PRELIMINARY BIODIVERSITY OFFSET STRATEGY

PREPARED FOR
MARTINS CREEK QUARRY EXPANSION PROJECT
(SSD 14-6612)

STATION STREET
MARTINS CREEK

OCTOBER 2016
REF: 6016

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Conacher Consulting Pty Ltd

Environmental and Land Management Consultants

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PREFACE

Conacher Consulting has been engaged to prepare a Preliminary Biodiversity Offset Strategy for the proposed Martins Creek Quarry Extension Project (Application Number SSD 6612) as part of the Environmental Impact Statement (EIS) documentation for the Project.

PROJECT TEAM

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DOCUMENT DETAILS	
Project Name	Martins Creek Quarry Extension Project (SSD 6612)
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1. INTRODUCTION AND BACKGROUND

1.1 BACKGROUND

Conacher Consulting has been engaged to prepare a Biodiversity Offset Strategy for the proposed Martins Creek Quarry Extension Project (Application Number SSD 6612) as part of the Environmental Impact Statement (EIS) documentation for the Project.

This Biodiversity Offset Strategy has been prepared in accordance with the NSW Biodiversity Offsets Policy for Major Projects (OEH 2014).

The Biodiversity Assessment Report prepared by Conacher Consulting (2016) in accordance with the Framework for Biodiversity Assessment methodology was reviewed as part of the preparation of this Biodiversity Offset Strategy.

1.2 BIODIVERSITY CREDITS REQUIRED

The biodiversity credits required for the major project are identified in Table 1.1 and have been determined as part of the Biodiversity Assessment Report prepared by Conacher Consulting (2016).

TABLE 1.1
IMPACT AREAS AND OFFSET REQUIREMENTS

Credit Types Required	Impact Polygon Area (ha)	No. of Credits Required	Approximate No. Credits Required per Hectare of Clearing
White Mahogany - Spotted Gum - Grey Myrtle semi-mesic shrubby open forest of the central and lower Hunter Valley, (HU798)*	9.8 ha	738	75.3
Spotted Gum - Narrow-leaved Ironbark shrub - grass open forest of the central and lower Hunter, (HU816)*	3.19 ha	252	79
Slaty Red Gum grassy woodland on hinterland foothills of the southern North Coast, (HU619)*	9.4	579	61.60
Whalebone Tree - Red Kamala dry subtropical rainforest of the lower Hunter River, (HU755)*	5	384	76.8
Eucalyptus glaucina (Slaty Red Gum) Species Credit	9.4	16,842	1791.7
Koala (*Phascolarctos cinereus*) Species Credit	21.61	562	26
* = Equivalent Plant community types identified in Appendix 1 can be utilised for offsets			

2. BIODIVERSITY OFFSET SITE AREAS

2.1 Identified Biodiversity Offset Lands

The following lands totalling approximately 53.84 hectares have been identified for biodiversity offsets:

- Lot 2 DP 242210 (10.47 ha)
- Lots 102 DP 882385 (11.5 ha)
- Lot 103 DP 882385 (13.47 ha)
- Lot 1 DP 304266 (2.9 ha)
- Part Lot 42 DP 815628 (5.2 ha?)
- Lot 3 DP 242210 (10.3 ha)

These lands (the Identified Biodiversity Offset Lands) are located within the Martins Creek locality adjoining and/or nearby to the existing site of the proposed development. The historical land uses of these proposed biodiversity offset lands include stock grazing and historical quarry activities. The lands are composed predominantly of native vegetation, and cleared areas which provide opportunities for rehabilitation works.

These offset lands are to be secured and managed in accordance with a future Biobanking agreement. Biobanking agreements provide security and certainty for offsets, as they ensure adequate funding for offset site management and have clear monitoring and reporting requirements (OEH 2014).

2.2 Future Investigations for Additional Offset Lands

Further investigations for additional lands for biodiversity offsets (if required) are ongoing.

