


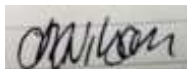
**Construction
Environmental
Management Plan
Meridian Business Park -
Neerabup Industrial
Area**

23 June 2020

Quality Information

Document	Construction Environmental Management Plan
Ref	HPE Trim 20/799973[v2]
Date	23 June 2020
Prepared by	Tenaha Wilson
Reviewed by	Claire Johnson

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	23-Jul-2018	Draft revision		
B	03-Aug-2018	Draft for Internal Review	Linda Kirchner Associate Director Environment AECOM	
C	07-Aug-2018	Draft for Client Comment	Linda Kirchner Associate Director Environment AECOM	
D	08-Sep-2018	Draft for Internal Review	Linda Kirchner Associate Director Environment AECOM	
E	09-Sep-2018	Draft for Client Review	Linda Kirchner Associate Director Environment AECOM	
0	26-Sep-2018	Final	Linda Kirchner Associate Director Environment AECOM	
1	02-Oct-2018	Final	Linda Kirchner Associate Director Environment AECOM	
2	28-Feb-2020	Draft for DAWE Review	Tenaha Wilson Natural Area Assets Officer, City of Wanneroo	
3	23-Jun-2020	Final	Tenaha Wilson Natural Area Assets Officer, City of Wanneroo	

DECLARATION OF ACCURACY

I declare that:

1. To the best of my knowledge, all the information contained in, or accompanying this Construction Environmental Management Plan Revision 3 – 23-Jun-2020 is complete, current and correct.
2. I am duly authorised to sign this declaration on behalf of the approval holder.
3. I am aware that:
 - a. Section 490 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence for an approval holder to provide information in response to an approval condition where the person is reckless as to whether the information is false or misleading.
 - b. Section 491 of the EPBC Act makes it an offence for a person to provide information or documents to specified persons who are known by the person to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth) where the person knows the information or document is false or misleading.
 - c. The above offences are punishable on conviction by imprisonment, a fine or both.

Signed



Full name (please print)

Benny Chang (Manager Asset Planning)

Organisation (please print)

City of Wanneroo

Date 24/06/2020

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1.0 Introduction

1.1 Background

The City of Wanneroo (the City) is planning to conduct resource extraction at Lot 9003 Mather Drive and industrial land development at Lot 9100 (previously Lot 9000), Lot 9003 Mather Drive and part Lot 600 Wattle Avenue in Neerabup, Western Australia (referred to as the site, Figure 1). The site is part of the Meridian Business Park which is located within the larger Neerabup Industrial Area (NIA) (Figure 2).

The development of the site will involve vegetation clearing and resource extraction followed by the gradual creation of industrial lots, construction of roads and drainage infrastructure, and installation of services.

The Meridian Business Park Industrial Development, Neerabup, WA was assessed and approved under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (EPBC 2007/3479). The approval has a number of conditions relating to the implementation of the action, including the requirement to develop and implement a Construction Environmental Management Plan (CEMP) to the satisfaction of the Commonwealth Minister for the Environment. This approval allows for the clearing of up to 130.7 ha of foraging habitat for the Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) within the 159 ha of native vegetation to be cleared for the development. The balance of the 159 ha does not contain foraging habitat for the Carnaby's Black Cockatoo due to degraded vegetation condition or an absence of preferred species.

Three variations to conditions have been approved for EPBC 2007/3479:

- Variation 1 June 2014. Amend wording of proposed action to:
 - *To clear native vegetation, undertake resource extraction and industrial land development on Lot 9000 Flynn Drive, Lots 41 and 9003 Mather Drive and Part Lot 600 Wattle Avenue at Neerabup, Western Australia.*
- Variation 2 June 2016. Changes to Condition 3 and 4 to remove references to Pinjar tipsite.
- Variation 3 November 2016. Replace Schedule 1 and Schedule 2 to amend boundaries of approval area.
- Variation 4 22 June 2019. Amended maps, updated references to maps in Condition 1 & 3; and updated definitions.

A native vegetation clearing permit (NVCP) has been granted by the Department of Water and Environment Regulation (DWER), issued for the period 15 August 2015 – 15 August 2045 (CPS 6359/3). Condition 3 of CPS 6359/3 allows for the clearing of up to 156.156 ha of native vegetation.

1.2 Site Description

The site covers approximately 159 ha within the Neerabup Industrial Area. The site is divided into two areas, a northern and a southern area, separated by Mather Drive and Pederick Road (Figure 2). Both areas contain native vegetation, with the northern area of the site being more degraded than the southern area.

A portion of the City's land north of Flynn Drive, comprising 50 ha, was transferred to the Crown in 2017 for the purpose of conservation in accordance with the conditions in EPBC 2007/3479. This area is gazetted as Mather Reserve and is to be managed in accordance with the Conservation Area Management Plan (CAMP).

The site is bounded by Barbagallo Raceway to the north, an existing material extraction area and industrial park being part of the Meridian Business Park owned by LandCorp to the west, Mather Reserve to the south and native vegetation and agriculture to the east.

1.3 Description of Action

The Meridian Business Park will be developed for an industrial area in stages over the next 20 –30 years. The proposed development of the site also allows for resource extraction where raw materials occur within the site. Vegetation clearing, earthworks and resource extraction (where applicable) will be conducted prior to each stage being developed. Ultimately, the entire Meridian Business Park will be developed for industrial and commercial use. The extraction operations will be carried out by a suitably qualified earthworks and quarrying contractor.

The clearing of vegetation will be staged over the duration of the industrial development and potential resource extraction. Sufficient area will be cleared in each stage to accommodate earthworks and where applicable any materials extraction activities. Additional clearing may be required at the completion of all material extraction activities and earthworks to accommodate the development of the industrial development.

Earthworks will be undertaken following vegetation clearing and any raw material extraction conducted at each stage. This will involve reconfiguration of the residual soil to create the desired landforms, satisfying the final surface contours as defined in the NIA Agreed Structure Plan 17, as amended. Earthworks will also be required for the construction of infrastructure and services, including roads with batters to be constructed along the edges of the retained vegetation. The review of the NIA Agreed Structure Plan 17 as amended is currently undergoing review and the current agreed contour levels may be subject to change. Amendments to the structure plan will continue to occur as development in the area continues.

1.4 Purpose of Document

The objective of this document is to develop a Construction Environmental Management Plan (CEMP) that meets the requirements of Condition 2 of EPBC 2007/3479 for each stage of the development. Condition 2 states:

To mitigate impacts to Carnaby's Black Cockatoos, prior to the commencement of the action, the person taking the action must prepare and submit a Construction Environmental Management Plan (CEMP) to the Minister for approval. The CEMP must be submitted at least 3 months prior to the commencement of the action.

The CEMP must include, but is not limited to:

- a. Avoidance and mitigation measures to prevent impacts to black cockatoos following the commencement of the action.
- b. Measures to physically delineate areas that will be within the Conservation Area.
- c. Management measures to control site access, weeds, *Phytophthora* dieback, erosion and dust.
- d. Details of monitoring, reporting and contingency measures if performance measures are not met. e. Timeframes for the implementation of the above measures.
- f. Descriptions of the roles and responsibilities of personnel associated with implementing each of the above measures.

If the Minister approves the CEMP the approved CEMP must be implemented.

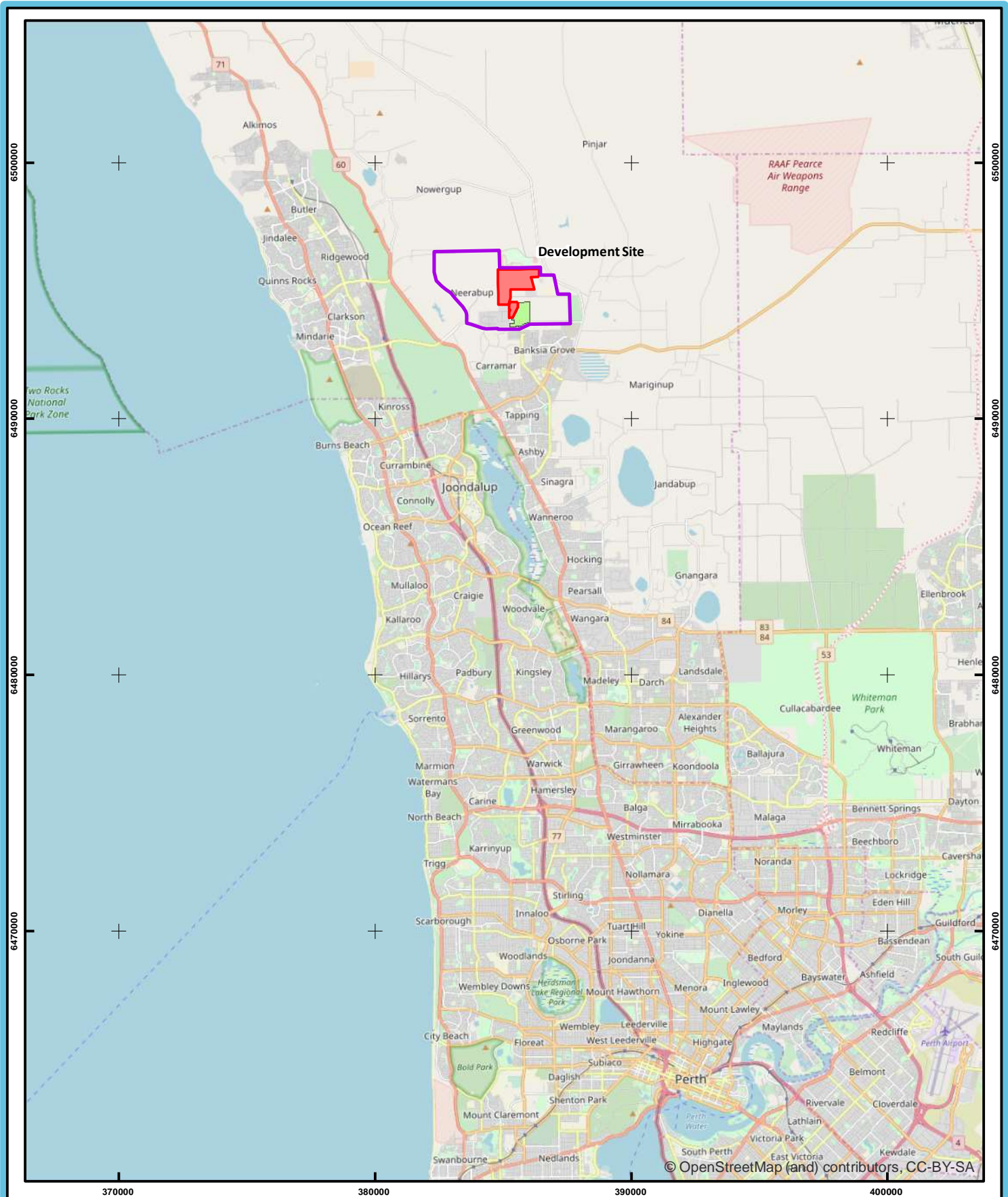
Note – this CEMP is specifically designed to address Condition 2 of EPBC 2007/3479. Any contractors working within the site will be required to ensure that their environmental management plans and procedures meet the obligations of this CEMP and any other regulatory requirements including general environmental management outside the requirements of Condition 2.

