NO EARTHWORKS TO BE UNDERTAKEN IN THE ENVIROMENTAL PROTECTION AREA. EXTENT OF THE PROTECTION AREA TO BE CLEARLY MARKED / SURVEYED ON SITE PRIOR TO EARTHWORKS CONSTRUCTION COMMENCING.

TEMPORARY SWALE TO DIRECT FLOW INTO SEDIMENT BASIN

NO EARTHWORKS TO BE UNDERTAKEN IN THE ENVIROMENTAL PROTECTION AREA. EXTENT OF THE PROTECTION AREA TO BE CLEARLY MARKED / SURVEYED ON SITE PRIOR TO EARTHWORKS CONSTRUCTION COMMENCING.

PRECINCT 9

SANDY ROAD

SP

S ES08

R ES08

LEGEND

- PROPOSED SURFACE CONTOURS
- TOP/TOE OF BATTER
- TEMPORARY SWALE
- CUT (BORROW MATERIAL) APPROX. VOLUME REQUIRED: 500,000m3
- PRECINCT BOUNDARY

STATUS CONSTRUCTION CERTIFICATE FOR APPROVAL

REV	DESCRIPTION	DRAWN	DATE
A	ORIGINAL ISSUE	G.S.	11.12.13

DRAWING IS NOT TO BE SCALED

SCALE (AT ORIGINAL SHEET SIZE) SCALE 10 0 10 20 30 40 50 1:1000

ORIGINAL SHEET SIZE A1

CLIENT LEDA MANORSTEAD Pty Ltd

PROJECT COBAKI, TWEED HEADS WEST
CENTRAL OPEN SPACE
BULK EARTHWORKS
CONSTRUCTION CERTIFICATE
CIVIL ENGINEERING DRAWINGS

SEDGMAN YEATS
LEVEL 1, 193 FERRY ROAD SOUTHPORT QLD 4215 AUSTRALIA
T 07 5558 4200 F 07 5503 1672 info@yeats.com.au www.yeats.com.au

TITLE PRECINCT 9
BORROW AREA EARTHWORKS PLAN

TASK	BY	INITIAL	DATE
REVIEW	CS		11.12.13
DESIGN	CJE		11.12.13
DRAWN	GS		11.12.13

APPROVED RPEQ No 7817

DRAWING NUMBER YC0229-1E1-EW13 REVISION A

LEGEND

—— 5.0 ——	PROPOSED SURFACE CONTOURS
	TOP/TOE OF BATTER
→ → → —	TEMPORARY SWALE
	CUT (BORROW MATERIAL) APPROX. VOLUME REQUIRED: 100,000m3
— — —	PRECINCT BOUNDARY

BULK EARTHWORKS NOTES

1. ALL EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH T.S.C. STANDARD SPECIFICATIONS.
2. ALL EARTHWORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH AS3798-2007 UNDER LEVEL 1 SUPERVISION.
3. FREQUENCY OF FIELD DENSITY TESTS SHALL BE CARRIED OUT IN ACCORDANCE WITH TABLE 8.1 "TYPE 1" OF AS3798-2007, UNDER THE BASIS OF LEVEL 1 SAMPLING AND TESTING. RELATIVE COMPACTION REQUIRED FOR PLACED FILL MATERIAL IS 95% STD DENSITY RATIO.
4. ALL NEW WORKS TO MATCH NEATLY WITH EXISTING. THE CONTRACTOR SHALL CONFIRM LOCATION OF ALL EXISTING SERVICES AND PROTECT THESE SERVICES DURING CONSTRUCTION. DAMAGED SERVICES SHALL BE REPAIRED AT THE CONTRACTORS EXPENSE.
5. ALL OF THE SITE SHALL BE KEPT FREE DRAINING DURING ALL PHASES OF THE PROJECT.
6. MINIMUM TOPSOIL THICKNESS 100mm
7. UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT ALL FILL SHALL BE PLACED AT BETWEEN +2% AND -2% OF OPTIMUM MOISTURE CONTENT.

FOR EARTHWORKS SECTIONS REFER DRAWING YC0229-1E1-ES09

STATUS	CONSTRUCTION CERTIFICATE	FOR APPROVAL	
A	ORIGINAL ISSUE	G.S.	11.12.13
REV	DESCRIPTION	DRAWN	DATE

DRAWING IS NOT TO BE SCALED

SCALE (AT ORIGINAL SHEET SIZE) 1:1000 — ORIGINAL SHEET SIZE A1

CLIENT: LEDA MANORSTEAD Pty Ltd

LEDA

PROJECT: COBAKI, TWEED HEADS WEST
CENTRAL OPEN SPACE
BULK EARTHWORKS
CONSTRUCTION CERTIFICATE
CIVIL ENGINEERING DRAWINGS

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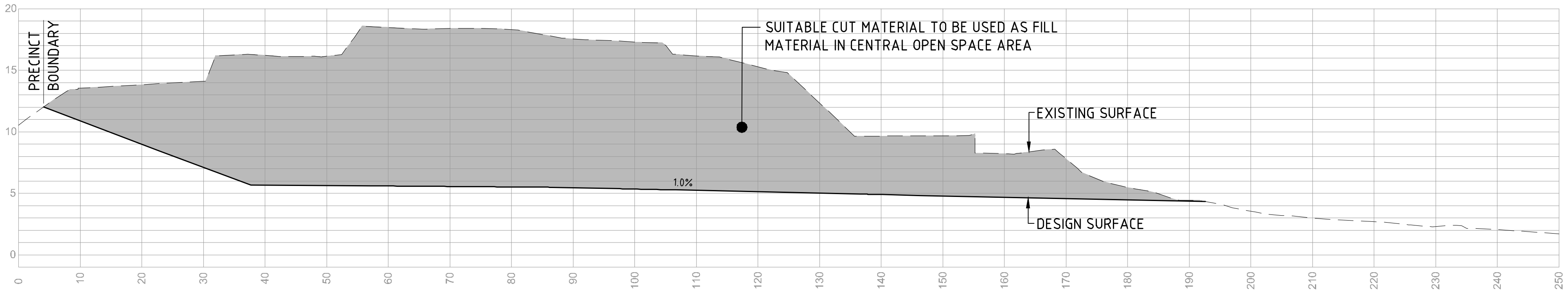
TITLE: PRECINCT 11
BORROW AREA EARTHWORKS PLAN

TASK	BY	INITIAL	DATE
REVIEW	CS		11.12.13
DESIGN	CJE		11.12.13
DRAWN	GS		11.12.13

APPROVED — RPEQ No 7817

DRAWING NUMBER: YC0229-1E1-EW14 — REVISION: A



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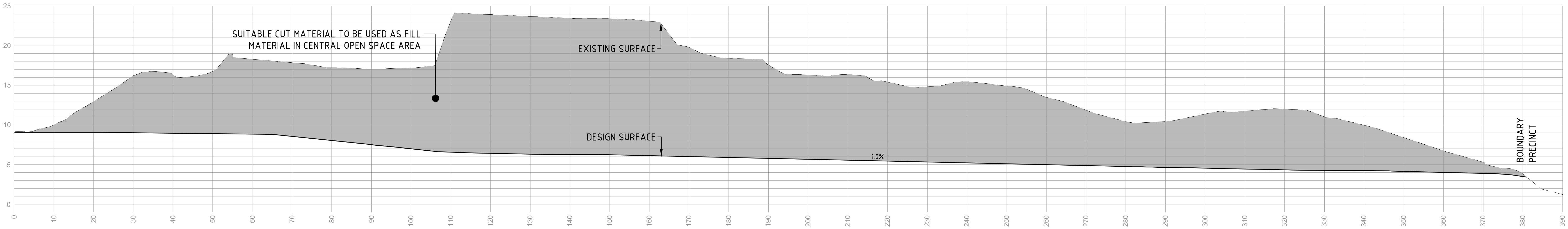
SCALE 1:250 v



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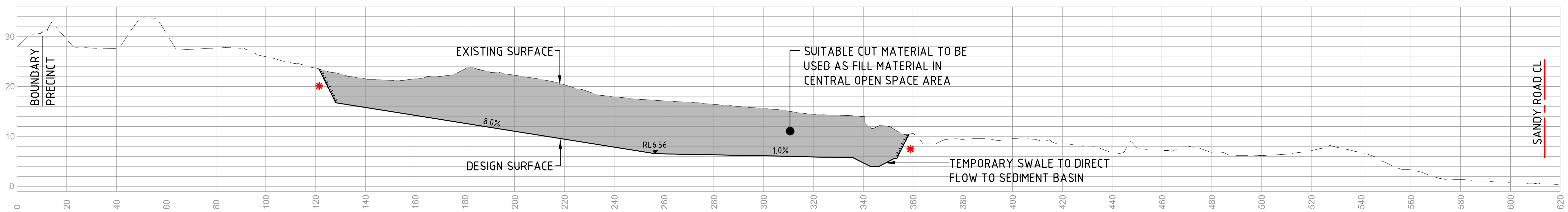

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NOTE

* CONTRACTOR TO APPLY A TEMPORARY 1 in 2 BATTER AT THIS LOCATION DURING BULK EARTHWORKS PHASE. LANDFORMING OF FUTURE EARTHWORKS IS TO BE UNDERTAKEN AS PART OF FUTURE WORKS OF PRECINCT 11 AND SHALL NOT BE INCLUDED IN THE BORROW AREAS FOR THE CENTRAL OPEN SPACE.

