

Final Response to Government Agency Submissions and Non- Confidential Public Submissions

for the

Calga Sand Quarry Southern Extension

Major Project Application No.
06_0278

Prepared by:



R.W. CORKERY & CO. PTY. LIMITED

in association with:

- Archaeological Surveys and Reports Pty Ltd
- Cumberland Ecology Pty Ltd
- Evans and Peck Pty Ltd
- Forward Planning Heritage Solutions
- GeoTerra Pty Ltd
- PAE Holmes Pty Ltd
- Transport & Urban Planning
- Wilkinson Murray Pty Ltd

Submitted: November 2012

This page has intentionally been left blank

Final Response to Government Agency Submissions and Non-Confidential Public Submissions

for the

Calga Sand Quarry Southern Extension

Major Project Application No. 06_0278

Prepared for:

Rocla Materials Pty Ltd
ABN: 30 083 169 091
72 Orchardleigh Street
PO Box 36
GUILDFORD NSW 2161

Telephone: (02) 9632 0122
Facsimile: (02) 9632 7471
Email: John.Gardiner@rocla.com.au

Prepared by:

R.W. Corkery & Co. Pty. Limited
Geological & Environmental Consultants
ABN: 31 002 033 712

Brooklyn Office:

1st Floor, 12 Dangar Road
PO Box 239
BROOKLYN NSW 2083

Telephone: (02) 9985 8511
Facsimile: (02) 9985 8208
Email: brooklyn@rwcorkery.com

Orange Office:

Suite 15, 256 Anson Street
ORANGE NSW 2800

Telephone: (02) 6362 5411
Facsimile: (02) 6361 3622
Email: orange@rwcorkery.com

Brisbane Office:

Suite 5, Building 3
Pine Rivers Office Park
205 Leitchs Road
BRENDAL QLD 4500

Telephone: (07) 3205 5400
Facsimile: (02) 9985 8208
Email: brisbane@rwcorkery.com

Ref No. 664/04

Date: November 2012



This Copyright is included for the protection of this document

COPYRIGHT

© R.W. Corkery & Co. Pty Limited 2012
and
© Rocla Materials Pty Ltd 2012

All intellectual property and copyright reserved.

Apart from any fair dealing for the purpose of private study, research, criticism or review, as permitted under the Copyright Act, 1968, no part of this report may be reproduced, transmitted, stored in a retrieval system or adapted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise) without written permission. Enquiries should be addressed to R.W. Corkery & Co. Pty Limited.



R. W. CORKERY & CO. PTY. LIMITED

FOREWORD

This document has been assembled in response to a range of government agency submissions and non-confidential public submissions to the *Environmental Assessment* for the proposed Calga Sand Quarry Southern Extension. The document comprises a consolidated set of responses with the following set of attached documents.

- Attachment 1: Results of Kashouli Pumping Test (December 2005)
- Attachment 2: Supplementary Noise Studies (2010)
- Attachment 3: Biodiversity Offset Strategy (May 2012)
- Attachment 4: Supplementary Aboriginal Heritage Assessment (July 2012)
- Attachment 5: Cultural Heritage Assessment, AHIMS Site 45-3-0119 and its Cultural Landscape Setting, Calga, NSW (December 2011)
- Attachment 6: Vibration Monitoring of Ripping Operations (July 2012)
- Attachment 7: Consultation Record with Aboriginal Stakeholders (J. Appleton and A. Atkinson)

As a result of the assembly of this document, Rocla has recognised the need to prepare a Preferred Project Report, which the Department of Planning and Infrastructure has formally requested be prepared. The stand-alone Preferred Project Report has been submitted in conjunction with this document.



This page has been intentionally left blank



CONTENTS

	Page
FOREWORD	III
PREAMBLE	ix
1. AIR QUALITY	1
1.1 BASELINE AIR QUALITY DATA	1
1.2 AIR QUALITY IMPACTS.....	9
2. SILICOSIS.....	13
2.1 BACKGROUND LEVELS OF SILICA IN PARTICULATES	13
2.2 INACCURATE CLAIMS BY RESIDENTS.....	13
3. SURFACE WATER.....	16
3.1 WATER REGULATIONS AND CUMULATIVE IMPACTS	16
3.2 FLOWS IN SURROUNDING CREEKS	19
4. GROUNDWATER	22
4.1 GENERAL COMMENTS.....	22
4.2 IMPACTS ATTRIBUTABLE TO SAND EXTRACTION.....	32
4.3 WATER ACCESS LICENCES	39
4.4 COMPENSATION FOR SURROUNDING LANDOWNERS.....	41
4.5 KULNURA MANGROVE MOUNTAIN GROUNDWATER SHARING PLAN	42
5. ECOLOGY	48
5.1 CLARIFICATION OF IMPACT AREA AND THREATENED SPECIES SECURITY	48
5.2 IMPACTS ON THREATENED SPECIES/EECS.....	61
5.3 IMPACTS ON GROUNDWATER DEPENDENT ECOSYSTEMS	74
5.4 STATUTORY CONSIDERATIONS.....	82
5.4.1 Commonwealth Legislation – Environment Protection and Biodiversity Conservation Act 1999	82
5.4.2 NSW Legislation – Threatened Species Conservation Act 1995	83
5.4.3 NSW Planning Instrument – Kulnura Mangrove Mountain Aquifer 2003 (Water Sharing Plan)	84
5.5 ADEQUACY OF BIODIVERSITY OFFSET – FAUNA.....	84
5.6 BIODIVERSITY OFFSET STRATEGY	87
5.7 MISCELLANEOUS ISSUES	94
6. ABORIGINAL HERITAGE.....	96
6.1 ABORIGINAL COMMUNITY CONSULTATION	96
6.2 SURVEY METHOD AND RESULTS	97
6.3 “GLENWORTH VALLEY” ROAD CORRIDOR	98
6.4 ENGRAVING/STONE ARRANGEMENT SITES	99



CONTENTS

	Page
7. NOISE AND VIBRATION.....	101
7.1 DAY SHOULDER PERIOD	101
7.2 GENERAL COMMENTS	104
8. TRAFFIC	108
8.1 GENERAL COMMENTS	108
9. LAND USES	112
9.1 COMMERCIAL AGRICULTURAL ACTIVITIES	112
9.2 LICENCING OF THE AUSTRALIA WALKABOUT WILDLIFE PARK	117
10. OTHER ISSUES	119
10.1 REHABILITATION	119
10.2 CONSULTATION	121
10.3 EMPLOYMENT	123
10.4 SOMERSBY FIELDS	123
10.5 SUPPLY OF SAND PRODUCTION DATA	124
10.6 FENCING THE EXTRACTION AREAS	124
10.7 PUMP OUT SEPTIC SYSTEM	124
10.8 ALTERNATIVE SAND SOURCES	125
10.9 INCOMING RAW MATERIALS	126
10.10 NIGHT LIGHTING/VISUAL LANDSCAPE	126
10.11 EXTENSION -V- NEW QUARRY	127
10.12 REAL ESTATE VALUES	127
11. RECOMMENDED APPROVAL CONDITIONS.....	129
11.1 INTRODUCTION	129
11.2 DECCW	129
11.3 GOSFORD CITY COUNCIL	130
11.4 NSW OFFICE OF WATER	132
12. REVISED STATEMENT OF COMMITMENTS	133
12.1 INTRODUCTION	133
12.2 REVISED STATEMENT	133
13. REFERENCES	149



CONTENTS

	Page
ATTACHMENTS	
Attachment 1	Results of Kashouli Pumping Test (December 2005).....A1-1
Attachment 2	Supplementary Noise Studies (2010)A2-1
Attachment 3	Biodiversity Offset Strategy (May 2012)A3-1
Attachment 4	Supplementary Aboriginal Heritage Assessment (July 2012)A4-1
Attachment 5	Cultural Heritage Assessment, AHIMS Site 45-3-0119 and its Cultural Landscape Setting, Calga, NSW (December 2011).....A5-1
Attachment 6	Vibration Monitoring of Ripping Operations (July 2012)A6-1
Attachment 7	Consultation Record held by Mr John Appleton (Archaeological Surveys and Reports) and Ms Amanda Atkinson (Forward Heritage Planning Solutions)A7-1
FIGURES	
Figure A	Impact Footprint 49
Figure B	Threatened Flora of the Project Site..... 53
Figure C	Vegetation Communities of the Project Site and Biodiversity Offset Areas 54
Figure D	Threatened Fauna and Habitat Features of the Project site and “Glenworth Valley” Offset Area 86
TABLES	
Table AQ-1	Annual average dust deposition levels in the vicinity of Calga Sand Quarry 1
Table AQ-2	DustTrak PM ₁₀ Concentrations at Australia Walkabout Wildlife Park..... 2
Table AQ-3	HVAS PM ₁₀ concentrations..... 2
Table AQ-4	HVAS PM ₁₀ Concentrations..... 4
Table AQ-5	DustTrak PM ₁₀ Concentrations at Australia Walkabout Wildlife Park..... 4
Table AQ-6	BOM Rainfall Data for 2007 – Lower Mangrove..... 5
Table AQ-7	24-hour average PM ₁₀ Concentrations at Richmond compared with HVAS data at CD-1..... 6
Table AQ-8	24-hour average PM ₁₀ concentrations at Richmond compared with HVAS data at Australia Walkabout Wildlife Park..... 7
Table AQ-9	24-hour average PM ₁₀ concentrations at Richmond compared with DustTrack data at Australia Walkabout Wildlife Park..... 8
Table AQ-10	NSW DECCW Criteria for Dust (Insoluble Solids) Fallout 12
Table AQ-11	NSW DECCW Criteria for Dust (Insoluble Solids) Fallout..... 14
Table SW-1	Change in Percentage of Time Flow of 0.14 ML/day is Exceeded..... 19
Table EA-5.20	(updated) Comparison of Offset Ecological Values..... 48
Table EA-5.21	(updated) Project Site Vegetation Clearing and Conservation 52
Table N-1	RBL Levels Presented in EA 102
Table N-2	Summary of the New RBL Levels Measured..... 102
Table N-3	RBL Noise Levels 103
Table N-4	Noise Criteria Proposed for Calga Sand Quarry. 104



This page has intentionally been left blank



PREAMBLE

Following the public exhibition of the *Environmental Assessment* and accompanying documents for the proposed Southern Extension of the Calga Sand Quarry, submissions were received by the Department of Planning from six government agencies, 111 members of the general public, 11 local community groups or organisations and numerous form letters. All non-confidential submissions were forwarded by the then Department of Planning (DoP) to R.W. Corkery & Co. Pty Limited on 19 March 2010. Each of the submissions from government agencies and non-confidential public submissions was comprehensively reviewed to enable an appropriate response to be prepared.

Table A (Attachment 1) lists the non-form letter submissions received, identifying whether they either support or object to the project, and categorising the issues raised into particular fields of assessment. The issues raised and comments presented in the submissions have been categorised into the following 12 separate fields of assessment.

- | | |
|------------------------|--------------------------------------|
| 1. Air Quality | 7. Noise and Vibration |
| 2. Silicosis | 8. Traffic |
| 3. Surface Water | 9. Land Uses |
| 4. Groundwater | 10. Other Issues |
| 5. Ecology | 11. Recommended Approval Conditions |
| 6. Aboriginal Heritage | 12. Revised Statement of Commitments |

Given the number of submissions received, the similarity of issues contained within a large number of these and in the interest of ensuring this response to submissions addresses all of the key issues in a concise and informative manner, this response document has been structured as follows.

1. All of the issues raised have been categorised under one of the 12 field headings presented above, with separate sub-sections created within the document accordingly. Representative text has been duplicated from various submissions under each issue to provide the basis for each response.
2. Each of the separate issues raised by the six government agency submissions has been addressed within the relevant sub-section.
3. Each of the separate issues raised within the public submissions has been addressed although it is noted that where issues are identified as common to two or more submissions, reference in the document is often restricted to a selected or representative submission.

The response to each issue identified has been assembled by R.W. Corkery & Co. Pty Limited with input from Rocla and seven of the specialist environmental consultants involved in the preparation of the *Environmental Assessment*, namely:

- Archaeological Surveys and Reports Pty Ltd – Mr John Appleton – responding to issues raised relating to Aboriginal heritage;



- Cumberland Ecology Pty Ltd – Dr David Robertson – responding to issues raised relating to ecology and the biodiversity offset strategy;
- Evans and Peck Pty Ltd – Dr Stephen Perrens – responding to issues raised relating to surface water;
- GeoTerra Pty Ltd – Mr Andrew Dawkins – responding to issues raised relating to groundwater;
- PAE Holmes – Ms Judith Cox – responding to issues raised relating to air quality;
- Transport & Urban Planning – Mr Terry Lawrence – responding to issues raised relating to traffic; and
- Wilkinson Murray Pty Ltd – Mr John Wasserman – responding to issues raised relating to noise and Mr Neil Gross responding to issues relating to vibration from ripping.

In addition to the above consultant groups, further assessments with respect to Aboriginal heritage issues were undertaken by the following consultants.

- Forward Planning Heritage Solutions – Ms Amanda Atkinson – responding to issues raised relating to Aboriginal heritage.
- University of Queensland – School of Social Science – Dr Anne Ross – responding to issues relating to the anthropology related to AHIMS Site 45-3-0119 and its Cultural Landscape Setting.



1. AIR QUALITY

1.1 BASELINE AIR QUALITY DATA

Representative Comment(s)

It is not clear why the proponents did not choose to monitor PM₁₀ for a 12 month period.

NSW Health Submission – Page 2

Response

The existing Development Consent (DA 94-4-2004) states that the air quality monitoring program should “concentrate on monitoring the dust deposition impacts of the development. However, in time, this may be expanded to include other pollutants”. This is a common requirement for projects which are not anticipated to have significant impact on local air quality, such as Calga Sand Quarry.

As presented in **Table AQ-1**, the annual average dust deposition levels in the vicinity of the existing Calga Sand Quarry have all been below the relevant impact assessment criteria of 4g/m²/month (see EA **Figure 5.21** (Page 5-144) for monitoring locations). Sand quarry operations generally have a low likelihood of resulting in PM₁₀ impacts. As such it has not been deemed necessary to introduce continuous air quality monitoring for PM₁₀. Furthermore, it is widely recognised that given the relationship between the proportion of deposited dust to PM₁₀, that low levels of deposited dust will equally be accompanied by low levels of PM₁₀.

Table AQ-1
Annual average dust deposition levels in the vicinity of Calga Sand Quarry (g/m²/month)

Year*	CD-1	CD-2a	CD-2b	CD-2c	CD-3	CD-4	CD-5	CD-6
2001	0.9	0.6			0.5			
2002	0.9	1.7			1.1			
2003	0.7	1.5			0.9			
2004	1.0	0.9			0.6			
2005	1.3	1.3			1.2			
2006	1.6	3.3	0.9		0.7	1.2		
2007	1.2		1.7		0.9	1.2	0.9	1.2
2008	1.0		1.6		0.6	0.8	0.7	1.1
2009	2.0		2.6		1.5	1.2	1.2	1.9
2010	1.3			1.1	0.5	0.5	0.5	0.7
2011	2.1			0.8	0.7	0.4	0.3	0.5

* not all data complies with the period of exposure specified in Australian Standard AS/NZS 3580.10.1:2003 “Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method”.

Rocla has completed some campaign monitoring for PM₁₀ concentrations on two occasions at the Australia Walkabout Wildlife Park (16th May to 1st June 2007, and 3rd August to 27th August 2007) – see **Table AQ-2** and at a location close to the existing operations (CD-1) between 4th February and 28th February 2007 – see **Table AQ-3** (see EA **Figure 5.21** for monitoring locations). Other than one 24-hour period at the Australia Walkabout Wildlife Park (17 May 2007), all the data collected were significantly below the health-based impact assessment criteria of 50µg/m³. It is important to note, that the sampling collects PM₁₀ from all sources, not just the Calga Sand Quarry. The National NEPM standard for PM₁₀ states the goal should not be exceeded on more than five occasions over the period of one year.



Table AQ-2
DustTrak PM₁₀ Concentrations at
Australia Walkabout Wildlife Park (µg/m³)

Date	PM ₁₀ 24-hour average concentration (µg/m ³)
16/05/07	24
17/05/07	64
18/05/07	10
19/05/07	1
20/05/07	3
21/05/07	3
22/05/07	4
23/05/07	2
24/05/07	3
25/05/07	7
26/05/07	19
27/05/07	21
28/05/07	15
29/05/07	12
30/05/07	5
31/05/07	10
01/06/07	9
Average	12.5

Table AQ-3
HVAS PM₁₀ concentrations (µg/m³)

Date	PM ₁₀ 24-hour average concentration (µg/m ³)
February 2007 – Location CD-1	
04/02/07	14
07/02/07	15
10/02/07	12
13/02/07	10
16/02/07	13
19/02/07	20
22/02/07	17
25/02/07	12
28/02/07	13
Average	14
August 2007 – Australia Walkabout Wildlife Park	
03/08/07	1
09/08/07	1
15/08/07	4
21/08/07	5
27/08/07	8
Average	3.8

We consider that Rocla's statement that PM₁₀ and PM_{2.5} can be inferred from TSP levels is totally incorrect.

Calga Peats Ridge Community Group Incorporated – Page 7

Response

It is important to understand how dust is classified. Dust is typically classified according to its particle size as follows.

- Deposited matter refers to any dust that falls out of suspension in the atmosphere and has a diameter (and hence mass) sufficient to fall out of the atmosphere (typically 50µm).
- Total suspended particles (TSP) typically refers to particles 50µm (micrometres) in size or less.
- PM₁₀ refers to particles 10µm in size or less.
- PM_{2.5} refers to particles 2.5µm in size or less.

Thus, when TSP measurements are made, these also include the PM₁₀ size fraction, which in turn contains the PM_{2.5} size fractions.

The relative proportion of the various fractions of dust from various mining and quarry operations are generally well defined and the levels applied in the air quality assessment for the Calga Sand Quarry Southern Extension are within these values.

As discussed on Page 1, when the deposited dust levels are low, the PM₁₀ concentrations would also be low.



To date contrary to the recommendation of overseas data $PM_{<4}$ have not been monitored.

Rocla has only monitored for PM_{10} particles continuously using DustTrak from May 15/5/07 to 1/6/07.

Rocla Mines used a High Volume Air Sampler to monitor PM_{10} every 3 days from 4/2/07-28/2/07, i.e. 9 days and from 2/8/07 to 27/8/07 only for 5 days. This data is insufficient and irresponsible.

Referring to the Bureau of Meteorology observations for all the above dates, it was raining before or during monitoring, for most of the days, and the monitors were placed up wind from the prevailing breezes.

Calga Peats Ridge Community Group Incorporated (Appendix B) - Page 9

Response

There are no relevant impact assessment criteria for ambient air which relate to $PM_{<4}$, nor a means of monitoring.

The measurements taken at the Calga Sand Quarry were made to determine the fraction of the sand that is respirable crystalline silica, The measurements were made in accordance with Australian Standard AS 2985-2004: Workplace atmospheres – *Method for Sampling and Gravimetric Determination of Respirable Dust*. This standard measures PM_7 while the dispersion model predictions are for concentrations of PM_{10} .

The California EPA Reference Equivalence Level (REL) applies to PM_4 and therefore the predicted impacts of PM_{10} concentrations were adjusted to PM_4 concentrations before they were compared with the standard. In their analysis, PAE Holmes assumed that the respirable crystalline silica fraction of PM_7 is the same for PM_{10} and PM_4 , i.e. a conservative assumption.

The amount of rainfall in any location varies significantly year-on-year and whilst there were rain periods in both monitoring periods, this does not render the data invalid. **Table AQ-4** shows measured PM_{10} concentrations and the rainfall recorded at the Bureau of Meteorology Lower Mangrove (Poplar Road) station (Station ID 061616) located approximately 5 km west of Calga Sand Quarry, the day before the sampling, and the day of the sampling. It is evident from these data that the majority of the samples were taken on days where there had been no rainfall the day before, and none on the day of sampling. It is noteworthy that the highest dust concentration measured at the Australia Walkabout Wildlife Park (see **Table AQ-5**) occurred on the day (21/08/07) when 125mm of rain was recorded – the highest rainfall ever recorded at that BOM station since it opened in 1963 (see **Table AQ-6**).

A similar conclusion can be drawn when considering the Dust Track data that were collected at the Australia Walkabout Wildlife Park in May/June 2007, as shown in **Table AQ-5**.



Table AQ-4
HVAS PM₁₀ Concentrations (µg/m³)

Date	PM ₁₀ 24-hour average concentration (µg/m ³)	Rainfall day before (mm)	Rainfall day of sampling (mm)
February 2007 – Location CD-1			
04/02/07	14	2.0	0
07/02/07	15	0	0
10/02/07	12	0	0
13/02/07	10	12	54
16/02/07	13	0	0
19/02/07	20	0	0
22/02/07	17	0	0
25/02/07	12	0	33
28/02/07	13	27	0
Average	14		
August 2007 – Australia Walkabout Wildlife Park			
03/08/07	1	0	0
09/08/07	1	0	0
15/08/07	4	0	0
21/08/07	5	125	6.4
27/08/07	8	0.2	0
Average	3.8		

Table AQ-5
DustTrak PM₁₀ Concentrations at Australia Walkabout Wildlife Park (µg/m³)

Date	PM ₁₀ 24-hour average concentration (µg/m ³)	Rainfall day of sampling (mm)
16/05/07	24	0
17/05/07	64	0
18/05/07	10	0
19/05/07	1	10.8
20/05/07	3	0
21/05/07	3	0
22/05/07	4	0
23/05/07	2	0
24/05/07	3	0
25/05/07	7	0
26/05/07	19	0
27/05/07	21	0
28/05/07	15	0
29/05/07	12	0
30/05/07	5	0
31/05/07	10	0
01/06/07	9	0
Average	12.5	

The 2007 rainfall data for the Lower Mangrove BOM station are presented in **Table AQ-6**.



Table AQ-6
BOM Rainfall Data for 2007 – Lower Mangrove

Daily Rainfall (millimetres)

LOWER MANGROVE (POPRAN RD)

Station Number: 061216 · State: NSW · Opened: 1963 · Status: Open · Latitude: 33.42°S · Longitude: 151.16°E · Elevation: 10 m

2007	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1st	0	0	26.0	0	0	0	0	0	0	0	0.4	51.8
2nd	9.6	3.0	1.2	0	0	0	0	0	0	0	0	20.0
3rd	4.4	2.0	0	0	0	0	0	0	0	0	27.0	0
4th	1.6	0	0	0	0	0	1.2	5.2	4.2	0	20.6	13.4
5th	0	0	14.6	0	0	0	0	0	4.0	0	0	24.0
6th	0	0	12.6	0	0	0	0	0	4.6	0	0.6	5.6
7th	0.2	0	2.4	14.0	0	37.0	0	0	2.6	0	18.0	0
8th	4.0	9.4	0	14.8	0	72.0	0	0	18.8	0	39.0	4.4
9th	0	0	18.0	5.6	0.8	233.0	16.0	0	4.2	0	14.6	0
10th	0	0	0	0.6	24.2	12.0	18.0	0	0.6	0	13.8	31.4
11th	0	3.6	0	0	0	0.4	0.2	0	0	0	4.2	8.0
12th	0	12.0	0	0	0	0	0	0	0	0	0	4.0
13th	0	54.0	3.4	0	0	0	0	0	0	19.0	0	0
14th	0	0.4	1.0	0	0	0	0	0	0	0	0	3.4
15th	0	0	0	0	0	0.8	0	0	0	0	2.6	0
16th	0	0	0	0.2	0	38.6	0	0.8	0	0	0	0
17th	0	0	0	0	0	36.4	0	1.4	0	0	0	6.4
18th	0	0	12.8	0	↓	2.8	0	0	0	0	0	0.6
19th	0	0	1.4	0	10.8	9.4	0	0	0	0	0	4.2
20th	0	0	0	0	0	25.4	0	125.0	0	0	0	1.0
21st	0	0	6.0	0	0	0.2	0	6.4	6.2	0	0	0
22nd	0	0	0	0	0	0	0	6.6	0	0	1.0	8.2
23rd	0	2.2	0	0	0	0	0.4	1.4	0	0	4.0	2.4
24th	66.0	0	0	44.2	0	0	0	1.0	0	0	7.8	0
25th	10.2	33.0	13.0	19.0	0	6.4	0	3.0	0.4	6.8	0	0.8
26th	0.6	38.0	3.8	3.4	0	13.2	0	0.2	0	5.6	0	0
27th	0	27.0	1.8	0	0	3.2	0	0	1.2	3.2	2.0	0
28th	0	0	0	6.0	0	2.2	0	0	0	0	10.4	0
29th	0		0	0.4	0	2.0	0	0	0	0	0	0
30th	0		0	0	2.4	0	0	0	0	0	5.4	0
31st	0		0		0		0	0		0		0
Highest daily	66.0	54.0	26.0	44.2	24.2	233.0	18.0	125.0	18.8	19.0	39.0	51.8
Monthly Total	96.6	184.6	118.0	108.2	38.2	495.0	35.8	151.0	46.8	34.6	171.4	189.6

Annual total for 2007 = 1669.8mm

Statistics for this station calculated over all years of data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Highest daily	66.0	99.2	96.4	53.0	91.2	233.0	83.4	125.0	69.6	68.8	42.0	71.6
Date of highest daily rainfall	24th 2007	25th 1999	9th 2000	2nd 2009	22nd 2009	9th 2007	15th 1999	20th 2007	7th 2006	19th 2004	9th 1999	11th 2002

↓ This day is part of an accumulated total

Quality control: 12.3 Done & acceptable, 12.3 Not completed or unknown



To present figures of continuous PM₁₀ monitoring for 12 months from Richmond (EA pg 5-146) 50km southwest of the proposed Quarry site is NOT acceptable!

