided for in this statement shall lapse and be void five years after the declaration of the Environmental Protection Authority under section 39B(3) of the *Environmental Protection Act 1986* that the proposal is a derived proposal.

4 Compliance Reporting

4-1 The proponent shall prepare and submit a compliance assessment plan to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority at least 6 months prior to the first compliance report required by condition 4-6 or prior to the commencement of future proposals, whichever is sooner.

4-2 The proponent shall implement and maintain to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority the compliance assessment plan required by condition 4-1. The compliance assessment plan shall indicate:

1. the frequency of compliance reporting;
2. the approach and timing of compliance assessments;
3. the retention of compliance assessments;
4. the reporting of potential non-compliances and corrective actions taken;
5. the table of contents of compliance reports; and
6. the public availability of compliance reports.

4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 4-1 and shall make those reports available when requested by the Chief Executive Officer of the Office of the Environmental Protection Authority.

- 4-5 The proponent shall advise the Chief Executive Officer of the Office of the Environmental Protection Authority of any potential non-compliance as soon as practicable.
- 4-6 The proponent shall submit a compliance assessment report annually from the date of the Minister for Environment's notice under section 45A(2) of the *Environmental Protection Act 1986* addressing the previous twelve month period or other period as agreed by the Chief Executive Officer of the Office of the Environmental Protection Authority. The compliance assessment report shall:
1. be endorsed by the proponent's Managing Director or a person, approved in writing by the Office of the Environmental Protection Authority, delegated to sign on the Managing Director's behalf;
 2. include a statement as to whether the proponent has complied with the conditions;
 3. identify all potential non-compliances and describe corrective and preventative actions taken;
 4. be made publicly available in accordance with the compliance assessment plan; and
 5. indicate any proposed changes to the compliance assessment plan required by condition 4-1.

5 Conservation Area

- 5-1 Within 6 months of the date of this statement the proponent shall fence the Conservation Area, as delineated by Figure 1 and Table 2, to assist in preventing unauthorised access, and shall maintain the fencing until such time as the land is ceded to the Conservation Commission of Western Australia.
- 5-2 Within 6 months of the date of this statement the proponent shall remove all dumped rubbish from the Conservation Area and thereafter the proponent shall maintain the Conservation Area free of rubbish until such time as the land is ceded to the Conservation Commission of Western Australia.
- 5-3 Within two years of the date of this statement the proponent shall prepare an Initial Conservation Area Management Plan for the Conservation Area to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation. The objective of this Initial Conservation Area Management Plan is to improve the condition of the Conservation Area to a level suitable for incorporation into the Conservation Estate.

The Initial Conservation Area Management Plan will address:

1. Protecting and rehabilitating the threatened ecological community *Sedgelands in Holocene dune swales of the Southern Swan Coastal Plain*;
 2. Maintenance of fencing of the area to control access to designated areas within the Conservation Area;
 3. Design and implementation of appropriate monitoring of the vegetation within the Conservation Area, including the threatened ecological community *Sedgelands in Holocene dune swales of the Southern Swan Coastal Plain*;
 4. Design and implementation of appropriate monitoring of hydrology including groundwater levels and quality and contingencies in the event of unacceptable hydrological impacts;
 5. Maintaining the Conservation Area free of dumped rubbish;
 6. Rehabilitation of degraded areas within the Conservation Area including tracks not required for strategic access;
 7. The control of feral animal populations in the Conservation Area;
 8. Weed control in the Conservation Area;
 9. Fire prevention and response;
 10. Enhancement of the fauna habitat in the area by providing harvested and artificial breeding infrastructure for significant fauna;
 11. Using artificial polishing drainage basins outside of the Conservation Area, for the re-infiltration of stormwater into the Conservation Area; and
 12. Completion criteria for handover to another management authority.
- 5-4 The proponent shall implement the Initial Conservation Area Management Plan required by Condition 5-3 until the Conservation Area is ceded to the Conservation Commission of Western Australia
- 5-5 When the completion criteria of Condition 5-3-12 are met, or within two years of a written request from the Department of Environment and Conservation, the proponent will arrange to cede the Conservation Area to the Conservation Commission of Western Australia.
- 5-6 Within one year of ceding land (pursuant to Condition 5-5) the proponent shall prepare a Conservation Area Management Plan to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation. The

objective of this Conservation Area Management Plan is to guide continued management of the conservation values of the area.

The Conservation Area Management Plan will address:

1. Protecting and rehabilitating the threatened ecological community *Sedgelands in Holocene dune swales of the Southern Swan Coastal Plain*;
2. Maintenance of fencing of the area to control access to designated areas within the Conservation Area;
3. Ongoing vegetation monitoring of the threatened ecological community *Sedgelands in Holocene dune swales of the Southern Swan Coastal Plain*;
4. Ongoing monitoring of hydrology including groundwater levels and quality and implementation of contingencies in the event of unacceptable hydrological impacts;
5. Management of rehabilitated areas within the Conservation Area
6. The control of feral animal populations in the Conservation Area;
7. Weed control in the Conservation Area;
8. Fire prevention and response;
9. Enhancement of the fauna habitat in the area by providing harvested and artificial breeding infrastructure for Carnaby's Cockatoos; and
10. Using artificial polishing drainage basins outside of the Conservation Area for the re-infiltration of stormwater into the Conservation Area.

6 Water Management Strategy

- 6-1 Within two years of the date of this statement the proponent shall prepare a Water Management Strategy to the requirements of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation and the Department of Water.