1.5 Amendments to the CEMP

Since the original CEMP was approved on 25 July 2016, a number of changes have been made to the document to bring it up to date with current practice and information. These changes are presented in Table 1.

Table 1 Updates to the CEMP since approval

Topic	Description	Reference
General	Update to reflect regulatory department name changes, and minor administrative updates.	All sections
Property boundaries	Update to reflect approved changes to property boundaries as well as the change in land ownership and the gazetted name for Mather Reserve.	All sections
Responsibilities	Revision of responsibilities to simplify roles and align better with typical contractual structure	Section 3.1
Description of Factor	Updated sections to incorporate recent technical site surveys	Section 4.0
Phytophthora management	Revision of management measures to reflect updated phytophthora dieback mapping.	Section 4.3
Carnaby's cockatoo management	Amendment to Carnaby's Black Cockatoo management to remove requirement for salvage of hollows, following results of Black Cockatoo Habitat Survey.	Section 4.2
Delineation of Conservation Area	Land dealings to set aside the 50 ha conservation area as required by the EPBC Act approval have been completed. As such the management chapter pertaining to this has been removed. Management of Mather Reserve boundaries will continue to be addressed in the Vegetation Clearing Management sub plan.	Section 4.1

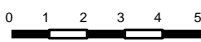


Regional Location

City of Wanneroo, Construction
Environmental Management
Plan

Figure 1

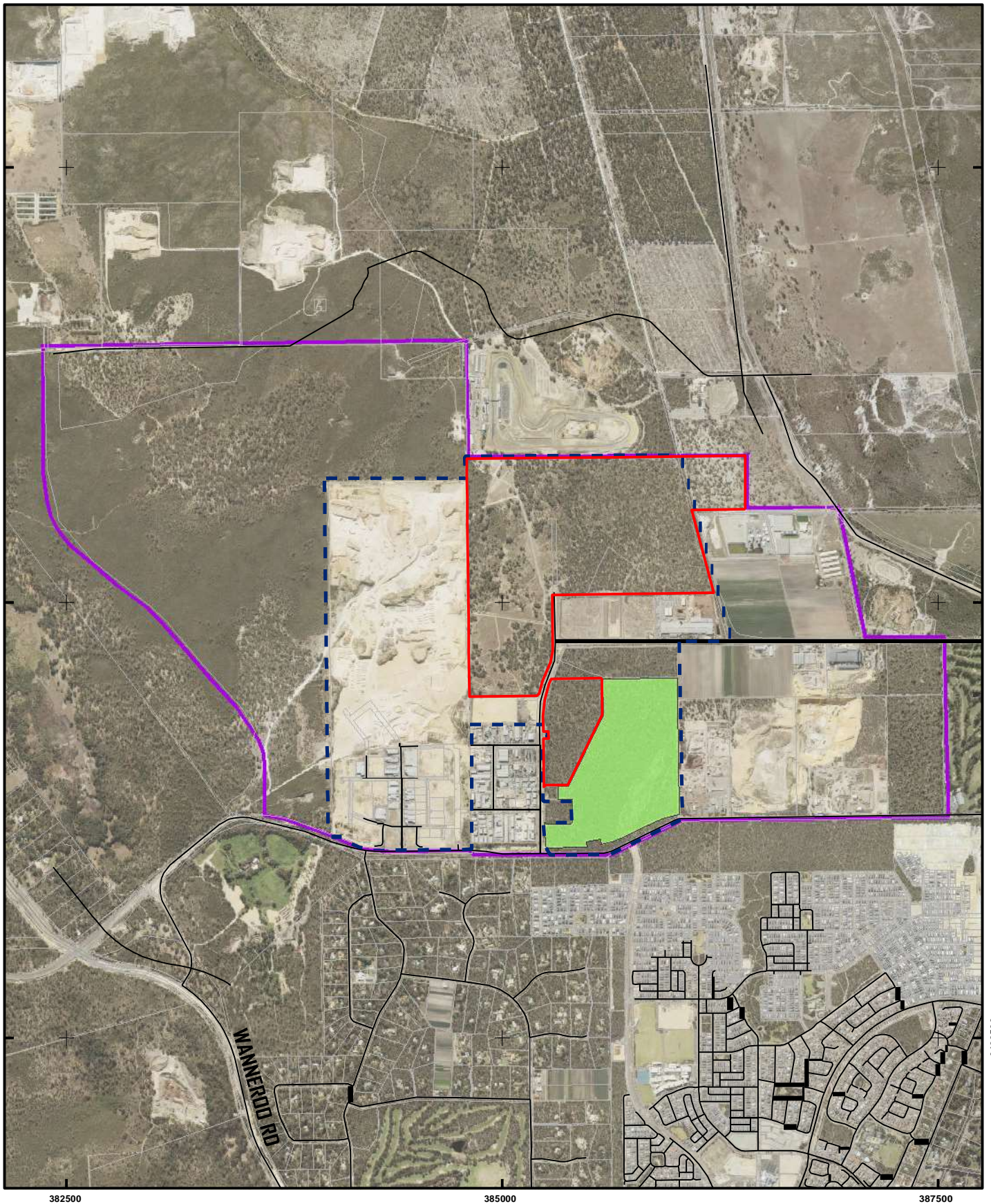
Coordinate System: GDA 1994 MGA Zone 50



Kilometres
1:200,000 (A4)

LEGEND

- Development Site
- Neerabup Industrial Area
- Mather Reserve Conservation Area

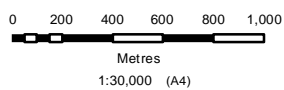


**Meridian Business Park
Layout Plan**

*City of Wanneroo, Construction
Environmental Management
Plan*

Figure 2

Coordinate System: GDA 1994 MGA Zone 50



LEGEND

-  Development Site
-  Meridian Business Park
-  Mather Reserve Conservation Area
-  Neerabup Industrial Area

2.0 Statutory and Policy Framework

The Meridian Business Park Industrial Development was referred to the Commonwealth Department of Agriculture, Water and Environment (DAWE) under the EPBC Act and the State Environmental Protection Authority (EPA) under the *Environmental Protection Act 1986*. The proposal was assessed and approved under the EPBC Act. The EPA determined that the proposal did not warrant assessment under Part IV of the EP Act and set a level of assessment as “Not Assessed”. A clearing permit application was submitted by the City in accordance with the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* under Part V of the EP Act. The NVCP has been granted by DWER for the period 15 August 2015 – 15 August 2045 (CPS 6359/3).

Relevant Commonwealth and State legislation, regulations, statutory requirements, guidelines, Australian Standards and codes of practices will be adhered to and complied with during the construction. However, this CEMP specifically addresses the EPBC Act approval for the action.

Only those acts, regulations and guidelines applicable to this CEMP are listed in Table 2. The requirements of these have been considered in the development of the Environmental Procedures detailed in this CEMP. All personnel and contractors involved in construction activities will be made aware of, and required to comply with the legislation applicable to their activities.