Calga Peats Ridge Community Group Incorporated (Appendix B) – Page 9

Response

Table AQ-7, Table AQ-8 and Table AQ-9 compare the 24-hour average concentrations measured at the DECCW monitoring station located at Richmond with the data collected by Rocla at monitoring location CD-1 and the Australia Walkabout Wildlife Park (see EA **Figure 5.21** for monitoring locations).

It is evident from these data that (with the exception of one reading (from Australia Walkabout Wildlife Park on 17/05/07) the PM₁₀ concentrations measured at Richmond are significantly higher than any of the data collected at Calga on behalf of Rocla. This would suggest the use of these data in the cumulative assessment would lead to higher predictions than would actually occur.

Table AQ-7

24-hour average PM₁₀ Concentrations at Richmond compared with HVA5 data at CD-1 (µg/m³)

Date	DECCW RICHMOND Particulate Matter (<10 micrometres) 24h maximum [µg/m ³]	CD-1
04/02/2007	27.7	14
05/02/2007	30.4	-
06/02/2007	30.1	-
07/02/2007	34.8	15
08/02/2007	28.0	-
09/02/2007	22.5	-
10/02/2007	33.3	12
11/02/2007	23.4	-
12/02/2007	25.8	-
13/02/2007	17.6	10
14/02/2007	22.0	-
15/02/2007	20.3	-
16/02/2007	27.9	13
17/02/2007	27.4	-
18/02/2007	16.9	-
19/02/2007	27.4	20
20/02/2007	25.4	-
21/02/2007	22.2	-
22/02/2007	73.6	17
23/02/2007	32.0	-
24/02/2007	32.5	-
25/02/2007	20.0	12
26/02/2007	17.4	-
27/02/2007	19.5	-
28/02/2007	29.7	13



Table AQ-8
24-hour average PM₁₀ Concentrations at Richmond compared with HVAS data at Australia
Walkabout Wildlife Park (µg/m³)

Date	DECCW RICHMOND Particulate Matter (<10 micrometres) 24h maximum [µg/m ³]	Australia Walkabout Wildlife Park
03/08/2007	16.6	1.0
04/08/2007	14.0	-
05/08/2007	11.0	-
06/08/2007	16.9	-
07/08/2007	22.3	-
08/08/2007	34.4	-
09/08/2007	15.8	1.0
10/08/2007	25.2	-
11/08/2007	24.4	-
12/08/2007	42.5	-
13/08/2007	20.3	-
14/08/2007	18.2	-
15/08/2007	25.5	4.0
16/08/2007	21.6	-
17/08/2007	18.2	-
18/08/2007	-	-
19/08/2007	-	-
20/08/2007	11.6	-
21/08/2007	19.8	5.0
22/08/2007	17.7	-
23/08/2007	12.9	-
24/08/2007	13.9	-
25/08/2007	16.4	-
26/08/2007	24.1	-
27/08/2007	28.3	8.0



Table AQ-9
24-hour average PM₁₀ concentrations at Richmond compared with DustTrack data
at Australia Walkabout Wildlife Park (µg/m³)

Date	DECCW RICHMOND Particulate Matter (<10 micrometres) 24h maximum [µg/m ³]	Australia Walkabout Wildlife Park
16/05/2007	27.5	24.0
17/05/2007	28.9	64.0
18/05/2007	22.7	10.0
19/05/2007	11.8	1.0
20/05/2007	12.3	3.0
21/05/2007	17.1	3.0
22/05/2007	25.2	4.0
23/05/2007	19.6	2.0
24/05/2007	23.5	3.0
25/05/2007	42.9	7.0
26/05/2007	27.8	19.0
27/05/2007	38.1	21.0
28/05/2007	32.6	15.0
29/05/2007	29.0	12.0
30/05/2007	12.2	5.0
31/05/2007	21.2	10.0
01/06/2007	31.4	9.0

Getex monitored dust from bulldozers and trucks on 28/4/08 and 16/6/2008 and on both occasions the pump failed due to excessive loading of dust in the filter. It would be good if they repeated this when the pumps were working.

Calga Peats Ridge Community Group Incorporated (Appendix B) – Page 9

Response

The monitoring completed by Getex was completed in accordance with *Australian Standard AS 2985-2004: Workplace atmospheres – Method for Sampling and Gravimetric Determination of Respirable Dust*.

The method to determine respirable crystalline silica (RCS) concentrations requires a mass of approximately 2 milligrams of dust to be collected and analysed using x-ray diffraction to establish the fraction of RCS on the filter. Whether or not the pump failed would not be anticipated to affect the fraction of RCS in the dust collected, especially as a sufficiently large sample of dust was obtained.

Samples were also taken when the pump didn't fail and they provided similar results.

Finally, it needs to be pointed out that the methodology adopted by PAE Holmes is consistent with the EPA approved methods. The EPA had no issue with the approach particularly as in this case it was demonstrated to be very conservative.



1.2 AIR QUALITY IMPACTS

Representative Comment(s)

*Residents are concerned that so called 'nuisance dust' not only from the new mine (less than 2km upwind), but also from passing trucks with legally **but inadequately** covered loads, will collect on rooves contaminating the drinking water and damaging water filters and pumps.*

Calga Peats Ridge Community Group Incorporated – Page 25

Response

Rocla requires all trucks to be covered with a truck tarp pulled over the load from ground level. This is enforced through Rocla's "No cover/no load" Policy. In reality, given the moisture content in the washed sand (at least 5%) and mortar sand (typically 10%), negligible dust is generated from sand in a truck. Reference to the deposited dust results assembled around the Quarry confirms that the entire quarry operations, including truck traffic does not substantially affect deposited dust levels near surrounding residences – hence, the amount of fallout on rooves surrounding the quarry would be minimal.

EA pg 2-16 states that land will be cleared 6-12 months in advance.⁵ This will greatly enhance the dust problem. However in the Statement of Commitments, pg 6-13, 11.1 states that they will minimise clearing ahead of extraction activities. Which will it be?

Calga Peats Ridge Community Group Incorporated (Appendix B) – Page 14

Response

These statements are not inconsistent. Rocla will clear the land required for approximately 12 months operation, however, the exact area cleared may also be dependent upon other conditional requirements that need to be satisfied.

Costs to Australia Walkabout Wildlife Park associated with the new quarry include:

- Impact of dust on health, including asthma exacerbation and silica-related diseases, with the greatest impact on staff and the approximately 100,000 visitors including visiting children's health (20,000 school children attending school workshops, some overnight) with the associated social, productivity and financial costs.*

Australia Walkabout Wildlife Park – Page 30

Response

Whilst dust generated from the Calga Sand Quarry operations may contain silica dust, and long term inhalation of silica dust may lead to the formation of scar tissue in the lungs, which can result in silicosis, a serious lung disease, silicosis is well recognised to be a work place issue associated with long-term exposure to high levels of RCS and not an environmental issue affecting the wider community.



An Australian Government Senate Committee (2005) report identified that there are no reports in the international literature of individuals developing silicosis as a result of exposure to non-occupational levels (i.e. levels outside the work place) of silica dust, and an expert appearing before the committee confirmed the potential for such an occurrence as being “very remote”.

A literature review on the potential impacts to health from exposure to crustal material in Port Hedland, WA, states “exposure to airborne quartz carries the risk of silicosis, but only with prolonged exposure to concentrations greater than $200\mu\text{g}/\text{m}^3$ ” (Department of Health, 2007). The air quality dispersion modelling for the proposed Calga Sand Quarry Extension predicted the increase in annual average respirable concentration of crystalline silica at the most affected residence to be $0.21\mu\text{g}/\text{m}^3$, approximately one-tenth of one percent of the levels that may be of concern.

Such claims are unjustified. Rocla will continue to adopt the required safeguards and controls to ensure that all health-related dust criteria are satisfied throughout the life of the project.

Australia Walkabout Wildlife Park has raised the issue of dust with the proponent even summoning the proponent to a site visit to examine a large overnight dust deposition on Australia Walkabout Wildlife Park after dry westerly winds blew dust directly from the existing approved operations onto the visitor centre at Australia Walkabout Wildlife Park. The proponent's response was that it was not dust from the proponent's operations. However, testing of the actual dust deposited that night and dust taken from the existing approved operations showed similar fractured silica in similar – unusually high (in excess of 80%) – concentrations. Fractured silica is not normal ‘dust’ but is the product of sandstone ripping which, in the area, only occurs on the proponents existing approved operation site. These tests were conducted by recognised authorities engaged to assess dust impacts for the Somersby Fields mine action group and were submitted by them to the Planning Department in support of their case.

Australia Walkabout Wildlife Park – Page 10

Response

The only sampling the Proponent is aware of, are the samples taken by Getex at Rocla's Calga Sand Quarry for presentation in the Somersby Fields Panel Hearing to determine the silica content of the actual operations. The Proponent has not been provided with the results of the additional analysis of the dust observed at the Australia Walkabout Wildlife Park. The Proponent is, however, well aware that the Panel hearing for the Somersby Fields Project who was provided with the analyses referred to concluded “there is no reason to expect any resident in the area will be exposed to sufficient concentrations of respirable silica as to cause silicosis”.

In the case of the Somersby Fields Project, one of the closest receptors considered was the Somersby Public School, approximately 260m from the closest point of sand extraction. The Panel concluded that “the Panel is confident that the concentrations of air-borne crystalline silica would remain well below internationally accepted criteria in the areas surrounding the project, including at the Somersby Public School”.

A representative of PAEHolmes (previously Holmes Air Sciences) visited the Australia Walkabout Wildlife Park in May 2007 to assist with the positioning of the HVAS. It is noted that there are significant areas of exposed surfaces within the Australia Walkabout Wildlife Park. It would be anticipated that samples from the site would be predominantly dust from the



areas exposed at that time. It is noted that any mechanical activity such as vehicular movements can produce fractured silica, however, it is important to note that the percentage of fractured silica does not mean this is the amount of silica that is respirable crystalline silica.

It is not feasible that any significant amount of silica has reached the Australia Walkabout Wildlife Park from the current operations at Calga Sand Quarry, which is approximately 1.2km north of Australia Walkabout Wildlife Park.

Our home is regularly covered by a fine layer of dust especially when the weather is dry and the prevailing westerly wind is blowing (we live directly east of the existing approved operations as well as the proposed new quarry). This dust we see we understand is so-called 'nuisance dust' and is not supposed to cause respiratory and other systemic disease. However, it does cause eye, throat and skin irritation.

The addition of the proposed new quarry will, due to both volume of dust produced and proximity to our home, make it uninhabitable as the health impacts, already high, will be downright dangerous.

My husband has developed "dry eye disease", an extremely painful condition which usually responds well to treatment. His has not responded at all despite specialist care over many months since diagnosis. Dry eye disease is known to be caused by airborne irritants. In the past four years, the only time's my husband has been symptom free have been when he has spent holidays of a month or more away from our home. Each time symptoms resolved but resurged within 24 hours of his return home. It is almost certain, therefore, that his condition is caused by airborne irritants constantly present in our home environment. The only feasible source is silica dust from Rocla's current approved operations.

I am a now symptomatic asthmatic. I had been symptom-free for many years before living downwind of the Rocla sand mine. My son-in-law is a chronic severe asthmatic requiring regular treatment including nebulisation. Medical research has proved that dust from open-cut mining is associated with higher incidences of asthma and exacerbation of symptoms, with impact increasing as proximity to the mine increases. We live approximately 2km from the existing approved operations. Once Rocla begins to quarry just 240m from our home, it is logical to assume that my and my son-in-law's asthma symptoms will worsen.

Barnard Family – Individual Submission No. 105 – Page 2

Response

Reference to Figure 4.4 in the *Environmental Assessment* reveals the Barnard residence (No. 13) is south-southeast of the existing Calga Sand Quarry (not directly east of the existing approved operation). Westerly winds are not the prevailing winds in this area as shown in Figure 4.3 in the *Environmental Assessment*.

As noted in previous responses, with the exception of one 24-hour average PM₁₀ concentration measured at the Australia Walkabout Wildlife Park, all the air quality monitoring completed in the vicinity of the existing Calga Sand Quarry operations complies with the impact assessment criteria, and are lower than the DECCW data collected during the same period in Richmond. It is therefore unlikely that the existing operations are having any impact on the community.

The dispersion modelling for the proposed operations shows that all predicted impacts meet the relevant impact assessment criteria at all assessed residences.



PM₁₀ and below size particles have got to settle somewhere, why not on my roof, where I collect rainwater from?

Angela Hellyer – Individual Submission No. 97

Response

The material that would preferentially settle on surfaces (and hence have the potential to be washed out into rainwater tanks) is referred to as “deposited dust”.

Table AQ-10 shows the dust deposition criteria set out in the DECCW procedures for modelling air pollutants from sources (NSW DEC, 2005).

Table AQ-10
NSW DECCW Criteria for Dust (Insoluble Solids) Fallout

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2 g/m ² /month	4 g/m ² /month

The air quality impact assessment for the proposed extended operations determined that the maximum increase in deposited dust will be less than 1 g/m²/month. Existing dust deposition levels are less than 2g/m²/month, which complies with the DECCW criteria.

As per advice from NSW Health (2007), it is good practice for any rain water system in any location to install a simple first flush system to prevent particulate matter (or any other undesirable materials) that have collected on the roof being washed into the rain water tank.



2. SILICOSIS

2.1 BACKGROUND LEVELS OF SILICA IN PARTICULATES

Representative Comment(s)

The silica content of local particulate matter in ambient air needs to be determined.

NSW Health Submission

Response

As the levels of respirable crystalline silica (RCS – the toxic form of crystalline silica) in ambient air are inherently very low, and significantly below the level at which there is risk to health, there are no methods (or monitoring equipment) that can directly monitor the concentrations in ambient air. The only method available is the *Australian Standard AS 2985-2004: Workplace atmospheres – Method for Sampling and Gravimetric Determination of Respirable Dust* which is then analysed for RCS using infrared or x-ray diffractometry.

In order to determine the RCS content, it is necessary to obtain approximately 2 milligrams of respirable dust (PM₁₀) dust. Even if the 24-hour average concentrations of PM₁₀ in the Calga area were 50µg/m³, this would require a sampling period of over 300 hours. Given that the majority of the 24-hour average concentrations in the vicinity of the existing Calga Sand Quarry have been less than 25µg/m³, the sampling time required would be in excess of 600 hours.

The Report of the Independent Hearing and Assessment Panel for the Somersby Fields Project (Department of Planning, 2008) presented an analysis of data collected by ANSTO (1995). The analysis determined that based on the most conservative assumptions the background levels of crystalline silica in the PM₁₀ size range would be approximately 0.34µg/m³ at Somersby. The levels in the vicinity of the Calga Sand Project are likely to be similar. The air quality impact assessment conservatively assumed the background levels are 0.7µg/m³.

2.2 INACCURATE CLAIMS BY RESIDENTS

Representative Comment(s)

In December 2006 there were some heavy dust depositions in the area. Dust samples from one residence approximately 1km from the existing quarry showed 80-90% Crystalline Silica less than 10µm, and from another residence 2km from the quarry showed 90% crystalline silica less than 10µm. On other occasions, Dust plumes have been photographed rising to 400m above the quarry. Local residents who rely on rain water for their drinking water supply are concerned that "This deadly silica dust that settles on our homes will be washed into water tanks - which we ingest - the health impact of this is yet unknown."

Calga Peats Ridge Community Group Incorporated – Page 8

Response

The only sampling the Proponent is aware of, are the samples taken by Getex at the Calga Sand Quarry for presentation at the Somersby Fields Panel Hearing to determine the silica content of dust. The Proponent has not been provided with the results of the additional analysis of "dust" in the area. The Proponent, is, however, well aware that the Panel Hearing for the Somersby



Fields Project who was provided with the analyses referred to still concluded “there is no reason to expect any resident in the area will be exposed to sufficient concentrations of respirable silica as to cause silicosis”.

In the case of the Somersby Fields Project, one of the closest receptors considered was the Somersby Public School, approximately 260m from the closest point of sand extraction. The Panel concluded that “the Panel is confident that the concentrations of air-borne crystalline silica would remain well below internationally accepted criteria in the areas surrounding the project, including at the Somersby Public School”.

The samples taken at the Calga Sand Quarry as part of the Somersby Independent Hearing Assessment Panel, were taken to determine the percentage of respirable crystalline silica generated while a bulldozer is ripping friable sandstone and when trucks are travelling on internal roads.

The particle size fractions that have health impacts are not visible to human eye. Adverse health effects of RCS arise when air is inhaled, not swallowed.

The material that would settle on surfaces (and hence have the potential to be washed out into rainwater tanks) is referred to as “deposited dust”.

Table AQ-11 shows the dust deposition criteria set out in the DECCW procedures for modelling air pollutants from sources (NSW DEC, 2005).

Table AQ-11
NSW DECCW Criteria for Dust (Insoluble Solids) Fallout

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
Deposited dust	Annual	2g/m ² /month	4g/m ² /month

The air quality impact assessment for the proposed extended operations determined that the maximum increase in deposited dust will be less than 1 g/m²/month. Existing dust deposition levels are less than 2 g/m²/month, which complies with the DECCW criteria.

As per advice from NSW Health (2007) it is good practice for any rain water system in any location to install a simple first flush system to prevent particulate matter (or any other undesirable materials) that have collected on the roof being washed into the rain water tank.

When the sandstone is ripped, it creates dust storms containing Crystalline Silica – carcinogenic to humans causing many health conditions including SILICOSIS (A condition similar to Asbestosis) Lung Cancer and kidney failure. The invisible ultrafine sand particles are capable of travelling kilometres downwind and are breathed into the deepest parts of the lungs.

Paragraph in Submitted Form Letter

Response

Whilst it is true that dust generated from the Calga Sand Quarry operations will generate silica dust, and that long term inhalation of silica dust may lead to the formation of scar tissue in the lungs, which can result in silicosis, a serious lung disease, silicosis is solely a work place issue.



An Australian Government Senate Committee (2005) report identified that there are no reports in the international literature of individuals developing silicosis as a result of exposure to non-occupational levels (i.e. levels outside the work place) of silica dust, and an expert appearing before the committee confirmed the potential for such an occurrence as being “very remote”.

A literature review on the potential impacts to health from exposure to crustal material in Port Hedland, WA, states “exposure to airborne quartz carries the risk of silicosis, but only with prolonged exposure to concentrations greater than $200\mu\text{g}/\text{m}^3$ ” (Department of Health, 2007). The air quality dispersion modelling for the proposed Calga Sand Quarry extension predicted annual average respirable concentration of crystalline silica at the most affected residence of $0.21\ 200\mu\text{g}/\text{m}^3$.

Rocla’s own product safety data sheet as indicated on its website for manufactured sand which is attached as Appendix B. Some of the noteworthy warnings contained within it are as follows:

Danger of serious damage to health by prolonged exposure through inhalation.

Do not breathe dust

Crystalline Silica (Quartz) 80-100%

Avoid breathing dust. Respirable dusts can be generated during processing, handling and storage.

Glenworth Valley Outdoor Adventures – Page 10

Response

The MSDS for the sand produced at Calga Sand Quarry is a generic document where the focus relating to health is upon silica particles or respirable dust less than $7\mu\text{m}$.

The MSDS is not relating specifically to the Calga Sand Quarry. Such warnings noted are appropriate for silica of the nominated grain size, i.e. less than $7\mu\text{m}$. In excess of 98% of washed sand produced at Calga Sand Quarry is in excess of $75\mu\text{m}$ or ten times the diameter of the crystalline silica particles of concern. Furthermore, the washed sand produced at Calga is marginally coarser than the sand present on Sydney’s beaches and most children’s sand pits.



3. SURFACE WATER

3.1 WATER REGULATIONS AND CUMULATIVE IMPACTS

Representative Comment(s)

Creek A in Stage 4 comes in at 190m AHD. Rocla proposes to mine down in this area to 141m AHD (Compendium volume 1 sect 5.2 pg 1-50) which is 50 m below the start of the creek. The creek is intercepted, which appears to contravene the rules as stated in Water Act Regulatory Compliance.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 2

Response

This submission raises two issues:

1. The elevation of the floor of the quarry;
2. The interception of the creek.

The submission appears to have misunderstood the particular section that is quoted. Page 1-50 of the Groundwater Assessment which is referring to the adopted configuration of the groundwater model. The text of the Groundwater Assessment distinguishes between the model assumption (that Stage 4 will have a flat floor) and the actual proposal (that Stage 4 will have a sloping floor that is between 20m and 30m below the natural surface – i.e. will vary from about 160m AHD near the north-eastern end of Creek A to about 145m AHD at the point where the creek crosses the boundary of the Stage 4 extraction area). The Groundwater Assessment goes on to explain that because the groundwater model assumes a lower level for the base of the quarry than is now proposed, the groundwater impacts the modelling will “provide for conservative (higher) groundwater inflow estimates.”

The submission is unclear as to which specific regulations are being referred to as “the rules as stated in Water Act Regulatory Compliance”. Because the proposed project involves intercepting Creek A, this activity has been specifically considered and assessed as part of the overall assessment in the *Environmental Assessment* and the detailed assessment of groundwater and surface water impacts in the Groundwater Assessment (Volume 1 – Part 1 of the Compendium) and the Surface Water Assessment (Volume 1 – Part 2 of the Compendium). Under Part 3A of the EP&A Act, any approvals arising from other acts form part of an approval for the project as a whole. The approval authority (the Minister for Planning or his/her delegate) will account for impacts that would be associated with any relevant activities that arise under the *Water Management Act 2000* and associated regulations.



There has been a significant oversight on the subject of the cumulative impacts of the existing and proposed quarry expansion. For instance whilst the Cabbage Tree Creek catchment is quite large there are only 3 watercourses which are or were in the driest of droughts perennial in the entire catchment. These being the creek to the north adjacent to water sampling location C, the creek to the north of the existing quarry adjacent to water sampling location A and the watercourse in the proposed expansion area known as Creek A. These 3 perennial watercourses are highly significant and critical to the survival of numerous plants and animals living in them or relying upon the moisture they provide such as in the extensive high quality rainforest valley below the project site.