The Water Management Strategy will address:

1. Managing stormwater as a resource;
2. Maintaining stormwater and groundwater quality to pre-development levels;
3. Maintaining hydrology including water quality and levels of natural ecosystems;

4. Retaining or improving groundwater balance;
 5. Managing the salt wedge / Cockburn Sound interface;
 6. Creating industrial landscapes as ecologically functioning units; and
 7. Integrating Water Sensitive Urban Design within landscape at site, precinct and district scales.
- 6-2 The proponent shall implement the Water Management Strategy required by Condition 6-1.

7 Offsets

- 7-1 Within two years of the date of this statement the proponent shall prepare an Offsets Package to the requirements of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice from the Department of Environment and Conservation that will ensure the rehabilitation of at least 9 hectares of threatened ecological community *Sedgelands in Holocene dune swales of the Southern Swan Coastal Plain*, outside of the Strategic Environmental Assessment boundary, that requires active management in land managed by the Department of Environment and Conservation and at other high priority sites in the Rockingham region.
- 7-2 The proponent shall implement the Offsets Package required by Condition 7-1 within three years of the date of this statement.

HON BILL MARMION MLA
MINISTER FOR ENVIRONMENT; WATER

Schedule 1

The Strategic Proposal for the Rockingham Industrial Zone and Identification of Derived Proposals (Assessment No. 1534)

The Strategic Proposal is to:

- identify a development footprint for future industrial development within a 339 hectare section of the Rockingham Industrial Zone (the SEA Area shown in Figure 1);
- retain an area as a conservation area as delineated in Figure 1 and by coordinates in Table 2.

Derived proposals are expected to include:

- subdivision for industrial purposes; and
- the provision of infrastructure (such as roads, water services and power services) within the development footprint.

The main characteristics and the extent of derived proposals of the strategic proposal are summarised in Table 1 below.

Table 1: Summary of Key Proposal Characteristics

Strategic proposal	
Element	Description
Overall area	339 hectares of Rockingham Industrial Zone (SEA Area).
Development area:	All land within the SEA Area, excluding the Conservation Area.
Derived proposals	
Type of derived proposal	Key characteristics
Subdivision and provision of infrastructure.	<ul style="list-style-type: none"> • Within the development area • In accordance with the Water Management Strategy (of Condition 6-1). • Includes a Construction Environmental Management Plan to: <ul style="list-style-type: none"> - Retain, where practical, vegetation within the developed area; - Include a fauna trapping and relocation

	<p>program to be implemented in consultation with the Department of Environment and Conservation (DEC);</p> <ul style="list-style-type: none"> - Salvage potential breeding habitat for avifauna during clearing for integration into the Conservation Area; and - Establish vegetation in road reserves using appropriate local native species to provide linkages between areas of remnant vegetation. <ul style="list-style-type: none"> • Includes an Environmental Management Plan (overall or site specific) to guide future development of industry within the site to: <ul style="list-style-type: none"> - Retain, where practical, vegetation within the developed area, especially the threatened ecological community <i>Sedgelands in Holocene dune swales of the Southern Swan Coastal Plain</i>; - Include a fauna trapping and relocation program to be implemented in consultation with the DEC; and - Salvage potential breeding habitat for avifauna during clearing for integration into the Conservation Area.
--	--

Office of the Environmental Protection Authority
Figure 1: SEA Boundary and Conservation Area Boundary






Legend  Conservation Area  SEA Boundary	 Projection: Geographic Coordinate System Datum: Geocentric Datum of Australia, 1994 Scale: 1:20,000	This map is produced for the Environmental Protection Authority, for inclusion into a report on the Rockingham Industrial Park Project This map depicts the boundaries of the Landcorp proposed conservation area in relation to the and Threatened Ecological Community Areas
	Data Source Landcorp Proposed Conservation Area (Landcorp - 2011) Threatened Ecological Community Areas - (Coffee, 2011) Swan Coastal Plain Imagery (Langstaffe - 2009)	Disclaimer This map is intended as a generalised interpretation of environmental issues. The information contained on this map is to be considered indicative only and it is advised that the Environmental Protection Authority be held liable for any accident or consequential damages resulting from use of the material. Copyright Environmental Protection Authority 2010. All Rights Reserved. All works and information displayed are subject to Copyright. For the reproduction or publication beyond that permitted by the Commonwealth Copyright Act 1962 written permission must be sought from the Authority.
Analysis not applicable	Presentation Map create date: 21/03/2011 Map create by: Euan Sutherland Map location:	

Figure 1: SEA Area and Conservation Area Boundary

Table 2: Co-ordinates defining the boundary of the Conservation Area

co-ordinates derived in GDA 94 MGA Zone 50

ID	Easting	Northing
1	383863.69	6429479.27
2	383926.94	6429537.90
3	383962.12	6429569.02
4	384013.19	6429614.58
5	384219.74	6429614.68
6	384244.25	6429635.26
7	384551.58	6429634.96
8	384558.70	6429634.99
9	384562.18	6429255.29
10	384511.07	6429254.87
11	384512.58	6429074.48
12	384492.56	6429074.31
13	384492.81	6429044.20
14	384494.36	6428859.42
15	384484.45	6428849.34
16	384484.61	6428829.36
17	384298.45	6428827.86
18	384294.35	6428827.86
19	384285.65	6428798.95
20	384324.40	6428639.14
21	384341.24	6428639.02
22	384378.42	6428588.06
23	384379.61	6428535.65
24	384268.47	6428534.84
25	383934.89	6428532.42
26	383597.19	6428529.97
27	383603.50	6428698.24
28	383486.31	6428859.12
29	383486.31	6428935.12
30	383543.70	6428947.53
31	383559.21	6429068.50
32	383557.66	6429135.19
33	383720.51	6429363.17
34	383790.19	6429419.72
35	383863.69	6429479.27

Attachment 1 to Ministerial Statement 863

Change to proposal under s45C of the *Environmental Protection Act 1986*

Proposal: Rockingham Industrial Zone Strategic Environmental Assessment (Formerly IP14)

Proponent: LandCorp

Change: Add 4.36 hectares to the Rockingham Industrial Zone Strategic Proposal area

The strategic proposal is to identify a development footprint for future industrial development over a 339 hectare area of the Rockingham Industrial Zone, while retaining an area as a conservation reserve.

