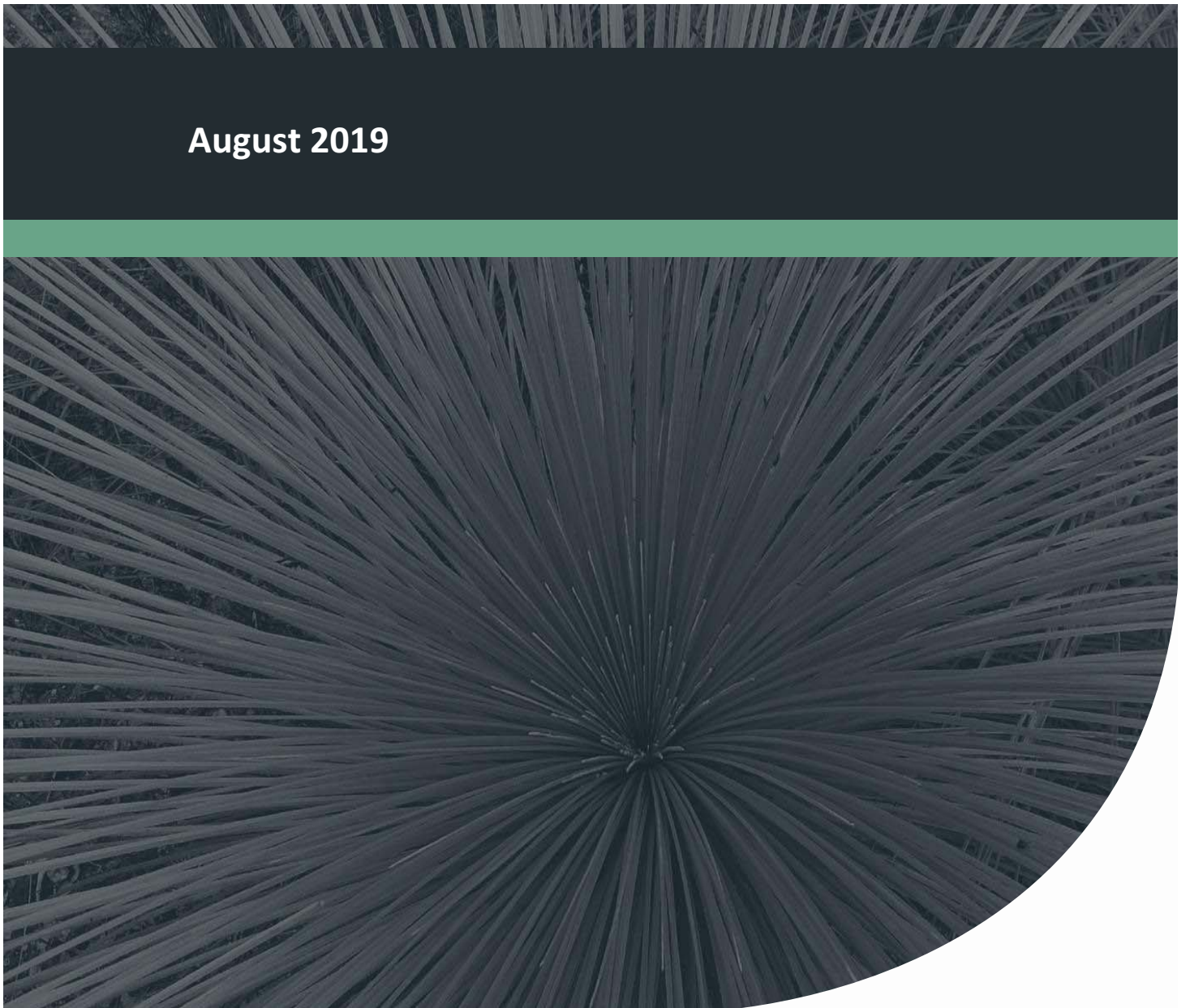


Construction Environmental Management Plan

Muchea Industrial Precinct (EPBC 2017/8119)