Table 2 Applicable Legislation, Policies and Guidelines

Legislation	Relevance
Commonwealth	
<i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)	This is the key piece of Commonwealth environmental legislation. This Act forms the national framework for environmental protection with a focus on protecting matters of National Environmental Significance. The EPBC Act is administered by DAWE.
State (WA)	
<i>Environmental Protection Act 1986</i> (EP Act)	The EP Act is the overarching environmental legislation in Western Australia that deals with the protection of the environment and environmental offences. The Act is administered and enforced by the Western Australian Department of Water and Environment Regulation (DWER).
<i>Biosecurity and Agriculture Management Act 2007</i> (BAM Act)	The Act deals with the prevention of serious animal and plant pests and diseases from entering the State and becoming established, and minimisation of the spread and impact of any that are already present within the State.
<i>Wildlife Conservation Act 1950</i> (WC Act)	An Act to provide for the conservation and protection of wildlife. The Act designates the regulations surrounding the collection and taking of flora and fauna, and administers protection of flora and fauna throughout the State, and the special protection of flora and fauna as declared by notice published in the Government Gazette.
Policies and guidelines	
EPBC Act referral guidelines for three threatened black cockatoo species (Australian Government, 2012a)	Guidelines on significant impacts on black cockatoos
EPBC Act environmental offsets policy (Australian Government, 2012b)	Australian Government’s environmental offset policy, October 2012. Relates to the implementation and management of offsets under the EPBC Act.
A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities (DEC, 2011)	Guidance on the development of dust management plans for development sites

3.0 Implementation of the CEMP

3.1 Roles and Responsibilities

Development of the site will be conducted in accordance with this CEMP as a requirement of contractual arrangements within all tenders associated with each stage of the project.

It is essential that all personnel associated with the project comply with the requirements of all applicable environmental legislation, regulations, codes of practice and standards. The key roles relevant to the implementation of the CEMP are presented in Table 3.

Table 3 Environmental management roles

Position	Appointed by	Description of Role
Project Manager (PM)	The City	This role is responsible for the long term implementation of the development of the Meridian Business Park landholdings held by The City.
Environmental Manager	The City	This role is responsible for the environmental compliance of individual stages of development within the site and assisting with appropriate environmental management of the site.
Construction Contractor (CC)	PM	Appointed by the PM as part of a tender process. The CC includes all contractors its nominated sub-contractors. The CC is responsible for ensuring that the environmental and other contractual obligations contained in the tender Contract between the City and the CC are met.
Environmental Management Representative (EMR)	CC	This is a specific role required to be responsible for the implementation of the CEMP during the project, including for implementing the management and monitoring actions set out in this CEMP

The term “Construction Contractor” (CC) applies to any contractor or contractors working within the site on behalf of the City. This includes – but is not limited to – the earthworks and quarrying contractors, specialist clearing contractors and subdivision developer contractors. The appointed CC will be obliged to meet environmental requirements through contractual arrangements and appoint an Environmental Management Representative (EMR) to ensure this obligation is met.

Table 4 outlines the responsibilities of each role in terms of environmental management during the project.

Responsibilities for the implementation of the project are given in detail under each of the Management Sub-Plans in Section 4.0 of the CEMP.

Table 4 Environmental management roles and responsibilities

Position	Responsibilities
Project Manager (PM) – City of Wanneroo	<ul style="list-style-type: none"> · Ensure compliance of all parties with this CEMP and EPBC 2007/3479 through contractual arrangements in tender documentation.
Environmental Manager (EM)– City of Wanneroo	<ul style="list-style-type: none"> · Ensure that CC understands their obligations and responsibilities under applicable environmental legislation and this CEMP · Obtain all other relevant regulatory permits and approvals required outside this CEMP · Monitor and review site environmental practices and works regularly and ensure that corrective measures are immediately taken if required · Review environmental documentation received from the CC and environmental consultants · Endorse environmental documentation prior to approval · Review and conduct desktop environmental assessments of new risks identified for the project · Review and approve site plans and work method statements prepared by the CC to check that they comply with this CEMP · Conduct site environmental compliance audits to check controls developed in the CEMP · Check and update the mitigation activities for each risk in the database · Ensure that the mitigation activities identified in the database are being performed · Provide updates of the CEMP to the contactors · Ensure relevant regulatory permits & approvals are in place before work commences on the site · Liaise with Commonwealth and State agencies with regard to environmental management of the site · Manage the environmental audit process for the PM · Obtain and collate evidence from the EMR for the compliance report under EPBC 2007/3479 · Submission of annual compliance report to DAWE.
Construction Contractor (CC)	<ul style="list-style-type: none"> · Incorporate this CEMP into the contractor environmental management plans, project-specific work procedures and construction activities · Ensure induction / briefings are provided to all personnel and contractors · Work jointly with the EM to deal with any non-conformances · Ensure remediation and preventative actions are undertaken to meet environmental targets · Support a performance review of the CEMP · Ensure suppliers and contractors on site comply with this CEMP · Halt construction activities in the event of substandard environmental performance or in the presence of unacceptable environmental risks · Report monthly environmental status of project to PM

Position	Responsibilities
Environmental Management Representative (EMR)	<ul style="list-style-type: none"> - Be present on site during high risk construction activities, such as clearing of vegetation - Undertake daily and fortnightly site inspections and complete environmental checklists, as required by the CEMP - Ensure construction personnel comply with the CEMP - Instruct construction personnel in the management of environmental impacts related to their work and the environmental work methods identified as standard environmental practice in this CEMP that must be adhered to - Investigate and report on any identified environmental incidents within 24hrs to the EM and implement controls to eliminate or reduce the risk of recurrence - Ensure all construction activity environmental impacts are contained on site, and within areas identified to be impacted - Record environmental risks and incidents into a risk management database - Regularly monitor the construction activities to assess the risk to the environment and implement appropriate actions to control any identified risk - Ensure environmental incidents or dangerous occurrences are promptly reported, investigated and appropriate mitigation strategies are implemented to prevent any further damage or the possibility of a recurrence - Ensure project environmental documentation is held on the project file - Undertake environmental monitoring requirements as required by the CEMP, environmental approvals, licenses and permits. - Ensure that evidence for the PM's compliance report for EPBC 2007/3479 is collected by construction staff and provide to the EM on request.
Construction workers (this includes all personnel, sub-contractors and visitors to the site)	<ul style="list-style-type: none"> - Participate in awareness training as directed by CC - Comply with this CEMP - Ensure that work practices cause the least amount of environmental disruption to the site possible - Report any suspected or known environmental hazard or situation requiring attention - Report any environmental incidents - Report plant and equipment defects - Use well maintained equipment, wherever possible - Follow the instructions of CC and EMR.

3.2 Relevant Documentation

The key documentation relevant to this CEMP is listed in Table 5. Some of these documents have already been prepared, whilst others will be required to be prepared by the CC under the contractual arrangement with the City.

Table 5 Relevant Documentation, Registers and Reports

Reference / Title	Issued by	Details
EPBC 2007/3479	DAWE	EPBC Act approval for the Meridian Business Park
CPS 6359/3	DWER	NVCP has been granted for the clearing of up to 156.156 ha of native vegetation.
Conservation Area Management Plan (CAMP)	AECOM, 2018	Management plan for conservation areas required under EPBC 2007/3479
Environmental Incident Register	To be prepared by the CC	Record of all environmental incidents on site
Corrective Actions Register		Record of corrective actions required and tracking of their completion
Complaints Register		Record of all community complaints and their close out
Document Register		Record of key documents

3.3 Training and Competency

3.3.1 Site Environmental Induction and Training

Project personnel and visitors to the project site will receive from the CC suitable environmental training relevant to their role, to ensure they are aware of their responsibilities and are competent to carry out their work in an environmentally acceptable manner. This training will be implemented during a site induction to be held prior to site access. Records of induction attendees will be maintained for the duration of the project.

Project staff (including subcontractors) will be provided with the following environmental information:

- environmental policies
- information within the CEMP and related documents, including significant project aspects, impacts and controls
- environmental objectives and targets for the job site
- project regulatory requirements and consequent staff responsibilities.

Additionally, on-going instruction will be provided to site personnel during 'toolbox' meetings, where project issues are discussed. At least weekly the 'toolbox' meetings are to address environmental management and the requirements of this CEMP, even if no incidents have occurred. The toolbox meetings will review any environmental incidents that occurred during the preceding week and discuss the precautions the work group will take to prevent environmental incidents occurring.

3.4 Incident and Emergency Management

3.4.1 Incident Procedures

In the event of any incident, the first priority shall be the safety of all personnel, including site workers, visitors and the community in the immediate vicinity. Following this, all practical steps will be taken to minimise the risk of further environmental damage as soon as possible after the event through the implementation of appropriate incident management or contingency plan procedures.

Environmental incidents are any breach of the management procedures detailed in the CEMP or unplanned actions (or actions within an unplanned location) which are detrimental to the environment. Examples of environmental incidents may include:

- environmental pollution, spillages or contamination or damage
- unapproved impacts on flora and fauna (including unapproved clearing)
- unapproved emissions (dust, sediment, pollution) to land, air or water.

All environmental incidents must be immediately reported to the EMR and recorded using an Environmental Incident Report Form. All incidents are to be reported to the CC with 24 hours and will be investigated by the EMR with assistance from the CC as required. Incidents will be ranked in accordance with the CC's risk assessment classifications.

A signed investigation report for all incidents must be submitted to the EM and PM within 5 days of the incident occurrence. The details of the incident are to be recorded by the EMR in an Incident Register, along with corrective and preventative actions outlined in the investigation report. If the incident results in a severe impact on MNES or Mather Reserve, the PM is to provide the incident investigation report to the Commonwealth Department of the Environment within one week of being notified of the incident. Examples of a severe incident include impacts to a species or community listed as a MNES, for example a Carnaby's Black Cockatoo injury or mortality, or unapproved clearing of critical fauna habitat.

Information on environmental incidents will be communicated to contractors and personnel in the next weekly toolbox meeting following the occurrence of the incident. Additional toolbox meetings may be called to specifically address an environmental incident if considered required by the Superintendent or Construction Manager (e.g. major breach to procedures). Recent incident reports will be displayed on site notice boards.