Table 1. Summary of Key Proposal Characteristics: this table replaces Table 1 in Schedule 1.

Strategic proposal		
Element	Description of proposal	Description of approved change to proposal
Overall area	339 hectares of Rockingham Industrial Zone (SEA Area)	343.36 hectares of Rockingham Industrial Zone (SEA Area)
Development area	All land within the SEA Area, excluding the Conservation Area	All land within the SEA Area, excluding the Conservation Area.
Derived proposals		
Type of derived proposal	Key characteristics	Key characteristics
Subdivision and provision of infrastructure.	Within the development area <ul style="list-style-type: none"> • In accordance with the Water Management Strategy (of Condition 6-1). • Includes a Construction Environmental Management Plan to: <ul style="list-style-type: none"> - Retain, where practical, vegetation within the developed area; - Include a fauna trapping and relocation program to 	Within the development area <ul style="list-style-type: none"> • In accordance with the Water Management Strategy (of Condition 6-1). • Includes a Construction Environmental Management Plan to: <ul style="list-style-type: none"> - Retain, where practical, vegetation within the developed area; - Include a fauna trapping and relocation program to

Strategic proposal		
Element	Description of proposal	Description of approved change to proposal
	<p>be implemented in consultation with the Department of Environment and Conservation (DEC);</p> <ul style="list-style-type: none"> - Salvage potential breeding habitat for avifauna during clearing for integration into the Conservation Area; and - Establish vegetation in road reserves using appropriate local native species to provide linkages between areas of remnant vegetation. <ul style="list-style-type: none"> • Includes an Environmental Management Plan (overall or site specific) to guide future development of industry within the site to: <ul style="list-style-type: none"> - Retain, where practical, vegetation within the developed area, especially the threatened ecological community <i>Sedgeland</i>s in <i>Holocene dune swales of the Southern Swan Coastal Plain</i>; - Include a fauna trapping and relocation program to be implemented in consultation with the DEC; and - Salvage potential breeding habitat for avifauna during clearing for integration into the Conservation Area. 	<p>be implemented in consultation with the Department of Environment and Conservation (DEC);</p> <ul style="list-style-type: none"> - Salvage potential breeding habitat for avifauna during clearing for integration into the Conservation Area; and - Establish vegetation in road reserves using appropriate local native species to provide linkages between areas of remnant vegetation. <ul style="list-style-type: none"> • Includes an Environmental Management Plan (overall or site specific) to guide future development of industry within the site to: <ul style="list-style-type: none"> - Retain, where practical, vegetation within the developed area, especially the threatened ecological community <i>Sedgeland</i>s in <i>Holocene dune swales of the Southern Swan Coastal Plain</i>; - Include a fauna trapping and relocation program to be implemented in consultation with the DEC; and - Salvage potential breeding habitat for avifauna during clearing for integration into the Conservation Area.

Note: Text in **bold** in the Key Characteristics Table, indicates change/s to the proposal.

Replacement Figure:

Figure 1. SEA Area and Conservation Area Boundary: this Figure replaces Figure 1 of Schedule 1.

[Signed 4 October 2013]

Dr Paul Vogel

CHAIRMAN




Environmental Protection Authority
under delegated authority

Rockingham Industrial Zone - SEA, Conservation and Proposed Additional Area boundaries

Map Version: 1.10
 Date: 01/10/2013
 Created By: B. Smith



LEGEND

-  s45 Proposed Additional Area
-  Conservation Area
-  SEA Boundary

SOURCE DATA
 Landgate: Roads
 SLIP: Metro Central Jan 2013 Mosaic
 Proponent: SEA, Additional Area 20130926
 Location Path: \\oepapvifs01\GIS\Projects\epasu\minor_projects\eia\20110110_Rockingham_industrial_zone_SEA_maps

Disclaimer:
 This map is intended as a generalised interpretation of environmental issues. The information contained on this map is to be considered indicative only and in no event shall the Environmental Protection Authority be liable for any incident or consequential damages resulting from use of the material.
 Copyright: Environmental Protection Authority, 2012. All Rights Reserved.
 All works and information displayed are subject to Copyright. For the reproduction or publication beyond that permitted by the Commonwealth Copyright Act 1968 written permission must be sought from the Authority.



0 250 500 1,000
 Metres

Projection: Map Grid of Australia Zone 50
 Datum: Geocentric Datum of Australia, 1994
 Scale: 1:20,000

LOCALITY MAP



APPENDIX 3

EPBC Referral Decision (EPBC 2010/5336)



Approval

Rockingham Industrial Zone, WA (EPBC 2010/5337)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted Western Australian Land Authority

proponent's ACN (if applicable) 34 868 192 835

proposed action The development of 339 ha of land in Rockingham, WA, for industrial purposes (the Rockingham Industry Zone, [See EPBC Act referral 2010/5337]).