LEGEND

- FINAL DESIGN SURFACE
- EXISTING DESIGN SURFACE
- TEMPORARY 1 in 2 BATTER
- CUT (BORROW MATERIAL)

STATUS: CONSTRUCTION CERTIFICATE — FOR APPROVAL

REV	DESCRIPTION	DRAWN	DATE
A	ORIGINAL ISSUE	G.S.	11.12.13

DRAWING IS NOT TO BE SCALED

SCALE (AT ORIGINAL SHEET SIZE): AS SHOWN — ORIGINAL SHEET SIZE: A1

CLIENT: LEDA MANORSTEAD Pty Ltd

LEDA

PROJECT: COBAKI, TWEED HEADS WEST
CENTRAL OPEN SPACE
BULK EARTHWORKS
CONSTRUCTION CERTIFICATE
CIVIL ENGINEERING DRAWINGS

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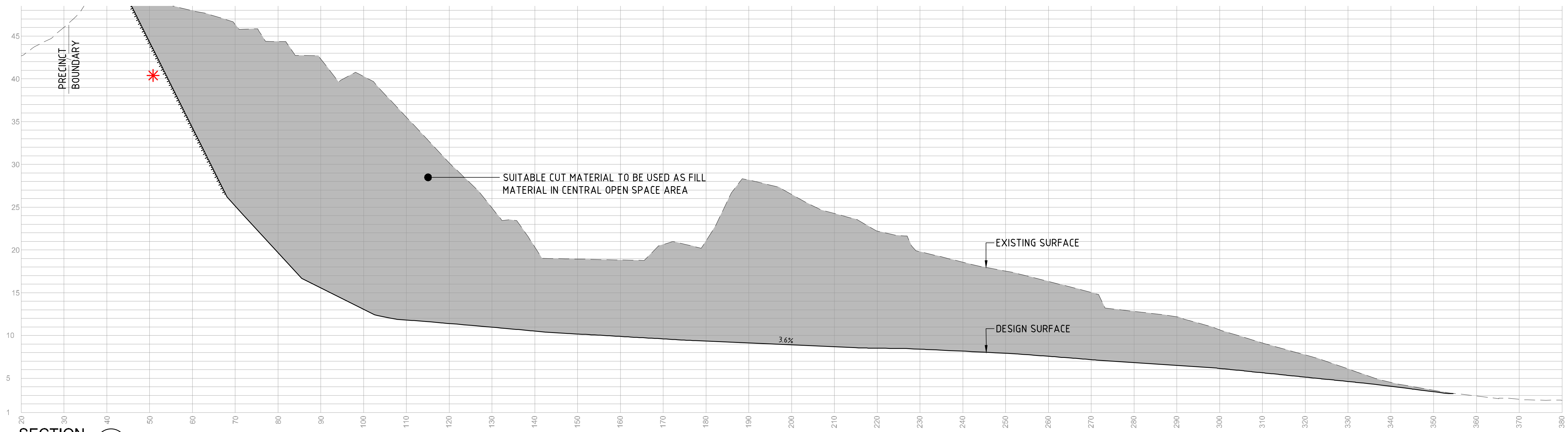
TITLE: PRECINCT 9
BORROW AREA EARTHWORKS SECTIONS

TASK	BY	INITIAL	DATE
REVIEW	CS		11.12.13
DESIGN	MB		11.12.13
DRAWN	GS		11.12.13

APPROVED — RPEQ No 7817

DRAWING NUMBER: YC0229-1E1-ES08 — REVISION: A



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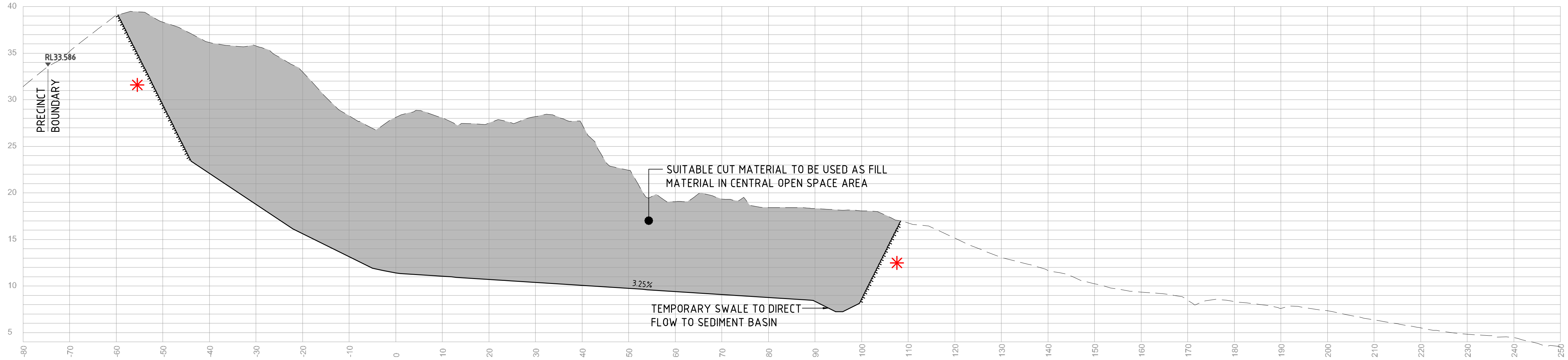

SECTION U (EC01)
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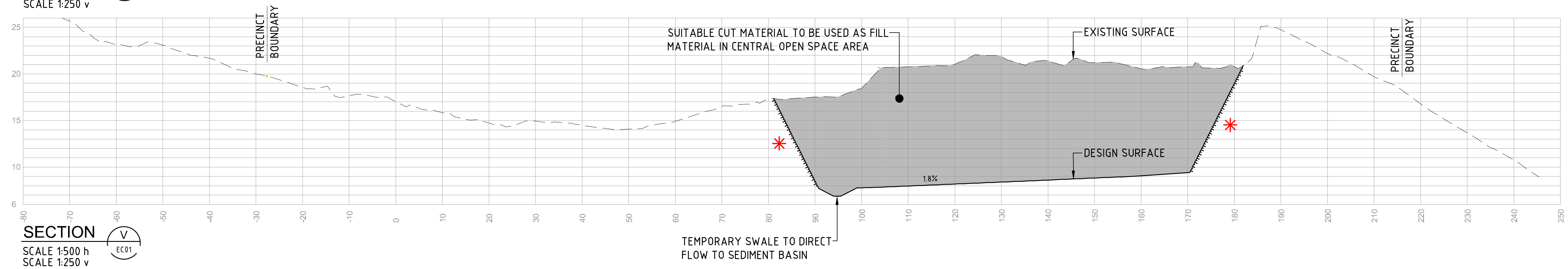

SECTION V (EC01)
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SCALE 1:250 v

NOTE

* CONTRACTOR TO APPLY A TEMPORARY 1 in 2 BATTER AT THIS LOCATION DURING BULK EARTHWORKS PHASE. LANDFORMING OF FUTURE EARTHWORKS IS TO BE UNDERTAKEN AS PART OF FUTURE WORKS OF PRECINCT 11 AND SHALL NOT BE INCLUDED IN THE BORROW AREAS FOR THE CENTRAL OPEN SPACE.