Project No: EP17-089(19)

August 2019



Construction Environmental Management Plan

Muceha Industrial Precinct (EPBC 2017/8119)



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Executive Summary

This Construction Environmental Management Plan (CEMP) outlines the environmental management and mitigation measures to be implemented as part of the construction process for the Muchea Industrial Precinct (located on part Lot 809 Great Northern Highway, Muchea), as they relate to relevant Matters of National Environmental Significance listed under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The proposed industrial development of the Muchea Industrial Precinct was referred to the Department of Environment and Energy under the EPBC Act and was determined to be a Controlled Action (EPBC 2017/8119). This CEMP will be implemented as part of the construction stage of the Controlled Action.

The MNES which are relevant to the Controlled Action include:

- Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community
- Carnaby's Black Cockatoo
- Forest Red-tailed Black Cockatoo.

In order to mitigate and manage impacts to the relevant MNES during the construction process, the CEMP details management actions to be implemented, which comprise five categories:

1. General
2. Vegetation retention
3. Fauna management
4. Reserve management
5. Weed and disease management.

Compliance reporting and adaptive management measures are also specified in this CEMP, to ensure the intended outcomes are achieved.

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Appendix A

Muceha Employment Node Local Structure Plan

Appendix B

Fencing Specification

Abbreviation Tables

Table A1: Abbreviations – Organisations

Organisations	
DoEE	Department of Environment and Energy
SoC	Shire of Chittering

Table A2: Abbreviations – General terms

General terms	
CBC	Carnaby's Black Cockatoo
CEMP	Construction Environmental Management Plan
FRBC	Forest Red-tailed Black Cockatoo
LSP	Local Structure Plan
MNES	Matter of National Environmental Significance
TARP	Trigger Action Response Plan
TEC	Threatened Ecological Community

Table A3: Abbreviations – Legislation

Legislation	
EP Act	<i>Environmental Protection Act 1986</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>

Table A4: Abbreviations – units of measurement

Units of measurement	
ha	Hectare
m	Metre

1 Introduction

1.1 Project background

Part Lot 809 Great Northern Highway, Muceha (herein referred to as 'the site') is proposed to be developed for industrial land purposes, in accordance with the approved *Muceha Employment Node Local Structure Plan* (LSP), provided in **Appendix A**. The site is approximately 127.2 ha in area and is located approximately 1.8 km east of the Muceha town site and 44.5 km north north-east of Perth, within the Shire of Chittering (SoC), as shown in **Figure 1**.

The proposed development of the site will involve establishment of the following land uses:

- Subdivided lots to support future industrial land uses.
- A public road network.
- A network of local reserves, to provide for the retention and ongoing management of various environmental values, including but not limited to:
 - A patch of vegetation representative of the Banksia Woodlands of the Swan Coastal Plain Threatened Ecological Community (Banksia Woodlands TEC).
 - Scattered mature trees which provide foraging and potential breeding habitat for Carnaby's Black Cockatoo (CBC) and Forest Red-tailed Black Cockatoo (FRTBC).

The proposed development of the site was referred to the Department of Environment and Energy (DoEE) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) and was determined to be a Controlled Action (EPBC 2017/8119) requiring assessment under the EPBC Act.

1.2 Purpose of this plan

The purpose of this Construction and Environmental Management Plan (CEMP) is to outline the environmental management and mitigation measures for applicable Matters of National Environmental Significance (MNES), which will be implemented as part of the construction stage of the Controlled Action.

1.3 Alignment with other plans

The scope of this CEMP is specific to applicable MNES. Notwithstanding, the management measures outlined in this CEMP align with those proposed in the *Flora, Vegetation, Wetland and Waterway Management Plan*¹, which has been prepared as a condition of subdivision approval issued for the project under the *Planning and Development Act 2005*. Whilst the content of this CEMP and the *Flora, Vegetation, Wetland and Waterway Management Plan* have some overlap, each of the plans have been prepared to support separate statutory processes and function independently of one another.