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approved

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 31 December 2035.

Decision-maker

name and position Barbara Jones
Assistant Secretary
Environment Assessment Branch

signature

date of decision 30 November 2011

Conditions attached to the approval

1. Within 30 days after the **commencement** of the action, the person taking the action must advise the **Department** in writing of the actual date of **commencement**.
2. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the management plans or strategy required by this approval, and make them available upon request to the **Department**. Such records may be subject to audit by the **Department** or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the **Department's** website. The results of audits may also be publicised through the general media.
3. Within three months of every 12 month anniversary of the **commencement** of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans or strategies as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the **Department** at the same time as the compliance report is published.
4. Upon the direction of the **Minister**, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the **Minister**. The independent auditor must be approved by the **Minister** prior to the **commencement** of the audit. Audit criteria must be agreed to by the **Minister** and the audit report must address the criteria to the satisfaction of the **Minister**.
5. If the person taking the action wishes to carry out any activity otherwise than in accordance with the management plans or strategy, as specified in the conditions, the person taking the action must submit to the **Department** for the **Minister's** written approval a revised version of that management plans or strategy. The varied activity shall not commence until the **Minister** has approved the varied management plan or strategy in writing. The **Minister** will not approve a varied management plan or strategy unless the revised management plans or strategy would result in an equivalent or improved environmental outcome over time. If the **Minister** approves the revised management plan or strategy, that management plan or strategy, must be implemented in place of the management plans or strategy originally approved.
6. If the **Minister** believes that it is necessary or convenient for the better protection of Listed threatened species and communities (sections 18 & 18A) to do so, the **Minister** may request that the person taking the action make specified revisions to the management plans or strategy specified in the conditions and submit the revised management plans or strategy for the **Minister's** written approval. The person taking the action must comply with any such request. The revised approved management plans or strategy must be implemented. Unless the **Minister** has approved the revised management plans or strategy, then the person taking the action must continue to implement the management plan or strategy originally approved, as specified in the conditions.
7. If, at any time after 5 years from the date of this approval, the person taking the action has not commenced the action, then the person taking the action must not **commence** the action without the written agreement of the **Minister**.

8. Unless otherwise agreed to in writing by the **Minister**, the person taking the action must publish all management plans and strategies referred to in these conditions of approval on their website. Each management plan and strategy must be published on the website within 1 month of being approved.
9. By 31 December of each year after the commencement of the action, the person taking the action must publish a report on their website addressing compliance with the conditions of this approval over the previous 12 months, including implementation of any management plans as specified in the conditions. Non-compliance with any of the conditions of this approval must be reported to the **Department** at the same time as the compliance report is published. These reports must remain available on the internet for at least 5 years after they are published.

10. Conservation Area

To protect the threatened ecological community *Sedgeland*s in Holocene dune swales of the Southern Swan Coastal Plain (TEC) and habitat for **Black Cockatoos** the person taking the action must establish a Conservation Area of at least 90.5 ha prior to the **commencement of construction**, as identified by the area within the blue line on the map (at Attachment A). The person taking the action must:

- (a) include at least 18.72 ha of the TEC within the Conservation Area;
- (b) prior to **commencement of construction**, provide the **Department** with written evidence that the Conservation Area will be protected and managed in perpetuity by a **recognised conservation organisation**;
- (c) within five years of the date of this approval, vest management and ownership of the conservation area with a **recognised conservation organisation**.

11. Conservation Area Management Plan

To protect and enhance the threatened ecological community *Sedgeland*s in Holocene dune swales of the Southern Swan Coastal Plain (TEC) and habitat for **Black Cockatoos** within the Conservation Area the person taking the action must prepare and submit a Conservation Area Management Plan (CAMP) for the **Minister's** approval. The person taking the action must not **commence construction** unless the **Minister** has approved the CAMP. The CAMP must be prepared in consultation with DEC and the WA Office of the Environmental Protection Authority (EPA).

The CAMP must include the following requirements:

- (a) Management measures to protect and enhance the TEC and **Black Cockatoo** habitat;
- (b) Measures to determine the effectiveness of all management measures for the TEC and **Black Cockatoo** habitat;
- (c) Construction of a permanent fence around the perimeter of the conservation area;
- (d) Management of weeds and feral animals, including monitoring requirements to determine the effectiveness of the weed and feral animal management;
- (e) Management of fire regime, and monitoring requirements to determine the effectiveness of the fire management, and
- (f) Rehabilitation works for degraded areas, including rubbish removal, and including monitoring requirements to determine the effectiveness of the rehabilitation.

If the **Minister** approves the CAMP then the approved CAMP must be implemented.