LEGEND

- FINAL DESIGN SURFACE
- EXISTING DESIGN SURFACE
- TEMPORARY 1 in 2 BATTER
- CUT (BORROW MATERIAL)

STATUS	CONSTRUCTION CERTIFICATE		FOR APPROVAL
A	ORIGINAL ISSUE	G.S.	11.12.13
REV	DESCRIPTION	DRAWN	DATE

DRAWING IS NOT TO BE SCALED

SCALE (AT ORIGINAL SHEET SIZE): AS SHOWN
ORIGINAL SHEET SIZE: A1

CLIENT
LEDA MANORSTEAD Pty Ltd
LEDA

PROJECT
COBAKI, TWEED HEADS WEST
CENTRAL OPEN SPACE
BULK EARTHWORKS
CONSTRUCTION CERTIFICATE
CIVIL ENGINEERING DRAWINGS

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TITLE
PRECINCT 11 BORROW AREA
EARTHWORKS SECTIONS

TASK	BY	INITIAL	DATE	APPROVED	RPEQ No 7817
REVIEW	CS		11.12.13	DRAWING NUMBER	REVISION
DESIGN	CJE		11.12.13		
DRAWN	GS		11.12.13	YC0229-1E1-ES09	A

APPENDIX B – EARTHWORKS FENCING PLAN

PRECINCT 11

PRECINCT 9

PIGGABEEN ROAD

LEGEND

- ENVIRONMENTAL PROTECTION AREA (NO-GO ZONE)
- PERMANENT FENCE
- TEMPORARY FENCE
- PROPERTY BOUNDARY
- CENTRAL OPEN SPACE
- VEHICLE GATE

A	Issued for Approval	08.06.16	AM/CH	
REVISION		DATE	DES/DFT	APP'D

LEDA

Principal
Leda Developments
Suite 14, Level 1, 46 Cavill Avenue
Surfers Paradise

Project Leader
S.Sandford
Designed
A. Marsden
Drawn
C. Haywood
Checked

Authorised

Date
June 2016

N

Scale @ A1

smec urban consulting group

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COBAKI ESTATE
OVERALL
Tweed Shire Council

Fencing Plan Precinct 9,11
Drawing No. 3310071E-044 (2) **Rev A**

Sheet No. 1 of 1

Subject to Approval
Not to be used for construction

APPENDIX C – NON-COMPLIANCE AND CORRECTIVE ACTION REGISTER

Non Conformance Number	Date	Location	Description	Works required	Allowance of action (days)	Photo log number	Date closed out	Closed out by (name and signature)
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:
								Name: Signature:

APPENDIX D – COMPLAINTS REGISTER

COMPLAINTS REGISTER

Complainants Name	Address	Contact Phone Number	Brief Description of Complaint	Resolved (Date)

APPENDIX E – ENVIRONMENTAL INCIDENT REGISTER

ENVIRONMENTAL INCIDENT REPORT

Date of Incident:	
Type of Incident:	
Names of Staff Interviewed:	
Incident Witnessed by:	
Description of Incident:	
Damage to plant and equipment:	
Method of Clean up?:	
Authorities/Community Informed?:	
Finding from Investigation:	
Recommended Correct Actions (tick):	
	Education or persons involved
	Improve Construction Methods
	Improve inspection/maintenance
	Change work method
	Equipment repair/replacement
Other:	
Follow Up Evaluation (date):	
General Comments:	
Signed: Project Environmental Officer	
Date:	

APPENDIX F – ENVIRONMENTAL TRAINING REGISTER

Name	Company	Position on Project	Site Induction	Training Details	CEMP Version

APPENDIX G – SITE INSPECTION CHECKLISTS

Project:	
Inspection Date:	**Area:**

PRE-CLEARING CHECKLIST

#	Control Measure	Yes	No	N/A	Comment/Corrective Action
1	Has the boundary of the clearing zone been fenced/delineated				
2	Has the ecologist marked the communities and or individuals of threatened plants?				
3	Has the seed and plant material collection been undertaken?				
4	Has the in situ significant plants been fenced?				
5	Have habitat trees been identified?				
6	Has weed mapping and eradication been completed?				
7	Have areas of weed infected topsoil been separated/removed?				
8	Has vegetation and topsoil to be salvaged been identified?				
9	Mulching and chipping plant established?				
10	Have clearing contractors been educated on the no-go/ environmental protection areas?				
11	Have heritage items been identified and protected?				
12	Have permits to remove saltmarsh been gained from Fisheries?				
13	Have threatened fauna surveys been undertaken?				
14	Have all sediment control measures been installed?				
15	Have habitat trees been flagged for removal as stage 2 of the clearing works?				
16	Are WIRES and the spotter/catcher organised for clearing/				
17	Any other issues to add or delete from the checklist?				
Completed by:			**Signature:**		

Project:	COBAKI ESTATE
Inspection Date:	Area/Precinct:

WEEKLY CONSTRUCTION CHECKLIST

#	Control Measure	Yes	No	N/A	Comments/Corrective Action
1	Is drainage from the project site being directed through necessary controls prior to entering any watercourse?				
2	Is vegetation being protected with Environmental Protection Zones?				
3	Is the integrity of the delineation fencing along the Environmental Protection Zone buffer satisfactory?				
4	Are fauna structures (koala posts and nest boxes) in place?				
5	Have hollows been salvaged for re-use?				
6	Have hollows been inspected by the fauna specialist?				
7	Has the area been inspected for threatened fauna?				
8	Has flora monitoring been undertaken?				
9	Is monitoring of water quality being undertaken?				
10	Is riparian and wetland monitoring being undertaken?				
11	Are disturbed areas being rehabilitated as soon as practical?				
12	Are suitable sedimentation and erosion control devices in place where necessary?				
13	Are protected areas being protected from sediment and erosion impacts?				
14	Are areas surrounding waterways satisfactorily stable?				
15	Is there evidence to suggest changes should be made to the site induction relating to flora and fauna aspects? (i.e. reoccurring issues, prevention measures, etc)				
16	Have any injuries or death to wildlife been identified or reported?				
17	Have any weed infestations been identified?				
18	Any other issues to add to the checklist?				
Completed by:		**Signature:**			

HOLLOW INSPECTION CHECKLIST	
Part 1 (To be completed prior to clearing)	
Inspection Date:	Location:
Project Ecologist:	
Tree Number:	Tree Location:
Tree species:	
Size of entrance: (Small: ≤5cm; Medium: 5-15cm; Large: 15-30cm; Extra Large: >30cm)	
Height of hollow from ground:	
Are there any additional hollows on same tree:	
Fauna species inhabiting hollow (if present) or species most likely to utilize the hollow:	
Can the hollow be soft-felled and relocated? If so, provide recommended GPS location for relocation:	
Part 2 (To be completed during clearing of the identified hollow)	
If an animal was present in the hollow, is it injured?	
Does it require immediate attention?	
Can it be released and, if so, where will it be released?	
If not, what time was the fauna rescue agency called?	
What was the outcome of the fauna rescue?	
Will a compensatory nest box be required? If so, specify the type/size and recommended GPS location:	
Additional Notes/Comments:	
Completed By:	Signed:

APPENDIX H – EROSION AND SEDIMENT CONTROL DRAWINGS

APPENDIX I – WASTE REGISTER

Date	Type of Waste	Destination			Contractor
		Recycle		Disposal	
		Onsite	Offsite		

APPENDIX J – MONITORING CHECKLIST

Monitoring Issue	Location	Frequency	Activity	Action Completed?	Signature
Pre- Construction					
Fauna	Precincts 9 & 11	Within one week prior to the commencement of clearing.	Inspection of fauna protection/exclusion fencing and erosion and sediment controls.		
		During all clearing activities.	Inspection of clearing area and habitat features for the presence of fauna.		
Flora	Precincts 9 & 11	Once	Inspection of all construction environmental controls.		
		During Clearing	Inspection for integrity of construction environmental controls		
		Every 6 months	Inspection for the presence of weeds		
Baseline Water Quality Monitoring	Sediment Basins	Monthly	Data collected for pH, turbidity, suspended solids, salinity, dissolved oxygen, dissolved organic compounds, magnesium and calcium hardness and temperature in accordance with the Groundwater Management Plan (SMEC, 2012f).		
Construction					
Fauna	Work areas	Daily	Inspection of fauna protection/exclusion fencing		
		Weekly general inspection	A general inspection completed for fencing associated with fauna. Rectifications reported and completed.		
		Monthly monitoring of Boyd Street, Cobaki Parkway and the Pacific Highway Tugun	Monitoring for road strike		

Monitoring Issue	Location	Frequency	Activity	Action Completed?	Signature
		Bypass on road strike.			
Surface Water Quality	Boards 1 to 4	Monthly	Water quality monitoring and sampling		
Storm Water	Stormwater retention basis	Weekly/ 12 hourly during rainfall events (>25 mm)/ when pH is recorded < 6.5	Water quality monitoring and sampling		
Contaminated Lands	Where potential for contamination is identified	Weekly	Inspection and sampling for potential contamination		
Noise	Nearest possible location to likely affected residence or boundary of.	Reactive (complaint based)	Noise monitoring		
Cultural Heritage	Entire site	As detected	Detection of Aboriginal objects or Aboriginal human remains reported and addressed.		
Erosion and Sediment Control	Work Areas	Daily	Inspection of erosion and sediment controls		
Air Quality	Work Areas	Daily	Visual observations for dust assessed, reported and managed		
Waste	Work Areas	Daily Monthly	Inspection of receptacles Monitoring of monthly volumes of waste streams		
Traffic and Pedestrian	Work Areas	Daily	Inspection of washing facilities, road traffic and public access roads.		