Glenworth Valley Outdoor Adventures – Page 6

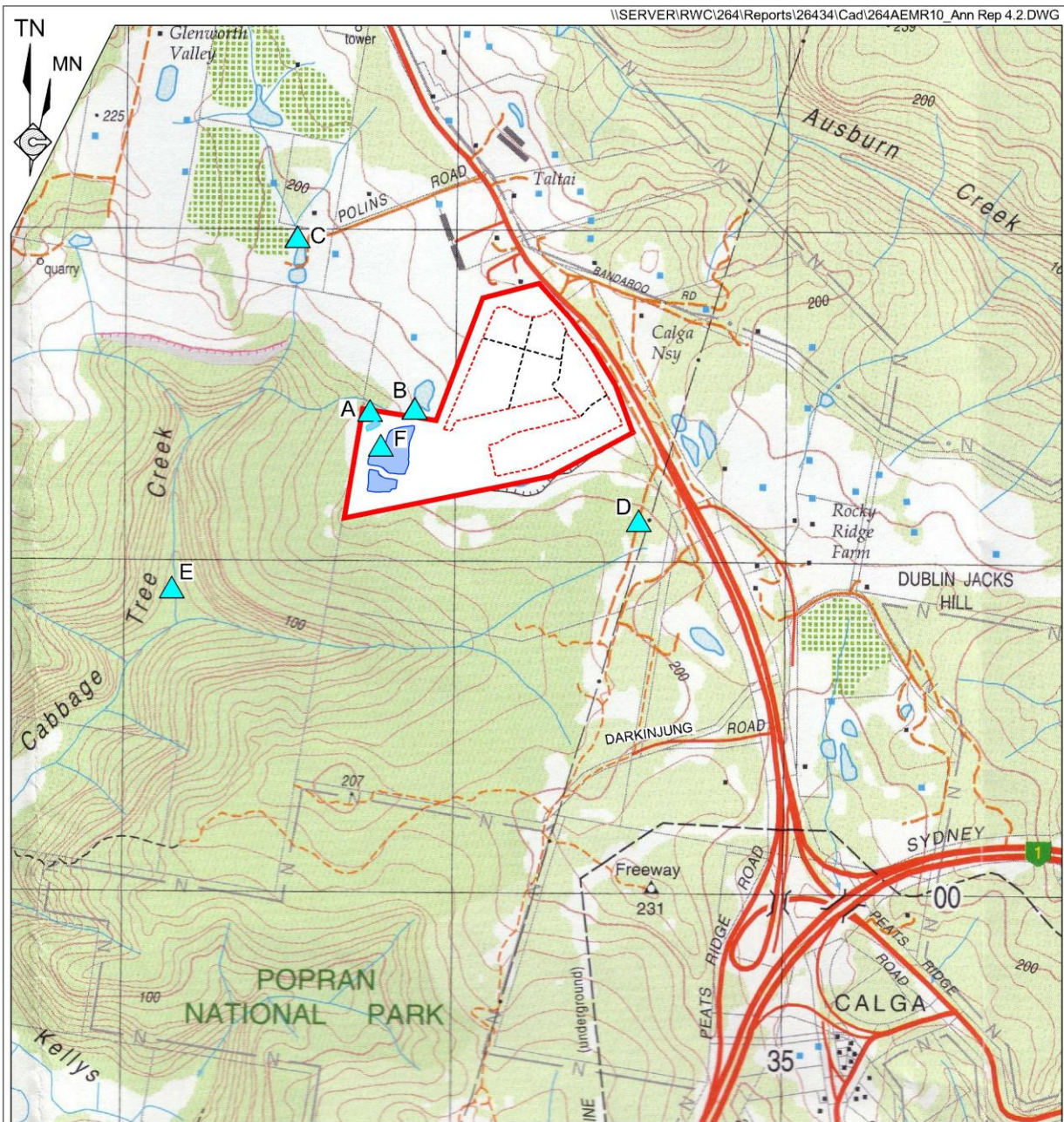
Response

The submission identifies three watercourses which, based on personal observation by the author of the submission, were perennial in the “*driest of droughts*” (presumably referring to the 2004-7 drought). The relevance of the three nominated creeks to the proposed project is as follows.

1. The creek to the north adjacent to water sampling location C is located upstream of the existing quarry and the proposed extension. The proposed extension will have no effect on this creek.
2. The creek immediately to the north of the existing quarry adjacent to water sampling location A drains from the dam on the adjoining property near water sampling location B and receives flow from the diversion weir structure within the existing quarry. Notwithstanding any impact of the existing quarry, it is pleasing to note that the author of the submission has observed perennial flow in this creek. Please note: A copy of Figure 4.2 from the 2011 Annual Environment Management Report more accurately locates the water sampling sites (than *Environmental Assessment* Figure 5.7). This figure is duplicated on the following page.
3. The impacts of the project upon the watercourse in the proposed extension area known as Creek A has been assessed in the *Environmental Assessment*. In particular, Section 5.4 of the Surface Water Assessment provides an assessment of the proposed project on flows in the remaining section of Creek A and the untouched sections of Creeks B and C at a point where Creek C leaves the Project Site boundary. Figures in Annexure 1 of Appendix C to the Surface Water Assessment (some reproduced as Figures 11, 12 and 13 of the Surface Water Assessment) compare the daily flow duration curves for existing “natural” conditions and the “project” conditions during and after the project. In relation to low flow conditions, the analysis indicates that the project will have the following impacts.
 - By Year 2 of the extension project, the flow in the creek will be greater than the “natural” flow.
 - By Year 5, the flow in the creek will be almost exactly the same as existing “natural” flow conditions.
 - Between Years 9 and 22, the flow in the creek will be marginally less than the “natural” flow.

Following completion of sand extraction, the flow in the creek will be greater than the natural flow – hence the claims of the author of the submission are unfounded.





- REFERENCE
- Quarry Site Boundary
 - - - Substage Boundary
 - A ▲ Surface Water Monitoring Location

SCALE 1:20 000

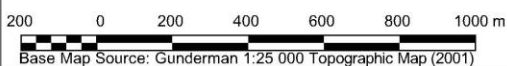


Figure 4.2
SURFACE WATER
MONITORING LOCATIONS



3.2 FLOWS IN SURROUNDING CREEKS

Representative Comment(s)

I have measured the flow in Creek A on a number of occasions during drought years (i.e. 90 percentile dry years) when there has been no rainfall events for 2 months beforehand and have been amazed to see that this creek continues to flow at a constant rate of .4 litres a second or contributes a minimum of 12.5 ML of base line water flow to the catchment per annum. Such a consistent and permanent flow of water is evidently fed from the aquifer and most likely bed plane fracturing. It would appear the current proposal cannot be determined until a complete assessment of allocations and extraction limits in the catchment have been done. This would confirm that an unacceptably high cumulative impact would occur if the quarry is permitted to expand further and that the catchment is already over exploited and cannot sustain any further removal of water from the catchment without irreparable damage to the environment.

Glenworth Valley Outdoor Adventures – Page 7

Response

The author of the submission provides anecdotal evidence that Creek A exhibits persistent flow during times of drought, with measured flow of 0.4 L/s (0.035 ML/day). Unfortunately, the specific location on Creek A is not identified nor are details provided of the method used for measurement and its likely accuracy.

Notwithstanding, the reported flow in Creek A is not inconsistent with the modelling of the “natural” flow regime for the flow in Creek C where it crosses the Project Site boundary and flows into the “Glenworth Valley” property (the point at which hydrologic modelling was used to assess the flow regime under existing conditions and at various stages during the project).

Creek A comprises approximately 25% of the combined catchment of Creeks A, B and C at the Project Site’s western boundary. Based on this proportion, the equivalent low flow in Creek C would be about 0.14 ML/day. The hydrologic modelling indicates that flow greater than this could be expected to occur on about 55% of days under existing conditions. The modelling indicates that during sand extraction the proportion of days on which this flow would be exceeded would be as set out in **Table SW-1** (see Figures 11, 12, 13 and Appendix C of the Surface Water Assessment).

Table SW-1
Change in Percentage of Time Flow of 0.14 ML/day is Exceeded

Quarry Year	% of Days Flow Exceeded	Change in % of Days
2	65%	+10%
5	53%	-2%
9	49%	-6%
12	49%	-6%
18	48%	-7%
22	46%	-8%
Post	83%	+18%



The hydrologic modelling results indicate that the project is likely to reduce the number of days on which flow exceeds 0.14 ML/day by between 2% and 8% (7 and 29 days/year) between Years 5 and 22 of the project. However, prior to Year 5 and following completion of the project, the proportion of the time that flow exceeds 0.14 ML/day at the Project Site boundary is likely to increase. In particular, it should be noted that following completion of the project, flow in the creek is expected to be greater than 0.14 ML/day on an additional 65 days per year.

The reduction in the proportion of time that flow exceeds 0.14 ML/day at the Project Site boundary is not expected to have any significant impact on flows in Cabbage Tree Creek, as the main tributary of which drains from the north and would not be affected by the proposed extension of the quarry.

The Proponent acknowledges that the conditions in sub clause (1) cannot be met within the 100m exclusion zone and refers to “incidental extraction of groundwater”. “This is an understatement of the facts i.e. “..the complete removal of the 360 metre creek that traverses stage 4 creek A and modification of the hydrology of creeks B and C..” (EA 5-99)

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 36

Response

This submission relates to Sub-clause 1 of Section 39 of the Kulnura Mangrove Mountain Water Sharing Plan which relates to the protection of groundwater dependent ecosystems. Notwithstanding the fact that the project will involve “*the complete removal of the 360 metre creek that traverses stage 4 creek A and modification of the hydrology of creeks B and C*”, the impact of these works has been specifically assessed as part of the EA. The assessment includes a detailed hydrologic analysis that accounts for changes in the flow regime in Creek C where it discharges from the Project Site. The analysis indicates that the project would have minimal impact on the low flow regime and would, therefore, not have a significant impact on any groundwater dependent ecosystems in Creek C or Cabbage Tree Creek downstream of the Project Site.

Our particular concern is the detrimental effect it will have on our Mountain Community’s water system and the wider Central Coasts water supply.

We further request a delay of all decisions until after the ANSTO results come out this year (about June 2010 we believe).

Mangrove Mountain Districts Community Group Incorporated – Page 1

Response

The surface water assessment undertaken for the EA quantifies the impacts of the project on the flow regime in Creek C which drains into Cabbage Tree Creek approximately 450m downstream of the Project Site boundary (the reference location for the surface water hydrology assessment). There are no identifiable residences downstream of the site on Cabbage Tree Creek that could be affected by the quantified changes in flow regime in Creek C. The proposal would therefore have no effect on the surface water supply that is relied on by members of the community.



Similarly, there are no elements of the water supply for the wider Central Coast that rely on streamflow from Cabbage Tree Creek. The nearest element of the Central Coast water supply is the weir and pump station on Mangrove Creek approximately 12 km upstream of the junction with Popran Creek.

The suggestion contained in the submission that the project would impact on local community water supply or the water supply for the Central Coast is unsupported.

It is noted that the ANSTO study referred to has not yet been finalised (S. Hollins, ANSTO, pers comm).

Have studies been done to determine the importance of Creek A in supplying Cabbage Tree Creek?

Angela Hellyer – Individual Submission No. 97

Response

The Surface Water Assessment includes a detailed hydrologic assessment of the flow regime in Creek C into which Creek A drains. The analysis considers the impact of the project, including changes to Creek A, on the flow regime in Creek C at the Project Site boundary. The analysis considers various stages throughout the project and assesses the impact following the completion of the project. As discussed in response to an earlier comment, the hydrogeological modelling has established that prior to Year 5 and following completion of the project, the flow in Creek A would in fact be higher than natural flows for an additional 65 days. The increase in downslope waterflows long term is attributable to a reduced level of evapotranspiration given the removal of the vegetation within Stages 4 and 5. That is, the water that would have been taken up by the vegetation on site would then either flow downstream or enter the groundwater system.

Reference to Figure 4.2 of the EA (Page 4-5) establishes that the catchment area for Creek A is in the order of 27ha whereas the total catchment for Cabbage Tree Creek is in excess of 400ha. Hence, the catchment of Creek A is <7% of the Cabbage Tree Creek catchment.



4. GROUNDWATER

4.1 GENERAL COMMENTS

Representative Comment(s)

The amount of conflicting information presented for the present site in Rocla's 2004 Environmental Impact Statement compared to the Development Application of 1990 suggests that the impacts could already be a lot greater than stated.

For the proposed new mine to predict an inflow of groundwater approx. five times that of the present operation, raises serious questions.

The figures provided in the EA and Compendiums appear questionable and indicate that there could be a shortfall of approximately 375ML per year needed to top up the system in addition to the 208ML stated in the Water Balance Chart.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 20

Response

The data contained in the 2004 EIS has been updated with additional field studies and monitoring for the current *Environmental Assessment*. The 1990 EIS is over 20 years old and therefore the findings and data used at that time do not reflect the significant improvements in modelling technology, nor the groundwater data collected since 1990. The current state of the groundwater system in the vicinity of the Rocla site is being regularly monitored and publicly reported, and was included in the *Environmental Assessment*.

It is also notable that while up to 161ML¹ of water is predicted to seep into the extraction area by the end of extraction in Stage 5, both the groundwater modelling and surface water modelling predict that the overall impact on environmental flows of water would be minor.

- **Table 5.8** of the *Environmental Assessment*, which summarises the modelling completed by Golder Associates (2009), predicts that as a result of ongoing seepage from the quarry silt and water storages, the reduction in base flows to the local creek system would be reduced by only 15% over the life of the quarry (and actually increase post quarry completion).
- **Table 5.18** of the *Environmental Assessment*, which summarises the run-off modelling for the Project Site catchments completed by Evans & Peck (2009), predicts that averaged over the life of the Project, the impact would be a slight reduction in the flow in to Creek C of about 31ML/year (8%) in average rainfall years, 11ML/year (13%) in 10th percentile (dry) years and 71ML/year (8%) in 90th percentile (wet) years. As predicted for groundwater base flows, the volume of runoff is predicted to increase in the final landform following the completion of quarrying and rehabilitation of the final landform.

¹ It is reiterated that the modelled in-flow rates are likely to be conservatively high as the model considered the effect of depressurisation that would be resultant from the complete removal of the sandstone all at once (as opposed to the progressive development of the extraction areas over the nominated life of the quarry).



The increase in downslope waterflows long term is attributable to a reduced level of evapotranspiration given the removal of the vegetation within Stages 4 and 5. That is, the water that would have been taken up by the vegetation on site would then either flow downstream or enter the groundwater system.

Hence, it is illustrated that the predicted in-flow to the quarry, as a consequence of the proposed Southern Extension, is unlikely to have the significant effect on local water resources claimed by this and other submissions.

With respect to the query related to the water balance, i.e. *“The figures provided in the EA and Compendiums appear questionable and indicate that there could be a shortfall of approx 375ML per year needed to top up the system in addition to the 208ML stated in the Water Balance Chart”*. This claim draws from a report prepared by Environmental Hydraulics Pty Ltd (EHPL) which questions two aspects of the water balance prepared by Evans & Peck Pty Ltd.

1. The proportional relationship assumed between sand production and water use.
2. The assumed water input provided by the friable sandstone.

Relationship between Sand Production and Water Use

The report prepared by EHPL provides no justification or calculation for their claims that an additional 290ML of water would be required (to that quoted in Evans & Peck, 2009 [see **Figure 6**] and the *Environmental Assessment* [see **Figure 2.10**]). Contrary to the claims of EHPL, it is argued that while there will be variation in the volume of water required and lost from the system over time, e.g. due to a change in the proportional production of washed and dry sand, or as a result of increased evaporation or seepage should the ratio of evaporative or seepage surface area to production rate increase, the rate of use and loss will remain equivalent. We do not believe that EHPL have provided a creditable basis for their claim that an additional 290ML of water would be required when production reaches 1Mtpa.

Water Content of the Friable Sandstone

In response to the claims by Environmental Hydraulics Pty Ltd (EHPL) and Larry Cook & Associates Pty Ltd (LCA) that the water balance incorporates a water input from the friable sandstone which is too high, an assessment of the claims made by EHPL and LCA are addressed and an explanation as to how the input rate was derived is provided.

The critical error made by EHPL and LCA is assuming that the 15% moisture content is a volumetric proportion, when in fact it is a gravimetric proportion. That is, EHPL and LCA assume that every 1m³ (2.4t) incorporates 0.15m³ (150L) of water. Using this (incorrect) assumption, it follows that there is only 0.0625t (62.5L) of water in every tonne of friable sandstone (a gravimetric moisture content of 6.25%).

Noting the error made by EHPL and LCA in calculating the friable sandstone water content component of the water balance, the following provides (with reference to the actual excel calculation sheet used to derive the input value) the derivation method.

1. The friable sandstone water content has been calculated assuming that every tonne of friable sandstone incorporates 0.15t (150L) of water.



2. The proportion of the various sand products and waste materials derived from each 100t of "dry" friable sandstone (Rows 26 to 30) was calculated based on several assumptions (derived from the geological logs and actual quarrying experience) (Rows 16 to 21).

Rocla - Calga Quarry

Water Gains and Losses

Wet silt sample collected 23/6/08

6	Volume of container (ml)	310	
7	Mass of wet silt (g)	306	
8	Mass of dry silt (g)	140.7	
9	Mass of water (g)	165.3	
10	Gravimetric water content (%)	117%	
11	Dry density of silt (t/m3)	0.454	
12	Volume of silt (@ SG 2.67)	0.170	
13	Volume of water (@SG 1.0)	0.830	

Assuming:	From Corkery	Original	
16	Silt as % of extracted sandstone	18%	14%
17	Coarse rejects as % of extracted sandstone	11%	10%
18	Proportion of mortar sand that is washed	50%	50%
19	Water in mortar sand product	9%	9%
20	Water in concrete sand product	5%	5%
21	Water content in friable sandstone	15%	15%

Water "gained" and "lost" per 100 tonnes of product leaving the site as a function of the split between mortar sand and concrete sand

24	Mortar sand %	10%	20%	25%
25	Concrete sand %	90%	80%	75%
26	Mass of "dry" mortar sand (t)	9.2	18.3	22.9
27	Mass of "dry" concrete sand (t)	85.7	76.2	71.4
28	Mass of "dry" silt from mortar sand (t)	1.2	2.3	2.9
29	Mass of "dry" silt from concrete sand (t)	21.7	19.3	18.1
30	Mass of coarse rejects (t)	14.6	14.4	14.3
31	Friable "dry" sandstone extracted (t)	132.3	130.5	129.6
32	Mass of water in processed friable sandstone (t)	17.7	17.4	17.3
33	Volume of water in friable sandstone (L)	17,667	17,427	17,307
34	Water in silt (L)	26,896	25,426	24,690
35	Water in mortar sand product (L)	826	1,651	2,064
36	Water in concrete sand product (L)	4,286	3,810	3,571
37	Total water losses (L per 100 t)	32,007	30,887	30,326
38	Mass of "wet" mortar sand product (t)	10.0	20.0	25.0
39	Mass of "wet" concrete sand product (t)	90.0	80.0	75.0
40	Total sand product (t)	100	100	100
41	Water "gained" from processed friable sandstone (L/t)	177	174	173
42	Water "lost" in product (per tonne of product) (L/t)	51	55	56
43	Water "lost" in silt (per tonne of product) (L/t)	269	254	247
44	Total water "lost" per tonne of product (L/t)	320	309	303
45	Volume of deposited wet silt (m3/t of product)	0.504	0.477	0.463
46	Volume of deposited wet silt (m3/t of extraction)	0.381	0.365	0.357



3. The proportional volume of these products and waste materials will vary dependent on the proportion of concrete sand (washed product) and mortar sand (dry screened product) (Rows 24 and 25). The water balance has assumed 80% concrete sand and 20% mortar sand as quoted in the *Environmental Assessment*.
4. Summing Rows 26 to 30 provides for the mass of “dry” friable sandstone required to be extracted and processed to generate 100t of sand products. In the highlighted case, 130.5t of friable sandstone will be extracted to produce 100t of sand products.
5. It has been assumed that the coarse reject component of the process would be screened off before the raw material is processed further to create the sand products. As such, this material is not considered to enter the processing circuit and the water content of this material is excluded from calculation of friable sandstone water content.
6. The calculations to this point assume the sandstone, sand products and waste are “dry”. To derive the water content of each of these elements, the dry mass is multiplied by the moisture content (15% in the case of the friable sandstone).
7. Therefore, the mass of water provided by the friable sandstone (for every 100t of sand products) provided by Row 32 is calculated as follows.
 - = Dry friable sandstone (130.5t) – mass of coarse reject (14.4t) x 0.15
 - = 116.1 x 0.15
 - = 17.4t

The unwary reader is left to believe, incorrectly, that no local bore owners have complained to the proponent about their bores’ yield. On careful reading it is apparent that no owners of the 8 bores that Rocla monitors including their own have complained. However, omitted from the EA is the fact that others including Australia Walkabout Wildlife Park have complained to Rocla that their water supplies are seriously depleted.

Because of the lie of the land, it is impossible to build a bund wall high enough to shelter staff and people attending the programs at Australia Walkabout Wildlife Park from the noise, dust, or a direct view of the extraction site. Because of the topography, Australia Walkabout Wildlife Park’s bore, the only source of water for Australia Walkabout Wildlife Park, will almost certainly run dry as its underground water feeds will be disrupted. This bore already only has 3 hours pumping before needing to be left for a day or more to recharge.

Australia Walkabout Wildlife Park – Page 13

Response

The owners of AWWP have never lodged a verbal or written complaint with Rocla regarding groundwater levels in their bore. Gerald Barnard first raised the matter with Rocla at a community meeting with Calga residents on the evening of 20 August 2009. Ever since then, Rocla has on more than one occasion offered for the bore levels to be recorded as part of the monthly monitoring program – a request that has been ignored/denied. The predictions included in the groundwater assessment for the proposed Southern Extension have therefore been, by necessity, conservative. It remains Rocla’s preference for discussions relating to impacts to be based on data and not uninformed speculation.



Reference to the most recent (2009) independent Groundwater Audit of the Calga Sand Quarry and the range of groundwater piezometers within the proposed Southern Extension verify that the existing Calga Sand Quarry has **not** been the cause of reduced yields in the AWWP bore (see Annexure 3 of the 2009 Annual Environment Management Report).

The available drawdown in the bore at any one time will depend on the “resting” water level and whether or not the water level has fully recovered from any pumping that may have occurred previously.

The comment that the bore last 3 hours before requiring one or more days to recover indicates that the current pumping rate is set at a level which is too high for the aquifer’s ability to supply water to the pump. If a lower pumping rate were to be used, the bore would have a lower discharge rate, but could last for longer, potentially enabling more total water volume to be extracted.

A pump out test is required to assess the current status of the bore, the pump depth and a sustainable extraction rate for the particular bore. It is again noted that all Rocla’s offers to date to measure water levels in the Walkabout bore have been ignored/rejected.

If a bore experiences greater than 10% reduction in yield (according to the current Site Water Management Plan), at Rocla’s expense, the cause of the loss will be investigated, and if it is found to be due directly to the sand extraction operation, either the pump can be lowered further into the bore or a new, deeper bore and suitably calibrated pump / pumping rate can be provided.

It is noted that the only complaint received by Rocla was in 2004 when Mrs Kashouli (north of the Gazzana Property) complained that the quarry had caused her bore to dry up. This claim was subsequently refuted in a report by Rocla’s then groundwater consultant, Mr Chris Jewell (see **Attachment 1**).

The proposed NEW mine will use 8 Billion litres of water per year and destroy the water aquifer, never to recharge. The use of 8 Million tons of water for at least 20 years will threaten the supply of water to the plateau and the city of Gosford. (Refer: Compendium 1/22 1.5.3 – Water supply).

Paragraph in Submitted Form Letter

Response

The aquifer is predicted to be depressurised due to the proposed sand extraction as outlined in the *Environmental Assessment*, however, it **will** continue to be constantly recharged. The evidence provided by groundwater monitoring of bores surrounding the existing Calga Sand Quarry (see *Figure 5.2* of the *Environmental Assessment* and *Appendix B* of GeoTerra (2009)) illustrates that groundwater levels are primarily influenced by local rainfall (which seeps into the permeable sandstone aquifer) as opposed to the extraction from the quarry (or groundwater extraction from the nearby production bores). It is likely that both these activities may result in a slight acceleration of groundwater level decline between major rainfall events (by providing an additional sink for groundwater to be drawn towards), however, as long as heavy rainfalls continue to occur locally, the friable sandstone component of the Hawkesbury Sandstone aquifer will continue to recharge.



The proposed Southern Extension is predicted to affect the regional water table in the immediate vicinity of the quarry as outlined in the *Environmental Assessment*. To suggest that the impact will extend beyond the periphery of the modelled drawdown area and adversely affect the water supply of Gosford is totally misleading.

The following reports indicate that groundwater in the region is already being extracted beyond the capacity of the catchment, and the Group considers that further extraction by Rocla as sought in this Project application is not sustainable and may have serious impacts on both the environment and existing water users.

**7.1 Merrick et al, Report, Kulnura – Mangrove Mountain Aquifer Model, November 2006
Commissioned by Gosford-Wyong Councils Water Authority and Department of Natural Resources**

...A recent report by Merrick et al at the Centre for Ground Hydrology found that groundwater on the MMK plateau was being extracted “above sustainable yield levels and that loss of groundwater affected the base flow in the streams that provide drinking water”.

7.2 Aquifer Risk Assessment report – April 1998, Department of Land and Water Conservation

In 1998 the NSW Department of Land and Water Conservation classified the MMKA among the “Coastal Highest Risk Aquifers on a Statewide Basis” using a number of different criteria. Since then extraction has increased enormously during ongoing drought conditions with long range forecasts of more and worse to come.