12. Black Cockatoo Habitat

To protect and enhance habitat for **Black Cockatoos**, the person taking the action:

- (a) May not clear more than 830 Tuart trees (*Eucalyptus gomphocephala*) that are greater than 500 mm diameter at breast height (DBH) from within the project area of the Rockingham Industry Zone ('Strategic Environmental Assessment Area' identified by the pink highlighted area on the map at Attachment A). No trees are permitted to be cleared within the Conservation Area referred to in condition 10.
- (b) Must, within 12 months of the **commencement of construction**, commence a Tuart revegetation project as described below:
 - i. At least six Tuart trees must be planted for every Tuart tree greater than 500 mm DBH removed.
 - ii. The seedling trees must be planted at a rate of no greater than 250 stems per hectare in cleared or highly degraded areas where Tuart density has been greatly reduced.
 - iii. If after two years from the date of planting trees, a survival rate of 80% trees is not achieved, all planted trees that have not survived must be replaced within 12 months, and maintained with a survival rate of at least 80% for a minimum of a further three years.
 - iv. The person taking the action must fund and manage the Tuart revegetation project in consultation with the DEC until such a time as management responsibility has been formally transferred to a **recognised conservation organisation**.
 - v. The revegetation project must be at least partially undertaken in the Rockingham Lakes Regional Park. If there is insufficient land in the Rockingham Lakes Regional Park to undertake the required revegetation, the person taking the action, in consultation with DEC and the **Department**, must find alternate locations to undertake the revegetation within the Rockingham region.
- (c) Prepare and submit a **Black Cockatoo** Habitat Revegetation Plan (BCHRP) for the **Minister's** approval, that describes how approval condition 12 b) will be implemented. The plan must be prepared in consultation with the DEC. The person taking the action must not **commence construction** unless the **Minister** has approved the BCHRP.

The BCHRP must address the following matters:

- i. The location of revegetation areas;
- ii. Planting methodology, including soil preparation;
- iii. What flora species that will be planted;
- iv. A monitoring program (including how survival rates and success criteria will be determined);
- v. Construction of a temporary fence around the perimeter of the revegetation areas;
- vi. Management of weeds and feral animals in the revegetation area;
- vii. How the performance of the plan will be reported to the **Minister**; and
- viii. Who will be responsible for implementing all aspects of the plan.

If the **Minister** approves the BCHRP then the approved BCHRP must be implemented.

13. Water Management Strategy

To protect the threatened ecological community *Sedgelands in Holocene dune swales of the Southern Swan Coastal Plain* (TEC) and habitat for **Black Cockatoos** the person taking the action must prepare and submit a Water Management Strategy (WMS) for the **Minister's** approval. The person taking the action must not **commence construction** unless the **Minister** has approved the WMS. The WMS must be prepared in consultation with the DEC and the EPA.

The WMS must include:

- (a) arrangements for the long term monitoring of groundwater levels in the site;
- (b) a pre-construction baseline for surface water and groundwater quality data and a monitoring program for these parameters to maintain stormwater and groundwater quality and hydrology to pre-development levels;
- (c) an adaptive management plan, including contingency measures, to ensure **construction** does not affect groundwater levels beyond normal seasonal variation, with the aim of ensuring that the TEC persists and thrives in perpetuity;
- (d) maintaining or improving groundwater balance;
- (e) managing the salt wedge, Cockburn Sound interface;
- (f) preventing abstraction of shallow groundwater during **construction** or for future industry use; and
- (g) managing drainage into the conservation site.

If the **Minister** approves the WMS then the approved WMS must be implemented.

14. Offsets Management Plan

To protect the threatened ecological community *Sedgelands in Holocene dune swales of the Southern Swan Coastal Plain* (TEC) the person taking the action must prepare and submit an Offsets Management Plan (OMP) for the **Minister's** approval. The person taking the action must not **commence construction** unless the **Minister** has approved the OMP. The OMP must be prepared in consultation with DEC and the EPA. The OMP must address the rehabilitation of 9 hectares of threatened ecological community *Sedgelands in Holocene dune swales of the Southern Swan Coastal Plain* that requires active management in land managed by the DEC at other priority sites (as agreed by DEC and the **Department**) in the Rockingham region.

The OMP must include:

- (a) Within 12 months of clearing any areas of TEC, 1.5 ha for every 1 ha of TEC cleared must be re-established onsite and protected in perpetuity; and
- (b) A program for the monitoring of vegetation regeneration in the areas of TEC rehabilitated. After 2 years of monitoring, consult with DEC and undertake further rehabilitation in areas of the TEC where natural regeneration is not successful.

If the **Minister** approves the OMP then the approved OMP must be implemented.

The annual report referred to in condition 9 detailing performance against the plan must include the following information:

- i. Areas of the Rockingham Industry Zone cleared for development and revegetation;
- ii. Areas of the TEC cleared and areas of TEC recreated/rehabilitated and their protection arrangements; and
- iii. Areas of the TEC rehabilitated at other occurrences of the TEC in the Rockingham region.

Definitions

- a) Black Cockatoo.
The endangered Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*).
- b) Department.
The Australian Government Department administering the *Environment Protection and Biodiversity Conservation Act 1999*.
- c) Minister.
The Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* and includes a delegate of the Minister.
- d) Construction.
Includes any preparatory works required to be undertaken including clearing vegetation, the erection of any onsite temporary structures and the use of heavy duty equipment for the purpose of breaking the ground for buildings or infrastructure.
- e) Clearance of native vegetation.
The cutting down, felling, thinning, logging, removing, killing, destroying, poisoning, ringbarking, uprooting or burning of native vegetation.
- f) Commencement
The construction of any infrastructure, excluding fences and signage, associated with the proposed action, including preparatory works such as clearing vegetation to begin construction.
- g) Recognised conservation organisation
The WA Department of Environment and Conservation, or an alternative conservation organisation that has been approved in writing by the **Department**.

Office of the Environmental Protection Authority
Figure 1: SEA Boundary and Conservation Area Boundary



Legend

- Conservation Area
- SEA Boundary

Scale: 1:25,000
 Projection: Geographic Coordinate System
 Datum: Australian National Standard 1984
 Units: Meters

Data Source
 Landcorp Property Consultation Area (LCPCA) - 2011
 Department of Conservation
 Beach Coastal Plan Review (2011)

Analyst
 [Name]

Prepared by
 [Name]
 Date: 21/01/2011
 Map Scale: 1:25,000

This map is produced for the Environmental Protection Authority, for inclusion into a report on the Robinsons Rd, and Park Project.
 This map depicts the boundaries of the Landcorp property conservation area in relation to the SEA and Threatened Ecological Community Areas.