¹ Emerge Associates 2018, *Flora, Vegetation, Wetland and Waterway Management Plan – Northern Gateway Industrial Park*

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A revegetation management plan will provide the framework to implement the proposed mitigation planting of marri trees within the site, and will respond to relevant EPBC Act approval conditions. This CEMP focuses on the construction element of the development process, which will provide for the establishment of local reserves and associated implementation of impact avoidance measures to MNES habitat. The future revegetation management plan will focus on the revegetation process, which will provide for the mitigation planting of marri trees within the future local reserves. As such, whilst these plans are linked, they focus on different aspects of the development process and function independently of one another.

2 Project Context

2.1 Existing environmental assets

The existing environmental assets within the site which are applicable to MNES include:

- A 7.28 ha patch of vegetation representative of the Banksia Woodlands TEC, of which:
 - 1.59 ha is in 'good' condition
 - 5.59 ha is in 'good to very good' condition.
- 22.81 ha of CBC and FRTBC foraging habitat, of which:
 - 10.05 ha represents quality black cockatoo foraging habitat (banksia woodland areas, pine plantation and groups of native paddock trees with consolidated canopy cover)
 - 12.76 ha represents marginal black cockatoo foraging habitat (revegetation areas and scattered native paddock trees with isolated canopy cover).
- 462 potential black cockatoo habitat trees, of which only two trees contain hollows which are potentially suitable for use by black cockatoos (note that these potential habitat trees are also accounted for as part of the 22.81 ha of black cockatoo foraging habitat).

A comprehensive assessment of these environmental assets is provided in the *Response to Request for Additional Information*², which was provided to support the EPBC Act assessment.

2.2 Future local reserve network

As shown in the approved LSP, a network of local reserves will be established as part of the subdivision and development of the site. These reserves will, amongst other functions, provide for the retention of existing MNES habitat within the site. These reserves are shown in **Figure 1** and a summary of the existing environmental assets to be retained within each is summarised in **Table 1**.

Table 1: Summary of future local reserve network

Local reserve	Environmental assets to be retained within reserve
Northern conservation reserve	<ul style="list-style-type: none"> • An existing wetland feature and associated buffer.
Central drainage and waterway reserve	<ul style="list-style-type: none"> • A waterway that is a clearly defined, highly eroded natural channel, with steep side slopes and minimal vegetation. This waterway enters the site on the eastern boundary and exits on the western boundary. • Generally 'parkland cleared' vegetation, comprising mature remnant trees over introduced paddock grasses. A small area of historic vegetation rehabilitation occurs at its western boundary. • A number of potential black cockatoo habitat trees, which also provide foraging habitat for CBC and FRTBC.
Southern conservation reserve	<ul style="list-style-type: none"> • In its eastern extent, approximately 6.85 ha of Banksia Woodlands TEC which represents approximately 94% of the total extent of the existing patch. • West of the Banksia Woodland TEC patch, wetland-type vegetation in varying condition. • Within the central portion of the reserve, an existing wetland feature and associated buffer zone.

² Emerge Associates 2018, *EPBC 2017/8119 Muchea Industrial Precinct – Response to Request for Additional Information*

2.3 Construction methodology

Implementation of the approved LSP will result in the majority of the site being subdivided and developed for industrial land uses. As part of this process, bulk earthworks will be undertaken across the industrial development area (as shown in **Figure 1**), which will involve re-contouring of the existing surface to create level surfaces of subdivided lots.