Monitoring Issue	Location	Frequency	Activity	Action Completed?	Signature
Management					
Biting Midge and Mosquito Control	Surface waters	Weekly	Inspection for presence of mosquito larvae undertaken in accordance with the Biting Midge and Mosquito Control Management Plan (McGinn, 2008).		

Comments:

Signed:

APPENDIX K – ENVIRONMENTAL MANAGEMENT PLANS

- Fauna Management Plan (K1);
- Vegetation Management Plan (K2);
- Cultural Heritage Management Plan (K3);
- Environmental Noise Impact Report (K4)

K1 - Fauna Management Plan

Cobaki Estate
Fauna Management Plan
Precincts 9 & 11, Bulk Earthworks

Revision 1
December 2013

For LEDA Manorstead Pty Ltd

Project Name:	Cobaki Estate Development – Precincts 9 & 11
Project Number:	30031162
Report for:	LEDA Manorstead PTY LTD

PREPARATION, REVIEW AND AUTHORISATION

Revision #	Date	Prepared by	Reviewed by	Approved for Issue by
1	09/12/13	A Marsden	J Alexander	J Alexander

ISSUE REGISTER

Distribution List	Date Issued	Number of Copies
LEDA Manorstead PTY LTD:	12/12/13	1 x electronic
SMEC staff:		
Associates:	12/12/13	1 x hard copy 1 x e copy
Tweed Shire Council		1 x hard copy 1 x e copy
Gold Coast Office Library (SMEC office location):		
SMEC Project File:		

SMEC COMPANY DETAILS

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TABLE OF CONTENTS

1 INTRODUCTION

This Fauna Management Plan (FMP) has been prepared by SMEC Pty Ltd for LEDA Manorstead Pty Ltd for the proposed borrow areas located within Precincts 9 and 11 of the Cobaki Estate development.

1.1 Project Location

The Cobaki Development is located west of the Tugun Bypass and Gold Coast Airport, Tweed Heads. The proposed development is bound by the Queensland and New South Wales border to the north and west and Piggabean Road to the south. The site adjoins Cobaki Creek and Cobaki Broadwater to the east. It is located approximately 6 km west of Tweed Heads/Coolangatta Town Centre and 1.5 km west of the Gold Coast Airport and the Gold Coast Highway, and 500 m west of the Pacific Motorway (Tugun Bypass). Access is currently off Piggabean Road. Future access will be off Boyd Street from the north and linking to Piggabean Road via the proposed Cobaki Parkway.

The site exists in its current state as a large portion of cleared land, which was previously cleared for agricultural purposes (cattle grazing), and scatterings of native vegetation communities.

This report specifically pertains to the borrow areas located in Development Precincts 9 and 11. Precincts 9 and 11 occur in the south-western portion of the Cobaki site and consist of land described as Lot 2 DP 566529, Lot 1 DP 562222, Lot 1 DP 570077, Lot 1 DP 823679, Lots 46, 228 & 305 DP 755740. Precinct 9 covers a total area of approximately 22.6 ha and Precinct 11 covers an area of approximately 15.6 ha.

The location of Development Precincts 9 and 11 with respect to the Cobaki site is shown in Figure 1.

1.2 Scope

LEDA Manorstead are seeking an amendment to the current modification application for the Cobaki Estate Central Open Space Project Approval (08_0200 Mod 1) for the winning of fill from Precincts 9 and 11 for construction of the Central Open Space (as approved under 08_0200), including:

- Precinct 9 - Quarrying of approximately 500,000m^3 of fill material sufficient to complete bulk earthworks in Stage 1 of the Central Open Space.
- Precinct 11 – Quarrying of approximately 100,000m^3 of fill material to complete bulk earthworks in the Central Open Space (Stage 2 and 3).

This Report details potential impacts to fauna as a result of the proposed borrow earthworks and a description of environmental management, mitigation and monitoring measures to minimise these potential impacts.

Refer to Drawing YC0229-1E1-D03 of Appendix A for Scope of Works.

Figure 1: Site Locality

COORDINATE SYSTEM GDA 1994 MGA Zone 56	0 1 2 km Scale: 1: 40,000 @ A4	**FIGURE** 1 - Site Locality	**REVISION** 1	**STATUS** FINAL
		CREATED BY AM11482	**DATE** 12/12/2013	**ISSUED FOR INFORMATION**

N

SMEC

PROJECT NO. 30031162	**PROJECT TITLE** Cobaki Estate Management Plans	**SOURCE** The State of Queensland (Department of Environment and Resource Management), Copyright 2010 Aerial Imagery from Nearmap Hypertiles, copyright 2011	**CLIENT** LEDA MANORSTEAD PTY LTD

CONSULTANT SMEC Australia

PATH:I:\Projects\30031162\007_Spatial\Workspaces\Fauna Management Maps.wor

1.3 Previous Studies

A number of previous studies have been undertaken as part of the various stages of development approval for this proposed development.

Such studies reviewed as part of this report include:

- Long-nosed Potoroo Management Plan (SMEC, 2013a)
- Flora and Fauna Monitoring Program (SMEC, 2013b)
- Wallum Froglet Compensatory Habitat Management Plan (SMEC, 2012a)
- Freshwater Wetland Compensatory Habitat Management Plan (SMEC, 2012b)
- Revised Assessment of Significance (JWA, 2013a)
- Revised Ecological Assessment (JWA, 2013b)
- Revised Regeneration and Revegetation Plan (JWA, 2012a)
- Revised Saltmarsh Rehabilitation Plan (JWA, 2012b)
-
- Revised Fauna Management Plan (JWA, 2010a)
- Stormwater Quality Concept Plan (Yeats, 2010)
- Cobaki Lakes Biting Midge and Mosquito Management Control Plan (Darryl McGinn, 2008)
- Environmental Assessment Report Part 3A Concept Plan (JBA Urban Planning, 2008)

2 PURPOSE & OBJECTIVES

2.1 Purpose

The purpose of this FMP is to protect native fauna and their habitat throughout construction associated with Precincts 9 & 11, and to provide a practical guide to minimising adverse impacts to fauna associated with the proposed development.

2.2 Objectives

The main objective of the FMP is to ensure that the proposed development will have minimal impacts to native fauna and their habitat by:

- Identifying actual and potential impacts to fauna;
- Identifying applicable legislative requirements;
- Identifying fauna habitat to be retained within Environmental Protection/No-Go Zones; and
- Recommending practical mitigation measures and monitoring requirements to manage identified impacts to fauna.

2.3 FMP Targets

The following targets have been established for the management of fauna impacts during construction works associated with Precincts 9 & 11:

- Minimal loss or significant impacts to native fauna, with no loss of endangered or threatened fauna;
- Minimal loss or significant impacts to identified habitat trees and/or features;
- No decrease in the diversity of the local protected fauna species population;
- Adequate control/management of any introduced/invasive pest species, where identified; and
- No infringements of the regulatory requirements relevant to fauna.