7.3 DWE (NOW) Bores and Hydrographs: 2002-2006

There were 3 DWE monitoring bores along Peats Ridge Rd within 10km north of Rocla’s current operations when it expanded after 2004:

- DWE hydrograph data (2002-2006) of all 3 bores show Standing Water Level (SWL) declines. Due to equipment problems, 2 of these 3 bores have not been monitored since 2006.*
- Assuming that these 3 are/were the closest bores to Rocla, the Group considers that water authorities cannot understand the current and future impact of Rocla’s operations particularly in drought conditions without this information, and this information must be provided.*

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 20-21

Response

The Project Site is located within Zone 7 (Lower Mangrove and Popran Creeks Groundwater Source) and groundwater within Zone 7 is managed by NSW Office of Water (NOW) under the Water Sharing Plan for the Kulnura Mangrove Mountain Groundwater Sources. Although Zone 7 only has 42% of its groundwater resources allocated, there is an embargo on obtaining additional Water Access Licences (WALs). Any additional groundwater WAL volume required by Rocla will need to be either purchased or leased from existing WAL holder/s.



Whilst it is acknowledged groundwater volumes within Zone 7 are not fully “allocated”, the actual quantity of groundwater extracted annually would not equal the allocation, as some extraction allocations would not be fully utilised. The substantial amount of data on groundwater levels that has been assembled from the bores within the Calga Sand Quarry and adjoining private bores are far more suitable to enable assessment of the groundwater system in the vicinity of the proposal, notwithstanding the status of the DWE (NOW) bores elsewhere on the plateau.

Apart from the above, it is also noted that the considerable monitoring of groundwater levels undertaken for the existing Calga Sand Quarry (and audited every 12 months) has established that the Calga Sand Quarry is not having adverse impacts on the existing environment and water users.

The significance of potential water table impacts is assessed by GeoTerra in terms of the loss of available drawdown. However, it is considered that the available drawdown calculations by GeoTerra do not provide meaningful assessment of potential impacts because they do not take into consideration the position of pumps or aquifers. Based on the available data and information (including the currency of water level measurements), it is considered difficult to establish the practical available drawdowns of the target bores and therefore the significance of any impacts.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 24

Response

The available drawdown is calculated by subtracting the NOW reported or measured water level in a bore from the total bore depth. Pumps can be raised or lowered within the water column, whilst the water level is directly related to the aquifer’s hydrostatic pressure, which dictates where the free standing piezometric surface is measured.

The monitoring bore network is sufficiently extensive and adequate. However, it is not clear whether GeoTerra have nominated any control (background) bores.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 32

Response

The current piezometer monitoring suite includes control piezometers (as in piezometers that measure water level in a “natural” piezometric state) in the undeveloped land in the vicinity of the proposed Stage 4 and 5 extraction areas. As sand extraction extends into these areas, the yet to be written Groundwater Management and Monitoring Plan will address the need for any additional “control” monitoring points.



Rocla is proposing to violate our property rights by not only depriving my property of water that would otherwise flow onto it and under it but to also remove groundwater that is already there through the effects of dewatering the water table by excavating deep into the surrounding water table. This water belongs to our property and they do not have my permission to take it.

Glenworth Valley Outdoor Adventures – Page 2

Response

The claims regarding reductions of flows are considered unsubstantial based upon the following statements.

- Table 5.8 of the EA, which summarises the modelling completed by Golder Associates (2009), predicts that as a result of ongoing seepage from the quarry silt and water storages, the reduction in base flows to the local creek system would be reduced by only 15% over the life of the quarry (and actually increase post quarry completion).
- Table 5.18 of the EA, which summarises the run-off modelling for the Project Site catchments completed by Evans & Peck (2009), predicts that averaged over the life of the Project, the impact would be a slight reduction in the flow in to Creek C of about 31ML/year (8%) in average rainfall years, 11ML/year (13%) in 10th percentile (dry) years and 71ML/year (8%) in 90th percentile (wet) years. As predicted for groundwater base flows, the volume of runoff is predicted to increase in the final landform following the completion of quarrying and rehabilitation of the final landform.

It is also noted that no changes in flow have been noticed over the many years as evidenced by monitoring on the “Glenworth Valley” property i.e. until it ceased.

One of our principal concerns is that if a deep hole or void is dug 30 metres deep into the uphill side of land from which groundwater has been identified as coming from, then it is only logical that such an excavation will intercept and cut off this flow of water to land situated on the downhill side.

Glenworth Valley Outdoor Adventures – Page 2

Response

Excavation of the friable sandstone is predicted to intercept and reduce the standing water level as shown in the *Environmental Assessment*, however, it will not totally “cut off” groundwater flow to the down gradient areas of the site. Surface water will still flow down gradient, whilst seepage from on-site dams and fines storage areas will provide a partial component of groundwater recharge to the down gradient areas.



Reference is again drawn to the result of groundwater base flow and surface run-off modelling completed for the proposed Southern Extension.

- Table 5.8 of the *Environmental Assessment*, which summarises the modelling completed by Golder Associates (2009), predicts that as a result of ongoing seepage from the silt and water storages, the reduction in base flows to the local creek system would be reduced by only 15% over the life of the quarry (and actually increase post completion).
- Table 5.18 of the *Environmental Assessment*, which summarises the run-off modelling for the Project Site catchments completed by Evans & Peck (2009), predicts that averaged over the life of the Project, the impact would be a slight reduction in the flow into Creek C of about 31ML/year (8%) in average rainfall years, 11ML/year (13%) in 10th percentile (dry) years and 71ML/year (8%) in 90th percentile (wet) years. As predicted for groundwater base flows, the volume of runoff is predicted to increase in the final landform following the completion of quarrying and rehabilitation of the final landform.

Hence, it is illustrated that the predicted in-flow to the quarry, as a consequence of the proposed Southern Extension, is unlikely to have the significant effect on local water resources claimed by this and other submissions. Both the groundwater modelling and surface water modelling predict that the overall impact on environmental flows of water would be minor.

The 2004 Rocla EA indicated that on average 1.2 ML of water is recharged into the water table per hectare. As a direct consequence of the proposal over 48 hectares and therefore 57.6 ML of water will be unable to be absorbed into the aquifer each and every year. I believe these figures need to be included in the amount of groundwater intercepted or removed from the system and a license for this water obtained from DWE.

The assertion in section 5.1.5.4 and table 5.8 that ground water flows will actually increase once the quarry ceases is completely illogical and undermines the accuracy of many of the other claims made in the EA.

Glenworth Valley Outdoor Adventures – Pages 3-4

Response

Groundwater intercepted by the proposal will need to be covered by an appropriate Water Access Licence volumetric allocation from the NSW Office of Water. Where surface water is retained and ponded in the final rehabilitated void/s, it will provide an additional recharge source to the underlying Hawkesbury Sandstone aquifer compared to the operational stage of the quarry where surface water will not be retained in the active void.

Claims are often made by persons unfamiliar with the total water balance that negligible reductions of downslope flows are “illogical” when an excavation is proposed which intersects the groundwater table. Persons claiming this are not considering the total surface water/groundwater regime. As discussed earlier in the responses to both surface water and groundwater issues, the increase in downslope long term is attributable to a reduced level of evapotranspiration given the removal of the vegetation with Stages 4 and 5. That is, the water that would have been taken up by the vegetation on site would then either flow downstream or enter the groundwater system.



Groundwater surrounding the quarry behaves in a very unique manner.

This makes the prediction of impacts from the quarry on groundwater highly risky and unreliable at best. Impacts associated with the quarry on the ground water table will include the loss of hydraulic head, dewatering of water transmitting fractures, and destruction of groundwater recharge areas. These impacts have not been adequately assessed and catered for from a regulatory perspective.

Glenworth Valley Outdoor Adventures – Page 4

Response

State-of-the-art groundwater modelling software and standard practice techniques were used to assess the potential effects of the sand extraction in Stages 4 and 5 on the groundwater system. The groundwater assessment was approved for exhibition following the Adequacy Assessment conducted by NOW.

Section 8.3 of the 2004 Rocla EA indicated that “impacts associated with excavation to depths of 190m as is proposed in the EIS may become significant.” They also acknowledge “it is not possible to define a penetration depth above which there would be no risk of impact.” On this basis this application should be refused because the effects of any level of excavation are unknown, unpredictable and unsafe.

Glenworth Valley Outdoor Adventures – Page 4

Response

The potential effects of the excavation on the groundwater system in the vicinity of the Project Site have been predicted in the *Environmental Assessment* using state-of-the-art groundwater modelling software. The inputs to this modelling reflect the considerable amount of data assembled since 2004. Hence with this additional data used, a greater degree of confidence can be achieved than was available in 2004.

The hydrological assessment suggests on a number of occasions that the drawdown effect from the quarry will be limited to 100 metres from the quarry excavation area. Such statements are false and misleading conduct on the part of the consultant concerned and are designed to trick unsuspecting landowners that the impacts will be a lot less than indicated.

Glenworth Valley Outdoor Adventures – Page 4

Response

No “false and misleading” statements have been presented. The predicted effects using “state-of-the-art” modelling software and procedures including discussion on the sensitivity analyses are presented in Appendix A of the *Groundwater Assessment (Volume1, Part 1)*.



The fact that pump tests were not performed over a generally accepted amount of time or even at all suggests that the consultant was afraid of the results that would be obtained if the test had occurred according to normal industry benchmarks.

Glenworth Valley Outdoor Adventures – Page 5

Response

The duration and extent of pump out, as well as other tests used was sufficient to characterise the aquifer system in the vicinity of the Project Site. The hydraulic parameters used for the Hawkesbury Sandstone are within the expected range in comparison to numerous studies conducted in the Hawkesbury Sandstone of the Sydney Basin by the report author and other investigations.

Water obtained from the Gazzana property is very popular due to its unique taste and flavour.

Such pure, high quality water is extremely rare due to there being no other properties which have such high yields of spring water that are free of contamination from previous farming activities.

Due to changes to Gosford Council's planning regulations in 2000, water extraction facilities are no longer a permitted activity.

There are far more alternative locations for sand quarries than there is for commercially viable water extraction facilities.

Glenworth Valley Outdoor Adventures – Page 6

Response

Reference to the 2009 Independent Groundwater Audit of the Calga Sand Quarry will inform the author that bores up-hydraulic gradient do in fact contain various nutrients attributable to past agricultural uses of the land adjoining the Gazzana Property.

4.2 IMPACTS ATTRIBUTABLE TO SAND EXTRACTION

Representative Comment(s)

It is unclear how it can be ascertained whether impacts are attributable to the quarrying operations. Realistic assessment and response protocols are required to ensure that project related impacts are accepted and managed as such.

NSW Health Submission – Page 1

Response

The author of the NSW Health submission should refer to the 2009 Independent Groundwater Audit for the existing quarry to gain an appreciation of how impacts attributable to sand extraction can be established. In brief, the network of groundwater monitoring bores within and around the extraction areas provide a total picture of the groundwater table and its variations attributable to rainfall and any other possible factors such as sand extraction. When considered



in this holistic manner, it is simple to identify any adverse changed and their cause. It is noted that the conclusion in the 2009 Independent Groundwater Audit recorded the following

“Because of the consistency with previous reporting periods, the consistency across the monitoring network, and the clear correlation with rainfall patterns and natural recession trends, it is considered that the observed trends can be entirely attributed to natural responses to climatic variation, and there was no evidence of impact from the quarry activities. Monitoring records continued to show that there has been no net drawdown of water levels across the site in 2009 or at any of the neighbouring private production bores”.

One of the impacts of the Project is the permanent removal of part of an aquifer that is already over allocated and under stress. And we consider that the mine will result in the removal of an entire creek.

The Group fear that these impacts may permanently destroy a water source that is vital to the existence of the environment and immensely important to the community at large.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 4

Response

The Kulnura Mangrove Mountain Water Sharing Plan (WSP) provides a maximum extraction limit (allocation) for each of the nominated groundwater sources within the area covered by the WSP. The extraction limit for the Lower Mangrove and Popran Creeks Groundwater Source (within which the Calga Sand Quarry is located) is 2 234MLpa. Currently, water access licences (WALs) exist for up to 946MLpa (approximately 42% of the extraction limit) illustrating that the aquifer is not ‘over allocated’ as claimed. Notably, there is currently an embargo on the issuing of new WALs within the entire plateau area where the WSP applies with Rocla required to purchase existing WAL entitlements for any water ‘accessed’ as a result of extraction below the groundwater table.

There is also no evidence to suggest that the aquifer is under stress as claimed. To the contrary, groundwater monitoring data collected by Rocla (and included as Appendix B of the Groundwater Report of GeoTerra, 2009) indicates that groundwater levels continue to be influenced by rainfall with water levels rising following heavy rainfall and steadily declining during extended dry periods. This trend does not appear to be affected by the high volume groundwater extraction undertaken (in excess of 70MLpa) on the property to the immediate northwest of the Project Site.

Creek A, a first order drainage channel will be removed by the extraction of sand from Stage 4. Creeks B and C will however, be retained. The catchment to Creek A is less than 50ha, representing <4% of the catchment to Cabbage Tree Creek (1 270ha) and <1% of the catchment to Popran Creek (6 500ha). Critically, Rocla has incorporated design and management controls to protect the critical ecological elements of the creeks on the Project Site, mitigating against the loss of the ephemeral first order creek.

The submission, either purposefully or unintentionally, also massively overstates the potential impact of the proposed sand extraction on local water resources. Attention is again drawn to **Tables 5.8** and **5.18** of the *Environmental Assessment* which summarise the results of



groundwater base flow and surface runoff modelling. The reduction in groundwater base flow to Creek C would be reduced by only 15% over the life of the quarry (and actually increase post completion). Furthermore, the reduction in surface runoff to Creek C, averaged over the life of the Project would be less than 15%. When the area of affected catchment (163ha) is compared against the total catchment of Popran Creek (6 500ha), the minor scale of the impact on the surface and groundwater catchment is further illustrated, ie, 15% reduction from 2.5% of the regional catchment.

All studies have been done on the Cabbage Tree Creek area and the EA does not assess the many other creeks and tributaries within the predicted drawdown area for example, Christies Gully and the creeks running into Ausburn Creek and Mooney Mooney Creek. These areas contain Groundwater Dependent Ecosystems (GDEs). The Group considers that the impacts of the proposed mine are likely to extend to areas other than just Cabbage Tree Creek.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 7

The proposed removal of friable sandstone may remove a proportion of recharge water that contributes to base-flow of creeks the other side of Peats Ridge Rd, e.g. Ausburn Creek and Christies Gully/ creek and there is no commentary in EA regarding this. Further information is required from Rocla to address the potential creek flow reduction on the eastern side.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 12

Response

The tributaries of Ausburn and Mooney Mooney Creeks are on the periphery of the modelled drawdown area where closer to 1m and possibly between 1m and 5m of drawdown is predicted. Groundwater levels in the headwaters of Christy Creek is predicted to experience approximately 1m of drawdown. These drawdowns are conservatively predicted by the model, and may eventuate to be less than predicted.

It is not anticipated that the predicted degree of drawdown due to the project will observably adversely affect the GDEs in these creek catchments, as the current groundwater levels would vary within this range both naturally and due to extraction from existing nearby private bores.

The Minister's decision should be deferred until the following two public authority studies have been publicly released and considered. (later in 2010):

- CSIRO groundwater sustainability study;
- ANSTO study of the age of water in the Kulnura/Mangrove Mountain Aquifer.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 5

Response

Deferment of the determination of the current project application is not necessary given the Project's compliance with the Water Sharing Plan and comprehensive hydrogeological assessment undertaken for the project.

It is noted that the ANSTO study referred to has not yet been finalised (S. Hollis, ANSTO, pers comm.)



An answer to the questions asked in the Cook report at page 45:

- i) *Noting that there is estimated to be a shortfall of approximately 85 L/t moisture content (decreased from 29% to 15%), therefore, a decrease in the volume of water contained in the friable sandstone from 174 L/t to 89 L/t, is a groundwater supplement required to satisfy the “make up” volume required and, if so, what is the supplementary groundwater volume required to maintain the 1 000 000 tpy production rate?;*
- ii) *If a supplementary groundwater supply is required, the implication is that a further groundwater entitlement or allocation may need to be purchased from a water access license holder – given the relatively low bore yields in the local area; can this volume of groundwater be successfully pumped from the sandstone hosted aquifer system beneath the project area?*
- iii) *Further information to address the potential creek flow reduction on the eastern side of the Peats Ridge Road ridge system;*
- iv) *A protocol for compensation and provision of proof of adequate insurance coverage to cover any loss of groundwater to all other groundwater users impacted by the quarry’s water usage;*

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 5

Response

Responses are numbered as per the submission.

- i) An assessment of the methodology used to derive the volume of water held within the friable sandstone by Larry Cook & Associates Pty Ltd (LCA) (the same methodology used by EHPL) and an explanation as to the (correct) derivation used by Evans & Peck was previously provided in Section 4.1. Notably, the critical error made by both LCA and EHPL was the assumption of a volumetric moisture content proportion (as opposed to a gravimetric proportion).
- ii) The supplementary water can be sourced from the expected dewatering of the proposed extraction areas, however, the extraction and use of the water must be conducted under an appropriate volumetric allocation with a Water Access Licence.
- iii) No observable adverse creek flow reduction is anticipated on the eastern side of Peats Ridge Road due to the predicted drawdown that would be in the pre-existing, natural range of water level variability.
- iv) Rocla has already adopted a process that, if required, would be adopted to compensate owners of bores where reductions of saturated thickness (>10%) are attributed to the sand extraction operations. Details of this commitment are included in the Site Water Management Plan (available on Rocla’s website). This commitment has also been included with the Statement of Commitments (see Commitment No. 5.10).



Because friable sandstone only comprises approx. 20% of the whole Mangrove Mountain Kulnura Water Source area, it appears to the Group to be totally irresponsible to interfere with such a vital resource that contributes to the environment as a whole. It is this friable sandstone that contains the bulk of the groundwater that keeps the whole Kulnura Mangrove Mountain area alive. Particularly the GDEs and base flows to many creeks as well as the community and helps support various agricultural enterprises. Once removed, this ground water will not return.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 8

Response

The proposal is only located within Zone 7 of the Kulnura Mangrove Mountain Water Source Area. The water within the remaining zones, (covering >90% of the Mangrove Mountain Kulnura area) would remain available for the creeks and agricultural enterprises in those areas. The area of groundwater affectation adjacent to the Rocla properties is comparatively minor. Furthermore, the predicted long term increase in runoff will avoid the concern expressed in this comment.

Page 15 at 10.2

Cook notes that geological structures such as joints and fractures have not been included in the model. However, sensitivity analysis (see sect.10.7) could include a scenario where Creek A is modelled as a groundwater conduit and/or as a barrier to groundwater flow. The Group recommends that this be done by Rocla.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 11

Response

The hydraulic properties of the conduit or barrier (if it is present) need to be known to generate a credible modelling assessment, otherwise it would be an exercise in running a set of hypothetical parameters to generate a range of unverifiable responses. The sensitivity analyses and the validation of the model using locally-sourced data provide a level of confidence the joints and fractures have appropriately been accounted for in the groundwater model.

The proposed removal of friable sandstone may remove a proportion of recharge water that contributes to baseflow in the Ashburn Creek system. Although this loss is likely to be insignificant, there is no commentary in the EA that addresses potential creek flow reduction on the eastern side of the Peats Ridge Road ridge system.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 12

Response

The proposed quarry is located in the westerly draining catchment on the opposite side of the ridgeline to the Ausburn Creek system and will not affect recharge in the Ausburn Creek catchment.



Page 16 at 10.3 Conceptual Hydrogeological Model

Cook considers that the conceptual model is adequately described by Golder but no conceptual diagram has been included in the Groundwater Assessment Report. Cook considers that such a diagram would be useful and we concur. Cook also states that, although useful for their purpose, the cross sections presented in Figure 2.3 (p 2-13 EA) only illustrate parts of the conceptualisation for the Project. He considers that a conceptual model is not only useful as a summary illustration for the Project's scientific fraternity and the assessment process, it is an excellent and simple way of portraying the key features, processes and quantities of the groundwater model in one summary diagram for the interested and concerned community.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 11

Response

If required by NOW, a cross section can be provided in the Site Groundwater Management Plan for the extended quarry proposal.

Page 19, at 10.7 Sensitivity Analysis

Actual inflows should be monitored and progressively compared to the modelled results.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 11

Response

Rocla intends to comprehensively monitor all components of water inputs/outputs to validate modelled results. This has been reflected in Commitment 5.9 in the Statement of Commitments (see Section 14).

Page 23, at 11.3.2 Possible Shortfall in Make up Water

Will a further groundwater entitlement be required and can such volume can be successfully pumped from the aquifer system beneath the project area. The Group seeks an explanation from Rocla in answer to these questions.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 12

Response

As previously noted, Rocla intends to ensure it holds water access licences with sufficient allocated volume at the start of each 5 year period to cover the predicted inflow at the end of each 5 year period. At present, Rocla holds water access licences for 89ML which is in excess of the predicted inflow for the next 5 years.



The available drawdown calculations by GeoTerra do not provide meaningful assessment of potential impacts because they do not take into consideration the position of pumps or aquifers. The Group is very concerned about this inadequate information and considers that an approval cannot be granted until this information gap is satisfied, as to the impacts on pumps and aquifers.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 12

Response

The aquifer and standing water level in the vicinity of the Project Site is known based on specific drilling and testing done on the Rocla bores and piezometers, monitoring of private bores by (or for) Rocla as well as from the NSW Office of Water database for private bores that have not been directly tested or monitored by, or for, Rocla. The depth of pumps in private bores is not publicly available and can only be determined on advice from the bore owner.

In order to adequately assess the significance of any potential adverse bore impacts, more information for the majority of registered bores is required. It is also clear that bores would have to be assessed individually because of the variation in standing water levels, positions of aquifers and position of pumps.”

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 12

In order to carry out effective investigations and meaningful assessments of any bores, pre-extraction baseline testing is necessary.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 12

Response

Having current information on the resting standing water levels, pump depths and bore hydraulic parameters would assist in generating a more detailed appraisal of each bore. However, collection of this data requires consent from the bore owner for Rocla to conduct suitable testing and monitoring of each bore. Rocla would be pleased to monitor any licenced bore on properties surrounding its Calga operations to accurately record the extent to which (if any) the extraction operations are having on the groundwater levels in those bores.

In three of the past four fire seasons we have been threatened by fire up to half a kilo-meter from our boundary. We have been saved by putting out spot fires with water. Our fire plan to protect our property and the indigenous wildlife it supports, plus Aboriginal sites, depends on our ability to pump water.

With any further reduction in water quantity or yield, or any deterioration of water quality, we will have to source water from elsewhere. This would include the expense of building dams, adding water tanks and buying drinking water from Gosford Council which is itself concerned about having sufficient water. And the bush and wild animals within the sanctuary would only be saved if we could install 180 acres of sprinkler systems to artificially maintain the bush, which is unlikely to be feasible.

Barnard Family – Individual Submission No. 105 – Page 4



Response

Firstly, the existing Calga Quarry is not impacting the bore on the Australia Walkabout Wildlife Park (as discussed earlier). If a bore is directly, adversely affected by the project (exceeding a reduction of 10% of the saturated thickness), then Rocla, at their own expense, will investigate the cause, and if it is established to be directly due to the quarry operation, they will either deepen the pump, provide a new bore or a replacement water source that is equivalent to the loss of water generated by the proposal.

This would require the current capacity and pumping duration to be tested prior to any adverse effects potentially occurring to provide a “baseline” status assessment of the bore. Rocla reiterates that despite a number of offers to the Barnard Family to measure water levels in their bore, no positive response has been received.

Water – we have a racehorse agistment and spelling business on our property (established for 20 years) which relies solely for horse water on our bore. Our bore is accessing part of the mountain plateau aquifer linked to the aquifers in Calga and Peats Ridge.

Why should residents business and health and lifestyle be threatened by one large corporation seeking to increase its profits?

Robert and Gillian Willcox – Individual Submission No. 108 – Page 2

Response

Rocla’s business is to supply sand for the construction of roads, homes, schools, factories, etc. – in other words to sustain the life persons in NSW expect. Such a business needs to operate profitably to ensure all aspects of the business can continue for the overall community’s benefit. A key element of Rocla’s business is to comply with the conditions under which it operates and to ensure its activities do not have an adverse impact on the health and livelihood of its neighbours. For this reason, the extended quarry has been designed to achieve this objective. The bore on the Willcox property is located beyond the area of influence of the extended sand quarry.

4.3 WATER ACCESS LICENCES

NOW requirements for inclusion in Director General Requirements specified the EA must demonstrate how Rocla will purchase entitlement to account for volumes of groundwater intercepted by all stages of the quarrying operation.