For the purpose of the EPBC Act approvals process, it has been assumed that all vegetation (and associated MNES habitat) which occurs within the industrial development area will be removed to facilitate bulk earthworks. However, opportunistic retention of potential habitat trees within development lots and streetscapes will be targeted where feasible, given this is a conditional requirement of the Western Australian Planning Commission's subdivision approval for the development of the site (issued pursuant to the *Planning and Development Act 2005*). As such, some potential habitat trees may be opportunistically retained within the industrial development area; however, a worst-case scenario of nil retention has been assumed given that it is difficult to estimate how many habitat trees will ultimately be retained.

Outside of the industrial development area within the local reserve network, construction works will generally be limited to the installation of internal boundary firebreaks (minimum 3 m width) and reserve fencing infrastructure. The extent of local reserve boundary fencing is shown in **Figure 1**, with the fencing design to be generally consistent with the specification provided in **Appendix B**. This infrastructure will provide multiple reserve management functions including public access restriction, bushfire hazard separation, management authority access to reserves and hard edge interfaces to restrict movement of weeds and disease.

3 Mitigation and Management Measures

In order to mitigate and manage impacts to MNES during the construction process, a range of measures will be implemented as part of this CEMP. These management measures are specific to the construction process and managing potential impacts on relevant MNES (CBC, FRTBC and Banksia Woodlands TEC) and their habitat within the site.

The management measures are provided in **Table 1** and comprise five categories:

1. General
2. Vegetation retention
3. Fauna management
4. Reserve management
5. Weed and disease management.

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Table 2: CEMP management actions

Category	ID	Management Action	Timing	Responsibility	Indicator
General	A1	All staff and on-site personnel to be inducted on CEMP and associated management actions before commencement on-site.	Prior to civil works commencement	Civil contractor	Completed induction register.
Vegetation retention	B1	Local reserve boundaries to be delineated on-site using appropriate methods (e.g. star pickets and coloured tape) to avoid encroachment and unintended clearing within reserves.	Prior to civil works commencement	Civil contractor	Visual confirmation that reserve boundaries have been delineated.
	B2	To ensure all potential habitat trees within local reserves are retained, mark all potential habitat trees that are within the local reserve but adjacent to its boundary.	One week prior to the commencement of earthworks.	Civil contractor	Visual confirmation that trees are marked with survey tape or similar.
	B3	Where trees are proposed to be opportunistically retained within industrial development area, trees are to be marked.	One week prior to the commencement of earthworks.	Civil contractor	Visual confirmation that trees are marked with survey tape or similar.
	B4	Avoid all trees marked for retention within industrial development area during earthworks and civil construction.	During earthworks and civil construction.	Civil contractor	Evidence that contractor has followed the required process, i.e. site induction material, or work method statements.
	B5	Following the completion of earthworks and civil construction works, confirm all tree identified for retention have been retained.	Completion of earthworks and civil construction.	Civil contractor/ Environmental consultant	Visual confirmation that all trees identified for retention have been retained.
Fauna management	C1	Fauna specialist to inspect all trees to be cleared to confirm no fauna is present.	Within 7 days prior to clearing.	Fauna specialist	Confirmation that fauna specialist has been engaged.
	C2	In the instance that fauna is observed nesting in a tree, clearing is not to occur until it has been verified that the tree is no longer in use.	Prior to clearing.	Fauna specialist	Confirmation that tree is no longer in use before clearing commences.
	C3	Fauna specialist to be onsite during clearing works.	During clearing.	Fauna specialist	Fauna specialist observation records.
	C4	Clearing of vegetation and fauna habitat to occur in a single direction.	During construction	Civil contractor	Clearing records maintained by civil contractor.
	C5	If any injured fauna species are encountered the DBCA's Wild Care (08 9474 9055) is to be contacted.	During construction	All parties	Fauna interaction records maintained by fauna specialist.