3. MANAGEMENT OF OFFSET AREAS

Future management of offset lands is to be in accordance with future Biobanking agreements. Management actions are likely to include regeneration of native vegetation and fauna habitat supplementation measures.

4. REHABILITATION AREA AND OFFSETS

The proposed development is not a mining project and rehabilitation associated with future quarrying activities does not form part of this Biodiversity Offset Strategy.

5. SUPPLEMENTARY MEASURES

Where credit requirements are not met through the dedication of land under a Biobanking agreement supplementary measures are to be utilised for the proposed development. Supplementary measures may include contribution of monetary funds to:

- Actions outlined in threatened species recovery programs;
- Actions that contribute to threat abatement programs;
- Biodiversity research and survey programs; or
- Rehabilitating degraded aquatic habitat.

In accordance with the Biodiversity Offsets Policy for Major Projects (OEH 2014), the amount of money to be contributed to supplementary measures will be calculated so it is approximately equivalent to the cost of establishing an offset site.

6. BIODIVERSITY OFFSET DELIVERY

The delivery of offsets for the proposed development is to follow a staged approach. Biodiversity offsets are to be delivered for each stage prior to the clearing of any vegetation within the defined stage area. The identified stage areas are shown Figure 2. The credits required for each stage are provided in Table 6.1.

TABLE 6.1
DETAILS OF BIODIVERSITY OFFSET CREDIT DELIVERY FOR PROJECT STAGES

Stage	HU 798 Credits*	HU 816 Credits*	HU 619 Credits*	HU 755 Credits*	Total Ecosystem Credits	Koala Species Credits	Eucalyptus glaucina Species Credits
Stage 1	0	0	81.9	0	**81.9**	34.6	2383
Stage 2	438.3	32.4	248.8	65.3	**784.8**	246.7	7238.5
Stage 3	261.3	115.3	90.6	122.9	**590.1**	166.4	2633.8
Stage 4	0	104.3	117.7	188.1	**410.1**	84	3422.1
Stage 5	9.8	0	20.3	7.7	**37.8**	12	591.3
Stage 6	25.6	0	0	0	**25.6**	8.9	0
Stage 7	3	0	19.7	0	**22.7**	9.4	573.3
Total	738	252	579	384	**1953**	562	16842
* = Equivalent Plant community types identified in Appendix 1 can be utilised for offsets							

A hypothetical calculation of the extent of offset areas required has been undertaken to inform the acquisition of future offset lands for the project. The calculation assumed that the vegetation within the development area was identical to a potential offset site. The indicative extents of offset areas in hectares required for each stage are provided in Table 6.2. Further details of the hypothetical calculation are provided in Appendix 2.

The identified Biodiversity Offset Lands will require additional surveys and calculations to determine the actual extent of offset credits generated. Where ecosystem offset credits are to be provided on land zoned for development or rural production an averted loss factor will be taken into account to reduce offset requirements. This information will be provided by the Applicant as part of the *Response to Submissions* following exhibition. A reduction in offset area requirements is also likely to occur where substantial management actions are necessary to rehabilitate offset lands.

TABLE 6.2
DETAILS OF INDICATIVE BIODIVERSITY OFFSET AREA DELIVERY BY HECTARES FOR PROJECT STAGES

Stage	HU 798 Credits*	HU 816 Credits*	HU 619 Credits*	HU 755 Credits*	Total Ecosystem Credits	Koala Species Credits	Eucalyptus glaucina Species Credits
Stage 1	0.0	0.00	11.0	0.0	**11.0**	4.9	2.6
Stage 2	70.4	5.4	33.4	10.5	**119.8**	34.8	8
Stage 3	42	19.4	12.2	19.8	**93.3**	23.5	2.9
Stage 4	0.0	17.5	15.8	30.4	**63.7**	11.9	3.8
Stage 5	1.6	0.0	2.7	1.2	**5.5**	1.7	0.7
Stage 6	4.1	0.0	0.0	0.0	**4.1**	1.3	0.0
Stage 7	0.5	0.0	2.6	0.0	**3.1**	1.3	0.6
Total	118.6	42.3	77.7	62	**300.6**	79.3	18.5
* = Equivalent Plant community types identified in Appendix 1 can be utilised for offsets							

7. MONITORING AND REPORTING

Monitoring and reporting on Biodiversity Offset delivery is to be undertaken for each stage. The monitoring and reporting on the management of offset lands is to be undertaken in accordance with the Biobanking agreement for the relevant offset area.