NSW Office of Water Submission – Page 2

It appears to the Group that Rocla’s current water usage far exceeds their 6 ML per year WAL for the existing Stage 3 which was approved in 2005. It appears that Rocla have been operating outside the Conditions of Consent for the past five years.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 13



Rocla must prove they have adequate WALs for the proposed quarry prior to any consent given. After all it was pointed out that obtaining sufficient WALs was seen as a potential constraint on this proposal by DWE (NOW) in 2006. After 4 years Rocla are only now in the late stages of purchasing an additional WAL of 46ML per year to complement their current WAL of 6ML p/y, which, as stated above would not be enough to suffice their current needs and obligations under their current conditions of consent.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 18

Reductions in water recharge ability cannot be reinstated once the quarry is rehabilitated and will be permanently lost to future generations. As such this loss of recharge area needs to be incorporated into the water sharing plan and a licence for this reduction in water available to the system obtained by the proponent.

Glenworth Valley Outdoor Adventures – Page 3

Response

Rocla holds three water access licences that allow the inflow of 89ML of groundwater per year. This quantity of water far exceeds the predicted inflow of 28ML per year during Stage 3 of the existing approved quarry.

For the future operations proposed in Stages 4 and 5, Rocla intends to progressively purchase water access licences to ensure the total quantity licenced exceeds the predicted (and validated) groundwater inflows. Every five years, Rocla proposes to review the data collected to monitor all surface water inflows, evaporation, on-site water usage and surface water outflows to validate the predicted groundwater inflows to establish what volume of water requires licencing. Once the volume requiring licencing is determined, Rocla would seek to purchase sufficient water access licences to cover the predicted intercepted volume of water. Rocla recognises that extension of the extraction area cannot proceed until the necessary licenses are acquired.

It is noted that since the level of groundwater inflow is not predicted to exceed 52ML per year within the next five years (by 2015), it is Rocla's intention to review the predicted (and validated) groundwater inflows by 2015 to ensure that sufficient water access licences are held for the following five years. The process would then be followed for each successive five year period.

Whilst the current policy of NSW Office of Water is not to recognise the quantity of water returned to the environment when considering licencing, the predicted quantity of groundwater to flow into the existing and proposed extraction areas, only a proportion (approximately 15%) will in fact be used by Rocla. The remainder will continue to enter the creek systems around the quarry as it does now. Rocla recognises that water intercepted by extractive industries is not all fully "used" as in the case for agriculture and water bottling operations on the Somersby Plateau. This has not been taken into account in this assessment by the NSW Office of Water and various individuals.

Conclusion

The groundwater assessment for the proposed extension of quarrying operations at Calga was based on an appropriate degree of direct field measurement of the hydraulic parameters, water levels and groundwater quality within the Hawkesbury Sandstone aquifer. Where direct



measurement of the parameters was not available, data from the NSW Office of Water registered bore database, or professional judgement based on previous experience with similar studies in the Hawkesbury Sandstone, was used.

The FeFlow groundwater model was developed using current best practice and in accordance with standard modelling procedures.

Rocla will develop and adhere to a Site Groundwater Management Plan that will be approved by the NSW Office of Water and all project approval conditions provided by the Department of Planning in regard to potential adverse effects on local private bores, streams or groundwater dependent ecosystems. Procedures for continued monitoring, mitigation and management and the effects on the groundwater system in the vicinity of the proposal will be outlined in the plan.

All proposed excavation beneath the quarry groundwater table will be covered by an appropriate volumetric allocation for each 5 year stage of the operation from the NSW Office of Water under a Water Access Licence.

4.4 COMPENSATION FOR SURROUNDING LANDOWNERS

Representative Comment(s)

NOW is concerned that the proposed contingency process may not be satisfactorily implemented, and that the consequences of quarrying-induced drawdown may lead to unacceptable impacts to groundwater users within the drawdown envelope of the quarry.

NSW Office of Water Submission – Page 2

The Report is unclear as to how Rocla is to compensate surrounding land use owners against losses that may occur as a result of the project proceeding, as well as impacts of possible salinity increases.

Gosford City Council Submission – Page 1

Before any consent is considered the Group submit that Rocla should be required to produce and publish a protocol for compensation and provide proof of adequate insurance coverage to cover the loss of groundwater to all other users.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 18

Response

Where a private bore experiences a greater than 10% reduction in saturated thickness compared to the pre proposal status of the bore, Rocla, at their own expense, will investigate the cause, and if it is established to be directly due to the quarry operation, they will either deepen the pump, provide a new bore or a replacement water source that is equivalent to the loss of water generated by the proposal.

This commitment is reflected in Action 5.10 in the Statement of Commitments.



If Rocla is committed to ensuring there will be no negative impacts to those in the same groundwater zone and to the environment, then it would be reasonable to expect Rocla to guarantee a reticulated water system to all land holders in the quarry drawdown area, particularly the Calga village, (16lots). This measure would only amount to less than 20% of total inflow predicted and ensure basic landholder rights, as is the law.

Calga Peats Ridge Community Group Incorporated (Appendix 1) - Page 19

Response

Calga village is not within the same surface water or groundwater catchment as the Project Site and it is not Rocla's responsibility to provide a reticulated water supply to the village. Rocla do have a responsibility to replace a groundwater supply that is directly, adversely affected by their operation. The current Site Water Management Plan indicates that, at Rocla's expense, if the saturated thickness is reduced by more than 10%, the cause of the loss will be investigated, and if the 10% loss is directly due to the quarry operation, then they will either deepen the pump, provide a new bore or a replacement water source that is equivalent to the loss of water generated by the project.

The proponent makes general statements. regarding the supply of water to Australia Walkabout Wildlife Park should the mine operations affect water supplies, but makes no commitment to this effect, and no workable way is proposed in which liability would be established and accepted by the proponent in any event, let alone mitigations effected.

Australia Walkabout Wildlife Park – Page 12

Response

It was Rocla's original intention early during the preparation of the *Environmental Assessment* to make the water accumulating in the Stage 5 extraction area available to the AWWP. However, later during the preparation of the *Environmental Assessment*, Rocla decided it was inappropriate to make a commitment to a single landowner. Inadvertently, a reference to the early intention was retained in one of the Specialist Consultant reports. Notwithstanding this statement, Rocla has committed (see Commitment 5.10) that it would "Develop replacement and/or compensatory measures in consultation with the affected landowner".

4.5 KULNURA MANGROVE MOUNTAIN GROUNDWATER SHARING PLAN

Representative Comment(s)

NOW advises Department of Planning (DoP) that several statements made in the EA do not comply with the rules of the KMMGWSP. 'These relate to accounting for groundwater take by means of the quarry expansion through the shallow aquifer system comprising part of the KMMGWSP water source, interference with neighbouring bores, and protection requirements for high priority groundwater dependent ecosystems located on the site, as well as down gradient from the quarry extension footprint to Popran Creek.

Sensitivity model runs of the FeFlow model, developed for the proposal, have been provided to NOW. These indicate that groundwater interception and take from the KMMGWSP water



source will increase from the current 28.Ml per annum to between, 160 and 600Ml per annum. No mechanism is proposed in the EA to ensure that the extended operation will fully account for groundwater ingress to the extended quarrying operation. The EA appears to assert that only 50% accounting is necessary with regard to adequate licencing of the operation. NOW DoP that full accounting for all groundwater interference; including groundwater extraction in-pit and drawdown of groundwater levels surrounding the quarry pit (including, evaporative, losses from quarry walls and floor) must be accounted for by purchase of entitlement in accordance with the operating rules of the KMMGWSP. Failure to do so may result in non-compliance and operational impacts for the proposal.

NSW Office of Water Submission – Page 2

Response

The base case FeFlow model, which was assessed to be more representative of the predicted groundwater response to the quarry, indicates that groundwater inflow to the operation will rise from the current 28ML/year to 138ML/year at the end of Stage 4 and 161ML/year at the end of Stage 5. As explained in the *Environmental Assessment*, the sensitivity case model run outputs, which indicated inflows of up to 618ML/year at the end of Stage 5, did not fit the observed water level data and was assessed to not represent the anticipated groundwater inflows.

The current Site Water Management Plan will be updated and extended to cover the proposed additional extraction, and a procedure will be written and followed, which will need approval from NOW, to monitor, manage and licence the full groundwater ingress to the operation in accordance with the operating rules of the KMMGWSP as well as any relevant legislation and departmental guidelines in force at the time.

How Rocla will purchase the required entitlements has not been provided in the EA: as Rocla has not finalised purchase of additional groundwater entitlement from other groundwater users under the rules of the KMMGWSP for current quarrying operations. NOW has attempted to clarify the actual take of groundwater from the current operations against the entitlements held by Rocla Calga Sands without acceptable response from Rocla.

NSW Office of Water Submission – Page 2

Response

Firstly, it is understood that the clarification sought by NOW involved a conversation between a NOW hydrogeologist and a Rocla employee on 16 June 2009. As a consequence of the enquiry, Rocla continued to pursue the resolution of the obstacles that had been incurred for many months to achieve the transfer of a WAL for the existing quarry. The application for the transfer was ultimately lodged with NOW on 19 September 2009. Secondly, Rocla's approach to the purchase of future licences has been set out in the response in Section 4.3.

NOW regards the lack of post-extraction management of groundwater dependent ecosystems down gradient of the extraction site as deficient against the water management framework of the KMMGWSP.

NSW Office of Water Submission – Page 3



The Project application should be rejected on the basis that the Project is not able to comply with sections 36 and 39 of the Water Sharing Plan 2003.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 5

Clause 36 Extraction interference between neighbouring bores

- (1) *To minimise interference between extraction under different access licences in each groundwater source, the following rules will apply to extraction authorised by an access licence:*
 - (a) *extraction from a new or replacement water supply work (bore) for the extraction of basic landholder rights will not be permitted within:*
 - (i) *50 metres of the property boundary, or*
 - (ii) *100 metres of an approved water supply work (bore) from which basic landholder rights water may be extracted,*
 - (b) *extraction from a new or replacement water supply work (bore) nominated by an access licence will not be permitted within:*
 - (i) *400 metres of an approved water supply work (bore) nominated by another access licence,*
 - (ii) *200 metres of an approved water supply work (bore) from which basic landholder rights water may be extracted, or*
 - (iii) *50 metres of the property boundary.*
- (2) *Notwithstanding the provisions of subclause (1), the Minister may, upon application by an access licence holder, vary the distance restrictions specified in subclause (1) if:*
 - (a) *an hydrogeological study undertaken by the licence holder, and assessed as adequate by the Minister, demonstrates minimal potential for adverse impact on existing licensed extraction,*
 - (b) *the applicant has sought written comment from the potentially affected licence holders, and submits these comments to the Minister for consideration, and*
 - (c) *there is a process for remediation in the event that any local impact occurs in the future, specified as conditions on the licence.*

The intention of this clause is to minimise the impact of extraction under new access licences on extraction under existing access licences. It is intended to develop models to support hydrogeological assessment of the adverse impact of new groundwater extractions on existing licensed extraction.
- (3) *Subclause (1) does not apply to extraction under existing access licences until such time the relevant water supply work (bore) is replaced. The intention of this clause is to minimise the impact of extraction by new access licences on extraction under existing licences.*
- (4) *The maximum authorised extraction resulting from extraction authorised by a new access licence nominating a water supply work (bore) at a particular location, or the operation of Part 11 of this Plan, is not to exceed 200 ML/yr per square kilometre.*



- (5) Pursuant to section 45 (1) (b) of the Act, the Minister may amend the maximum extraction density established in subclause (4) if change is required as a result of further studies undertaken by the Minister.
- (6) Any change to the maximum extraction density resulting from subclause (5) is to be within the range of 12 ML/yr per square kilometre to 200 ML/yr per square kilometre.

39 Protection of groundwater dependent ecosystems

- (1) Extraction of groundwater from a new or replacement water supply work (bore) for any purpose, is excluded within 100 metres of:
 - (a) high priority groundwater dependent ecosystems listed in Schedule 5 and shown in Appendix 4,
 - (b) culturally significant sites, being areas of high conservation value for cultural reasons, as contained in the National Parks and Wildlife Service's Cultural Sites Register, or
 - (c) any river.

Subclause (1) will not apply to current authorised extraction from an existing water supply work (bore) until such times as the work is replaced.

- (2) Where an applicant can demonstrate to the Minister that the distance conditions in subclause (1) cannot be met, the Minister may consider the application providing the following construction criteria can be met:
 - (a) the water supply work (bore) must only draw water from an aquifer at depths greater than 40 metres from the land surface,
 - (b) the water supply work (bore) must have an impermeable seal, as specified by the Minister, constructed within the bore to isolate aquifers above 40 metres depth and to prevent water ingress, and
 - (c) the water supply work (bore) must comply with any access licence and water supply work approval conditions established to mitigate any risk to groundwater dependent ecosystems.

Water supply work (bore) approval conditions may include bore construction requirements, establishment of monitoring bores between extraction bores and ecosystems, and pumping limits.

- (3) Pursuant to section 45 (1) (b) of the Act, the Minister may amend the exclusion distances in subclauses (1) and (2), based on further studies of groundwater ecosystems dependency undertaken by the Minister.
- (4) Pursuant to section 45 (1) (b) of the Act, the Minister may identify further high priority groundwater dependent ecosystems and include them in Schedule 5 and Appendix 4 after year 5 of this Plan, based on further studies of groundwater ecosystem dependency undertaken by the Minister.
- (5) The Minister should consult with the Minister for the Environment before adding further high priority groundwater dependent ecosystems to Schedule 5.



Response

Clause 36 (1a) - does not apply as the proposed groundwater extraction is not for basic landholder rights.

Clause 36(1b) and 36(2a,b,c) - although private bore GW66907 is present within 400m of the proposed quarry extraction, the 400m distance can be varied by application to the Minister under Clauses 36 (2a, b), which have been undertaken by Rocla, as well as Clause 36 (2c) which will be covered by a NOW approved Site Water Management Plan for the project.

Clause 36(3) – does not apply as no bore (or works) are being “replaced”.

Clause 36(4) (5) (6) - does not apply as the proposal will not exceed a groundwater extraction of greater than 200ML/year /km².

Clause 39

Rocla remains confident that the predicted groundwater drawdowns and on-going monitoring of down-slope flows and seepage will demonstrate the down-slope GDEs are not adversely affected.

Rocla is committed to the long term protection of the GDEs down-slope of the Southern Quarry Extension. The critical management element will be the provision for ongoing water flow/seepage from the extension area at rates comparable to the pre-extraction or existing flow rates. Monitoring of down-slope water flows and seepage from on-site dams will enable Rocla to verify (or require adjustment of) its management practices – see Commitment 5.12 (Section 12 of this document).

NOW advises Department of Planning that one bore (GW66907) lies within the 400 metre exclusion zone requirement set out in Clause 36(1)(b) of the KMMGWSP to the proposed extension quarry. This would normally prohibit the operation of the quarry. However, Clause 36(2) of the KMMGWSP provides:

"Notwithstanding the provisions of subclause (1), the Minister may, upon application by an access licence holder, vary the distance restrictions specified in subclause (1) if:

- a) An hydrogeological study, undertaken by the licence holder, and assessed as adequate by the minister, demonstrates minimal potential for adverse impact on existing licensed extraction*
- b) The applicant has sought written comment from the potentially affected licence holders, and submits these comments to the Minister for consideration, and*
- c) There is a process for remediation in the event that any local impact occurs in the future, specified as conditions in the licence."*

NOW requests that evidence that the above process has been undertaken, with written confirmation from neighbouring entitlement holders that Rocla has complied, with Clause 36(2)(b) of the KMMGWSP. NOW seeks confirmation that the above statutory process is reflected in any conditions of project approval to the proposal.

Response

Written comment has been sought by Rocla in accordance with Clause 36(2)(b) from the potentially affected licence holder for GW66907, however, Rocla's request to monitor, conduct pump tests, etc. has not been accepted.



5. ECOLOGY

5.1 CLARIFICATION OF IMPACT AREA AND THREATENED SPECIES SECURITY

Representative Comment(s)

Security of the large number of threatened species, particularly Hibbertia procumbens and Darwinia glaucophylla, within the power line easement that transects the site.

DECCW Submission – Page 4

Response

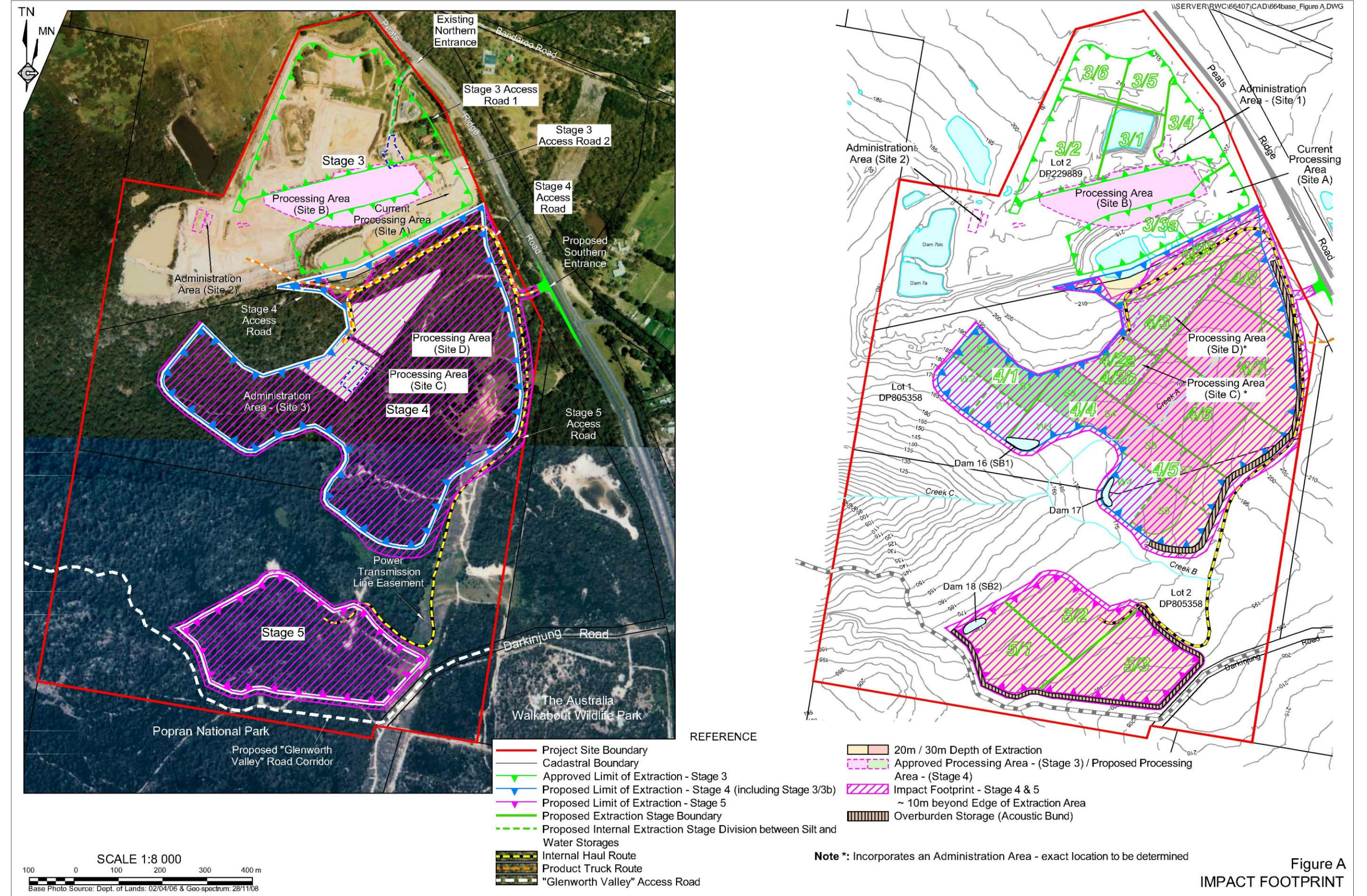
An impact footprint has now been defined around the various activities of the Project that would result in the disturbance of native vegetation (see **Figure A**). As such, the number of individual plants to be disturbed and conserved can be more accurately calculated. The impact footprint incorporates a 10m wide area around sections of Stages 4 and 5 providing access for fencing, etc. The walking track to the engraving site #45-3-0119 would also be located within the 10m wide area, noting however, the extent of vegetation clearing would be minimal within this 10m wide area. EA **Table EA-5.20** has been reviewed and updated to include the individual threatened flora species occurring within the impact footprint.

Table EA-5.20 (updated)
Comparison of Offset Ecological Values

Page 1 of 2

Threatened Species	Occurrence in Project Impact Footprint (Extraction Area + Buffer)	Occurrence in Power Line Easement (external to Project Impact Footprint)	Occurrence in Project Site Offset	Occurrence in Glenworth Valley Offset Area	Occurrence in Popran NP
<i>Hibbertia procumbens</i>	✓ (91)	✓ (40)	✓ (67)	P	✓ (9)
<i>Tetradlea glandulosa</i>	P	X	✓ (1)	P	✓
<i>Acacia bynoeana</i>	P	X	P	P	P
<i>Prostanthera junonis</i>	P	X	P	P	P
<i>Callistemon linearifolius</i>	✓ (3)	X	✓ (4)	✓ (1)	✓
<i>Darwinia glaucophylla</i>	✓ (90)	✓ (28)	✓ (187)	✓ (119)	✓ (144)
<i>Eucalyptus camfieldii</i>	P	X	P	P	P
<i>Kunzea rupestris</i>	P	X	P	P	P
<i>Melaleuca deanei</i>	P	X	P	P	P
<i>Micromyrtus blakelyi</i>	P	X	P	P	P
<i>Diuris bracteata</i>	P	X	P	P	P
<i>Ancistrachne maidenii</i>	P	X	P	P	P
<i>Grevillea shiressii</i>	X	X	P	P	X
<i>Persoonia hirsuta</i>	P	X	P	P	P
<i>Lasiopetalum joyceae</i>	P	X	P	P	P
Gang-gang Cockatoo	P	X	P	P	✓
Glossy Black Cockatoo	✓	X	✓	P	✓
Powerful Owl	P	X	P	P	✓





This page has intentionally been left blank

This page has intentionally been left blank

Table EA-5.20 (updated)
Comparison of Offset Ecological Values

Page 2 of 2

Threatened Species	Occurrence in Project Impact Footprint (Extraction Area + Buffer)	Occurrence in Power Line Easement (external to Project Impact Footprint)	Occurrence in Project Site Offset	Occurrence in Glenworth Valley Offset Area	Occurrence in Popran NP
Masked Owl	P	X	P	P	P
Sooty Owl	P	X	P	P	✓
Yellow-bellied Sheath-tail Bat	P	X	P	P	P
Eastern Freetail Bat	P	X	P	P	P
Large-eared Pied Bat	P	X	P	P	P
Little Bentwing Bat	P	X	P	P	P
Eastern Bentwing Bat	P	X	P	P	✓
Greater Broad-nosed Bat	P	X	P	P	P
Grey-headed Flying-fox	P	X	P	P	✓
Eastern Pygmy Possum	P	X	✓	P	P
Spotted-tailed Quoll	P	X	P	P	✓
Yellow-bellied Glider	P	X	P	P	P
Squirrel Glider	P	X	P	P	✓
Long-nosed Potoroo	P	X	P	P	P
Red-crowned Toadlet	P	X	✓	P	✓
Giant Burrowing Frog	P	X	P	P	✓
Rosenberg's Goanna	P	X	P	P	P
✓(23) = Species recorded (number of individuals) P = Potential Habitat Occurs X = Potential Habitat Absent					

Figure B illustrates the location of the identified threatened plant species on the Project Site, within the offset areas and within Popran National Park to the south of the Project Site. Prior to the commencement of disturbance, the impact footprint would be surveyed and pegged to ensure disturbance remains within this nominated area. By providing and pegging the proposed buffer zones (30m from the extraction areas and 10m either side of internal roads), the conservation of the individual plants outside the buffer zone would be secured.

The Impact Area needs to be further defined both in writing and on a figure.

DECCW Submission – Page 4

Response

Figure A has been prepared to better illustrate the impact footprint of the proposed Southern Extension. The following aspects of the Project are specifically identified on **Figure A**.

- Stage 4 and 5 extraction areas. (Note: the boundaries of both areas have been modified to accommodate the results of the Supplementary Aboriginal Heritage Assessment)
- Internal access roads.



- Glenworth Valley Access Road Corridor. (Note: the alignment of the corridor has also been modified slightly)
- Dams and water ways external to the extraction areas. It is noted that Dam 18 (SB2) has been relocated to within the Stage 5 extraction area.

Overburden storages (acoustic bunds) to be constructed around the perimeter of the extraction areas. The bunds are assumed to be 5m in height and 20m wide at their base.