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Table 2: CEMP management actions (continued)

Category	ID	Management Action	Timing	Responsibility	Indicator
Fauna management (continued)	C6	Speed limit of 40 km/hr will be applied within site for all construction vehicles to reduce risk of fauna strikes and minimise dust generation.	During construction	Civil contractor	Visual monitoring by construction personnel that construction speed limits are been observed.
	C7	Water carts and/or surface stabilisation measures (e.g. hydro mulch) will be used to minimise dust generated from cleared areas to minimise impacts on fauna health and fauna habitat.	During construction	Civil contractor	Visual dust monitoring by construction personnel.
Reserve management	D1	Install minimum 3 metre firebreak within internal boundary of local reserves to provide access for emergency vehicles and a reserve management interface.	During earthworks	Civil contractor	Visual confirmation firebreak is installed.
	D2	Inspect firebreak to monitor for any debris or vegetation regrowth.	Annually (prior to annual bushfire season)	Civil contractor	Visual confirmation that no debris or vegetation regrowth occurs. In the instance that debris or vegetation regrowth occurs, evidence that firebreak has been re-cleared is required in accordance with the TARP.
	D3	Install reserve fencing to restrict public access to reserve, generally consistent with the design specification provided in Appendix B .	During construction	Civil contractor	Visual confirmation reserve fencing is installed.
	D4	Inspect constructed reserve boundaries and associated fencing to monitor for damage.	Annually during construction process.	Civil contractor	Visual confirmation that no damage has occurred. In the instance that damage has occurred, evidence that fence has been repaired is required in accordance with the TARP.
	D5	During periods of civil construction work adjacent to reserve boundaries, undertake reserve boundary inspections to monitor for damage and/or encroachment.	Daily during adjacent civil construction works	Civil contractor	Visual confirmation that no works have occurred within fenced area and the fence is undamaged. In the instance that works have occurred within fenced area, or the fence is damaged, works to follow the TARP.
Disease and weed management	E1	Access of vehicles to be restricted to construction areas only and excluded from local reserves. To be included as part of site induction package.	During construction	All parties	Completed induction register.
	E2	All machinery, vehicles and tools to be cleaned down before entering the site and when leaving the site. To be included as part of site induction package.	During construction	All parties	Completed induction register.
	E3	Any fill brought onto site to be disease free.	During construction	Civil engineer	Receipts and records of fill imported to site.

4 Reporting and Adaptive Management

4.1 Reporting

An audit against the management actions will be undertaken as part of annual compliance reporting for the EPBC Act approval, which will be provided to the DoEE.

4.2 Adaptive management

The following trigger action response plan (TARP) has been formulated to provide a process in the instance that the actions and indicators identified in **Table 1** have not been implemented or met. The actions identified in the TARP are only required if the trigger has been breached.

Table 3: Trigger action response plan

Trigger	Action / Response	Responsibility	Indicator as a result of TARP
Fence has not been installed prior to civil construction work commencing.	Ensure no further works are undertaken prior civil construction works commencing.	Civil contractor	Fence has been installed prior to civil construction works commencing.
	Notify landowner that fence has not been installed.	Civil contractor	
	Install fence as per the management action in Table 1 .	Civil contractor	
Fence has been damaged.	Notify landowner that fence has been damaged.	Civil contractor	Fence has been repaired.
	Repair damage within one week of it being identified.	Civil contractor	
Civil construction works have occurred within the fenced reserve area.	Ensure no further works are undertaken and prevent further unauthorised access.	Civil contractor	Further civil construction work to be undertaken in accordance with approved plans. Environmental consultant is engaged to prepare an appropriate rehabilitation schedule of work.
	Notify landowner that unauthorised civil construction work has occurred.	Civil contractor	
	Undertake additional education and training to ensure contractors are aware of where civil construction work is not permitted.	Civil contractor	
Firebreak has debris accumulated preventing access.	Remove debris within one week of it being identified.	Civil contractor	Firebreak is free from debris.
Fauna identified as nesting in a tree prior to clearing.	Stop work to ensure clearing of that tree does not take place.	Civil contractor	Fauna is removed/relocated prior to any additional work.
	Notify fauna specialist to remove/relocate fauna.	Civil contractor	
	Fauna removed/relocated.	Fauna specialist	
	Clearing can re-commence.	Civil contractor	