8. STATEMENT OF PROPOSAL COMPLIANCE WITH NSW BIODIVERSITY OFFSETS POLICY FOR MAJOR PROJECTS PRINCIPLES

The following statement has been provided to identify proposal compliance with the NSW Biodiversity Offsets Policy for Major Projects Principles. The principles are identified as follows in bold font.

Principle 1: Before offsets are considered, impacts must first be avoided and unavoidable impacts minimised through mitigation measures. Only then should offsets be considered for the remaining impacts.

Details regarding impact avoidance are provided in the Biodiversity Assessment Report prepared for the proposal by Conacher Consulting (2016). Mitigation measures are provided in the Flora and Fauna Management Plan prepared for the proposal by Conacher Consulting (2016).

Principle 2: Offset requirements should be based on a reliable and transparent assessment of losses and gains.

The reliable and transparent methodology for assessing losses and gains associated with major projects has been identified as the NSW Framework for Biodiversity Assessment (2014). Assessment of losses has been undertaken in accordance with the NSW Framework for Biodiversity Assessment (OEH 2014), and is detailed in the Biodiversity Assessment Report prepared by Conacher Consulting

(2016). Further assessment of gains achieved through offsets is also to be assessed in accordance with this methodology.

Principle 3: Offsets must be targeted to the biodiversity values being lost or to higher conservation priorities.

Offsets are proposed to be targeted to biodiversity values being lost, in accordance with the like-for-like and like-for-like variation rules outlined in the NSW Biodiversity Offsets Policy for Major Projects (OEH 2014).

Principle 4: Offsets must be additional to other legal requirements.

All offsets associated with the proposal will be additional to existing legal obligations for conservation that are attached to proposed offset lands.

Principle 5: Offsets must be enduring, enforceable and auditable.

Direct offsets delivered for the proposal are to be secured through an enduring, enforceable and auditable Biobanking agreement.

Principle 6: Supplementary measures can be used in lieu of offsets.

Supplementary measures are proposed to be utilised where offsets cannot be secured under a Biobanking agreement and the rules for use of supplementary measures are achieved.

REFERENCES

Conacher Consulting (2016) Biodiversity Assessment Report, Martins Creek Quarry, Station Street Martins Creek.

NSW Office of Environment and Heritage (2014) NSW Biodiversity Offsets Policy for Major Project. Available Online:
http://www.environment.nsw.gov.au/resources/biodiversity/140672biopolicy.pdf