3.4.2 Corrective/Preventative Actions

All corrective / preventive actions identified for incidents, complaints and non-conformance audit results are to be recorded in a Corrective Actions Register by the EMR. The register will be checked weekly by the EMR to ensure that corrective actions are completed.

- the register is to include the following details
- date & location of incident/complaint/non-conformance
- details of incident/complaint/non-conformance
- actions taken to control the incident/complaint/non-conformance and prevent future occurrence
- time and date by which the corrective action will be completed (unless ongoing)
- appropriate sign-off, indicating that the incident/complaint/non-conformance was investigated and followed up appropriately.

3.4.3 Emergency Response Plan

In the event of a serious emergency at the site, the following procedure will be followed:

1. Stop work
2. All personnel shall leave the work zone and return to the emergency assembly area
3. Await further instructions from the Construction Contractor and/or appointed representative.

Personnel will not return to the work area unless advised to do so by the Construction Contractor or an appointed representative. The Construction Contractor will notify the relevant service as to the details regarding any emergency.

Table 6 Emergency Contact Information

Name	Contact Number
Ambulance / Police / Fire Brigade	000
Department of Environment Regulation Pollution Response Services (24/7)	1300 784 782
Wildcare helpline	(08) 9474 9055
City of Wanneroo	(08) 9405 5000

Records will be kept of any incidents, accidents, hazardous situations, unusual events and unsafe health exposures and the corrective action taken. Emergency procedures and contact telephone numbers will be available on site at all times at a central location.

3.5 Progress Tracking and Reporting

3.5.1 Records

During regular progress meetings, environmental incidents and non-compliances will be discussed and reported on. The CC shall maintain records required by the CEMP and by project permits, approvals and licenses. Specifically, records to be maintained include (as appropriate):

- GPS data, dates and hectares of all vegetation clearing
- environmental incident reports (including weed infestations, dust, noise, spills etc.)
- environmental inspection reports
- toolbox meeting minutes
- records of equipment (including vehicle) wash down and maintenance
- records of environmental training and induction.

All documents held for the purpose of tracking will be recorded within a Document Register to be maintained by the EMR. The Document Register and associated documents will be in a format that is accessible to the City beyond the life of the project or the term of the contract.

3.5.2 Monitoring Environmental Checklists

The designated supervisors for construction activities are required to inspect the work site, laydown areas and project area boundary on a daily basis and take any corrective action immediately in order to maintain those areas in a safe acceptable condition and to ensure environmental compliance.

The responsibility for general environmental monitoring rests with all personnel engaged on the project. More specifically the EMR shall monitor each element of the construction process to ensure that appropriate environmental protection/procedures are in place.

The EMR shall conduct unannounced inspections at least monthly in different areas, as well as repeat daily inspections of activities with a moderate to high risk of resulting in an environmental incident. Fortnightly environmental checklists (Appendix A) will be completed by the EMR to ensure that implementation and assessment of compliance with the CEMP is being achieved. These checklists will be used to identify corrective actions.

Generally, monitoring requirements shall include:

- record of information to track performance
- inspect and monitor environmental controls on site via fortnightly environmental monitoring using environmental checklists
- assess the level of conformance with objectives and targets.

Detailed monitoring requirements are provided within each sub-plan of the CEMP.

3.5.3 Document Revision

The CEMP, once approved by the Commonwealth Minister for the Environment, may not be updated without approval from the Minister, or the Minister's delegate. However, there may be occasions when review and amendment of the CEMP will be required. These include:

- identification of opportunities for improvement
- recommendations arising from audits and monitoring
- change in operations or activities
- change in legislation.

This CEMP will be continually monitored during its implementation and revisions recommended at an annual formal review conducted by the City. Unless there is a significant issue that requires urgent attention, reviews and revisions of the CEMP should be limited to the annual formal management review.

Following the formal management review, any proposed updates to the CEMP will be reported by the City to the Minister for approval. The CC will be responsible for meeting the requirements of amended CEMP revisions.

3.5.4 Reporting

The CC will provide the EM with monthly reports on environmental compliance. These reports will summarise the environmental incidents that occurred during the month and provide any other relevant information relating to environmental issues. The EMR will check that environmental protection measures undertaken are appropriate and effective and will report these measures on a monthly basis. The monthly reports will include (but are not limited to) the following key items:

- status of relevant KPIs
- incident report numbers
- improvements made to address environmental matters.

The EM is responsible for annual reporting under condition 7 of EPBC 2007/3479 which is required within three months of every 12 month anniversary of the commencement of the action for each stage until the development is complete. This reporting is to include a report of compliance against all conditions of the approval including the implementation of management plans specified in the conditions.

The CC is to provide information for the completion of an annual compliance report against this CEMP to the PM at least one month prior to the due date of the report. This report will include:

- status of relevant KPIs
- incident report numbers
- improvements made to address environmental matters
- audit findings.

3.5.5 Complaint Reporting

The CC will maintain a register of complaints, which will include a record of any action taken with respect to the complaints. Complaints relating to environmental aspects are to be handled as incidents in terms of communication and investigation.

3.6 CEMP Auditing

In addition to regular monitoring as set out in this CEMP, comprehensive audits shall also be undertaken against the requirements of the CEMP. System deficiencies, adverse or potentially adverse environmental conditions arising from construction activities may be subject to the issue of Environmental Non-conformances or Corrective Action Requests. The project shall also comply with any auditing regime set by relevant external authorities or the City in its statutory capacity.

3.6.1 Scheduled Environmental Audits

Audits against this CEMP shall be conducted by the CC at the following times:

- prior to the commencement of clearing for any stage of the action
- at the completion of each stage of clearing
- annually during resource extraction activities.

A detailed audit report is to be developed following each audit. The audit report will identify:

- items within this CEMP that were audited
- a summary of conformances, non-conformances and opportunities for improvement
- recommended corrective actions.

Following each audit, copies of relevant corrective action requests and general recommendations will be supplied to contractor supervisors.

Corrective action requests will be actioned within the timeframe set. Follow up actions will be assessed by the EMR to verify implementation of approved corrective actions, recommendations and their effectiveness in preventing re occurrence.

The CC is responsible for ensuring that the items listed for attention are actioned. The EMR will act on behalf of the CC in the field.

Scheduled audits may also be carried out by relevant government agencies. The compliance audit/s from the preceding month shall be checked at the commencement of each monthly audit to ensure items marked for attention have been adequately attended to.

3.6.2 Unscheduled Environmental Audits

Unscheduled audits may be undertaken at the request of the City or the CC should a situation arise where environmental non-compliance indicates such a need (e.g. unauthorised clearing). Unscheduled audits may also be carried out by relevant government agencies.

4.0 Environmental Management

4.1 Vegetation Clearing Management

4.1.1 Description of Factor

Nine vegetation communities have been mapped within the site (Table 7). Most of these communities are exhibiting some level of degradation, except for EmBAf and EmBaBmA in the southern area. No threatened or priority flora have been recorded within the site (Ecological, 2013a).

The Development area contains extensive areas of native *Eucalyptus* and *Banksia* woodland of which 130.7 ha constitutes high quality foraging habitat for Carnaby's Black-Cockatoo (Ecological, 2013a).

Table 7 Vegetation communities mapped within the Meridian Business Park site (Ecological, 2013b)

Vegetation Code	Description	Carnaby's Foraging Value
CcBgBa	Open woodland of <i>Corymbia calophylla</i> , <i>Banksia grandis</i> and <i>Banksia attenuata</i> over a Low Open Shrubland of <i>Hibbertia hypericoides</i> over a Grassland of introduced species	High
EmBAf	Open Forest of <i>Eucalyptus marginata</i> and <i>Allocasuarina fraseriana</i> over Woodland of <i>Banksia attenuata</i> and <i>Banksia menziesii</i> over Shrubland of <i>Xanthorrhoea preissii</i> over Low Open Shrubland	High
EmBaBmA	Open Woodland to Low Woodland of <i>Eucalyptus marginata</i> , <i>Allocasuarina fraseriana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> over Low Open Shrubland of <i>Xanthorrhoea preissii</i> , <i>Stirlingia latifolia</i> and <i>Hibbertia hypericoides</i>	High
CcEmOF	<i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> open forest over <i>Hibbertia hypericoides</i> and <i>Hakea prostrata</i> low shrubland to open shrubland of introduced species	High
EmLW	<i>Eucalyptus marginata</i> Low Woodland with scattered <i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Allocasuarina fraseriana</i> over <i>Xanthorrhoea preissii</i> low to Open Shrubland	Moderate
EgOW	<i>Eucalyptus gomphocephala</i> Open Woodland over <i>Jacksonia furcellata</i> and <i>Acacia saligna</i> Tall Closed Scrub over <i>Macrozamia riedlei</i> and <i>Xanthorrhoea preissii</i> Open Shrubland	Moderate
EtNfLOW	<i>Eucalyptus todtiana</i> and <i>Nuytsia floribunda</i> low open woodland over <i>Hibbertia hypericoides</i> , <i>Eremaea pauciflora</i> and <i>Xanthorrhoea preissii</i> Low Open Shrubland over introduced grasses	Low
ErAfMpOW	<i>Eucalyptus rudis</i> , <i>Allocasuarina fraseriana</i> and <i>Melaleuca preissiana</i> Open Woodland with scattered <i>Banksia ilicifolia</i> and <i>Nuytsia floribunda</i> over <i>Jacksonia furcellata</i> Tall Open Shrubland over an Open Grassland of introduced species	Low
Cleared	Cleared	Low

4.1.2 Potential Impact

Impacts to MNES resulting from the project are approved under the EPBC Act approval EPBC 2007/3479, which allows for the clearing of up to 130.7 ha of Carnaby's Black-Cockatoo habitat within the site. Impacts to flora, vegetation and fauna protected at a WA State level are approved under the NVCP 6359/3 which has been issued by DWER for clearing of up to 156.156 ha of native vegetation within the site, which includes 130.7 ha of Carnaby's Black-Cockatoo habitat as per EPBC 2007/3479.