3 PLANNING & LEGISLATION

3.1 Relevant Legislation

3.1.1 Legislative Requirements

Key environmental legislation specifically relating to fauna management for the proposed development includes:

- **Commonwealth Legislation**
  - *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

- **New South Wales Legislation**
  - *Environment Planning and Assessment Act 1979* (EP& A Act)
  - *Threatened Species Conservation Act 1995* (TSC Act) and amendments
  - *Fisheries Management Act 1994* (FM Act)
  - *Fisheries Management Amendment Act 1997* (FMA Act)
  - *National Parks and Wildlife Act 1974*

It is noted that the Cobaki Estate Development was assessed under Part 3A of the EP&A Act. Section 75U of the EP&A Act provides that a range of NSW legislative approvals are not required for projects approved under Part 3A. However, the relevant regulator will be consulted and where necessary, inspections and ongoing advice will be sought during the course of the proposed development.

- **Other Statutory Instruments**
  - Tweed Local Environment Plan (2000)
  - Draft Tweed Local Environment Plan (2012)
  - Tweed Shire Council Development Control Plan (2008).

3.2 Compliance with Legislative Requirements

Table 1 specifies compliance details of all conditions of approval and statements of commitment relevant to fauna management for the proposed development.

Table 1: Compliance summary of all relevant conditions of approvals and statements

Condition/ Commitment Reference	Details of Condition/Commitment
EPBC	
3: Biodiversity Strategy	The person taking the action must submit a Biodiversity Offset Strategy to the Minister for approval. The strategy must address the following requirements: a. The acquisition and conservation of land containing a minimum of 3 ha of foraging habitat for the Grey-headed Flying fox for every 1 ha of habitat cleared or degraded for this species, that is of equal or greater quality to the removed for Cobaki Lakes residential development. In the event that

	land acquired is of lower value, then the ratio will need to be greater to account for the difference; b. The land referred to in condition 3 (a) must be protected by a legal instrument under relevant nature conservation legislation, that ensures the land is conserved in perpetuity; and c. The strategy must include key milestones, performance indicators, corrective actions and timeframes for the completion of all actions outlined in the strategy. The approved strategy must be implemented. The person taking the action must not remove any habitat for the Grey-headed Flying Fox until the Minister approves the strategy.
Concept Plan Approval 06_0316 Mod 1	
C4(1)	All future applications are to include, where relevant, draft stage-specific management plan updates to the Preliminary FMP. Each plan is to consider all other existing plans for the site to ensure management strategies do not conflict.
C14	All future development applications must demonstrate that the keeping of cats within the Cobaki Lakes site shall be totally prohibited and that all residential lots are to be encumbered to this effect with a Section 88B instrument under the *NSW Conveyancing Act 1919*.
Revised Statement of Commitments (8 May 2013) – Concept approval	
4.5.1	The provisions of the Revised Fauna Management Plan (James Warren & Associates, 2010) will be implemented.
4.5.2	The provisions of the SEPP 44 Assessment – Cobaki Lakes – Preferred Project Report (James Warren & Associates, 2009h) will be implemented.

3.3 Licenses & Permits

Table 2: Licenses and Permits Required

Legislation	License / Permit	Timing and Responsibility
National Parks and Wildlife Act 1974	Permit to collect seed/cuttings from a threatened plant	During landscaping stages, a permit may be required
National Parks and Wildlife Act 1974	License to rescue protected Fauna under Section 132(c) of the *National Parks and Wildlife Act 1974*	An appropriately licensed Fauna Spotter Catcher will be engaged prior to clearing works commencing.
Animal Research Act 1995	Ethics approval through an approved Animal Care and Ethics Committee for fauna monitoring involving trapping	All monitoring of fauna which includes trapping will be carried out by an appropriately licensed contractor.

4 RESPONSIBILITIES & RESOURCES

The responsibilities of key staff for the project, including the Construction Manager and on-site Environmental Officer will be detailed in the CEMP (SMEC, 2013c).

The Proponent, Leda Manorstead Pty Ltd, will ensure that adequate resources are available to carry out and maintain all mitigation measures discussed in subsequent sections in accordance with relevant Acts and this plan.

The personnel that will be required during the implementation of this FMP include:

- Fauna specialist
- Ecologist
- Fauna Spotter – Catcher

Contact details for relevant personnel involved in the implementation of this FMP include:

Table 3: Contact Details Relevant to the Fauna Management Sub Plan

Organisation	Name	Contact Details
Construction Manager	Dennis Hughes	Phone:0417 797 099 Email: leda@hughesintermodal.com.au
Project Manager Leda Developments	Reg Van Rij	Phone: (07) 5570 5500 Email: rvr@ledagc.com
Office of Environment and Heritage (OEH) (DECC)	Chris Sayer	(02) 6640 2500 131 555
Fisheries	Pat Dwyer	(02) 6626 1397 1300 550 474
Tweed Shire Council Representatives	Mick Denny	Phone: (02) 6670 2602 Email: MDenny@tweed.nsw.gov.au
	Tanya Fountain	Phone: (02) 6670 2787 Email: TFountain@tweed.nsw.gov.au
Environmental on-site Officer	Jon Alexander	Phone: 0424 152 298 Email: Jon.Alexander@smec.com
Bush regenerator	*TBA*	Phone: *TBA*
Ecologist	*TBA*	Phone: *TBA*
Fauna Specialist	*TBA*	Phone: *TBA*
Veterinary Hospital (Billinudgel)		(02) 6680 3480
Wildlife Relocation and Management Services		(07) 5590 4301
Currumbin Sanctuary		(07) 5534 1266

5 ENVIRONMENTAL IMPACTS

5.1 Impacts to native fauna and habitat

Activities associated with the development have the potential to affect fauna and habitats through:

- Direct mortality and loss of habitat (foraging, breeding, and roosting/nesting) due to vegetation clearing and changes in land use (vehicle strike, trampling, arson, spills, dumping of waste);
- Habitat degradation due to alteration of natural hydrological regimes and increases in pollutants (e.g heavy metals, oils, greases, petroleum hydrocarbons, etc) associated with urban run-off, particularly downstream aquatic habitats.
- Increased competition and predation on native fauna due to potential prevalence of invasive species and domestic animals;
- Increased risk of disease due to increased stress of native fauna induced by construction.

5.2 Impacts to threatened and locally significant fauna

Eleven (11) threatened fauna species and/or their habitat have been recorded within or adjacent to Precincts 9 and 11 , as detailed in **Table 4** below.

Table 4: Threatened fauna species and/or habitat within or adjacent to Precincts 9 and 11.

Common name	Scientific name	Status	Act	Precinct location	
				9	11
Powerful owl	*Ninox strenua*	Vulnerable	TSC Act		
Masked owl	*Tyto novaehollandiae*	Vulnerable	TSC Act		
Black-necked stork	*Ephippiorhynchus asiaticus*	Endangered	TSC Act		
Osprey	*Pandion haliaetus*	Vulnerable	TSC Act		
Grey-headed flying fox	*Pteropus poliocephalus*	Vulnerable	EPBC Act		
Little bent-wing bat	*Miniopterus australis*	Vulnerable	TSC Act		
Common bent-wing bat	*Miniopterus schreibersii*	Vulnerable	TSC Act		
Yellow-bellied sheathtail bat	*Saccolaimus flaviventris*	Vulnerable	TSC Act		
Greater broad-nosed bat	*Scoteanax rueppelli*	Vulnerable	TSC Act		
Eastern free-tail bat	*Mormopterus norfolkensi*	Vulnerable	TSC Act		
Koala	*Phascolarctos cinereus*	Vulnerable	TSC Act		

Specific impacts to threatened fauna and habitat are detailed below.

Powerful Owl (*Ninox strenua*)

The powerful owl is endemic to eastern and south-eastern Australia, inhabiting a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest from Mackay to south-western Victoria (DECC, 2012).

The Powerful owl was recorded within a patch of vegetation at the far northern end of the site in 1994 (Warren 1994). Further spotlighting and call playback surveys of the subject site have failed to record this species (JWA, 2008).

Approximately 70 hectares of suitable forage habitat occurs on the site, of which 0.08 hectares (0.1%) will be removed from the Precinct 9 and 11 borrow areas (0.03 ha and 0.05 ha, respectively) (**Figure 2**).

Masked owl *(Tyto novaehollandiae)*

The masked owl is widely distributed from the coast to the western plains, where it inhabits dry eucalypt forests and woodlands. Pairs have a home range between 500 and 1000 hectares and they roost and breed within large tree hollows in moist eucalypt gullies (DECC, 2012). The species was recorded in a patch of vegetation at the far northern end of the site in 1994 (Debus 1994). Further spotlighting and call playback surveys of the subject site have failed to record this species (JWA, 2008).