FIGURES

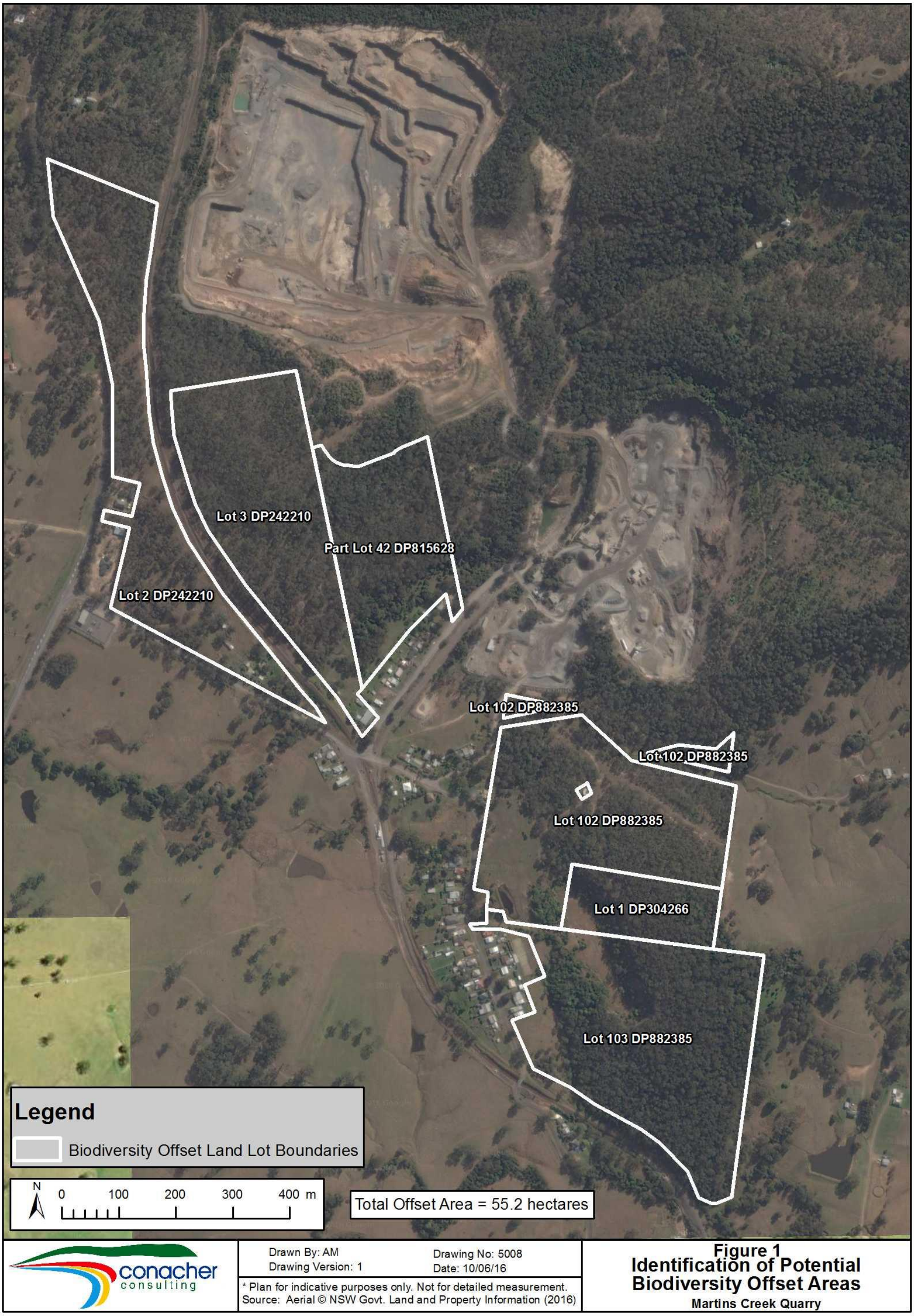

Figure 1
Identification of Potential Biodiversity Offset Areas
Martins Creek Quarry