Disclaimer: This map is provided as a general information only and does not constitute a guarantee of accuracy. The information contained on this map is to be used as a guide only and is not intended to be used for any purpose other than that for which it was prepared. The user assumes all responsibility for any errors or omissions. The user agrees to indemnify the Department of Conservation from any and all claims, damages, costs, and expenses, including reasonable legal fees, arising from the use of this map.

© Crown Copyright. All Rights Reserved. This map is published under the Creative Commons Attribution-NonCommercial-ShareAlike license. For more information, please visit: <http://creativecommons.org/licenses/by-nc-sa/4.0/>

APPENDIX 4

Proposed Stage 1 Subdivision



ROCKINGHAM INDUSTRY ZONE SUBDIVISION PLAN LOT 500 PATTERSON ROAD, ROCKINGHAM

LEGEND:

- Area subject to application for subdivision
- Existing easement / lot dimension
- Proposed subdivision
- Proposed future subdivision
- Existing easement
- Contour (1m interval)



DEVELOPMENT SUMMARY:

LOT	PLAN / DIAGRAM	AREA (Ha)
500	PR1681	236.8100

SUMMARY OF PROPOSED SUBDIVISION		
DEVELOPMENT	LOTS	AREA (Ha)
DEVELOPMENT LOT (LOTS 1-10)	10	27.4332
WATER CORP SCHOOL LOT FOR FUTURE ACQUISITION (LOT 11)	1	4.4553
BALANCE LOT (LOT 500)	1	200.9444
ROAD/ROAD WIDENING		3.9771
TOTAL		236.8100

**AMENDED PLAN
07/08/2013**

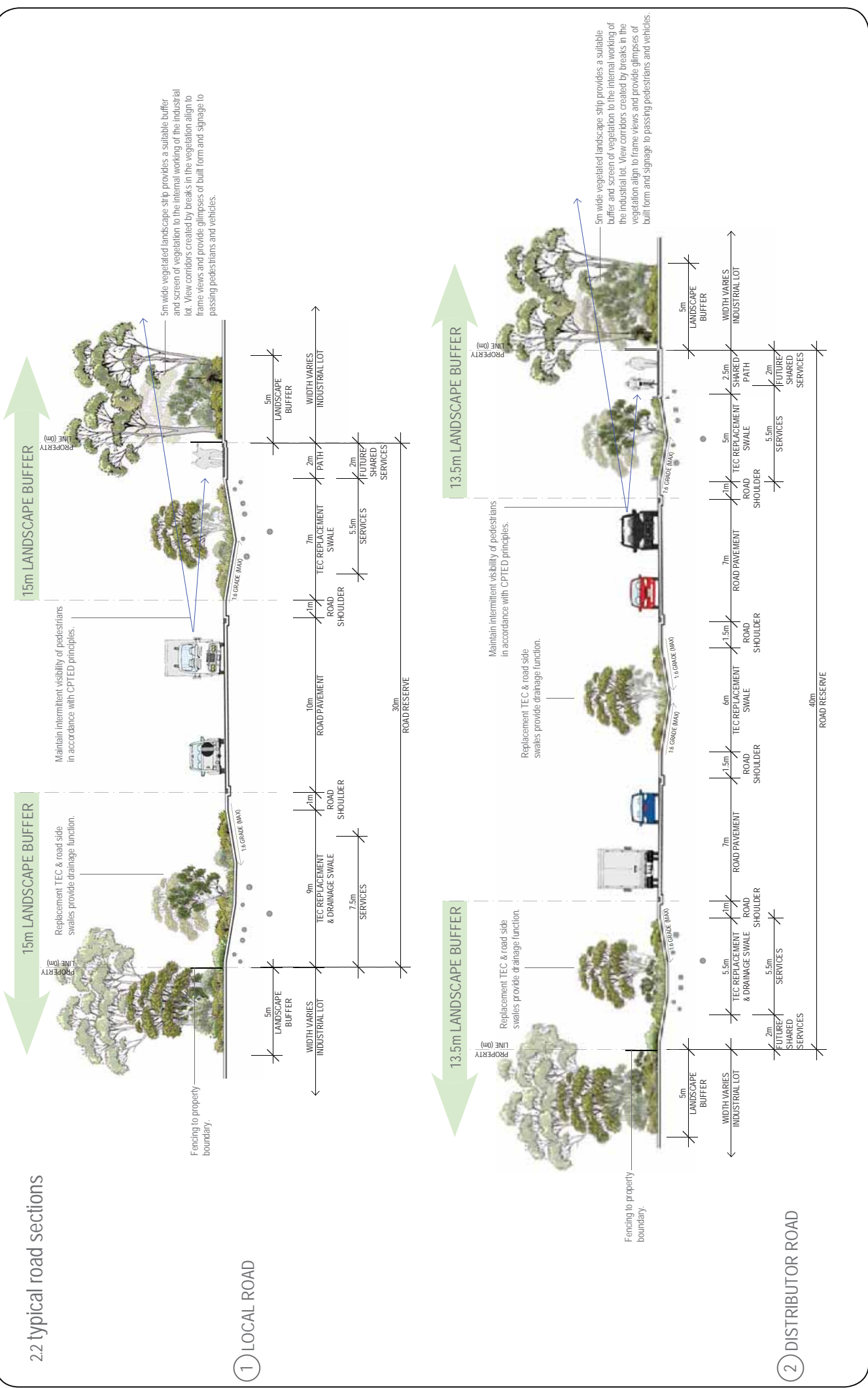


PLAN NO. PR1681
DATE 07/08/2013
SCALE 1:2500
DRAWN BY [Name]
CHECKED BY [Name]
APPROVED BY [Name]