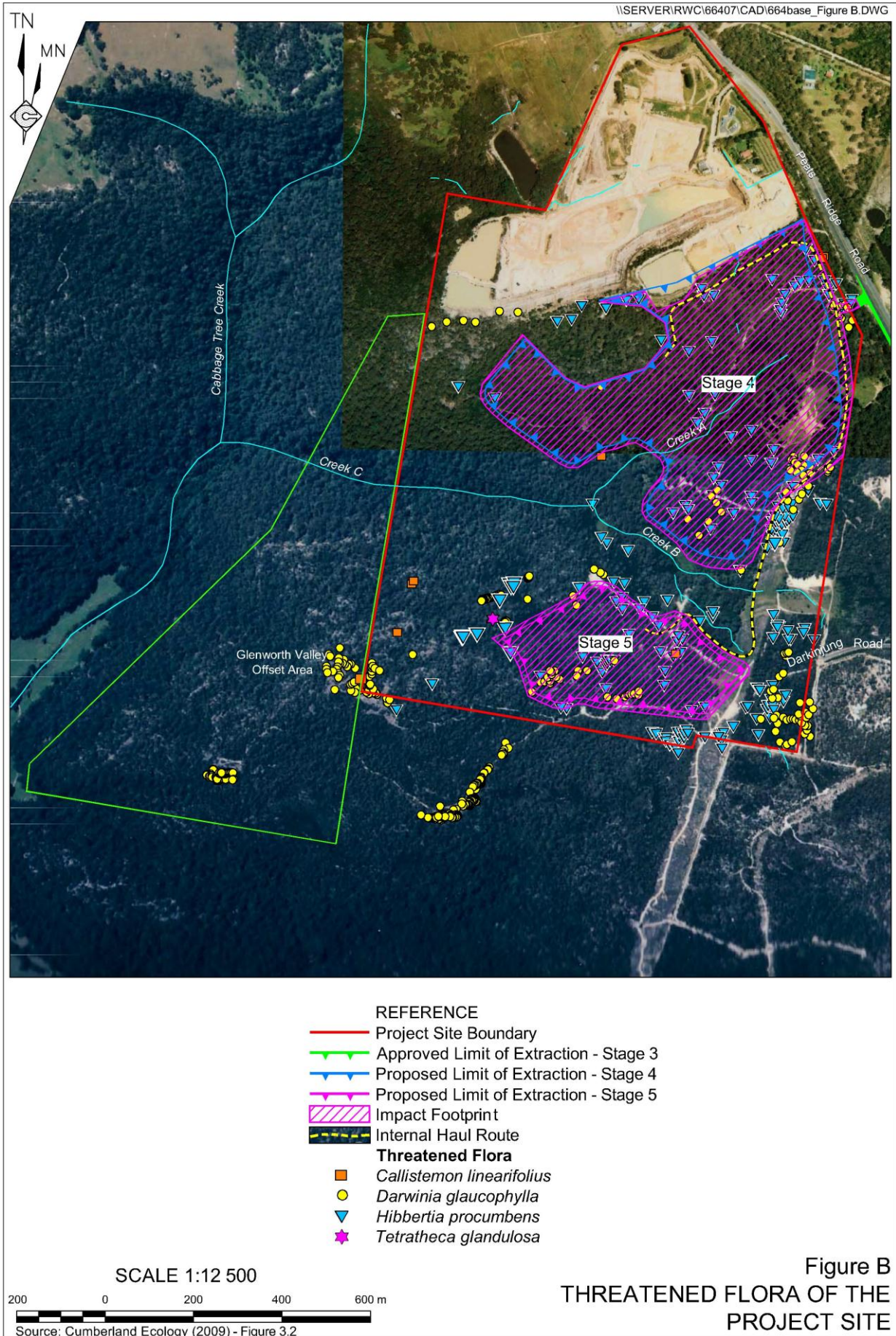
Around the majority of the extraction area, an impact footprint of approximately 30m has been assumed (which will include the proposed acoustic bunds and external dams) to account for miscellaneous disturbance associated with roads, stockpiles and water diversionary structures. The impact footprint has been restricted to the extraction area, however, where the perimeter has been modified to avoid areas of environmental or cultural heritage sensitivity. These areas will be carefully pegged prior to commencement and all activities managed to ensure disturbance remains within the pegged area. Commitments 6.1 and 8.2 to 8.4 reinforce the intention of the Proponent to restrict disturbance in these areas.

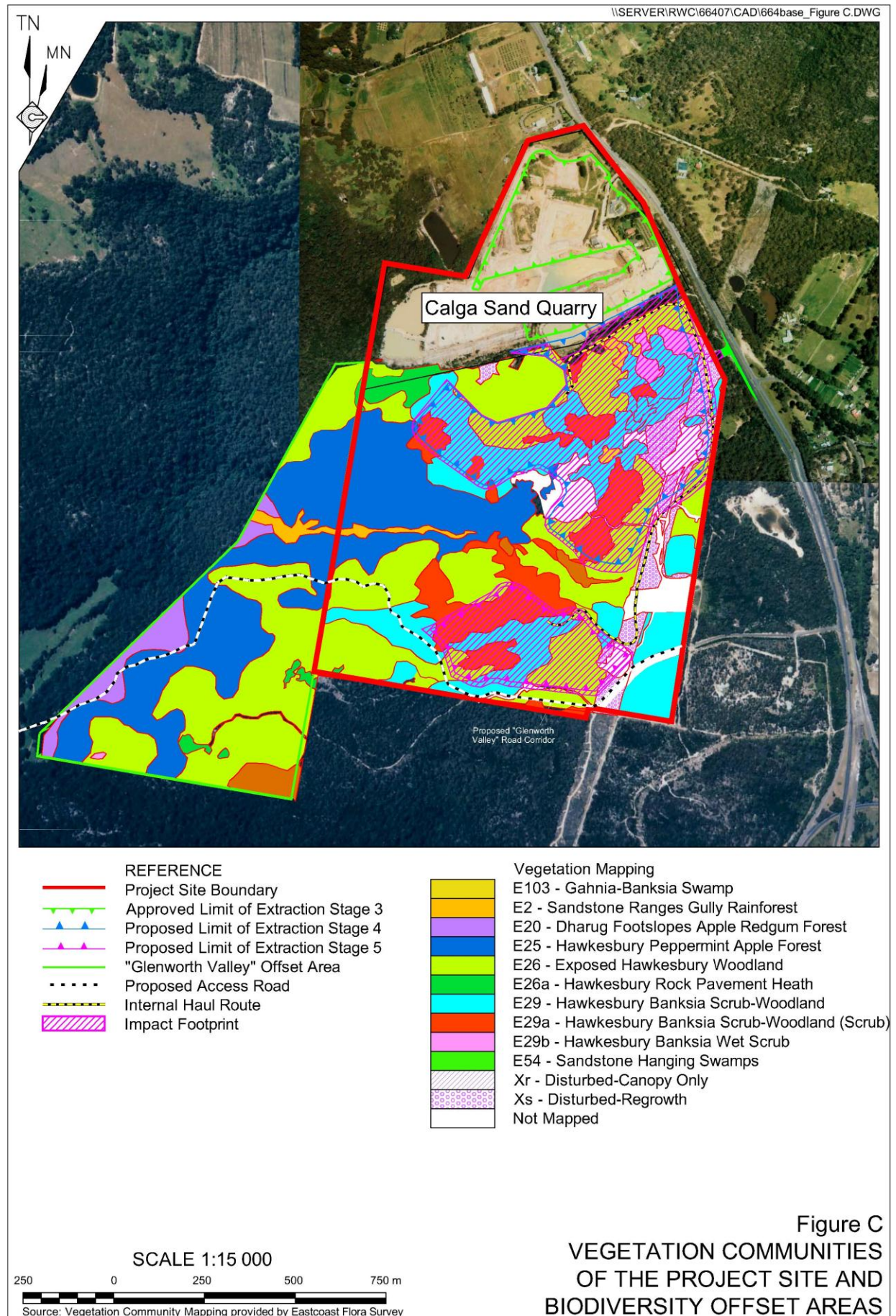
Figure C provides an illustration of the disturbance footprint over the vegetation mapping of **EA Figure 5.15**. **EA Table EA-5.21** has been updated based on the impact footprint defined on **Figure C**.

Notably, a buffer of 50m was already assumed around the extraction areas when defining the biodiversity offset areas. As such the number of threatened flora species occurring within these areas has not changed from that presented in the *Environmental Assessment*.

Table EA-5.21 (updated)
Project Site Vegetation Clearing and Conservation

Community	Total Vegetation		Project Site Impact Footprint (Disturbance and Buffer)	Biodiversity Offset					Ratio (Offset : Disturbance)
	Glenworth Valley Offset	Project Site		On-site Offset			Glenworth Valley Offset	Total Offset Area	
				North (29.3ha)	South (2.8ha)	East (7.0ha)			
E103	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0
E2	0.8	0.5	0.0	0.5	0.0	0.0	0.8	1.3	UTD
E20	3.3	0.0	0.0	0.0	0.0	0.0	3.3	3.3	6:1
E25	19.2	11.5	0.0	11.3	0.0	0.0	19.2	30.5	UTD
E26	19.1	31.8	17.3	8.0	2.4	1.0	19.1	30.5	1.8:1
E26a	0.8	1.4	0.0	0.9	0.1	0.0	0.8	1.8	UTD
E29	0.0	23.8	15.5	0.1	0.3	4.0	0.0	4.4	~1:3
E29a	0.0	12.4	8.6	2.5	0.0	0.0	0.0	2.5	~1:3
E29b	0.1	1.2	1.2	0.0	0.0	0.0	0.1	0.1	1:12
E54	1.4	0.6	0.0	0.6	0.0	0.0	1.4	2.0	UTD
Xr	0.0	0.6	0.5	0.0	0.0	0.0	0.0	0.0	N/A
Xs	0.0	5.4	4.0	0.1	0.0	0.0	0.0	0.1	N/A
Unmapped (exotic)	0.0	15.0	7.0	5.3	0.0	2.0	0.0	7.3	N/A
Total	44.7	104.7	54.6	29.3	2.8	7.0	44.7	83.8	N/A
Total (native)	44.7	83.7	43.1	23.9	2.8	5.0	44.7	76.4	1.8:1





DECCW has undertaken a review of the Surface Water Assessment (Evans and Peck 2008) in regards to impacts upon threatened species and the Biodiversity Offset Area. A number of diversion banks and controlled waterways (spillways) have been placed within the Biodiversity Offset Area, whilst it is acknowledged that these facilities are required for a proposal of this nature, the impact on the biodiversity offset area, particularly threatened flora species, has not been addressed.

*In addition, Dam 18 (sediment basin 2) appears to have been located in the same position as the only *Tetratheca glandulosa* record for the site. DECCW notes that the Offsets Report includes this plant as being retained within the Offset Area. The security of this plant therefore needs to be clarified.*

DECCW Submission – Page 5

Response

The nominated water management structures have now been included within a revised impact footprint. Notably, Dam 18 (SB 2) has been relocated to within the Stage 5 extraction area to reduce the impact on the recorded *Tetratheca glandulosa* on the Project Site². EA **Table EA-5.20** has been reviewed and updated to include the individual threatened flora species occurring outside the extraction areas and other nominated areas of disturbance but within the 30m buffer zone.

Surveys of impacted areas have not been done.....

Even where surveyed, Rocla states that certain surveys were not done e.g. a herpetological (reptiles) survey despite the fact that there is known habitat for endangered reptiles such as the Broad headed snake.

Calga Peats Ridge Community Group Incorporated – Page 10

Response

Searches were made for reptiles. The *Environmental Assessment* report relied upon surveys completed by Countrywide Ecological Service (2004) for the approved, existing quarry project, and also upon incidental surveys for species such as Broad Headed Snake during general fauna work, as indicated in Section 3.2.3.6 and **Table 3.2** of the Ecological Assessment.

With regard to the Broad-headed Snake, it is not particularly likely to occur, even though it has potential habitat. Of the 137 records for this species in NSW none occur in the nearby Popran National Park and none within a 10km x 10km search area around the Project Site.

² The identification of *Tetratheca glandulosa* was made following the finalisation of the Project Site layout and as such the impact of the original location of Dam 18 was not re-assessed. The relocation of Dam 18 corrects this situation.



No environmental studies have been done of the area on the other side of Peats Ridge Road and of Christies Gully. The Environmental Assessment is incomplete. This data needs to be gathered and the community needs access to this information, once supplied, before we can finalise our submission. Considering the unreliability of the content of the Rocla-requisitioned Environmental Assessment as presented, independent detailed studies of the impacted environment should be done before the Rocla application is allowed to progress.

Calga Peats Ridge Community Group Incorporated – Page 10

Response

The *Environmental Assessment* does not exclude the Ausburn Creek and Mooney Mooney Creeks catchments from assessment. Notably **Figure 5.5** of the *Environmental Assessment* illustrates the predicted (worst-case) groundwater drawdown that could be observed on the eastern side of Peats Ridge Road. As noted in response to a submission within Section 4.2 of this document, the tributaries of Ausburn and Mooney Mooney Creeks are on the periphery of the modelled drawdown area where the predicted drawdown would be between 1m and 5m. The drawdown at Ausburn and Mooney Mooney Creeks themselves is predicted to be <1m.

Evidence provided by the monitoring of groundwater levels within bores surrounding the Calga Sand Quarry illustrates that groundwater fluctuates by at least this amount in response to rainfall (the sandstone is permeable and therefore influenced by recharge from rainfall and discharge to creeks lower in the topography) (see **Figure 5.2** of the *Environmental Assessment* and *Appendix B* of GeoTerra (2009)). Considering the mapped groundwater dependent ecosystems (the most likely to be affected by fluctuating groundwater levels) are located within the immediate vicinity of Ausburn and Mooney Mooney Creeks (where drawdown is predicted to be <1m), it was considered highly unlikely that the minor drawdown attributable to the Southern Extension would have any effect on the vegetation occurring on the eastern side of Peats Ridge Road.

On the basis of the above, it was considered unnecessary to undertake survey and assessment of the vegetation within the Ausburn and Mooney Mooney Creek catchments on the eastern side of Peats Ridge Road.

The EA contradicts itself on the subject of staging land clearing. In one part of the EA it talks about minimising harm by avoiding site clearance until quarrying commences. In another it states the site will be cleared in advance (prematurely destroying species and habitat, exposing local residents to unnecessarily prolonged exposure to wind dispersed dangerous silica, and prematurely exposing water to the elements causing greater water loss through extraordinary evaporation.

Australia Walkabout Wildlife Park – Page 7

Response

The statements are not contradictory, rather they describe the logical sequence of quarrying activities whereby vegetation must be cleared in advance of extraction.



The intent of the statement related to minimising harm is that, rather than clear large areas of vegetation which would not form part of the active extraction area for extended periods, clearing would be limited to that required for the ensuing 12 months extraction (as stated by Commitment 6.5). Based on the proposed production rate, cleared areas in advance of extraction would not exceed 2ha.

What reasons can be given for areas in and around ROCLA's extraction sites, illustrated in Figure 5.15 Vegetation Communities of the Project Site and Biodiversity Areas (p.5-66) ROCLA Materials P/L Environmental Assessment, Calga Sand Quarry Southern Extension Major Project Application 06_0278, being listed as "Not Mapped"? Is the Minister prepared to approve a development that does not contain all essential data for an informed determination on those areas marked "Not Mapped" inclusive of the aforementioned concerns? How could ROCLA Materials P/L expect such a determination to be made?

Australia Walkabout Wildlife Park – Page 9

Response

East Coast Flora Survey conducted the initial vegetation mapping of the Project Site. The areas currently defined as "Not Mapped" were described as:

- previously disturbed areas beneath the power line easement, which have been subject to past disturbance, including periodic slashing of vegetation;
- areas of disturbance in the east and central parts of the site, where prior clearing has now become overgrown and where weed species are still common; and/or
- areas along existing tracks and roads.

That is, the areas shown as "Not Mapped" are essentially cleared of native vegetation.

The vegetation map, **Figure 5.15** of the *Environmental Assessment* provides an appropriate summary of the native vegetation within the study area, including areas to be cleared and areas outside the development footprint. **Figure B** updates this vegetation map by identifying the proposed impact footprint of the Project.

Contradictory data where the conclusion understates the number of plants that will be destroyed, and overstates the number of plants that will be conserved: The following is stated in the report Calga Sand Quarry Southern Extension, Offsets, Report No.8050RP2 (p 3.2) Table 3.2 Threatened Species Recorded in Study Area.

	Impact Areas	Project Site Offset	Glenworth Valley Offset	Popran National Park	Total Recorded Plants Conserved
<i>D. glaucophylla</i>	59	215	119	144	478
<i>H. procumbens</i>	91	107	0	9	116



Yet the following is stated in the report ROCLA Materials EA ...Report No 664/01 Table 5.20, Comparison of Offset Ecological Values (p. 5-93).

	Proposed Extraction Area	Project Site Offset	Glenworth Valley Offset	Popran National Park	Total Recorded Plants Conserved
<i>D. glaucophylla</i>	200	67	23	19	109
<i>H. procumbens</i>	92	67	P*	19	86

*P = potential habitat occurs

These tables' data directly contradict each other. Which is correct or are they both wrong? This is just one of the numerous discrepancies and contradictions in the EA.

Australia Walkabout Wildlife Park – Page 17

Response

With respect to the differing plant numbers, attention is drawn to the fact that the Calga Sand Quarry Southern Extension, Offsets, Report No.8050RP2 was prepared as a supplementary report to the Ecological Impact Assessment incorporated as Part 3 of the *Environmental Assessment*. The supplementary report reflects additional targeted survey work completed by Cumberland Ecology to better establish the distribution of threatened plant species on the Project Site, within the proposed offset areas and within existing conservation areas, i.e. Popran National Park. Based on the proposed areas of impact presented in the *Environmental Assessment*, the correct numbers for threatened species recorded within the impact area and offset areas are those contained within Table 3.2 of Calga Sand Quarry Southern Extension, Offsets Report No.8050RP2. As noted previously, however, the numbers have been reviewed again following the establishment of an impact footprint (including buffer zones). This only affects the number of individual plants identified within the proposed impact areas, as the offset areas were already offset 50m from the proposed areas of disturbance.

Tetratheca glandulosa is listed as Vulnerable (Schedule 2 NSW TSC Act) and as Vulnerable (EPBC Act). The species was recorded on the Project Site on the western edge of the proposed Stage 5. The site where the specimen was found is marked on Figure 3.2 in the Supplementary Report to an Ecological Assessment (Cumberland 2009). Why then, is the presence of *Tetratheca glandulosa* not mentioned in the EA and not marked at all on Figure 5.16 Threatened Flora Australia Walkabout Wildlife Park Page 19 of 30 of the Project Site (p5.71) along with the other threatened flora species recorded on the Project Site? How can the ROCLA assessment honestly state that *Tetratheca glandulosa* "...has not been recorded on the Project Site..." (Section C.5.4, C.5.5, C.5.7). The Calga Sand Quarry Southern Extension, Offsets, Supplementary Report (No 8050RP2) states that more specimens could be in the Project Site and may have been missed as the October 2009 surveys were at the end of the flowering season, and that individuals are difficult to locate when not in flower. Therefore, it is evident that a further survey targeting *Tetratheca glandulosa* during flowering season needs to be conducted and warranted.

Australia Walkabout Wildlife Park – Page 18



Response

Despite the apparent contradiction, the two documents are consistent with regard to this species. The species has only been detected once in 2009, during surveys of prospective offset sites. The Offsets Supplementary Report provides a mapped location of the only individual of this species detected. The potential for occurrence of the species was recognised in the *Environmental Assessment*. The *Environmental Assessment* states that targeted surveys were made for the plant, but that no individuals of the plant were found. The occurrence of potentially suitable habitat was recognised and this was later vindicated when the plant was found to occur during the offset surveys.

This plant is cryptic but occurs widely in sandstone habitat in the northern Sydney Bioregion. It is well represented in National Parks and other conservation reserves. According to the NSW NPWS (2000) **Environmental Impact Assessment Guidelines: *Tetratheca glandulosa*** NSW NPWS, Hurstville:

Adequacy of representation in conservation reserves

T. glandulosa is likely to be adequately conserved north of the Hawkesbury River, as there are several large populations in Dharug NP, Parr SRA, Yengo NP and Ourimbah State Forest. Populations south of the Hawkesbury are similarly adequately conserved in Berowra Valley RP, Marramarra NP and Ku-ring-gai NP. Populations in the far south of the species distribution (i.e. Ku-ring-gai and Warringah Local Government Areas) and the west of the species distribution (i.e. Baulkham Hills Local Government Area) are considered to be inadequately conserved.

The species is adequately conserved and is not under major threat from the proposed quarry extension. The proposed offsets and the adjacent National Park contain habitats for this species. There is no need to commission additional surveys of the species.

According to Section 2.4.3 of the Specialist Consultant Studies, Part 3: Ecological Assessment “no species listed under the EPBC Act were found to occur on the Project Site. • However grey-headed Flying-foxes are likely to occur, and habitat is present for the Giant Burrowing Frog”. This statement is false as Tetratheca glandulosa was recorded in the Project 1 Dept of Environment and Conservation, threatened species, populations and ecological communities of NSW 2 Dept of Environment and Conservation, threatened species, populations and ecological communities of NSW Australia Walkabout Wildlife Park Page 23 of 30 Site by Cumberland Ecology (2009) and is listed under the EPBC Act as Vulnerable. Other species listed under the EPBC Act and likely to occur on the Project Site include the Spotted-tailed Quoll, Southern Brown Bandicoot, Green and Golden Bell Frog, Broad-headed Snake, Long-nosed Potoroo, Swift Parrot and Camfield’s Stringybark. These species have been omitted from this section of the Ecological Assessment.

Australia Walkabout Wildlife Park – Page 22

Response

At the time of preparation of the *Environmental Assessment*, no EPBC listed species had been found on site, but a number of species were considered in the report and determined to have potential to occur. As stated in Section 4.1.2 Database Surveys of the Ecological Assessment,



“a variety of threatened flora and fauna listed under the TSC Act and the EPBC Act are known or considered likely to occur on the Project Site and within the Project Area.....This analysis revealed that a number of threatened species/communities have the potential to occur on the Project site (refer to Table 4.1).”

Spotted-tailed Quoll, Southern Brown Bandicoot, Green and Golden Bell Frog, Broad-headed Snake, Long-nosed Potoroo, Swift Parrot and Camfield’s Stringybark are all listed in *Table 4.1* of the *Environmental Assessment*, implying that they have at least some potential to occur on site. However, a number of these species, including but not limited to Green and Golden Bell Frog, *Eucalyptus camfeldii*, have not been found in Popran National Park and have not been detected on site during targeted surveys. Hence for such species the likelihood of occurrence is at most low.

In Section 5.3.5.4, the third paragraph states “As noted in Section 5.2.4.1.1 and 5.2.4.2.3, three threatened flora species and six threatened fauna species have been identified on the Project Site. As noted in Section 5.2.3.1.3, a further 22 threatened species have been identified within 5km of the Project Site ...”. However, when each of the three Sections referred to are checked, the reader discovers that they either do not exist or focus on unrelated topics.

Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 10

Response

The sections referred to should have been prefaced **5.3**, not 5.2. The error is regrettable, however, the information referred to is accurate.

*The document states that more individuals of the three mentioned threatened flora species will be conserved in the two offset areas and Popran National Park than will be destroyed in the Project Site. This is in direct contrast to the figures given in Table 5.20 in the EA which states that 200 *Darwinia glaucophylla* will be destroyed in the Extraction Area and only 90 plants will be conserved in the two offset areas.*

Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 11

Response

With respect to the numbers quoted by the submission, and as noted in response to a previous submission, *Table 5.20* of the *Environmental Assessment* does not contain the most up to date field survey results targeting threatened species. More accurate survey numbers are provided by *Table 3.2 Threatened Species Recorded in Study Area* of the Calga Sand Quarry Southern Extension, Offsets Report No.8050RP2. Notably, these numbers have been revised again (see **Table EA5.20 (updated)**) to reflect the establishment of an impact footprint around the proposed areas of disturbance.

It is noted that while targeted searches were undertaken for threatened flora species within the proposed offset areas, these searches could in no way be deemed exhaustive. The identification of the four threatened flora species within the proposed offset areas indicates that these species occur within the areas of suitable habitat. It is therefore highly likely that many more individual plants of each species are present within similarly suitable habitat of the proposed offset areas.