Approximately 70 hectares of suitable forage habitat occurs on the site, of which 0.08 hectares (0.1%) will be removed from the Precinct 9 and 11 borrow areas (0.03 ha and 0.05 ha, respectively) (**Figure 2**).

The masked owl will persist in disturbed environments as long as existing and potential nest trees are retained, and suitable areas of forested or woodland areas are conserved so as to conserve prey species (Woodward-Clyde 1997). It is considered that the proposed development is highly unlikely to result in the local extinction of this species.

Black-necked stork (*Ephippiorhynchus asiaticus)*

The black-necked stork inhabits wetlands, such as floodplains of rivers with large shallow swamps and pools, freshwater meadows, wet heathland, farm dams, shallow floodwaters and adjacent grasslands, paddocks and open savannah woodlands in coastal and sub-coastal northern and eastern Australia (DECC, 2012). Approximately 142 hectares of potential forage habitat for the species exists within the low-lying eastern and south eastern portions of the site, and the species has been identified foraging approximately 200 metres east of Precinct 9. Refer to **Figure 3** for Potential Habitat for the Black-necked Stork.

Approximately 0.07 hectares (0.05%) of potential habitat for the black-necked stork occurs within a dam in Precinct 9. The proposed bulk earthworks within the Precinct 9 borrow area will not involve the removal of this dam, however mitigation measures such as sediment and erosion control, as detailed in Section 4, will be required to minimise impacts of nearby earthworks on this habitat. Given the high mobility of this species, the loss of potential foraging habitat is not considered significant in relation to the regional distribution of habitat for this species.

Osprey (*Pandion haliaetus)*
The osprey occupies coastal areas, especially the mouths of large rivers, lagoons and lakes throughout most of Australia (excluding Tasmania and Victoria).

Three ospreys and a stick nest were observed by SMEC on the southern nesting platform in the Saltmarsh Rehabilitation Area in June 2013. This nest site is approximately 1 kilometre south-east of Precinct 9 (**Figure 4**), and human disturbance near the nest site is not expected. The proposed development is considered highly unlikely to result in significant impacts on this species (JWA, 2010a).

Wedge-tailed eagle (*Aquila audax)*
A pair of wedge-tailed eagles was identified nesting in a tree stag on the boundary of Precinct 9 and Rehabilitation and Management Area 8 during the 2011 breeding season. This nest no longer exists, however, SMEC have identified a wedge-tailed eagle utilising a stick nest on the boundary of Precinct 11 and Rehabilitation and Management Area 6 (June & November, 2013) (see **Figure 4** for location). While the wedge-tailed eagle is not listed as threatened on mainland Australia, the occurrence of a nesting pair which may be utilizing this tree for breeding is considered significant for the local Tweed area.

It is expected that impacts of the proposed development will be limited to noise and dust related impact in the vicinity of the nest site. It is not likely that the proposed development will result in significant impacts on the wedge-tailed eagle.

Koala (*Phascolarctos cinereus)*
Although no evidence of a resident koala population exists on the site (JWA, 2008), given the observation of faecal pallets and a low density of scratches on Grey gums and Tallowwoods throughout the site, it is considered that koalas utilise the site as they commute between areas of primary use habitat.

SMEC conducted four Koala Spot Assessment Technique (KSAT) Surveys on the site in 2013, including one on the boundary of Precinct 9 and Rehabilitation and Management Area 9. Koala pellets were only detected within the northern end of Rehabilitation and Management Precinct 5, 1 km north of Precinct 11.

Potential habitat for the species exists in the sclerophyll forest (mostly *E. microcorys*) located within and adjacent to Precincts 9 and 11. 0.08 hectares (0.2%) of suitable Koala habitat will be removed from the Precinct 9 and 11 borrow areas (0.03 ha and 0.05 ha, respectively). Refer to **Figure 5**.

Potential impacts of the proposed works on transient koalas include:

- Death, injury or loss of habitat due to earthworks
- Increased risk of death or injury from vehicle strike; and
- Risk of harassment, death or injury from dogs.

Fauna management measures, as detailed in Section 4.1 will reduce these risks.

Grey-headed flying fox (*Pteropus poliocephalus)*

The grey-headed flying-fox forages in rainforest, wet and dry sclerophyll forest, mangroves, fruit crops and fruiting trees in parks and urban areas. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy (DECC, 2012). The species has been recorded foraging in various locations on and adjacent to the site, including within a dry sclerophyll community located approximately 250 metres north of Precinct 11. No flying-fox roosting camps have been identified on or adjacent to the site (JWA, 2008).

Approximately 72 hectares of potential forage habitat occurs on the site for this species. Approximately 0.08 hectares of potential forage habitat will be removed from the Precinct 9 and 11 borrow areas. Refer to **Figure 6** for potential habitat on site.

Given the high mobility of this species (up to 50 km), this loss of foraging habitat is not considered significant. The grey-headed flying-fox is likely to continue foraging within retained areas of vegetation on the site. Clearing works on the site are not likely to affect this species.

Little bent-wing bat (*Miniopterus australis)* & Common bent-wing bat (*Miniopterus schreibersii*)

The little bent-wing bat and common bent-wing bat forage on insects in forested habitats, and roost in caves, tunnels or similar structures located nearby.

Approximately 72 hectares of potential forage habitat occurs on the site, of which approximately 0.08 hectares of potential forage habitat will be removed from Precinct 9 and 11 borrow areas. Refer to **Figure 6** for potential habitat on site.

Given the high mobility of these species, the loss of potential foraging habitat is not considered significant in relation to the regional distribution of habitat for this species. The extent of impacts to these species due to loss of roost habitat is currently unknown and will be determined based on the number of suitable hollows and fissures identified during pre-clearing surveys. Any loss of roost sites will be mitigated by the installation of nest-boxes within retained vegetation.

Eastern free-tail bat (*Mormopterus norfolkensi*), Yellow-bellied sheathtail bat (*Saccolaimus flaviventris*) & Greater broad-nosed bat (*Scoteanax rueppelli*)

Potential habitat impact for eastern freetail bat, yellow-bellied sheathtail bat and greater broad-nosed bat within the current development precincts is limited to approximately 0.08 hectares from the Precinct 9 and 11 borrow areas. Refer to **Figure 6** for potential habitat on site.

Given the high mobility of these species, the loss of potential foraging habitat is not considered significant. There may be a minor loss of potential roost sites (e.g. hollow-bearing trees and fissures) for these species however the installation of bat boxes within retained vegetation (in accordance with the Fauna Management Plan – JWA, 2010a) will increase roosting opportunities for these species. Potential roost sites will be identified during pre-clearing surveys in order to determine the extent of the resulting impact to these species. It is considered that these species will continue to utilise retained vegetation for foraging and retained habitat trees for roosting.