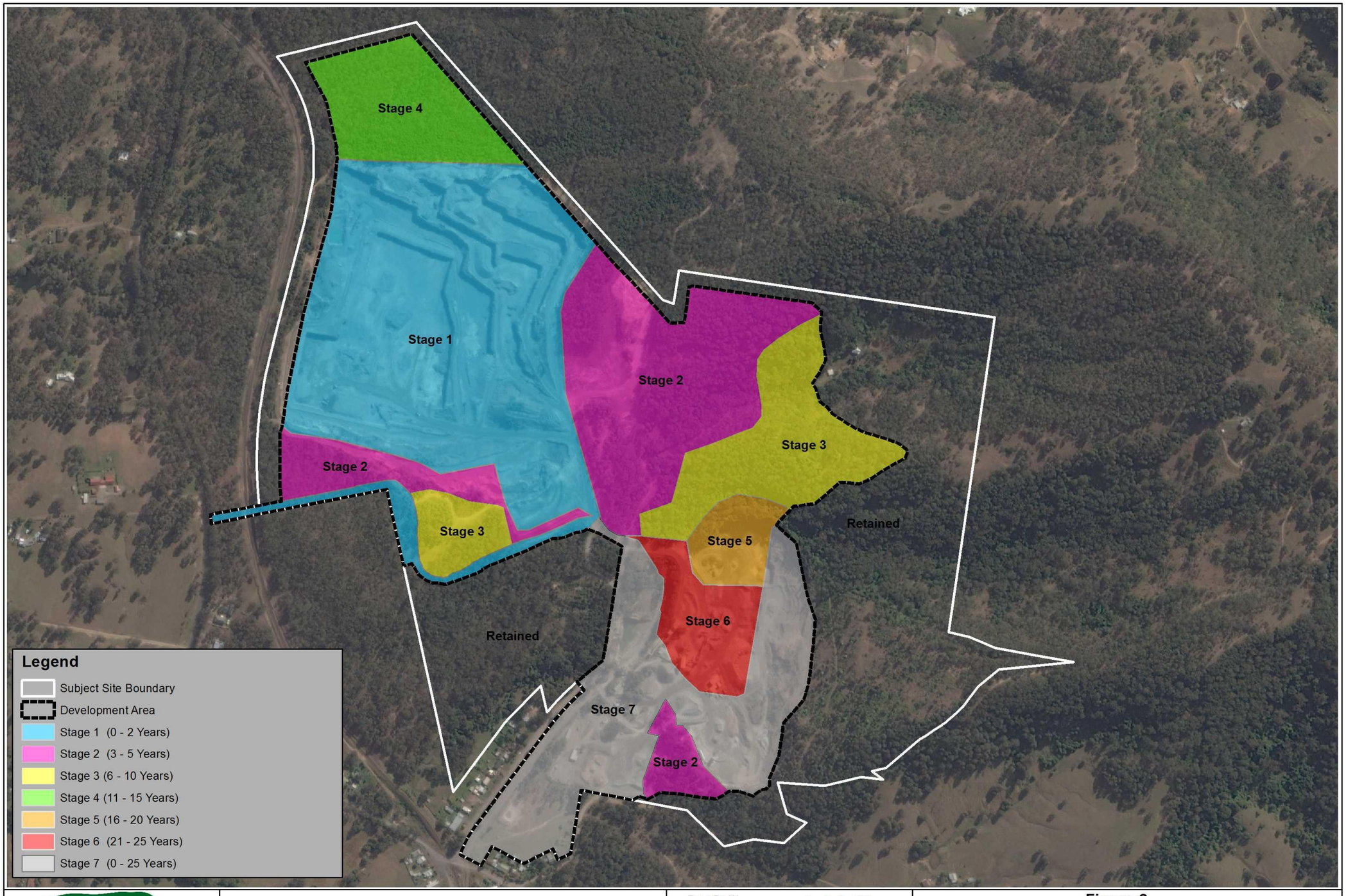

Figure 2
Subject Site Location & Development Stage Areas
Martins Creek Quarry

APPENDIX 1

DETAILS OF EQUIVALENT PLANT COMMUNITY TYPES FOR OFFSET CREDITS

The alternative plant community types available for offsetting as determined by the FBA calculator are listed in Table A1.1. Other plant community types may also be utilised in accordance with the NSW Biodiversity Offsets Policy for Major Projects variation rules.