APPENDIX 5

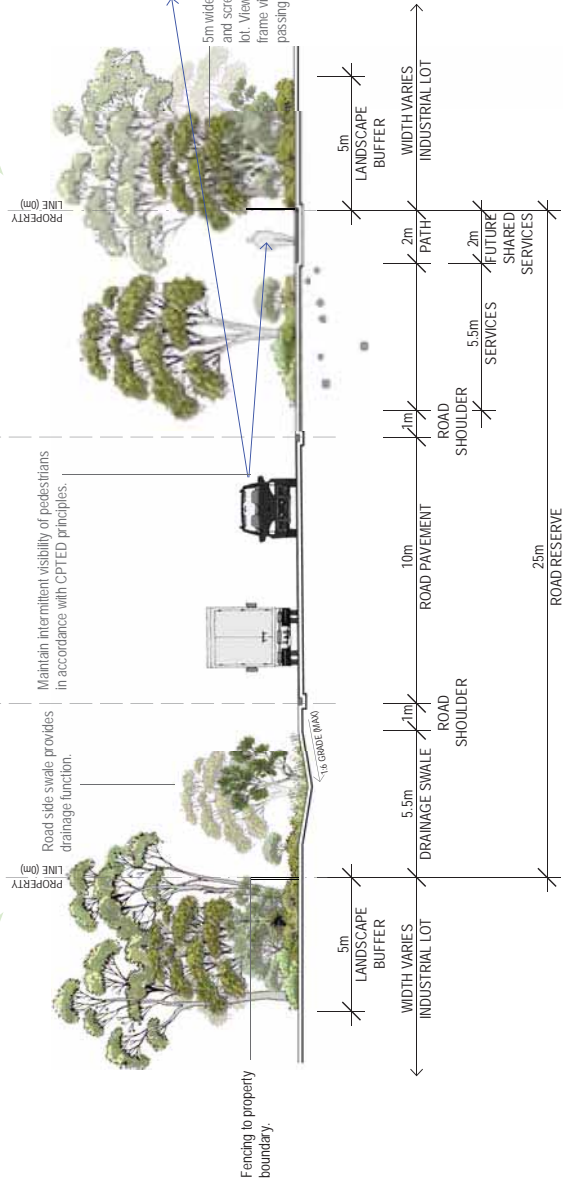
Proposed Road Cross-Sections

2.2 typical road sections



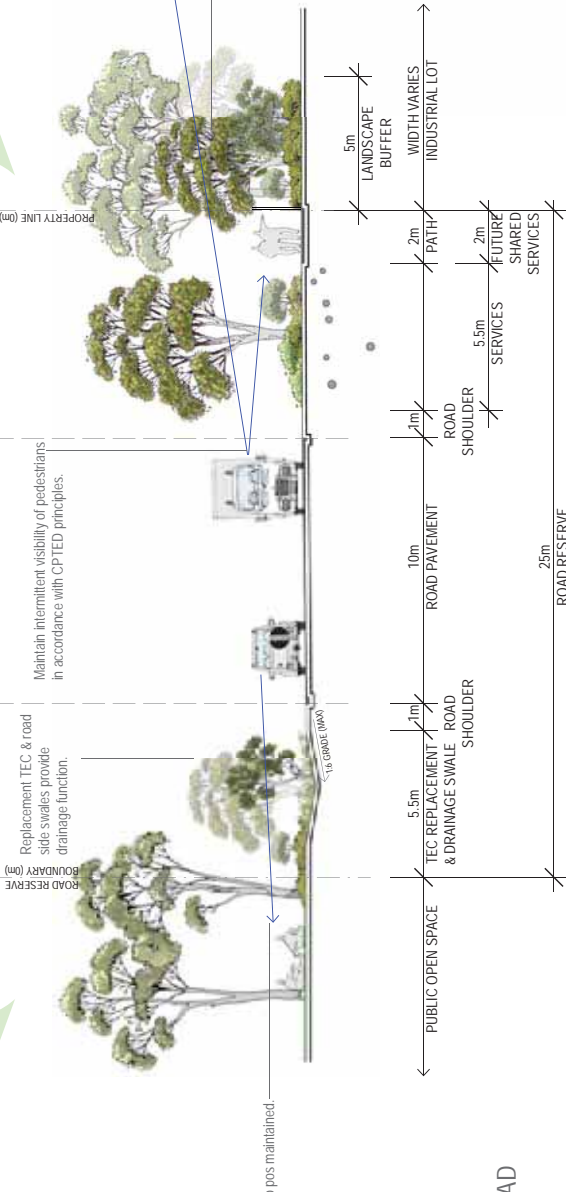
2.2 typical road sections

11.5m LANDSCAPE BUFFER



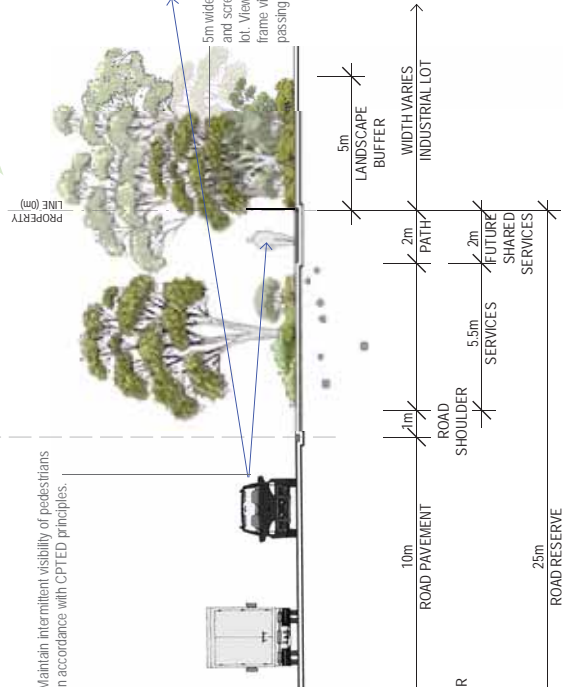
3 LOCAL ROAD - NO TEC

LANDSCAPE BUFFER

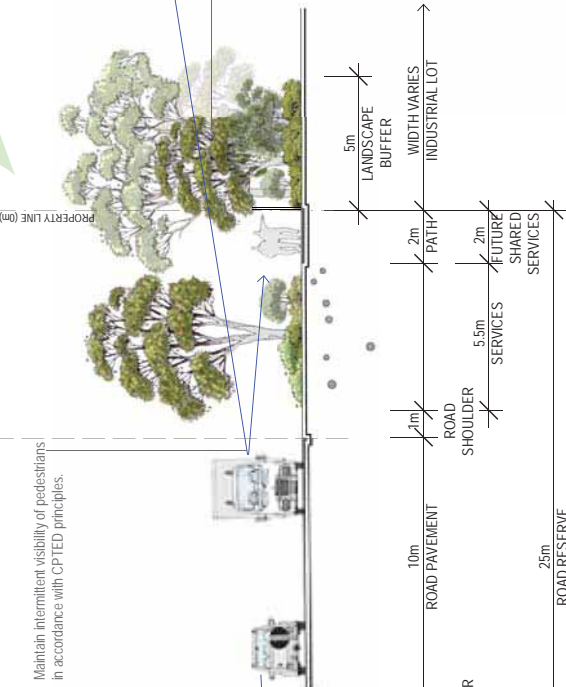


4 LOCAL ROAD - KWINANA BEACH ROAD

13.5m LANDSCAPE BUFFER