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Figures



Figure 1: Local Reserve Network

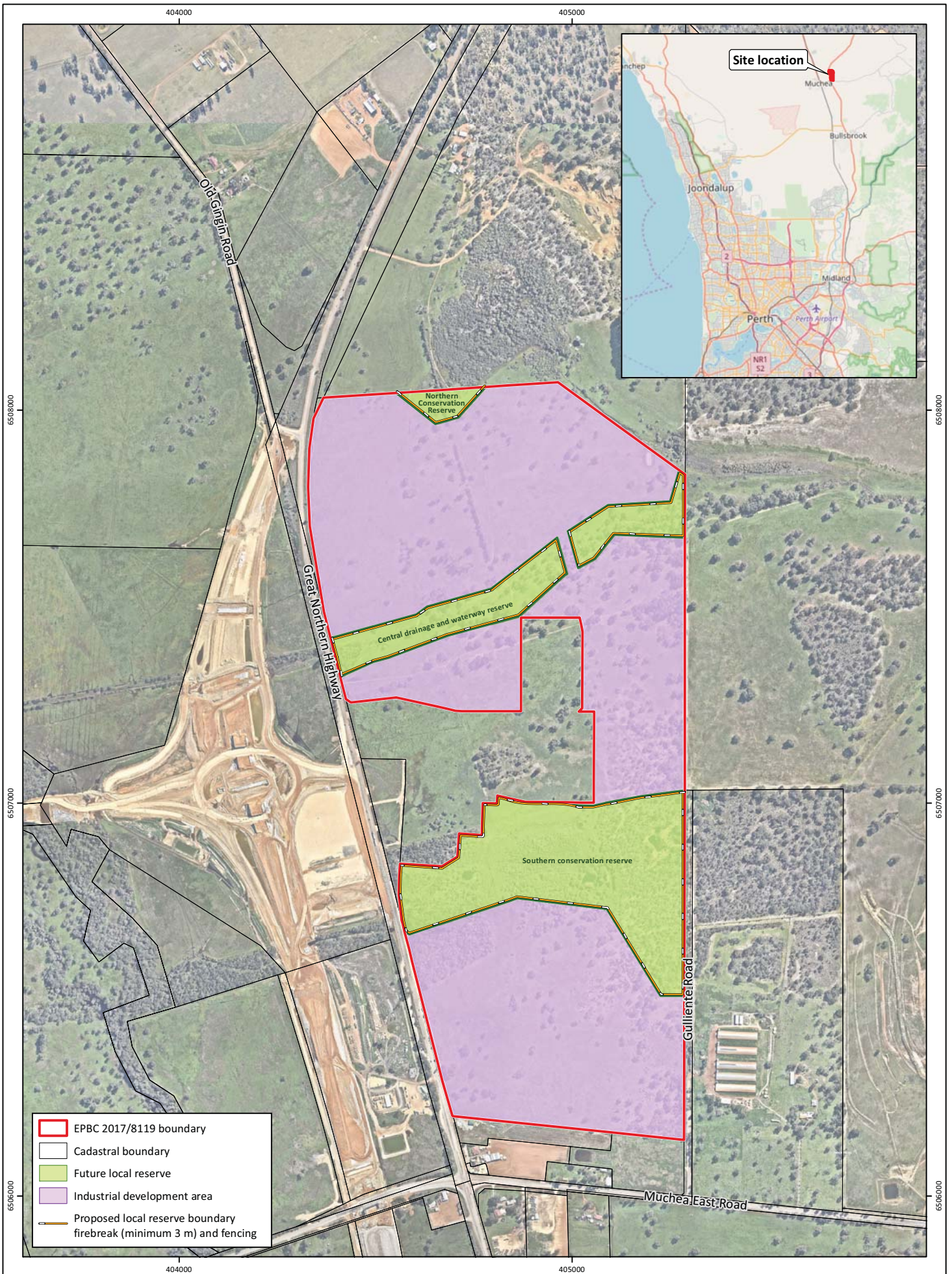


Figure 1: Local Reserve Network

Project: Construction Environmental Management Plan
 EPBC 2017/8119 Muchea Industrial Precinct
Client: Sirona Capital Pty Ltd