Figure 2: Potential Habitat for the Powerful Owl and Masked Owl

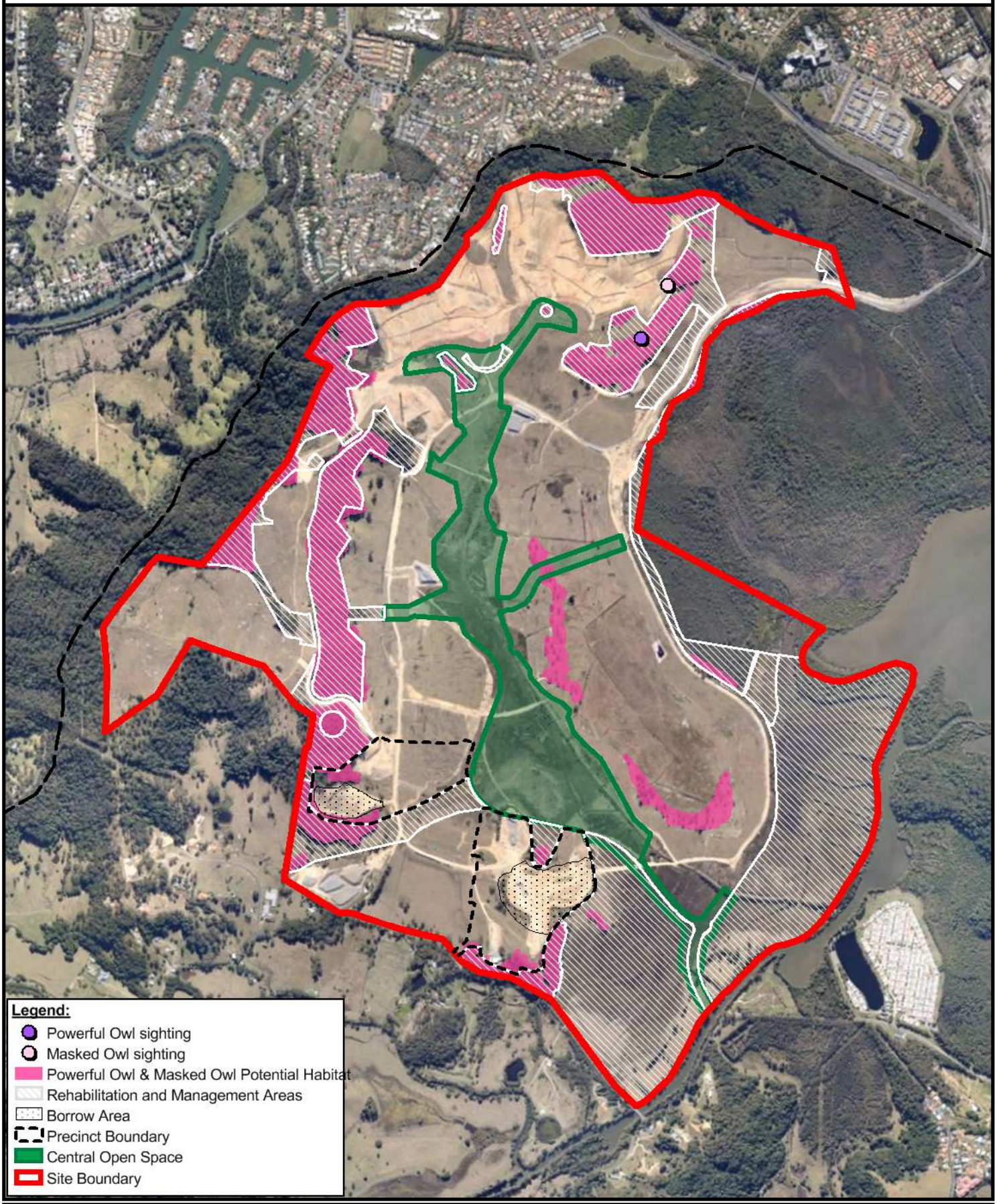

FIGURE 2: Potential Habitat for the Powerful Owl and Masked Owl **CREATED BY** AM11482	**REVISION** 2 **STATUS** FINAL **DATE** 17/12/2013 **ISSUED FOR INFORMATION** N	SMEC **CONSULTANT** SMEC Australia
PROJECT NO. 30031162 **PROJECT TITLE** Cobaki Estate Environmental Management Plans	**COORDINATE SYSTEM** GDA 1994 MGA Zone 56 0 0.5 1km Scale: 1:20,000 @ A4	
	SOURCE The State of Queensland (Department of Environment and Resource Management), Copyright 2010 Species Records from James Warren & Associates, 2010 Aerial Imagery by Nearmap Hypertiles, Copyright 2011	**CLIENT** LEDA MANORSTEAD PTY LTD

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Figure 3: Black-necked Stork Records and Potential Habitat

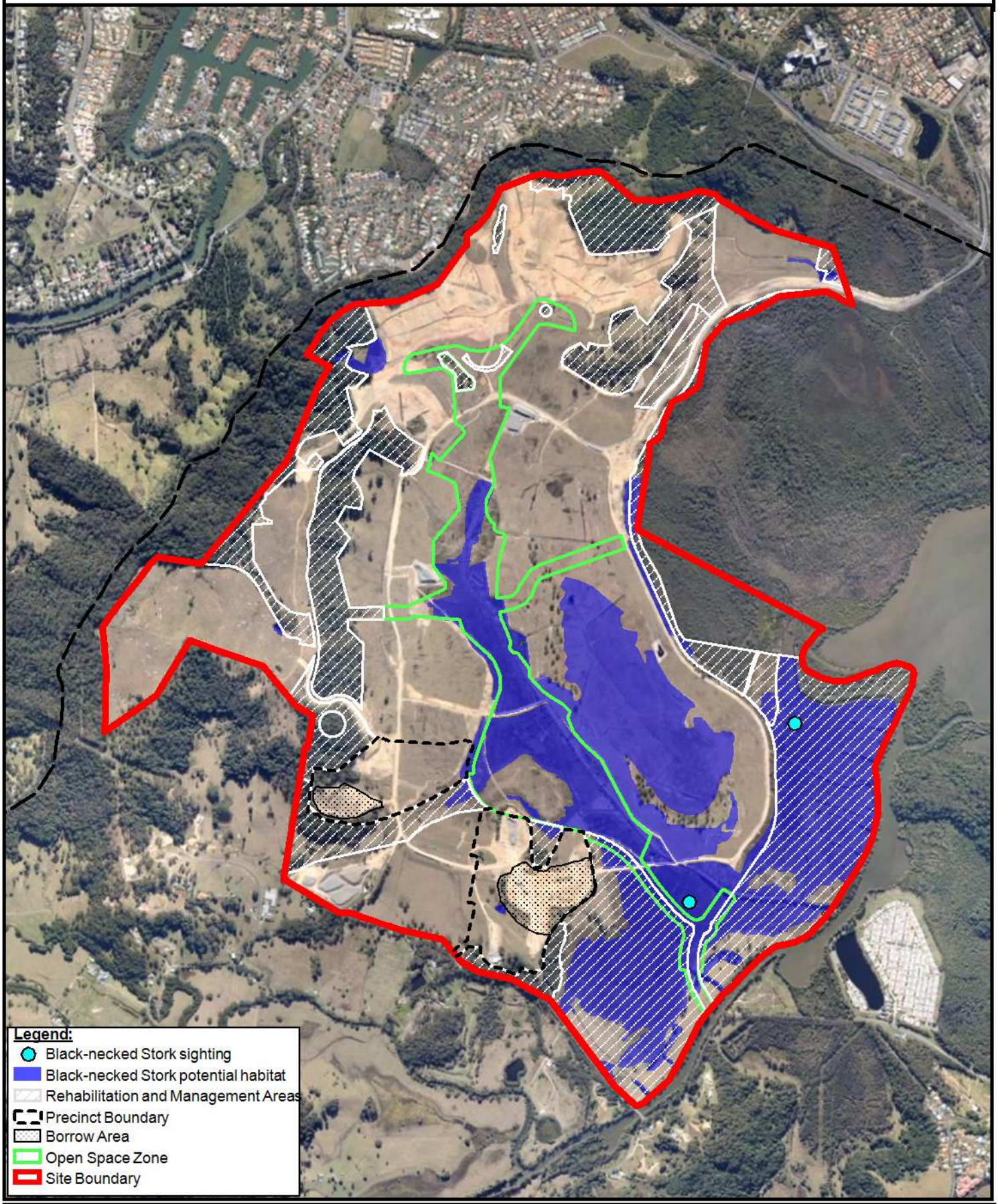

FIGURE 3: Black-necked Stork Records and Potential Habitat	**REVISION** 2 **STATUS** FINAL	N
CREATED BY AM11482	**DATE** 17/12/2013 **ISSUED FOR INFORMATION**	
PROJECT NO. 30031162	**COORDINATE SYSTEM** GDA 1994 MGA Zone 56	0 0.5 1km Scale: 1:20,000 @ A4
PROJECT TITLE Cobaki Estate Environmental Management Plans	**SOURCE** The State of Queensland (Department of Environment and Resource Management), Copyright 2010 Species Records from James Warren & Associates, 2010 Aerial Imagery by Nearmap Hyperlink, Copyright 2011	**CONSULTANT** SMEC Australia Copyright SMEC Australia Pty Ltd. All Rights Reserved. **CLIENT** LEDA MANORSTEAD PTY LTD

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Figure 4: Raptor Nesting Platforms and Nest Locations