TABLE A1.1
DETAILS OF BIODIVERSITY OFFSET CREDIT EQUIVALENT PLANT COMMUNITY TYPES

Plant Community Type on Site	Alternative Plant Community Type for Biodiversity Offset Credits
White Mahogany - Spotted Gum - Grey Myrtle semi-mesic shrubby open forest of the central and lower Hunter Valley, (HU798)	Blackbutt - Tallowwood dry grassy open forest of the southern NSW North Coast Bioregion, (HU511) Tallowwood - Small-fruited Grey Gum - Kangaroo Grass grassy tall open forest on foothills of the lower North Coast, (HU762) Tallowwood - Smooth-barked Apple - Blackbutt grass tall open forest of the Central and lower North Coast, (HU770) Pink Bloodwood - Thin-leaved Stringybark - Grey Ironbark shrub - grass open forest on ranges of the lower North Coast, (HU772)
Spotted Gum - Narrow-leaved Ironbark shrub - grass open forest of the central and lower Hunter, (HU816)	Melaleuca decora low forest of the central Hunter Valley, Sydney Basin Bioregion, (HU564) Slaty Red Gum grassy woodland on hinterland foothills of the southern North Coast, (HU619) Grey Ironbark - Broad-leaved Mahogany - Forest Red Gum shrubby open forest on Coastal Lowlands of the Central Coast, (HU802) Spotted Gum - Broad-leaved Mahogany - Grey Gum grass - shrub open forest on Coastal Lowlands of the Central Coast, (HU803) Spotted Gum - Broad-leaved Mahogany - Red Ironbark shrubby open forest, (HU804) Spotted Gum - Red Ironbark - Grey Gum shrub - grass open forest of the Lower Hunter, (HU806) Red Ironbark - Spotted Gum - Prickly-leaved Paperbark shrubby open forest of the Lower Hunter, (HU807) Spotted Gum - Red Ironbark - Narrow-leaved Ironbark - Grey Box shrub-grass open forest of the lower Hunter, (HU814) Spotted Gum - Narrow-leaved Ironbark-Red Ironbark shrub - grass open forest of the central and lower Hunter, (HU815) Grey Box - Grey Gum - Rough-barked Apple - Blakely's Red Gum grassy open forest of the central Hunter, (HU822)

TABLE A1.1 DETAILS OF BIODIVERSITY OFFSET CREDIT EQUIVALENT PLANT COMMUNITY TYPES	
Plant Community Type on Site	**Alternative Plant Community Type for Biodiversity Offset Credits**
Slaty Red Gum grassy woodland on hinterland foothills of the southern North Coast, (HU619)	Spotted Gum - Narrow-leaved Ironbark-Red Ironbark shrub - grass open forest of the central and lower Hunter, (HU815)
Whalebone Tree - Red Kamala dry subtropical rainforest of the lower Hunter River, (HU755)	Sandpaper Fig - Whalebone Tree warm temperate rainforest, (HU739)

APPENDIX 2

SUPPLEMENTARY CALCULATION OF HYOPTHETICAL OFFSET AREA EXTENT

A2.1. SUPPLEMENTARY CALCULATION OF HYPOTHETICAL OFFSET AREA EXTENT

Table A2.1 provides the results of a hypothetical calculation of the extent of offset areas required, to inform the acquisition of future offset lands for the project. A detailed survey and site specific calculation would be required for any future offset site to accurately determine offset credit generation.

TABLE A2.1
ESTIMATE OF OFFSET AREA EXTENT REQUIREMENTS

Credit Types Required	Impact area (ha)	No. Of credits required for clearing	Clearing credits per hectare	Hypothetical offset credits generated at site	Hypothetical offset credits per hectare	Credit ratio per hectare (development / offset)	Estimate of hectares required for offset	Reduced offset extent where offset is zoned for development or rural production
White mahogany Open Forest (HU 798)	9.8 ha	738	75.3	61	6.22	12.1	**118.58**	**88.2**
Spotted Gum Open Forest (HU816)	3.19 ha	252	79	19	5.96	13.26	**42.30**	**29.8**
Slaty Red Gum Woodland (HU619)	9.4	579	61.60	70	7.45	8.27	**77.74**	**64**
Whalebone Tree dry subtropical rainforest (HU755)	5	384	76.8	31	6.2	12.39	**61.95**	**44.7**
Total Ecosystem Offsets	14.4	1953	292.7	181	25.83	46.02	**300.57**	**226.7**
Eucalyptus glaucina (Slaty Red Gum) Species Credit	9.4 (1203 inds)	16,842	1791.7	8541	908.62	1.97	**18.52**	**NA**
Koala (*Phascolarctos cinereus*) Species Credit	21.61	562	26	153	7.08	3.67	**79.31**	**NA**