Plan Number: EP17-089(19)--F57
Drawn: KNM
Date: 17/04/2019
Checked: ADB
Approved: ALB
Date: 30/04/2019



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 Metres
 Scale: 1:12,500@A4
 GDA 1994 MGA Zone 50



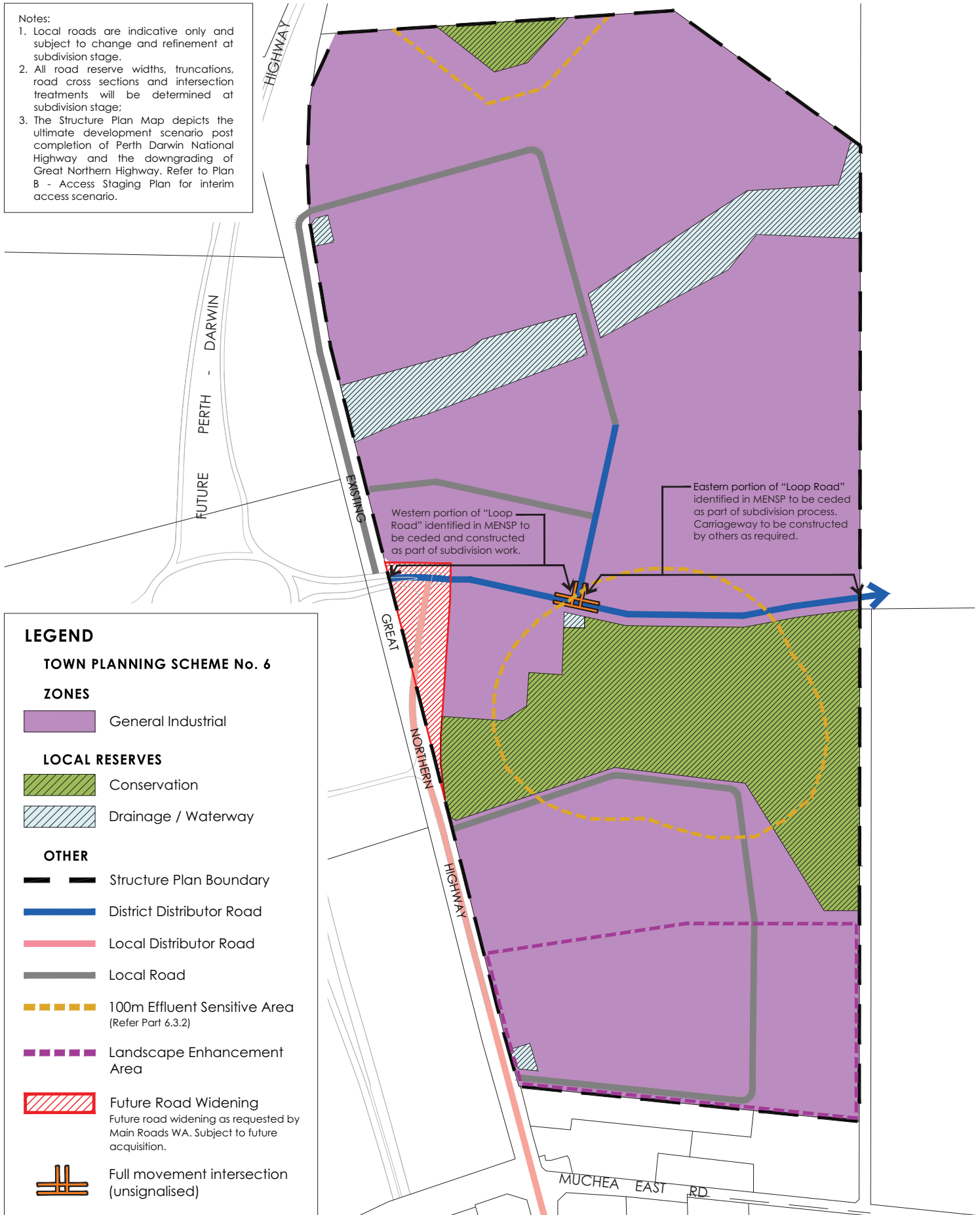
While Emmerge Associates makes every attempt to ensure the accuracy and completeness of data, Emmerge accepts no responsibility for externally sourced data used