50 ha of the southern area of the site has been preserved as Mather Reserve and managed in accordance with the EPBC Act approved CAMP.

Clearing of the site for resource extraction and/or industrial development is likely to occur in a staged manner, depending on demand for resource materials.

4.1.3 Management, Monitoring and Mitigation Actions

Clearing of native vegetation within the site, including Carnaby's Black Cockatoo foraging habitat is to be conducted in accordance with the vegetation clearing sub-plan in Table 8. Topsoil management is to be conducted in accordance with the topsoil management sub-plan in Table 9.

In order to avoid over-clearing of vegetation, the boundaries of the site and the retained vegetation will be surveyed and clearly marked prior to the commencement of clearing. In line with the staged approach to development at the site, each stage of clearing will also be individually surveyed and clearly marked to identify clearing limits. An induction will be provided to all personnel that will be on-site, which outlines the environmental values of the site and re-iterates the importance of remaining within defined clearing areas.

An inspection of the site for the supply of suitable salvage material will also be undertaken by the CC with advice from the EM prior to the commencement of clearing. Where considered suitable and available, seeds and other materials including; habitat logs, mulched vegetation and topsoil (specifically topsoil that is from vegetation mapped as being in Very Good or better condition and dieback free) will be collected and stored for later use in landscaping and/or rehabilitation of areas external to the site. Seed collection and storage will be influenced by the staging of limestone and sand extraction, however, is likely to be undertaken in the first seed collection period (generally from September – February).

Table 8 Vegetation clearing sub-plan

Vegetation Clearing			
Key Standards / References			
<ul style="list-style-type: none"> - <i>Environment Protection and Biodiversity Conservation Act 2012</i> (EPBC Act) - <i>Environmental Protection Act 1986</i> (EP Act) - <i>Wildlife Conservation Act 1950</i> (WC Act) - Clearing Permit 			
Objectives			
<ul style="list-style-type: none"> - Clearing of native vegetation for resource extraction and industrial development will be staged and will not exceed 130.7 ha of Carnaby's Black-Cockatoo foraging habitat. 			
1. KPIs and Targets			
Ref	Details		
8.1.1	No damage to native vegetation outside approved disturbance boundary.		
8.1.2	No unauthorised clearing of native vegetation within the approved disturbance boundary.		
2. Management Actions			
Ref	Description	Responsibility	Timing
8.2.1	Demarcate approved clearing area using GPS coordinates and flagged star pickets.	CC	Prior to clearing
8.2.2	Delineate Mather Reserve prior to any clearing on site, regardless of whether the clearing stage abuts the Mather Reserve.	EM	Prior to clearing
8.2.3	Demarcate topsoil, weed and dieback management boundaries.	CC	Prior to clearing
8.2.4	Restrict access by personnel, vehicles and plant into vegetated areas adjacent to project boundary.	EMR	At all times
8.2.5	Ensure trees are felled into the construction zone, not into undisturbed vegetation.	EMR	During clearing
8.2.6	Retain logs for use as habitat landscaping and revegetation, where possible.	CC	During clearing
8.2.7	Stockpile all cleared vegetation separately and mulch for use either on-site (for stabilisation), as part of the CAMP or for other rehabilitation projects.	CC	During clearing
8.2.8	Ensure no new informal tracks arise and all vehicle and personnel movement is limited to the approved project boundary.	EMR	At all times

Vegetation Clearing				
8.2.9	Conduct seed collection of uncleared areas of the Development site, for use in rehabilitation and landscaping on site and off site. Where the vegetation condition is unfavourable or the species of seed is too difficult to collect from the development site, local provenance seed will be collected or an alternative source of the vegetation will be sourced.		EM	Annually
8.2.10	Report all incidents relating to the Vegetation Clearing Management Sub-plan to the CC and EM within 24 hours of incident.		EMR	Within 24 hours of incident
3. Monitoring				
Ref	Description and Location	Parameter	Responsibility	Frequency
8.3.1	Inspect clearing to ensure that only trees flagged are felled or damaged.	Habitat trees	EMR	Daily during clearing
8.3.2	Inspect project boundary to ensure flagging and temporary fencing is intact and no boundary breach has occurred.	Clearing boundary	EMR	Daily during clearing. Fortnightly during construction.
8.3.3	Inspect felled timber and identify as suitable for use in rehabilitation and revegetation works.	Rehabilitation timber	EMR	Fortnightly during clearing
Contingency and Corrective Actions				
Incident or Consequence	Corrective Action			Responsibility
Approved boundary is breached.	Report and investigate as an Incident.			EMR
	Report immediately to the EM.			EMR
	Halt activities on site until impacted area is reviewed by EM.			CC
	Re-establish the approved boundary with temporary fencing.			EMR
	Rehabilitate impacted area.			CC
	Hold additional toolbox meetings to address significance of habitat trees.			EMR

Table 9 Topsoil management sub-plan

Topsoil Management			
Key Standards / References			
<ul style="list-style-type: none"> · <i>Environment Protection and Biodiversity Conservation Act 2012 (EPBC Act)</i> · <i>Environmental Protection Act 1986 (EP Act)</i> · <i>Wildlife Conservation Act 1950 (WC Act)</i> · Clearing Permit 			
Objectives and Targets			
<ul style="list-style-type: none"> · Retain and reuse site won topsoil for rehabilitation on-site or at another rehabilitation site · Separate weedy topsoil from good quality (i.e. weed free) topsoil 			
1. KPIs			
Ref	Details		
9.1.1	Topsoil is mapped prior to clearing according to vegetation quality.		
9.1.2	Good quality topsoil is retained for use in revegetation off-site.		
9.1.3	Unsuitable topsoil (weed / dieback infested) is to be disposed of offsite to a licenced facility.		
2. Management Actions			
Ref	Description	Responsibility	Timing
9.2.1	Conduct topsoil mapping to identify weedy and dieback infested topsoil.	EM	Prior to clearing
9.2.2	Demarcate topsoil boundaries with flagging.	CC	Prior to clearing
9.2.3	Strip top 150 mm of soil and stockpile. Good, weedy and dieback infested topsoil is to be stockpiled separately.	CC	After clearing
9.2.4	Stabilise topsoil stockpiles in accordance with the Erosion and Dust sub-plan if topsoil is to be stockpiled for more than 7 days.	EMR	At all times
9.2.5	Where possible, directly transport topsoil to proposed rehabilitation site immediately following extraction.	CC	After clearing
9.2.6	Reuse topsoil within 12 months of extraction where possible.	EMR	During clearing
9.2.7	Dispose of weedy or dieback infested topsoil appropriately	EMR	After clearing

Topsoil Management				
3. Monitoring				
Ref	Description and Location	Parameter	Responsibility	Frequency
9.3.1	Monitor clearing to ensure that weed and dieback hygiene is maintained.	Weed and dieback hygiene	EMR	Daily during clearing
9.3.2	Inspect topsoil stockpiles for weed germination	Topsoil stockpiles	EMR	Fortnightly
Contingency and Corrective Actions				
Incident or Consequence	Corrective Action			Responsibility
Topsoil boundary is breached.	Report and investigate as an Incident.			EMR
	Report immediately to the EM.			EMR
	Designate all topsoil involved in boundary breach as the lowest class of topsoil (i.e. weedy or dieback infested).			EMR
	Re-establish the approved boundary with temporary fencing or flagging.			EMR
Weed germination occurs within topsoil stockpiles	Report and investigate as an Incident.			EMR
	Designate affected topsoil stockpile as the lowest class of topsoil (i.e. weedy or dieback infested).			EMR
	Conduct weed control measures over affected area and surrounds.			EMR
Failure in weed and dieback hygiene measures	Report and investigate as an Incident.			EMR
	Designate affected topsoil stockpile as the lowest class of topsoil (i.e. weedy or dieback infested).			EMR

4.2 Carnaby's Black-Cockatoo Management

4.2.1 Description of Factor

The site includes extensive areas of Carnaby's Black-Cockatoo habitat within its 159 ha. The *Eucalyptus* and *Banksia* vegetation communities contain known foraging habitat for Carnaby's Black-Cockatoo including: 0 ha of high value Carnaby's Black-Cockatoo foraging habitat; 86.7 ha of moderate value foraging habitat and 70.77 ha of low value foraging habitat (Table 10) (Ecoscape, 2020a).

Any *Eucalyptus* with a DBH of greater than 500 mm is considered a potential nesting tree for Carnaby's Black-Cockatoo (Australian Government, 2012b). There were more than 600 *Eucalyptus* trees recorded within the site with a diameter at breast height (DBH) of greater than 500 mm.

A targeted Black Cockatoo habitat assessment conducted in 2018 and 2020 determined that all hollows recorded within the site were not suitable for current use by Carnaby's Black-Cockatoo and would not be viable for salvage. The nearest known Carnaby's Black Cockatoo breeding population occurs near the Yanchep National Park, more than 16 km away, and it is unlikely that Carnaby's Black-Cockatoos would nest within the Development site (Terrestrial Ecosystems, 2018 and Ecoscape, 2020a).