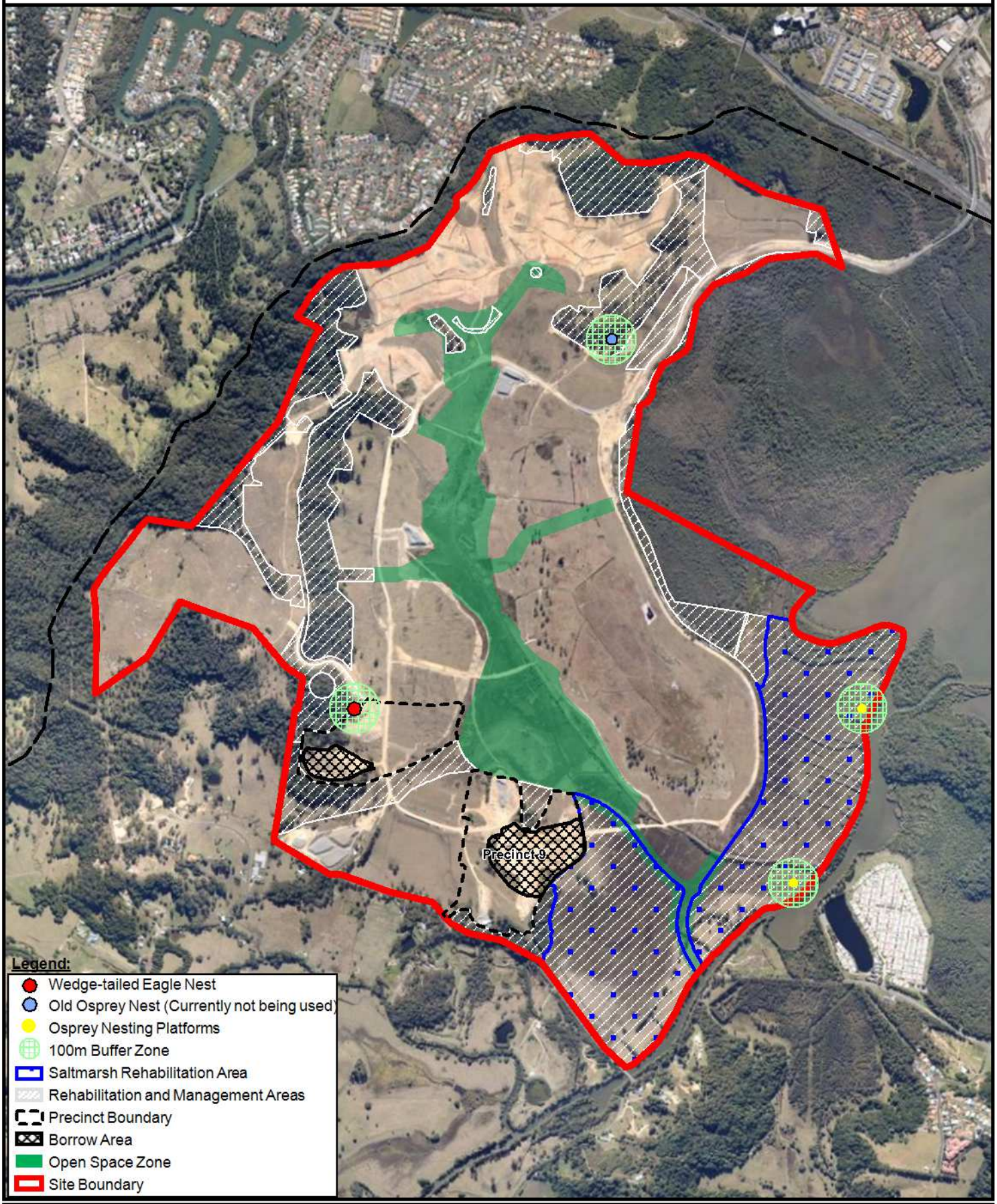

FIGURE 4: Proposed Raptor Nesting Platform Locations **CREATED BY** AM11482	**REVISION** 2 **STATUS** FINAL **DATE** 17/12/2013 **ISSUED FOR INFORMATION** N	SMEC **CONSULTANT** SMEC Australia
PROJECT NO. 30031162 **PROJECT TITLE** Cobaki Estate Environmental Management Plans	**COORDINATE SYSTEM** GDA 1994 MGA Zone 56 0 0.5 1km Scale: 1:20,000 @ A4	 **CLIENT** LEDA MANORSTEAD PTY LTD
	SOURCE The State of Queensland (Department of Environment and Resource Management), Copyright 2010 Species Records from James Warren & Associates, 2010 & SMEC, 2013 Aerial Imagery by Nearmap Hyperlite, Copyright 2011	

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Figure 5: Potential Habitat for the Koala

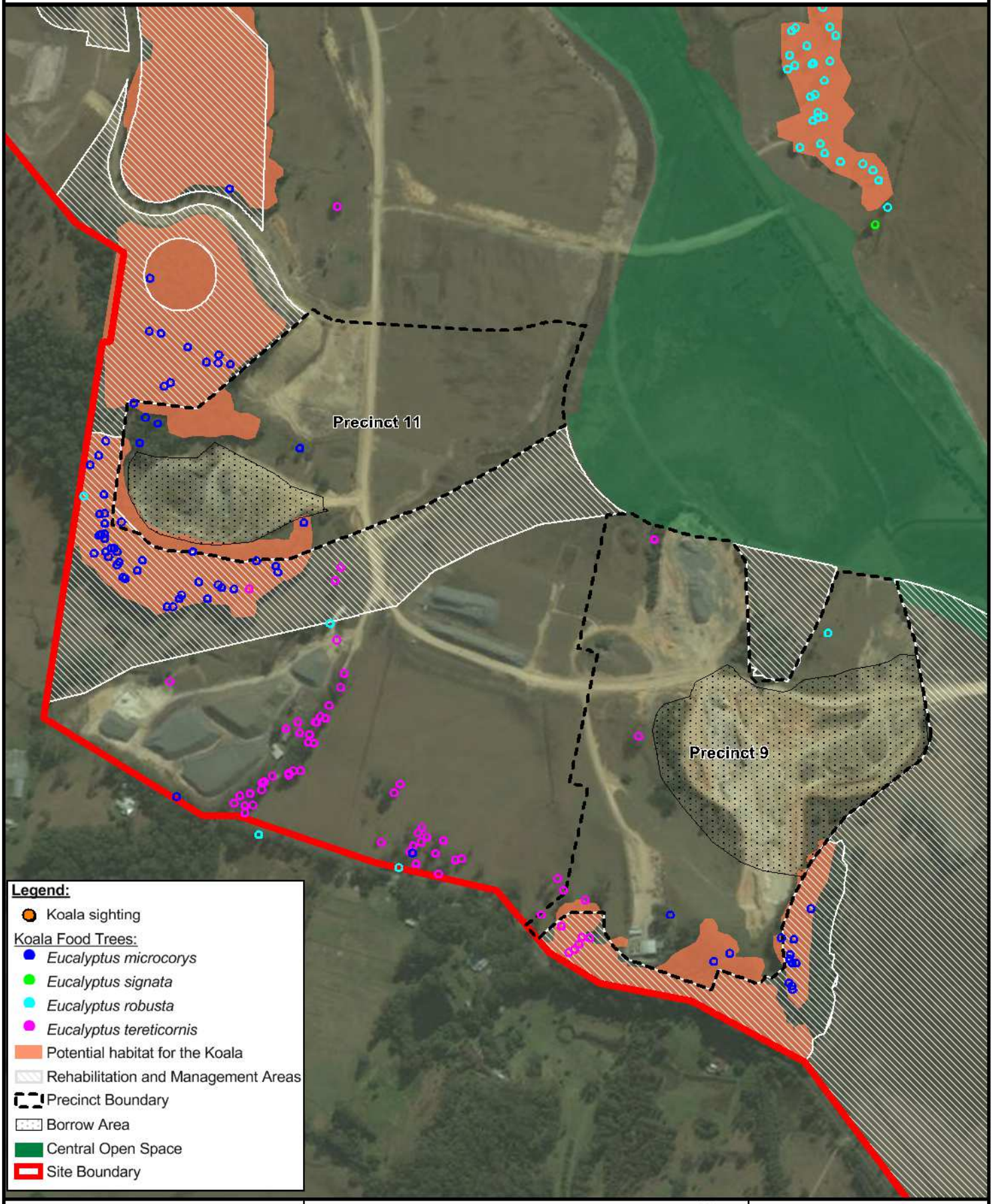

FIGURE 5: Potential Habitat for the Koala

CREATED BY AM11482

REVISION 2

STATUS FINAL

DATE 17/12/2013

ISSUED FOR INFORMATION

N

PROJECT NO. 30031162

PROJECT TITLE
Cobaki Estate Environmental Management Plans

COORDINATE SYSTEM
GDA 1994 MGA Zone 56

0 100 200m
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The State of Queensland (Department of Environment and Resource Management), Copyright 2010
Species Records from James Warren & Associates, 2010
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