Appendix A

Muchea Employment Node Local Structure Plan



- Notes:
1. Local roads are indicative only and subject to change and refinement at subdivision stage.
 2. All road reserve widths, truncations, road cross sections and intersection treatments will be determined at subdivision stage;
 3. The Structure Plan Map depicts the ultimate development scenario post completion of Perth Darwin National Highway and the downgrading of Great Northern Highway. Refer to Plan B - Access Staging Plan for interim access scenario.



LEGEND

TOWN PLANNING SCHEME No. 6

ZONES

General Industrial

LOCAL RESERVES

Conservation

Drainage / Waterway

OTHER

Structure Plan Boundary

District Distributor Road

Local Distributor Road

Local Road

100m Effluent Sensitive Area (Refer Part 6.3.2)

Landscape Enhancement Area

Future Road Widening
Future road widening as requested by Main Roads WA. Subject to future acquisition.

Full movement intersection (unsignalised)



Appendix B

Fencing Specification



Specifications for Conservation Area Fencing



Plate 1: Example of installed conservation area fencing

1. Strainers and Gate Posts – Treated Pine RL6 x 2.4m (1200mm in ground)
2. Intermediate Posts – Treated Pine RL5 x 2.1m (900mm in ground)
3. Maximum spacing between posts on a straight run: 5m
4. Maximum straight run between “boxed” assemblies: 200m
5. Posts to be spaced evenly over intermediate distances, 3 – 5m between posts
6. End assemblies (boxed corners) to comprise of 3 treated pine strainers RL6 x 2.4m with 2 rails of RL5 x 2.4m, tensioned with a diagonal support of 3.15mm High Tensile wire strained up with Gripples.
7. Fence of 7/90/30 Ringlock, or Southern Wire equivalent, available in 200m rolls. Top wire of Ringlock to be fastened using a Ringrip fastening system to a high tensile 2.5mm wire strung between the posts 900mm above the ground. Wire and Ringlock to be stapled to posts. This system facilitates easier repairs to vandalised fences.
8. Where required to exclude wind-blown rubbish and sand drift, a continuous shade cloth apron is to be attached to the top and bottom of the Ringlock using Ringrip fasteners.
9. Where required for fauna management purposes, Ringlock will be replaced with 900mm height black PVC coated cyclone chain wire mesh - 50mm diamond x 2.5mm hot dip galvanised wire extending to the ground, to be fastened using a Ringrip fastening system to black PVC coated high tensile 2.5mm wire strung between the posts 900mm, 5000mm and 100mm above the ground. In this case, maximum spacing between posts on a straight run will be 2.5m
10. A top wire is to be attached for visibility using White plastic coated Sighter wire with a 4mm wire core. The sighter wire is threaded through a drill hole in the posts.
11. Gates are 3.6m rural gates used for vehicle access.
12. Pedestrian and machinery access gates use a 1.8m width.
13. Pedestrian only gates are 900mm or a constructed “kissing” gate style.

The above specification has been adapted from the City of Gosnells ‘*Specification for Conservation Area Fencing*’ dated March 2018.