The low percentage (3.06%) of suitable breeding trees (13 Class 3 trees out of the 425 trees that satisfied the Commonwealth guidelines) indicates that the six sites do not constitute high value as breeding habitat. This low number combined with few confirmed records of Black Cockatoo breeding events on the Swan Coastal Plain (Johnstone et al. 2011; Kabat et al. 2012) would possibly reduce the likelihood of Black Cockatoo breeding occurring within the survey area.

Table 10 Carnaby's Black-Cockatoo Foraging Habitat

Black Cockatoo Foraging Habitat	Area (ha)
High Value	0
Moderate Value	86.7
High and Moderate Cockatoo habitat in Development Area (approved for clearing under EPBC 2007/3479)	86.7
Low Value (not requiring EPBC Act approval)	70.77
Total vegetation	157.47

4.2.2 Potential Impact/Hazard

There are a number of potential impacts on Carnaby's Black-Cockatoo and other fauna including:

- loss of up to 130.7 ha of Carnaby's Black-Cockatoo foraging habitat
- mortality of birds during construction and clearing activities.

4.2.3 Management, Monitoring and Mitigation Actions

Management of Carnaby's Black-Cockatoo within the site is to be in accordance with the Carnaby's Black-Cockatoo management sub-plan (Table 11). The main aims of the Carnaby's Black-Cockatoo management sub-plan are to:

- ensure that the loss of Carnaby's Black-Cockatoo foraging habitat does not exceed 130.7 ha (as approved under EPBC 2007/3479).
- identify opportunities to retain Carnaby's Black-Cockatoo habitat within areas to be cleared
- prevent injury or disturbance to Carnaby's Black-Cockatoos utilising the site.

Table 11 Carnaby's Black-Cockatoo management sub-plan

Native Fauna			
Key Standards / References			
<ul style="list-style-type: none"> · <i>Environment Protection and Biodiversity Conservation Act 2012</i> (EPBC Act) · <i>Environmental Protection Act 1986</i> (EP Act) · <i>Wildlife Conservation Act 1950</i> (WC Act) · <i>EPBC Referral Guidelines for three threatened black cockatoo species</i> (Australian Government, 2012a) · Clearing Permit 			
Objectives			
<ul style="list-style-type: none"> · To prevent injury or disturbance of Carnaby's Black-Cockatoo during construction activities · To minimise the reduction of Carnaby's Black-Cockatoo habitat wherever possible 			
1. KPIs and Targets			
Ref	Details		
11.1.1	No harm or injury to Carnaby's Black-Cockatoo.		
11.1.2	No unapproved disturbance of Carnaby's Black-Cockatoo habitat.		
2. Management Actions			
Ref	Description	Responsibility	Timing
11.2.1	Ensure Mather Reserve is established prior to the commencement of on-site activities.	EM	Prior to clearing
11.2.2	Display contact information for Wildcare Hotline and fauna handler on the Health, Safety and Environment noticeboard.	EMR	At all times
11.2.3	Inspect site for presence of foraging Carnaby's Black-Cockatoo.	EMR	Daily during construction
11.2.4	A qualified fauna handler is to be on-call during all site activities.	CC	At all times
11.2.5	Prohibit pets or domesticated animals onsite.	EMR	At all times
11.2.6	Prohibit personnel feeding or interacting with fauna (native or feral).	EMR	At all times
11.2.7	No firearms are permitted on site.	EMR	At all times

Native Fauna				
11.2.8	Audit clearing area to ensure that the total extent of Carnaby's Black-Cockatoo habitat lost does not exceed 130.7 ha.		CC	Post-clearing
3. Monitoring				
Ref	Description and location	Parameter	Responsibility	Frequency
11.3.1	Visual inspection of site and boundaries	Presence of foraging Carnaby's Black-Cockatoo	EMR	At all times
11.3.2	Visual inspection of site and boundaries	Presence of injured or dead fauna.	EMR	Fortnightly
4. Contingency and Corrective Actions				
Incident or Consequence	Corrective Action			Responsibility
Carnaby's Black-Cockatoo foraging on vegetation within or adjacent to site during construction	Report as an incident.			EM
	Halt adjacent construction activities until birds move on of their own accord; or on advice of EM if activities are deemed to not be interrupting foraging activities.			EMR
Native fauna present onsite during construction.	Report as an incident (no investigation required).			EMR
	If animal is not at risk of being impacted (not in proximity to moving equipment or plant etc.) allow to move on in own time.			EMR
	If animal is at risk of being impacted, halt construction until fauna have moved on or are removed by a qualified fauna handler.			EMR
Injured fauna present onsite.	Report and investigate as an incident.			EMR
	If animal is at further risk, contact Wildcare or Department of Biodiversity, Conservation and Attractions (DBCA) for assistance with the injured animal.			EMR
Feral fauna present onsite.	Notify EM of sighting.			EMR

4.3 Weed and *Phytophthora* Management

4.3.1 Description of Factor

Whilst weeds, in particular grasses, were present in most vegetation communities, no Declared Pests under the *Biosecurity and Agricultural Management Act 2007* (BAM Act) were recorded within the Development Area (Ecological, 2012).

Phytophthora dieback is a soil borne pathogen that causes root rot in susceptible species of plants. Many species of plants that comprise Carnaby's Black-Cockatoo habitat are susceptible to *Phytophthora* dieback. Terratree (2017) conducted a survey for Dieback within Mather Reserve and the Development Area, identifying no indication of the *Phytophthora* species pathogen. Whilst all samples returned negative results for *Phytophthora*, it is important to exercise hygiene protocols to prevent spread from other areas or other diseases.

4.3.2 Potential Impacts

Movement of plant and machinery within and adjacent to bushland areas has the potential to introduce and/or spread weeds and diseases such as *Phytophthora* dieback. The impacts of weed invasion and spread may include:

- loss of biodiversity
- increased fire risk and changes to fire regime
- introduction of agricultural weeds to nearby agricultural areas.

Phytophthora dieback has the following potential impacts:

- loss of biodiversity
- destruction of Carnaby's Black-Cockatoo habitat.

4.3.3 Management, Monitoring and Contingency Actions

Weeds and *Phytophthora* dieback will be managed by implementing the Hygiene Management Plan (HMP) (Table 12). The HMP shall be implemented until the completion of all clearing of native vegetation on the site.

Table 12 Hygiene management plan to control weeds and *Phytophthora* dieback.

Weeds and Dieback			
Key Standards / References			
<ul style="list-style-type: none"> - <i>Environment Protection and Biodiversity Conservation Act 2012</i> (EPBC Act) - <i>Environmental Protection Act 1986</i> (EP Act) - <i>Wildlife Conservation Act 1950</i> (WC Act) - <i>Biosecurity and Agriculture Management Act 2007</i> (BAM Act) - Weeds in Australia (DotE 2012) - Environmental Weed Strategy for WA (DEC 1999) - Environmental Weed Census and Prioritisation for the Swan NRM Region (Bettink & Keighery 2008). 			
Objectives			
<p>As a high level management target, the construction within the Development Area will aim:</p> <ul style="list-style-type: none"> - To prevent the spread of weeds from the site to new locations. - To prevent the introduction of new weeds into Mather Reserve. - To control, with the aim to eradicate, any Declared Pests and High to Very High priority weeds within the site. - To prevent the introduction of <i>Phytophthora</i> dieback to the site or Mather Reserve. 			
1. KPIs and Targets			
Ref	Details		
12.1.1	No introduction of new weed species into Mather Reserve.		
12.1.2	Eradicate any Declared Pests and High to Very High priority weeds found within the site.		
12.1.3	No evidence of <i>Phytophthora</i> dieback being introduced to Mather Reserve within 5 years of construction.		
2. Management Actions			
Ref	Description	Responsibility	Timing
12.2.1	Conduct baseline surveys of the site to determine the current level of weed and <i>Phytophthora</i> dieback infestation.	EM	Prior to clearing
12.2.2	Conduct weed control for target species on a seasonal basis as per optimal control for each target species.	EM	Seasonal as per optimal control for each target species for three years

12.2.3	Conduct follow up weed and <i>Phytophthora</i> dieback infestation surveys of Mather Reserve following the completion of all clearing activities. These surveys will be compared with the original survey.	EM	5 years from completion of clearing
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Weeds and Dieback				
12.2.4	Ensure all vehicles, equipment and plant undergo a complete quarantine inspection prior to access to site and are free of plant material and soil.		EMR	At all times
12.2.5	Ensure fill, soil and mulch used on site and in landscaping is uncontaminated, and free weeds and disease as specified in the Landfill Waste Classification and Waste Definitions (DOE 1996).		CC	At all times
12.2.6	Conduct herbicide spraying of weeds along the clearing line and the boundary of Mather Reserve, prior to weeds setting seed.		EMR	Seasonal, during construction
12.2.7	Control, with the aim to eradicate, any infestation of Declared Pests or High to Very High priority weeds.		EMR	As required
12.2.8	Transfer salvaged top soil, from good or better quality vegetation to be cleared, to degraded areas following the control of weed species present. Ensure that topsoil for re-use is taken from dieback free areas.		CC	Post-clearing
12.2.9	Locate topsoil and cleared vegetation stockpiles away from areas where runoff from rainfall may occur.		EMR	During clearing
12.2.10	Ensure any hydro-mulching used for dust suppression or stabilisation is certified weed free.		EMR	At all times
12.2.11	No movement of soil, equipment or personnel during wet conditions in areas suspected of dieback infestation		EMR	At all times
12.2.12	No movement of soil, equipment or personnel between dieback free and dieback infested areas without implementing proper hygiene standards		EMR	At all times
3. Monitoring				
Ref	Description and Location	Parameter	Responsibility	Frequency
12.3.1	Visual inspection of stockpiles, landscaping and weed spraying.	Weed infestations <ul style="list-style-type: none"> · No Declared Pests · No High to Very High priority weeds Overall weed cover estimate of <5% (1 or less on the Braun-Blanquet Scale).	EMR	Every 3 months