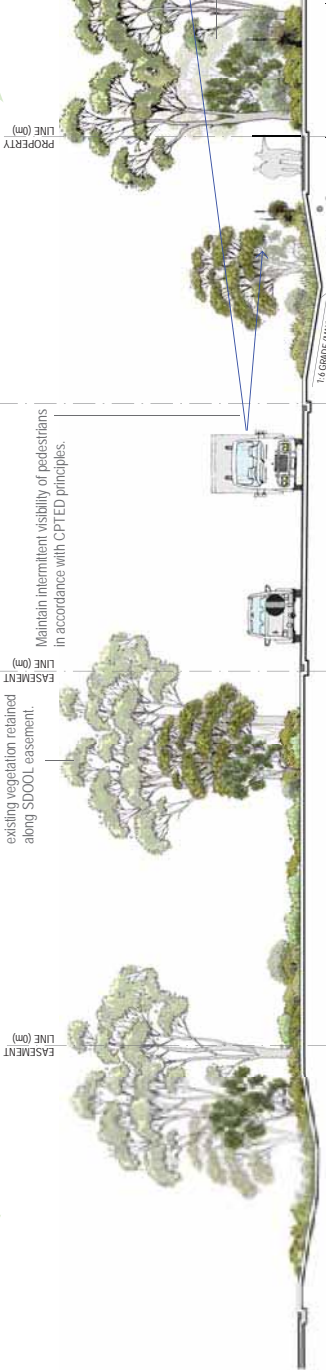


13.5m LANDSCAPE BUFFER

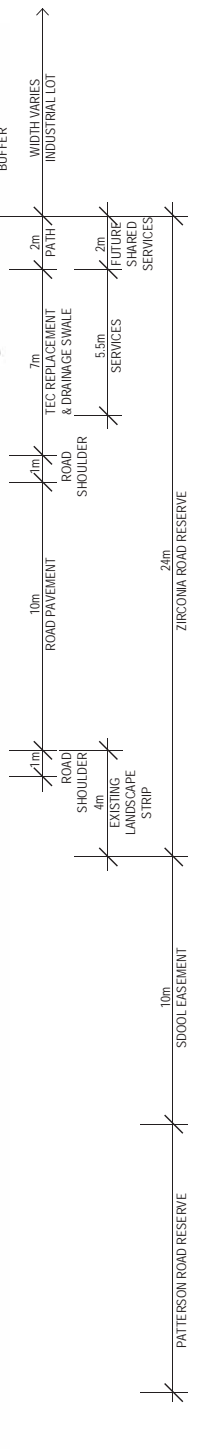


2.2 typical road sections

15m LANDSCAPE BUFFER



5) PATTERSON / ZIRCONIA ROAD - SDOOL EASEMENT



ROAD SECTIONS LOCATION PLAN
NTS

APPENDIX 6

Proposed Drainage Plan



Site

Conservation area

Existing development

Distributor road with TEC drainage swales

Local road with TEC drainage swales

Local road

1:30,000