Weeds and Dieback				
12.3.2	Visual inspection with photographic records of vegetation within Mather Reserve adjacent to the site boundary.	Evidence of dieback infection: <ul style="list-style-type: none"> · Localised plant deaths within a distinct area. · Edge effects with a clear distinction between healthy and diseased vegetation. · Evidence of a dieback front with old deaths next to recently killed plants. 	EMR/EM	Monthly and then 6 monthly for up to 1 year after completion of construction.
Contingency and Corrective Actions				
Incident or Consequence		Corrective Action		Responsibility
Vehicle or equipment does not meet quarantine inspection requirement (i.e. not free of plant material or soil).		Report and investigate as an incident.		EMR
		Arrange for vehicle / equipment to be cleaned or washed down at an external facility.		CC
		Re-inspect vehicle / equipment.		EMR
New weed or Declared Pest or High to Very High priority infestation occurring onsite, on stockpiles or within landscaping areas.		Report and investigate as an incident.		EMR
		Arrange for weed control by a suitably trained contractor.		EMR
		Increase monitoring frequency to weekly until no weed occurrence for 1 month.		EMR
		Review hygiene measures and conduct additional toolbox meetings as required.		EMR
Evidence of potential dieback infection.		Report and investigate as an incident.		EMR
		Report immediately to EM.		EMR
		Inspect and recommend corrective action to CC.		EM
		Implement corrective actions (i.e. phosphite application) on advice from EM.		CC
		Review hygiene measures and conduct additional toolbox meetings as required.		EMR

4.4 Erosion and Dust Management

4.4.1 Description of Factor

Dust and erosion may become a factor during clearing and resource extraction operations. Dust is the generic term used to describe solid airborne particles generated and dispersed into the air by processes such as handling, extracting and stockpiling raw materials and wind-blown dust.

Erosion is a natural process, but it is accelerated by human activities. Erosion within the site will most likely be caused by wind, rainfall and surface runoff. Wind erosion is likely to be a more significant erosion process than rainfall or surface runoff.

Dust lift will occur when bare areas become exposed and soil is stockpiled without adequate coverage. Erosion is likely to be limited to wind erosion on bare areas and stockpiles, with some water erosion on stockpiles and man-made slopes as well.

4.4.2 Potential Impacts

Dust may have the following impacts:

- amenity and nuisance impacts on nearby industrial area / horticultural area
- loss of visibility on site
- deposition on adjacent agricultural crops
- adverse effects on human health
- dust deposition on adjacent Mather Reserve.

4.4.3 Management, Monitoring and Contingency Actions

Dust and erosion will be managed and monitored in accordance with the Dust and Erosion management sub-plan (Table 13).

Table 13 Dust and erosion management sub-plan

Erosion, Bank Stabilisation and Sedimentation			
Key Standards / References			
<i>Environmental Protection Act 1986 (EP Act)</i>			
A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities (DEC, 2011)			
Objectives			
<ul style="list-style-type: none"> - Minimise dust lift during construction and operation - All stockpiles are stabilised to prevent erosion and dust lift - No adverse impacts on adjacent stakeholders 			
1. KPIs and Targets			
Ref	Details		
13.1.1	No visible signs of erosion within or at the boundaries of the site.		
13.1.2	Address all complaints regarding dust and erosion.		
13.1.3	No irreparable collapse or destabilisation of the final site level from erosion.		
2. Management Actions			
Ref	Description	Responsibility	Timing
13.2.1	Develop and implement a site specific dust management plan (DMP) for all stages of the project in accordance with State guidelines (DEC 2011) and including the actions below.	CC	For provision with tender documentation
13.2.2	Comply with site specific DMP as required by contractual arrangement with the City.	CC	At all times
13.2.3	Where required, install wind fencing around the perimeter of the site, taking into consideration the use of natural wind fencing (remnant vegetation) as a natural wind barrier.	CC	At the completion of initial vegetation clearing
13.2.4	Earthwork slopes and batters that are subject to water run off or wind erosion are to be stabilised as soon as practicable after completion. Stabilisation must occur within seven days and may include hydro-mulch or another similar stabilisation technique as a temporary measure, but batters and slopes should ultimately be stabilised with mulch and vegetation or hard landscaping.	CC	As required

Erosion, Bank Stabilisation and Sedimentation				
13.2.5	Water trucks are to water down unsealed roads during operation to reduce dust lift.		CC	As required
13.2.6	Transport of dust-prone material will be via covered trucks or dampened prior to transport to prevent dust lift off during transport.		CC	During soil transport activities.
13.2.7	Water trucks are to be available at all times during operation to water the site on the observation of dust lift.		CC	As required
13.2.8	All complaints regarding dust and erosion are to be recorded within a Complaints Register immediately		EMR	As required
13.2.9	All complaints regarding dust and erosion are to be addressed within 24 hours if severe, or within one week for minor complaints.		EMR	As required
13.2.10	Implement a dust monitoring program that sets thresholds and measures dust deposition at the boundary of the site and Mather Reserve and neighbouring properties.		CC	Prior to the commencement of clearing operations and at all times during resource extraction activities.
3. Monitoring				
Ref	Description and Location	Parameter	Responsibility	Frequency
13.3.1	Visual monitoring of wind fences, stockpiles and earthwork batters.	Signs of erosion, bank slumping or the formation of rills and gullies. Deposition or damage on wind fences	EMR	Fortnightly
13.3.2	Implement dust monitoring plan.	Dust lift off and signs of dust deposition within Mather Reserve	EMR	Fortnightly
Contingency and Corrective Actions				
Incident or Consequence	Corrective Action			Responsibility
Observation of excessive dust lift on site	Report and investigate as an Incident.			EMR
	Halt work within proximity of the area until cause of dust is addressed.			CC
	Apply water as an immediate dust suppressant measure			EMR
	Increase dust mitigation measures (e.g. more water trucks).			CC
Complaint received.	Report and investigate as an Incident.			EMR
	Complaint must be addressed within 24 hours if severe, or within one week for minor complaints.			CC
	Review procedures and adjust if required.			EMR

Erosion, Bank Stabilisation and Sedimentation		
	Conduct additional toolbox meeting to highlight dust management issues.	CC
	Notify the PM if the complaint escalates to a serious concern that cannot be addressed by the CC.	CC
	If repeat incidents occur, implement boundary particulate monitoring in accordance with current DWER dust management guidelines.	CC
Signs of erosion on embankments or stockpiles	Report and investigate as an incident.	EMR
	Remediate erosion and stabilise.	EMR

4.5 Site Access

Site access will be controlled through the installation of fencing to prevent unauthorised entry to the site during clearing and material extraction activities. Access to Mather Reserve will also be controlled. The site access management sub-plan is located in Table 14.

Access will be controlled by:

- induction of site personnel
- fencing each stage of the site to delineate the site following clearing for each stage
- signs erected at entry points to inform site personnel and the public of access restrictions
- fencing and signage around Mather Reserve.

Table 14 Site access sub-plan

Site Access			
Key Standards / References			
<ul style="list-style-type: none"> Occupational Safety and Health Act 1984 			
Objectives			
<ul style="list-style-type: none"> To restrict access to the site for safety reasons. To prevent unauthorised access to Mather Reserve. 			
1. KPIs and Targets			
Ref	Details		
14.1.1	Restrict access to the site		
14.1.2	Prevent unauthorised access to Mather Reserve		
2. Management Actions			
Ref	Description	Responsibility	Timing
14.2.1	Erect signage to notify public and workers of restricted access for works.	CC	At least 2 weeks prior to construction
14.2.2	Erect fencing around the site perimeter with signage indicating restricted access.	CC	Prior to construction
14.2.3	Install secure fencing around stockpiles and storage areas.	CC	Prior to construction
14.2.4	Ensure the boundary to Mather Reserve is clearly marked and fenced.	EM	Prior to working on site
14.2.5	Ensure there is no access to Mather Reserve by unauthorised persons.	EMR	At all times
14.2.6	Discuss with City of Wanneroo the details of haulage routes for large equipment.	CC	Prior to construction
14.2.7	Ensure staff, vendors and related delivery drivers are aware of the designated routes for haulage and construction related traffic and the need to use them.	CC	At all times
14.2.8	Install signs indicating speed limits and advice on traffic hazards in visible areas.	CC	As required

Site Access				
14.2.9	Record all complaints relating to access matters in a Complaints Register.		EMR	At all times
3. Monitoring				
Ref	Description and Location	Parameter	Responsibility	Frequency
14.3.1	Visual inspection of site boundary	Evidence of site access by public	EMR	Minimum of Monthly
14.3.2	Investigation of complaints	Complaints Register	EMR	Minimum of Monthly
14.3.3	Visual inspection of Mather Reserve boundary	Evidence of access to Mather Reserve by public or workers	EMR	Minimum of Monthly
Contingency and Corrective Actions				
Incident or Consequence	Corrective Action			Responsibility
Unauthorised access by a member of the public to site.	Report and investigate as an incident.			EMR
	If required contact Police for assistance with escorting unauthorised person offsite.			EMR
	Review site perimeter fencing and signage.			EMR
	Arrange for additional security or perimeter measures as required.			EMR
Public complaint relating to access around site.	Report and investigate as an incident.			EMR
	Review existing controls and implement additional measures to reduce emissions or impacts to visual amenity.			EMR
	Provide incident report to City of Wanneroo for public information.			EM
	Facilitate community workshop if required.			EM

5.0 Environmental Risk Register

An Environmental Risk Register for the actions described in this CEMP has been developed by AECOM and is included below in Table 15. The risk rating matrix is included in Table 16.

This register will be updated by the EMR at the following times:

- prior to initial commencement of works
- prior to clearing for any subsequent stage
- at the completion of clearing operations for a particular stage
- as required following non-conformances or other changes to procedures
- annually

Table 15 Environmental Risk Register

Item	Construction Aspect	Environmental Hazard	Factor	Potential Environmental Impacts	Likelihood	Consequence	Inherent Risk	Assumptions / Comments	Planned Mitigation	Likelihood	Consequence	Residual Risk	
1	General (all construction activities)	Equipment and/or Plant usage	Vegetation clearing and management	Damage or accidental clearing of remnant vegetation	Likely	Major	Serious		Vegetation clearing sub-plan	Unlikely	Moderate	Low	
2			Carnaby's Black Cockatoo	CBC mortality or injury through vehicle strike	Possible	Major	Serious		CBC sub-plan	Unlikely	Major	Moderate	
3			Delineation of Mather Reserve	Damage to Mather Reserve	Possible	Major	Serious		CAMP and Mather Reserve sub-plan	Unlikely	Moderate	Low	
4			Weeds	Contaminated soil may spread weeds	Possible	Minor	Low		HMP	Unlikely	Minor	Very Low	
5			<i>Phytophthora</i> dieback	Contaminated soil may spread <i>Phytophthora</i> dieback	Possible	Major	Serious		HMP	Unlikely	Major	Moderate	
6			Erosion and Dust	Dust lift impacting stakeholders	Highly Likely	Moderate	Serious		Dust and erosion management sub-plan	Likely	Minor	Low	
7			Site Access	Unauthorised access during normal operations	Likely	Minor	Low		Site Access sub-plan	Unlikely	Minor	Very Low	
8		Laydown / Storage	Vegetation clearing and management	Dust impacts on remnant vegetation	Possible	Minor	Low		Dust and erosion management sub-	Unlikely	Minor	Very Low	
9			Delineation of Mather Reserve	Stockpiles impact on Mather Reserve	Possible	Moderate	Serious	Spread of weeds, dieback, smothering of vegetation	CAMP and Mather Reserve sub-plan	Unlikely	Moderate	Low	
10			Weed and <i>Phytophthora</i> dieback	Imported soil may contain and spread weeds and dieback	Possible	Major	Serious		HMP	Unlikely	Moderate	Low	
11				Stockpiles potential source of weed establishment	Likely	Moderate	Moderate		HMP	Possible	Moderate	Low	
12			Erosion and Dust	Stockpiles provide dust source	Likely	Moderate	Moderate		Dust and erosion management sub-plan	Possible	Minor	Low	
13				Stockpiles eroded through wind and rain	Likely	Minor	Low		Dust and erosion management sub-plan	Possible	Minor	Low	
14			Emissions (dust)	Erosion and Dust	Dust emissions resulting in a nuisance or health issue for local residents.	Likely	Moderate	Moderate		Dust and erosion management sub-plan	Possible	Moderate	Low
15	Site preparation	Vegetation Clearing	Vegetation clearing and management	Clearing outside approved boundary or unapproved removal of trees	Likely	Very Major	Critical		Vegetation clearing sub-plan	Possible	Moderate	Low	
16			Carnaby's Black Cockatoo	CBC injury or Mortality	CBC injury or Mortality	Possible	Very Major	Serious		CBC sub-plan	Unlikely	Very Major	Serious
17				Unapproved removal of critical fauna habitat	Possible	Very Major	Serious	Carnaby's Habitat	CBC sub-plan Vegetation clearing sub-plan	Unlikely	Very Major	Serious	

Item	Construction Aspect	Environmental Hazard	Factor	Potential Environmental Impacts	Likelihood	Consequence	Inherent Risk	Assumptions / Comments	Planned Mitigation	Likelihood	Consequence	Residual Risk
18			Delineation of Mather Reserve	Accidental clearing within Mather Reserve	Possible	Very Major	Serious		CAMP and Mather Reserve sub-plan Vegetation clearing sub-plan	Unlikely	Major	Moderate
19			Weed and <i>Phytophthora</i> dieback	Spread of weeds and dieback by plant and machinery	Likely	Very Major	Critical		HMP	Possible	Major	Serious
20			Erosion and Dust	Dust emissions during clearing impacting adjacent stakeholders	Likely	Moderate	Moderate		Dust and erosion management sub-plan	Possible	Moderate	Low
21			Site Access	Unauthorised site access	Likely	Minor	Low		Site access sub-plan	Unlikely	Minor	Very Low
22	Resource Extraction	Ground disturbance	Vegetation clearing and management	Accidental clearing or damage to remnant vegetation	Possible	Major	Serious		Vegetation clearing sub-plan	Unlikely	Moderate	Low
23			Carnaby's Black Cockatoo	CBC injury or Mortality	Possible	Very Major	Serious		CBC sub-plan	Unlikely	Very Major	Serious
24			Delineation of Mather Reserve	Clearing or disturbance of Mather Reserve	Possible	Very Major	Serious		CAMP and Mather Reserve sub-plan Vegetation clearing sub-plan	Unlikely	Major	Moderate
25			Weeds and <i>Phytophthora</i> dieback	Spread or introduction of dieback	Possible	Major	Serious	No dieback present Difficult for dieback to become established following clearing of vegetation	HMP	Unlikely	Major	Moderate
26				Spread or introduction of weeds	Likely	Moderate	Moderate	Weeds are likely to become established in disturbed areas	HMP	Possible	Moderate	Low
27			Erosion and Dust	Dust impacts on nearby stakeholders	Likely	Moderate	Moderate		Dust and erosion management sub-plan	Possible	Moderate	Low
28				Erosion on site	Highly Likely	Moderate	Serious		Dust and erosion management sub-plan	Possible	Minor	Low
29			Site Access	Unauthorised access	Likely	Minor	Low		Site access sub-plan	Unlikely	Minor	Very Low

Table 16 Risk rating matrix used in risk assessment

		CONSEQUENCE				
		Minor	Moderate	Major	Very Major	Extreme
LIKELIHOOD	Highly Likely	Low	Serious	Critical	Critical	Critical
	Likely	Low	Moderate	Serious	Critical	Critical
	Possible	Low	Low	Serious	Serious	Critical
	Unlikely	Very Low	Low	Moderate	Serious	Serious
	Highly Unlikely	Very Low	Very Low	Moderate	Moderate	Serious

6.0 References

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- Department of Environment and Conservation (2011) *A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities*. Viewed 23 September 2014, <http://www.dec.wa.gov.au/pollution-prevention/air-quality/publications.html?showall=&start=3>.
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- Ecological (2013a) *Meridian Business Park Industrial Development, Neerabup Western Australia (2007/3479). Preliminary Documentation – Additional information request*. Report by Ecological Australia for the City of Wanneroo.
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- Ecoscape (2020b) *Final Flora Survey Mary Street and Mather Reserve*, Report by Ecoscape Spring 2019 for the City of Wanneroo
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- Terratree (2017) *Phytophthora Dieback Assessment of Conservation and Development Areas*, prepared for the City of Wanneroo, Perth.
- Terrestrial Ecosystems (2018) *Black Cockatoo Habitat Survey Report - Neerabup Industrial Area and Offset Sites*, prepared for the City of Wanneroo, Perth.

Appendix A

Fortnightly CEMP Checklist

Example Inspection Checklist

Inspection Details			
Conducted by:		Signature:	
Witness (if applicable):		Signature:	
Date / Time:		Weather:	

Parameter	Inspected (✓)	Issue identified (details)	Incident (Y/N)
Dust and Erosion Management			
Wind fence intact, no signs of damage or wear. No sign of sand deposition along fenceline			
Site is free of pooling or ponding after rainfall.			
All stockpiles and batter slope are stabilised if left longer than 7 days.			
No signs of erosion in stockpiles or batters eg rills, gullies.			
Examine dust monitoring gauges.			
Biodiversity Management			
No unapproved clearing or breach of project boundary.			
No removal of flagged habitat trees.			
Fauna (alive, injured or dead) present onsite			
Stockpiles and landscaping are free from weed infestations.			
Examine any sprayed weed infestations to ensure application is effective			
Vegetation adjacent to site is free from visual evidence of dieback infection: <ul style="list-style-type: none"> - Localised plant deaths within a distinct area. - Edge effects with a clear distinction between healthy and diseased vegetation. - Evidence of a dieback front with old deaths next to recently killed plants. 			

Parameter	Inspected (✓)	Issue identified (details)	Incident (Y/N)
No unexpected fire hazards onsite or along site boundary.			
Chemical and fuel storage is intact and appropriately banded.			
Firefighting equipment is appropriately tagged, undamaged and accessible.			
Community Management			
Site boundary is intact with no access to site by public.			
No visible dust lift, detectable vibration, excessive noise or odour emissions.			
Plant operating onsite has up to date logbooks and is operating free of excessive noise or odour emissions.			

Inspection notes
Corrective actions implemented during inspection

Inspection Photos	
Plate 1	Location and Description
Plate 2	Location and Description
Plate 3	Location and Description