Furthermore, no exhaustive survey of plants was conducted in the Popran National Park. Only a small area was surveyed, but this indicated that high quality habitat for the three species, and occurrences of the three species, are conserved in the National Park. Table 5.20 provides data about plants counted in Popran National Park, but does not purport to enumerate all occurrences of the these threatened plants in the National Park. Rather, the data comes from a limited area of survey within the National Park. What the aforementioned quotation means is that when the areas of actual and potential habitat in the National Park and offset area are considered together, more plants will be conserved than destroyed. This statement is quite conservative in that there are extensive areas of habitat within the National Park. In reality it is likely that there are large numbers of the three threatened plants within the National Park.

It is on this basis of the above that the statement “*more individuals of the three mentioned threatened flora species will be conserved in the two offset areas and Popran National Park than will be destroyed in the Project Site*” is made.

5.2 IMPACTS ON THREATENED SPECIES/EECs

Representative Comment(s)

The aims of the Somersby Mintbush Prostanthera junonis Recovery Plan (NSW National Parks and Wildlife Service, 2000) have not been addressed.

Gosford City Council Submission – Page 2

Response

The aims of the Recovery Plan are not relevant to the proposed quarry extension. No known habitat of the Somersby Mintbush is to be cleared as a result of the Project. In any case, a substantial area of land will be set aside as offsets for conservation, including representative habitat for all species considered to have potential to occur on site.

A seven-(7) part assessment, pursuant to Section 5a of the Environmental Planning & Assessment Act 1979 has not been prepared.

Gosford City Council Submission – Page 2

Response

No Somersby Mintbush was found to occur on the Project Site and none is considered likely to be impacted by the Project. For this reason, there is no need to prepare a seven part test for the species.

Additionally, the Project is being assessed under Part 3A of the *Environmental Planning and Assessment Act 1979*, and as such no seven part tests are legally required to form part of the *Environmental Assessment*.

The indirect impacts of the Project upon the Lowland Rainforest Endangered Ecological Community have not been addressed.

Gosford City Council Submission – Page 2



Response

No Lowland Rainforest will be cleared as a result of the Project. Rainforest occurs downstream of the Project Site within a sheltered creek line. There is little likelihood that there would be a significant indirect impact upon such vegetation as a result of the Project because the rainforest will not be exposed to a changed set of environmental conditions. It is located downslope in a protected gully and is not likely to experience increased fire frequency, significantly decreased water availability, or changes in microclimate.

The effects of air quality upon Threatened Flora have not been addressed.

Gosford City Council Submission – Page 2

Response

No significant changes in air quality are predicted and none are likely to significantly impact threatened flora. Threatened plants such as *Darwinia glaucophylla* and *Hibbertia procumbens* occur close to the workings of the existing quarry and there is no sign of adverse impacts to such plants. There is no reason to indicate that air quality (specifically dust) would kill or slow the growth of plants beside the existing workings.

The effects of noise pollution upon Threatened Fauna have not been addressed.

Gosford City Council Submission – Page 2

Response

During the fauna surveys it was observed that there was a considerable variety of fauna that occurred in habitats in close proximity to the existing quarry workings. Where habitat is to be retained, it is unlikely that fauna will be impacted due to noise impacts.

The EA states that large areas both within the “Project Site” and in adjacent areas were not surveyed at all for any flora. Where surveys were conducted, H. Procumbens and D. Glaucopylla were identified.

Calga Peats Ridge Community Group Incorporated – Page 11

Response

The *Environmental Assessment* does not make this statement. The Project Site and adjacent areas were searched in detail as indicated in the *Environmental Assessment*, Ecological Assessment and the Calga Sand Quarry Southern Extension, Offsets Report No.8050RP2.



There are more than 20 threatened and endangered animals recorded on and around the proposed extraction site.....

The EA states that Rocla identified habitat for all of these animals but “No endangered fauna population, ecological community or critical fauna habitat was identified within the Project Site.”

- *According to the Rocla EA, the Project Site is only the actual extraction site. This statement, even if true, does not mention whether or not these species exist in areas abutting the extraction sites and, if yes, how they will be affected once their corridors, food sources and water supplies are interrupted.*
- *Due to the reduced numbers of these species which have led to their protection status, Rocla’s one-off survey over a week or so to find these animals is grossly inadequate.*
- *The fact that these animals have been sighted on neighbouring properties Popran National Park and Australia Walkabout Wildlife Park indicates that, even if not sighted by Rocla, they must exist in appropriate habitat areas on the proposed mine site.*
- *Rocla’s frog studies were done at a time when Red-crowned toadlets and the Giant burrowing frogs would least likely be seen due to season, weather and location.*
- *The researchers conducting the search for species on the site reported to Australia Walkabout Wildlife Park that the weather and seasonal conditions were such that they were very unlikely to find the animals they were looking for. Qualified Australia Walkabout Wildlife Park rangers concur.*

The EA states that Rocla did not do a herpetological (reptile) study and just noted (two only) reptiles that were coincidentally noticed when examining the site for other animals. The EA states that large areas both within the “Project Site” and in adjacent areas were not surveyed at all for any animals. The EA fails to note known habitat of threatened and endangered fauna.

Calga Peats Ridge Community Group Incorporated – Page 11-13

Response

The fauna impact assessment was based upon literature review (including past faunal studies on or adjacent to the Project Site), database analysis of the locality, and targeted surveys. With regard to frogs, for example, surveys conducted by Countrywide Ecological Service (2004) and Abel Ecology (2005) in the adjacent land were referred to for relevant records and discussion about habitat. Also targeted surveys were made for the Cumberland Ecology study for the *Environmental Assessment* over two days in December 2005. Later, for the purposes of the Offset Report, additional surveys were done during March and October 2009.

The field surveys completed by Cumberland Ecology (and others) have been completed over a number of years, in varying seasonal conditions, during variable meteorological conditions and in accordance with established guidelines and methodologies for flora and fauna survey.



Sections 3.2.2 and 3.2.3 of Cumberland Ecology's Ecological Assessment provides detailed documentation as to the survey undertaken. The assertion that the survey effort undertaken over the Project Site and surrounding lands was a "one-off survey over a week or so" is both inaccurate and misrepresents the quantity and quality of the work undertaken.

It is noted that for different elements of the field survey conducted for the Project, as with many other ecological field surveys, conditions for identifying particular fauna species may not have been ideal at the time of survey. However, these conditions did not preclude the field staff from determining as to whether potential habitat was present. In any case where potential habitat was identified, assessment of impact assumed the presence of the species for which potential habitat was identified.

A reptile survey was undertaken over the Project Site. Whilst this survey was generally incidental to the other survey conducted, e.g. mammal trapping, spotlighting, etc., it was undertaken.

It is clear that in its current format the proposed Calga sand mine does not strike the correct balance between the benefits and impacts of the proposal and as such contravenes the principles of ESD. In particular the precautionary principle has been ignored, the development will have negative impacts on intergenerational equity, biological diversity and valuation.

Glenworth Valley Outdoor Adventures – Page 11

Response

The Calga Sand Quarry does strike the correct balance between the benefits and impacts of the proposal. It is consistent with the principles of ESD. The sandstone landscapes of the Sydney Basin Bioregion are extensively conserved, and such habitats are represented in a ring of large National Parks and other nature reserves that occur around and within Sydney and Gosford. Popran National Park is one such National Park. Together, the "sandstone" National Parks comprise well over 1,000,000 ha of conserved and well linked habitats.

The proposed development will impact sandstone habitats, however, these are generally well conserved in the locality and in the Bioregion (see **Table 5.22** of the *Environmental Assessment*). Notwithstanding that the extensive regional conservation of the affected vegetation and habitat types, the Proponent has proposed to develop and manage a biodiversity offset strategy to address the impacts of the Project on local threatened species. Also notable is that although threatened species will be impacted, none are put at significant risk from the project. The Project thus balances ecological impacts against the need to extract a valuable sand resource.

On the subject of vulnerable species I would like to confirm that I have personally seen a family of 8 or so Gang Gang Cockatoos on the project site in the recent past. Likewise I have previously seen a Quoll on the project site but I can't be sure which particular species it was. Both of these types of vulnerable species should be the subject of detailed assessment because they are known to inhabit the project site.

Glenworth Valley Outdoor Adventures – Page 10



Response

These are interesting observations but do not change the predicted impacts of the Project. The Quoll would have been the Spotted-tailed Quoll, *Dasyurus maculatus*, which is known to inhabit the forests and woodlands of the locality, but in low densities. Gang Gang Cockatoos could infrequently visit the locality too. Based upon the types of habitat present in the proposed impact area, both species have potential to forage across the area on occasion. However, the impact area is not likely to sustain a population of either species and abundant habitat will remain in the wider locality for both species.

Rocla claimed that the conservation values are the same for both the new quarry and the existing approved operation.....

on the land approved for the proponent's existing operations, any environmental and cultural assets had already been destroyed, or at best disturbed, by farming, so the conservation value of the land would have been relatively low.....

The yet untouched bushland which Rocla purchased from the NSW government in 2006.....

is untouched bushland and has great conservation value, and warrants protection.

Australia Walkabout Wildlife Park – Page 5

Response

The *Environmental Assessment* does NOT claim that the environmental values of land previously disturbed by the Calga Sand Quarry are the same as those of the land on which the Southern Extension is proposed. In fact, the only comparison of environmental values made in the *Environmental Assessment* is between that of the land to be disturbed and that of the proposed biodiversity offset.

It is reiterated here that the environmental values of the land to be disturbed, and the impact of the proposed activities within the Southern Extension on these, has been assessed on its merits and independently of previous assessments of the Calga Sand Quarry and any other development application.

Considering the extraordinary unique cultural and environmental value of the land, it should be returned to the original vendor, the NSW government, for a refund of the purchase price. The land should then be transferred to the appropriate department, Parks and Wildlife DECCW, given the appropriate protections, and put to what is now known to be more appropriate use, perhaps as part of Popran National Park. Although alternatives may produce lower profits, or may not produce any profits at all, for the proponent, these should still be considered in the EA.

Australia Walkabout Wildlife Park – Page 6

Response

The environmental and cultural value of the land on which the proposed Southern Extension is located has been comprehensively assessed.



As demonstrated by **Table 5.22** of the EA, the vegetation communities of the Project Site are well represented locally. In fact, as discussed by Dr David Robertson of Cumberland Ecology elsewhere in this document the vegetation of the Hawkesbury Sandstone is one of the best conserved vegetation types in NSW and Australia (due to the high frequency of National Parks and other conservation areas around the Sydney basin).

The above notwithstanding, the Proponent recognises the relative importance of certain environmental and cultural aspects of the land, e.g. identified Aboriginal sites. Consequently, the Proponent has excluded these from the proposed quarry extension and provided for ongoing management measures to ensure impacts on these values are avoided. It is worthy of note that the Proponent commissioned the targeted field survey of the land to identify Aboriginal Site #45-3-2195 (acknowledged to be of particular cultural importance) which in turn led to the discovery of Site Calga SA1. The supplementary survey was exhaustive and conducted to ensure that the previously identified site (#45-3-2195) was not inadvertently disturbed by the proposed quarrying activities. The actions taken by the Proponent to firstly identify the site, and secondly to ensure its ongoing protection, demonstrate the commitment of the Proponent to protecting the cultural and environmental value of the land.

Why was Stage 4 not surveyed for threatened microbats at all? The Project Site provides known habitat for several threatened species of microbat.

Australia Walkabout Wildlife Park – Page 9

Response

Microbat surveys were conducted at relevant points in the study area and the information collected from these surveys was interpreted together with information from the literature review and the database assessments. There was no need to conduct surveys at each and every part of the landscape. Sufficient information was available from those other sources.

Many specimens of E. oblonga are visible on the Project Site from Australia Walkabout Wildlife Park and therefore have either been missed in flora surveys of the Project Site or misidentified. Therefore, given the difficulty in identifying species of eucalypts similar to the Vulnerable Eucalyptus camfieldii, and the lack of qualifications of the survey staff, confirmation of specimens is required with the Herbarium of NSW.

Australia Walkabout Wildlife Park – Page 10

Response

The survey staff are adequately qualified to collect and identify this species (qualifications of various staff range from a minimum of a Bachelor of Science degree, to PhD). The species (*Eucalyptus camfieldii*) has not been found on site, nor is it known from Popran National Park. In the event that it occurs but has been overlooked, abundant potential habitat occurs in the areas proposed as offsets and within the ridge top areas of the Popran National Park.



Eucalyptus oblonga was not recorded in any of the flora quadrats established on the Project Site (see the flora species list provided within the Ecological Assessment – Appendix B). Cumberland Ecology flora surveys were undertaken by Dr David Robertson, who has 20 years experience undertaking vegetation surveys.

Where species are not able to be identified in the field, samples are collected and keyed out using a variety of reference books. Should there be any uncertainty in species identification, the sample would then be sent to the Royal Botanic Gardens (Sydney) for identification. No samples were forwarded on to the Royal Botanic Gardens (Sydney).

Example the EA states in The Calga Sand Quarry Southern Extension, Offsets, Supplementary Report (No 8050RP2) states that more specimens of Tetratheca glandulosa could be in the Project Site and may have been missed as the October 2009 surveys were at the end of the flowering season, and that individuals are difficult to locate when not in flower. Therefore, it is evident that a further survey targeting Tetratheca glandulosa during flowering season needs to be conducted and warranted.

Example EA states that certain frogs were sought in conditions where they were known to be extremely unlikely to be spotted – yet no attempt was made when conditions were appropriate.

Australia Walkabout Wildlife Park – Page 10

Response

This plant is cryptic but occurs widely in sandstone habitat in the northern Sydney Bioregion. It is well represented in National Parks and other conservation reserves. According to the NSW NPWS (2000) **Environmental Impact Assessment Guidelines: Tetratheca glandulosa** NSW NPWS, Hurstville:

Adequacy of representation in conservation reserves

T. glandulosa is likely to be adequately conserved north of the Hawkesbury River, as there are several large populations in Dharug NP, Parr SRA, Yengo NP and Ourimbah State Forest. Populations south of the Hawkesbury are similarly adequately conserved in Berowra Valley RP, Marramarra NP and Ku-ring-gai NP. Populations in the far south of the species distribution (i.e. Kuring-gai and Warringah Local Government Areas) and the west of the species distribution (i.e. Baulkham Hills Local Government Area) are considered to be inadequately conserved.

The species is adequately conserved and is not under major threat from the proposed quarry extension. The proposed offsets and the adjacent National Park contain habitats for this species. There is no need to commission additional surveys of the species.

The EA shows a high risk of net loss of values of flora and fauna in the medium to long term. Example H. Procumbens (Endangered NSW TSC Act) will be reduced from 159 plants, to 67 plants in the offset areas.

Australia Walkabout Wildlife Park – Page 14



Response

As discussed above, the impacts from the proposal will be on sandstone landscapes that are very well represented in the locality and the Sydney Sandstone Bioregion. There will be an impact upon threatened species habitats, but plants such as *Hibbertia procumbens* will be conserved within the proposed offset areas of the Project Site, "Glenworth Valley" property and Popran National Park. It is predicted that the impacts will be sustainable and that populations of plants such as *Hibbertia procumbens* will not be put at risk from over clearing.

In the 1995 development application for Australia Walkabout Wildlife Park (previously Calga Springs Sanctuary or CSS) serious concerns were raised by Gosford City Council about potential impacts to D. glaucophylla and other "Species of Conservation Significance" and CSS was instructed that under no circumstances should any impact be placed upon these species, thus requiring the development of a vegetation management plan. This plan was not only to address mitigation practices for those Species of Conservation Significance but was to include management plans for all inset flora.

Therefore, will the threat posed mean that the remaining population of D. glaucophylla will require a new level of legislative protection under Commonwealth law (EPBC Act), thus becoming an Endangered Species or Endangered Ecological Community or a Critically Endangered Ecological Community?

Australia Walkabout Wildlife Park – Page 15

Response

The offset areas proposed will increase the area of *Darwinia glaucophylla* within permanent conservation areas, giving greater security to the species.

Investigations by Cumberland Ecology for the Calga Sand Quarry Southern Extension, Offsets Report No.8050RP2 indicate that abundant habitat for *Darwinia glaucophylla* will remain on the site of the proposed development and within the additional offset area. The plant is also well represented in the National Park. There will be no need to require an upgrade in threatened species status.

Much discussion is made about the impact of both D. glaucophylla and H. procumbens on the Project Site (extraction area), however no mention is made of impacts on the "Proposed "Glenworth Valley" Road Corridor", either directly devastating or abutting clusters of H. procumbens, in particular, including some small samples of D. glaucophylla (p.5-71) Fig. 5.16 Threatened Flora of the Project Site. This impact is not included in the assessment by ROCLA. These claims must be adjusted to estimate and understand the overall impact of their proposal. Similarly, the same is said of the proposed Internal Haul Route illustrated in the same figure (p5-71) that runs right over the top of or abuts some of the largest clusters of D. glaucophylla and H. procumbens. The inference that the ROCLA proposal only impacts on those areas nominated as the extraction sites is a misleading and fallacious one. A cursory glance of the existing mining activities proves this to be the case. These claims must be adjusted to estimate and understand the overall impact of their proposal.

Australia Walkabout Wildlife Park - Page 18



Response

As stated within Section 2.7.3.3 of the *Environmental Assessment*, the construction of the “Glenworth Valley” Access Road does not form part of the Project. The construction of the access road would be subject to a separate development application lodged by the owner of “Glenworth Valley”, and impacts upon flora and fauna will be assessed accordingly within the assessment process.

It is importantly noted that a comprehensive ecological assessment was undertaken on the “Glenworth Valley” corridor across the Project Site which has been reflected in the biodiversity offset.

The EA appears to grossly understate the diversity of flora, fauna, habitat and ecological communities to be found on the project site. For example, the 1995 EA undertaken by Andrews-Neil Architects and Planners P/L (Andrews-Neil) for Calga Springs Sanctuary (now called Australia Walkabout Wildlife Park), shows significantly higher levels of biodiversity than that suggested in the assessment commissioned by ROCLA Materials P/L, titled ROCLA Materials P/L EA, Calga Sand Quarry Southern Extension Major Project Application 06_0278, November 2009. The current and past owners of Australia Walkabout Wildlife Park believe that the only explanation for this variance is that insufficient surveys have been undertaken.

Australia Walkabout Wildlife Park – Page 14

Response

The field surveys conducted by Cumberland Ecology (and others) have been completed over a number of years, in varying seasonal conditions, during variable meteorological conditions and in accordance with established guidelines and methodologies for flora and fauna survey by highly qualified personnel (many with in excess of 20 years experience). Sections 3.2.2 and 3.2.3 of Cumberland Ecology’s Ecological Assessment provides detailed documentation as to the survey undertaken. The results presented in the Ecological Assessment of Cumberland Ecology reflect the results of these surveys and therefore provide an accurate reflection of the biodiversity of the Project Site and proposed offset areas. The implication that the surveys were either inadequate or conducted by under qualified personnel is strongly refuted.

Rare Eucalyptus camfieldii

This species is listed as Vulnerable (NSW TSC Act). Whilst this species was not recorded on the Project Site, further survey work is needed to determine if this species is found on the Project Site.

Australia Walkabout Wildlife Park – Page 19

Response

Survey undertaken on the Project Site and surrounds was undertaken by Mr David Thomas, who has 20 years experience undertaken vegetation surveys. The species was not found on the subject site nor has it been recorded within Popran National Park. No further survey work is warranted for the species.



The restricted plant Grevillea diffusa ssp. filipendula has not been recorded in any of the flora surveys of the Project Site, even though specimens growing on the Project Site are clearly visible from the adjacent property (Australia Walkabout Wildlife Park). Grevillea diffusa ssp. filipendula has an extremely limited range, only recorded in the Calga and Mt White areas. Will the destruction of large numbers of this species result in Grevillea diffusa ssp. filipendula being listed under the Threatened Species Conservation Act?

There are more than 20 threatened and endangered animals recorded on and around the proposed extraction site.

Australia Walkabout Wildlife Park – Page 19

Response

Grevillea diffusa ssp. Filipendula is not a threatened species. Habitat and individuals of the species will remain in the offset sites proposed for the Project. It is not likely that the species will be listed as Vulnerable under the Threatened Species Conservation Act 1995.

The EA states that Rocla identified habitat for all of these animals but “No endangered fauna population, ecological community or critical fauna habitat was identified within the Project Site.” According to the Rocla EA, the Project Site is only the actual extraction site. So this statement, even if true, does not mention whether or not these species exist in Australia Walkabout Wildlife Park Page 22 of 30 areas abutting the extraction sites and, if yes, how they will be affected once their corridors, food sources and water supplies are interrupted. • Due to the reduced numbers of these species which have led to their protection status, Rocla’s one-off survey over a week or so to find these animals is grossly inadequate. The fact that these animals have been sighted on neighbouring properties Popran National Park and Australia Walkabout Wildlife Park indicates that, even if not sighted by Rocla, they must exist in appropriate habitat areas on the proposed mine site.

Australia Walkabout Wildlife Park – Page 21

Response

It is correct to state that “No endangered fauna population, ecological community or critical fauna habitat was identified within the Project Site”. Some Vulnerable species of plants and animals occur but no endangered populations, endangered ecological communities or critical fauna habitats, i.e. as listed in the Schedules of the Threatened Species Conservation Act 1995.

Section 4.3.1.7 of the EA in Corkery (2009) describes the Red-crowned Toadlet as “endangered”. If Corkery believes this species to be endangered, how can the proposed mine which will destroy known habitat of this species be allowed to proceed.

Australia Walkabout Wildlife Park – Page 22



Response

The statement above is not correct as impact assessment requirements clearly do not prohibit disturbance to “endangered” flora or fauna, rather require that the impact be identified with respect to the conservation of the effected species.

The above notwithstanding, the Ecological Assessment that forms part of the *Environmental Assessment* clearly lists the Red-crowned Toadlet as a Vulnerable species under the *Threatened Species Conservation Act 1995*, not an endangered species. The proposed extension to the quarry can proceed because habitats and known occurrence of this species will remain in the offset area and in Popran National Park.

Also at higher risk are the Glossy black cockatoos because of the destruction of the increasingly scarce casuarina trees on the mine site, their nuts being the only food source of Glossy black cockatoos.

Australia Walkabout Wildlife Park – Page 22

Response

Groves of feed trees will remain in the proposed offset areas and within Popran National Park. Such trees can also be replanted in the rehabilitated quarry areas as required.

It is stated that the surveys undertaken for the Green and Golden Bell Frog were completed at an “unsuitable time of year”. Therefore, further surveys must be carried out in identified habitat on the Project Site at the best time of year to determine the presence or absence of this species.

Australia Walkabout Wildlife Park – Page 23

Response

Green and Golden Bell Frogs are unlikely to occur on the Project Site as no suitable habitat exists. Frog surveys have been conducted over several years and seasons, as noted in Section 3 of the Ecological Assessment that accompanies the *Environmental Assessment* (as Part 3 of the *Specialist Consultant Studies Compendium*) and the Calga Sand Quarry Southern Extension, Offsets Report No.8050RP2.

*The Swift Parrot, listed as endangered under the EPBC Act is recorded as a species with a possible occurrence due to the presence of suitable habitat including the presence of one of its favoured food trees, the Red Bloodwood *Corymbia gummifera*. No effort was made to identify the species as existing on the Project Site, and bird surveys were not conducted during the flowering period of the Red Bloodwood. Why not?*

Australia Walkabout Wildlife Park
Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 12



Response

The Swift Parrot is a migratory species that nests in Tasmania and flies into NSW during winter each year. It feeds on a variety of flowering trees and shrubs and will use planted, as well as remnant native vegetation. The Project Site is not within the areas regularly used by the species. Although it is an occasional visitor to the locality, it is not expected to make regular use of the habitats on site. Surveys for the species would almost certainly not have found the species and were not warranted.

Under the heading "Background" there is a statement describing the report as a survey of the land on the Project Site unaffected by the Project. This statement is false and misleading, and makes me wonder whether its authors understand the impacts of the mine if it proceeds. All of the land on the Project Site and the two Offset Sites, and its fauna and flora will be negatively affected by the clearing of 34.7 hectares, and the associated altered water flows.

Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 11

Response

The survey covered areas that have potential to be directly impacted (cleared and quarried) and indirectly impacted (such as by changed riparian and groundwater flows). Such indirect impacts were considered by the Ecological Assessment.

Why was no reptile survey completed of the Project Site? Why was the Broad-headed Snake not mentioned in the EA by Corkery (2009) as a species expected to be found on the Project Site.

Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 6

Response

Reptile searches were conducted. The Broad-headed Snake is not considered likely to occur as it is not known from Popran National Park or the locality.

DECC reports the cooler months as the best time of year to find Stephen's Banded Snake as it shelters under rock slabs. Why then did Cumberland Ecology only conduct a spotlighting session in the trees during December to locate Stephen's Banded Snake?

Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 6

Response

This misrepresents the facts. The impact assessments were based upon literature review, database analysis and field surveys. The Stephen's Banded Snake is unlikely to occur on the Project Site as it prefers more mesic (wetter) forests than occur on the Project Site.



According to DECC, the Pale-headed Snake is known to occur in the following vegetation associations which occur on or surrounding the Project Site. Why was there no targeted survey for the Pale-headed Snake on the Project Site?

Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 6

Response

The impact assessments were based upon literature review, database analysis and field surveys. The Pale-headed Snake is unlikely to occur on the Project Site as it prefers more mesic (wetter) forests than occur on the Project Site.

How can a development be approved on a site containing suitable habitat for Endangered and Vulnerable reptiles when a reptile survey was not completed at all?

A total of 40 reptile species have been recorded at Australia Walkabout Wildlife Park adjacent to the Project Site, yet the report by Cumberland Ecology (2009) only lists two species of reptile recorded on site.

Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 7

Response

No endangered reptiles are known to occur on the Project Site. Some vulnerable species have potential to occur but similar sandstone habitat will remain widespread in the locality.

Only a very small section of Stage 4 has been surveyed for mammals near the lower section of Creek A. Why wasn't the rest of Stage 4 surveyed for threatened mammals and reptiles?

Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 11

Response

Mammal surveys were conducted at relevant points in the study area and the information collected from these surveys was interpreted together with information from previous assessment undertaken at and surrounding the Calga Sand Quarry, the literature review and the database assessments. There was no need to conduct surveys at each and every part of the landscape. Sufficient information was available from those other sources.

Further survey work is therefore required to determine the existence of Southern Brown Bandicoots on the Project Site.

Calga Peats Ridge Community Group Incorporated (N. Carson) – Page 12

Response

Mammals surveys were conducted as part of the survey and the species was not detected. Notably, it is not known to occur in Popran National Park.



5.3 IMPACTS ON GROUNDWATER DEPENDENT ECOSYSTEMS

Representative Comment(s)

The Project Site supports a number of GDEs (E29a Hawkesbury Banksia Scrub Woodland, E29a Hawkesbury Banksia Wet Scrub, E26 Exposed Hawkesbury Woodland and E10 Gahnia/Banksia Swamp) which would be cleared by the project.

The Ecological Assessment states that the proposal could potentially lead to the alteration of existing hydrological conditions in those areas that contain areas of hanging swamp between Creek A and B, noted as potentially important habitat for birds and frogs by Dr Tony Saunders and Dr Arthur White during surveys of the Project Site in December 2005. Whilst impacts upon GDEs are addressed by the NSW Office of Water under the Water Management Act 2000, DECCW notes that the direct clearing and altered hydrological regime are likely to result in permanent loss of GDEs within the Project Site (including the Biodiversity Offset Area) due to groundwater drawdown and depletion.

DECCW Submission – Page 6

Response

The Project will not result in permanent loss of the aforementioned plant communities from the subject land for several reasons.

Firstly, the vegetation types (E29a Hawkesbury Banksia Scrub Woodland, E29a Hawkesbury Banksia Wet Scrub, E26 Exposed Hawkesbury Woodland and E10 Gahnia/Banksia Swamp), are partially but not entirely dependent upon groundwater. They are likely to be sustained by rainfall as much as by flows of ground water.

Secondly, the predicted groundwater impacts are minor (base flow reduction of 15% or less are predicted by GeoTerra, 2009). Given groundwater flow in the local environment is dominantly influenced by local rainfall (recharging the permeable sandy aquifer), and rainfall is likely to vary but much greater than 15% from year to year, this level of groundwater base flow reduction will not cause a catastrophic loss of such vegetation down-slope.

Furthermore, reductions in surface flows are similarly predicted to average 15% or less over the life of the Project. Once again, this represents a reduction which is well within the natural variation in rainfall of the local setting.

Evidence for the conclusion that the predicted reduction in surface and groundwater base flows will have limited impact on the identified vegetation communities is provided by the fact that this vegetation persists quite successfully immediately adjacent to the existing Calga Sand Quarry. Changes to vegetation are likely to be at most small.

NOW has concerns that, excavation-induced depressurisation will lead to significant reductions of baseflows to downstream groundwater dependent ecosystems. Statements made in Section 5.1.5.4 of the EA argue that partial groundwater recovery will occur due to rainfall collection in pit sumps and silt cells. The level of groundwater, are not clear, as evaporative losses from pit sumps and other storages do not appear to be including in the modelling.

NSW Office of Water Submission – Page 3



Response

Both the Groundwater Assessment of GeoTerra (2009) and the *Environmental Assessment* do provide a quantitative assessment of the impact of the proposed and extraction on groundwater in-flow, groundwater levels and groundwater recharge. The following identifies the relevant sections where the quantitative impact of the proposed sand extraction is provided.

Groundwater Parameter	GeoTerra (2009)	<i>Environmental Assessment</i>
• Groundwater In-flow	• Section 6.3 (p. 1-62)	• 5.1.5.2 (p. 5-20)
• Groundwater Drawdown	• Section 6.1 (p. 1-58)	• 5.1.5.3 (p. 5-21)
• Groundwater Recharge	• Section 6.4 (p. 1-63)	• 5.1.5.4 (p. 5-23)

The claim that the impact on the level of groundwater is unclear, is therefore disputed.

With respect to the predicted impact of the proposed sand extraction on base flows to Cabbage Tree Creek (which could potentially impact upon groundwater dependent ecosystems) the following should be considered.

1. The predicted maximum reduction in actual base flows to the catchment of the Creek C (which flows into Cabbage Tree Creek) is 15% at the end of Stage 4.
2. The affected Creek C catchment is approximately 163ha.
3. The Cabbage Tree Creek catchment (including Kelly's Creek to the southeast which flows into Cabbage Tree Creek) is approximately 1 270ha.
4. Therefore, the 15% reduction in base flows would impact on the recharge of 13% of the Cabbage Tree Creek catchment, i.e. equivalent to a 1.15% reduction in total base flows.

1.15% is not considered a significant reduction in base flow and unlikely to have any significant impact on the availability of water to vegetation communities downstream of the Project Site. This conclusion is reinforced by the fact that the dominant influence on groundwater levels, and contribution of groundwater to base flows within local creeks, is local rainfall. Alkhatib (2007) (a study of the interaction between rainfall and surface recharge, and the groundwater contained within the aquifer system) reports that on average 47% of total rainfall recharge appears as base flow in local streams (see Section 5.1.2.1.2 on p. 5-4 of the *Environmental Assessment*).

Finally, NOW claim that the modelling has not provided for impacts associated with evaporation from water storages and pit sumps within the quarry site. The modelling assumed water storage in the structures identified in the various figures of the *Environmental Assessment*. Evaporation from these structures itself would have only a very minor impact on seepage as the critical parameter in calculating the seepage rate would be the surface area of each water storage covered with water. Therefore, unless evaporation resulted in a large decrease in the water covered surface area (which is not anticipated given the nominated water storages are incorporated into the water balance for the quarry which requires the circulation of large volumes of water) the impact of evaporation would be minimal.



Clauses 39(2)(c) and 39(3) of the KMMGWSP provide a process to permit impacts to high priority groundwater dependent ecosystems. This may include provision of offset to critical ecosystems under the NSW biobanking methodology, and/or mitigative procedures to provide protection to high priority groundwater dependent ecosystems. NOW notes the proposed offset arrangement in the EA. NOW requests consultation over the nomination of offset areas, which would allow Rocla to fulfil Clause 39(3), by extending the hydrogeological study area to include any such offset areas, to identify offset replacement areas for impacted or destroyed groundwater dependent ecosystems. NOW is aware that the Department of Environment Climate Change and Water has nominated a size for any offset area to which project approval may be granted.

NSW Office of Water Submission - Page 3

Response

As discussed above, the groundwater studies for the project do not indicate major impacts to groundwater and so no major changes to plant communities are predicted as a result. Some of the vegetation in the study area down-slope has a degree of groundwater dependence but is predicted to remain as quarrying proceeds. Any reduction in vegetation is likely to be of a minor scale that will be difficult to detect and which should not require additional offsetting.

The activity of the proposed Rocla sand mine, even if Rocla agrees to not actually mine the ecological communities themselves, will destroy them when Rocla mines down to 30m through their water feeds and/or due to the inflow of nutrients/sedimentation/silting due to interference with the water due to sand mining operations.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 10

Response

As discussed above, no major changes are predicted to groundwater quantity as extraction proceeds. No major changes are predicted to vegetation communities down-slope of the quarry, similar to what occurs now around the existing quarry.

The Schedule 5 list identifies seven high priority GDE communities.

The Appendix 4 Map only shows likely regional distribution of these communities, without specifically identifying any by name. Therefore the map must be reviewed in context of the Schedule 5 list and the results of closer investigations of vegetation communities on any particular site.

In the EA, the Proponent directly refers to section 39 (1) (a) and states that the Appendix 4 Map “..did not identify any GDEs recorded on the Project Site..” but fails to make any reference to the Schedule 5 list.

The Proponent also states in the EA that there are “..NO WSP identified GDEs within 100metres of the proposed extraction areas..”



At best these statements, together with other inferences and omissions in the EA and Compendium are misleading.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 35

Response

Schedule 5 of the List of high priority groundwater dependent ecosystems is as follows:

“Schedule 5 List of high priority groundwater dependent ecosystems

High priority groundwater dependent ecosystems in the Kulnura Mangrove Mountain Groundwater Sources are:

- (a) Sheltered Rough Barked Apple Forest,*
- (b) Hawkesbury Coastal Banksia Woodland,*
- (c) Sandstone Hanging Swamps and Heaths,*
- (d) Coastal Sand Wallum Woodland—Heath,*
- (e) Popran Creek Wetland,*
- (f) Mangrove Creek Wetland, and*
- (g) Mooney Mooney Creek Wetland.”*

The map provided by Appendix 4 of the Water Sharing Plan shows the regional occurrence of groundwater dependent ecosystems generally, but does not map the seven listed communities. It does, however, indicate that such communities could occur on or around the subject land.

When the mapping of the vegetation of the Project Site is considered, of these communities, Sandstone Hanging Swamps are mapped on the Project Site. They occur in an area that will be incorporated within part of the Project Site Offset Area (East) and will not be cleared by the proposed quarry extension. As discussed in responses above, no major decline in groundwater base flows is predicted and so this community is predicted to persist on the subject land.

Banksia woodlands of various kinds (E29 Hawkesbury Banksia Scrub- Woodland, E29a Hawkesbury Banksia Scrub- Woodland, E29b Hawkesbury Banksia Wet Scrub and E103 Ghania-Banksia Swamp) have also been mapped on the Project Site. However these, while similar, are not Coastal Banksia Woodland.

Of the Banksia-dominated communities, all except some small areas of Hawkesbury Banksia Wet Scrub, will have sizeable areas retained within the Project Site Offset (East).

FIGURE 4.3: Vegetation Communities of the Project Site and Biodiversity Offset Areas.

The proponent identifies the following vegetation communities are included amongst others, as occurring on the Project site and offset areas:

- *E29 Hawkesbury Banksia Scrub- Woodland (blue)*
- *E29a Hawkesbury Banksia Scrub- Woodland (Scrub) (red/orange)*
- *E29b Hawkesbury Banksia Wet Scrub (lilac)*



- E103 Ghania- Banksia Swamp small horseshoe shaped area, top right. (mustard)
- E53 Sandstone Hanging Swamps small area, centre, lower right. (dark green)

This map shows that:

- *The Hawkesbury Banksia community includes 3 sub-formations, which collectively dominate both extraction areas.*
- *It appears to the CPR Group that none of these Banksia communities grow in the proposed Biodiversity Offset Areas. The Group considers that this significantly compromises the integrity of the offset proposal.*
- *We also note that a substantial part of the site is unmapped (the white area in the centre). Therefore, it appears that insufficient on-ground studies have been undertaken to verify the vegetation and species on the Project and offset sites.*

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 32

Response

Banksia woodlands of various kinds (E29 Hawkesbury Banksia Scrub- Woodland, E29a Hawkesbury Banksia Scrub-Woodland, E29b Hawkesbury Banksia Wet Scrub and E103 Ghania- Banksia Swamp) have been mapped on the Project Site and proposed “Glenworth Valley” offset area. Cumberland Ecology notes that while similar, none of are considered to be Coastal Banksia Woodland.

Contrary to the claim made in the submission, of the Banksia-dominated communities, all except some small areas of Hawkesbury Banksia Wet Scrub (E29b), will have sizeable areas retained within the Project Site Offset Area (East).

With respect to the area identified as “Not Mapped”, these are essentially cleared of native vegetation. East Coast Flora Survey conducted the initial vegetation mapping of the Project site and defined the “Not Mapped” areas as either:

- a) Previously disturbed areas beneath the power line easement, which have been subject to past disturbance, including periodic slashing of vegetation; or
- b) Areas of disturbance in the east and central parts of the site, where prior clearing has now become overgrown and where weed species are still common; or
- c) Areas along existing tracks and roads.



2.9 Vegetation to be cleared on the Project Site- TABLE 5.2 - (Compendium 3-83)

this table shows hectares and percentages of cleared vegetation. Individually and collectively the Banksia communities suffer the greatest proportional loss by far over all species on the site:

<i>E29 Hawkesbury Banksia Scrub- Woodland</i>	<i>48.1%</i>
<i>E29a Hawkesbury Banksia Scrub- Woodland (Scrub)</i>	<i>69.6%</i>
<i>E29b Hawkesbury Banksia Wet Scrub</i>	<i>85.3%</i>
<i>E103 Ghania- Banksia Swamp</i>	<i>100%</i>
<i>E53 Sandstone Hanging Swamps</i>	<i>0.0%</i>

- *The Group is concerned that, in fact, closer to 100% of the above vegetation communities will be cleared as a result of the Project.*

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 33

Response

The estimates of areas of each vegetation community to be cleared shown above are correct. As explained previously, the residual areas will be conserved within the Project Site Offset Area (East) and will not be impacted much if at all by changes to groundwater availability (base flows) as extraction takes place.

The Compendium contains extensive lists of multiple and diverse flora and fauna species, many of which will be affected to some degree by the destruction of these largely undisturbed GDEs.

Having evolved in an ancient and specialized environment, the Group considers that the more vulnerable, less resilient and/or mobile fauna species will not survive without food, water or habitat, deprived of a safe and familiar “corridor” to Popran NP (to compete with established communities).

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 35

Response

This concern is unfounded. Such diverse sandstone vegetation exists currently beside the existing quarry without any signs of major indirect impacts. Native flora and fauna occur almost to the edges of the existing quarry. There is no reason to predict any different response for the proposed new quarry areas. With regard to the corridor to Popran National Park, the offset areas will afford a link though continuously connected vegetation to the National Park.



The Proponent states that the EA Section 5.3.7.3 is:

“..considered to be in sufficient detail for the Minister to determine that the residual impacts of the Project on GDEs are acceptable...”.

The Group does not agree, particularly in light of the following issues, addressed above:

- a) The Proponent’s failure to acknowledge the “protected” status of the on-site Schedule 5 GDEs under s39;*
- b) The direct and permanent impacts of the Project, particularly for 100% of the rare Ghania Banksia Community on the site;*
- c) Fragmented remnants of E29 Banksia communities are at high risk of perishing;*
- d) It appears to the Group that there are no E29/E29a/E29b communities in the Proposed Offset areas*
- e) The impacts of the Project on undetected, endangered species under the EP&B Act*
- f) The indirect impacts on three other Schedule 5 GDEs as set out below.*

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 36

Response

The residual impacts of the Project on GDEs are predicted to be minor and acceptable when considered within the context of the wider catchment. Notably, the “GDEs” referred to are not entirely groundwater dependent and are likely to persist in the Project Site Offset Area (East), Glenworth Valley Offset Area and downstream within the Cabbage Tree Creek catchment.

There appears to be no impact management or contingency plans developed for a situation where impacts on GDEs may exceed the modelled impact.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 46

Response

As explained above, there is not likely to be a significant indirect impact upon plant communities which display some groundwater dependence. Such vegetation is likely to persist in the longer term as firstly these GDEs are likely to be sustained by rainfall as much as by flows of groundwater, and secondly the reduction in groundwater base flows and surface water run-off are predicted to remain less than 15% over the life of the Project.

Clearing of some of the Banksia-dominated communities will be offset by the proposed conservation of these communities in the proposed biodiversity offset areas. Furthermore, the vegetation types developed on the Hawkesbury Sandstone are extremely well represented in conservation areas surrounding Sydney with the scale of impact very minor when compared against the larger areas in the wider locality that are conserved within National Parks and other conservation areas.



At numerous places throughout the EA it is suggested that there are no or very little groundwater dependent ecosystems present on the project site. My own inspections of the site and Gosford Councils vegetation mapping (attached as Appendix A) (which has proven to be highly accurate), prepared by the respected ecologist Bell and includes ground truthing, confirms that there are large and significant amounts of E54 GDE within and surrounding the project site. There are also significant amounts of E103 Gahnia Banksia Swamp that the project proposes to destroy.

Glenworth Valley Outdoor Adventures – Page 2

Response

The vegetation mapping presented in the *Environmental Assessment* for the Project Site was actually completed by Bell and is based on the mapping provided for Gosford City Council. Contrary to the claims made in this submission, the vegetation mapping completed by Bell for the Project identifies only a small area of E54 Sandstone Hanging Swamps and E103 Gahnia – Banksia Swamp on the Project Site. The former will be retained while the latter will be cleared, as indicated in the *Environmental Assessment*.

Another major concern is the impact on a significant area of GDE located adjacent to the south western corner of the project site within the adjoining Popran National Park (PNP) in an area where the water table is expected to drop by approximately 5 metres.

No study of the impacts on the GDE located in the PNP have been undertaken as part of the EA and this issue will need to be brought to the attention of DECC. In addition nowhere has the rainforest situated down slope of the quarry in Cabbage Tree Creek area been assessed in the EA. This area has previously been identified as a rainforest ecosystem of state significance yet no mention or assessment of this area and the impacts on it has been made throughout the EA. This oversight appears to be part of a deliberate process of only looking at the immediate effects of the proposed expansion rather than properly assessing the impacts of significant ecosystems on our land and within the adjoining PNP. The whole subject of GDEs within and surrounding the project site appears to be incomplete and inappropriately investigated and assessed.

I would like to request that an independent ecologist retained by the DOP inspects and assesses the rainforest valley and offsite GDEs and the impact the proposal will have on these areas.

Glenworth Valley Outdoor Adventures – Page 3

Response

The rainforest in Cabbage Tree Creek has been mapped and assessed in the *Environmental Assessment*. Areas of Popran National Park, such as the area adjacent to the southwestern corner of the Project Site have not been mapped but are not predicted to be impacted either directly or indirectly by the Project.

The closest extremity of rainforest in Popran National Park is over 150 m from the closest area of proposed extraction. It is not to be directly impacted and is quite unlikely to be indirectly impacted, such as by reduction in surface or groundwater runoff.



5.4 STATUTORY CONSIDERATIONS

5.4.1 Commonwealth Legislation – Environment Protection and Biodiversity Conservation Act 1999

Representative Comment(s)

During the last few days information has come to our notice regarding the sandstone hanging swamps identified on the Project site by the Proponent. We informed you in our A2 Water Submission and again in recent correspondence that this community is protected under the Water Sharing Plan. We now advise you that it is also listed as an Endangered Ecological Community (EEC) and protected by other legislation, both Commonwealth and State.

STATUTORY PROTECTION

1. Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Temperate Highland Peat Swamps on Sandstone ecological community were listed as “Endangered” under the Environment Protection and Biodiversity Conservation Act 1999 (May 2005) in the Hawkesbury Nepean Catchment they occur in the Blue Mountains and on the Somersby Plateau areas. (HNCMA).

EPBC ACT – ASSESSMENT AND APPROVAL: (DEWHA Significant impact Guidelines)

*Any person who proposes to take an “action” as defined by the EPBC Act (including a “project” or “development”) that will have a “significant” impact” on a matter of national environmental importance **must** refer that action to the minister for a decision on whether assessment and approval is required under the EPBC Act.*

*We consider that there are no grounds to support the Proponent’s failure to refer this matter of “**national environmental importance**” to DEWHA. In fact we regard it as a deliberate attempt to evade statutory obligations.*

Calga Peats Ridge Community Group Incorporated (Tony Kelly Letter) – Page 1

Response

According to the DEWHA web site, the Temperate Highland Peat Swamps on Sandstone are temporary or permanent swamps in the Blue Mountains, Lithgow, Southern Highlands and Bomabala Regions. They are not known to occur in the vicinity of the Project Site and therefore, the recent listing is not relevant to the Project.

With regard to preparation of a referral under the EPBC Act, the Proponent can refer the action before, during or after a proposal is assessed by the State government (although this was not deemed necessary by Cumberland Ecology).



5.4.2 NSW Legislation – Threatened Species Conservation Act 1995

Representative Comment(s)

During the last few days information has come to our notice regarding the sandstone hanging swamps identified on the Project site by the Proponent. We informed you in our A2 Water Submission and again in recent correspondence that this community is protected under the Water Sharing Plan. We now advise you that it is also listed as an Endangered Ecological Community (EEC) and protected by other legislation, both Commonwealth and State.

2. Threatened Species Conservation Act: (TSC Act)

The Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions were listed as an Endangered Ecological Community in Part 3 of Schedule 1 of the Act. Habitat distribution includes the areas specified above.

In view of the Proponent's statements re protected status of EECs and GDEs we consider that their EA does not comply with state legislation as it contains material that amounts to false and misleading information. Under regulation 283 of the Environment Planning and Assessment Regulation 2000, a person who makes any False or Misleading Statement is guilty of an offence.

Calga Peats Ridge Community Group Incorporated (Tony Kelly Letter) – Page 1

Response

According to the Final Determination of the Scientific Committee:

Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions is the name given to the plant community associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaus, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite. Montane Peatlands and Swamps is characterised by the assemblage of species listed in paragraph 2 and comprises a dense, open or sparse layer of shrubs with soft-leaved sedges, grasses and forbs. It is the only type of wetland that may contain more than trace amounts of Sphagnum spp., the hummock peat-forming mosses. Small trees may be present as scattered emergents or absent from the community.

E29b Hawkesbury Banksia Wet Scrub, E103 Ghania- Banksia Swamp and E53 Sandstone Hanging Swamps have the closest potential resemblance to the listed community. However, they are not strongly peaty, do not occur above 400m AHD, and are not dominated by the appropriate assemblage of species to fit the listing. For example, Banksia is not a characteristic species of the listed community but it is common in the aforementioned communities. None can be considered to be the endangered ecological community.



5.4.3 NSW Planning Instrument – Kulnura Mangrove Mountain Aquifer 2003 (Water Sharing Plan)

Representative Comment(s)

During the last few days information has come to our notice regarding the sandstone hanging swamps identified on the Project site by the Proponent. We informed you in our A2 Water Submission and again in recent correspondence that this community is protected under the Water Sharing Plan. We now advise you that it is also listed as an Endangered Ecological Community (EEC) and protected by other legislation, both Commonwealth and State.

3. Water sharing Plan of the Groundwater sources of the Kulnura Mangrove Mountain Aquifer 2003 (WSP)

Sandstone hanging Swamps and Heaths were listed in Schedule 5 and protected under provisions of Section 39 Protection of High Priority Groundwater Dependant Ecosystems. (July 2004)

In our Water Submission we have already identified in detail that the "rivers" and the GDEs on the project site are both subject to state government requirements which are impossible to comply with under the WSP section 39. We also identified evidence of current non compliance with the WSP section 36.

Calga Peats Ridge Community Group Incorporated (Tony Kelly Letter) – Page 1

Response

The Sandstone Hanging Swamps are not proposed for clearing and will be protected within the Project Site Offset Area (East). As discussed with respect to previous submissions, the impacts upon groundwater are not predicted to be of significance to vegetation and so these communities are predicted to remain viable in the long term.

5.5 ADEQUACY OF BIODIVERSITY OFFSET – FAUNA

Representative Comment(s)

DECCW does not agree with the proponent's assessment of significance in relation to the impact upon amphibian species, particularly the local population of Red-crowned Toadlet.

DECCW Submission – Page 5

Response

DECCW believes that the local population of Red-crowned Toadlet would not survive the proposed extraction in Stages 4 and 5. The Department states that the population would be directly cleared and indirectly impacted by changes to hydrology.

It is important to note the occurrence of the Red-crowned Toadlet on the Project Site is a sub-population, not a population. The wider population extends into Popran National Park, as indicated by DECCW Wildlife Atlas records and the summary in Table 4.1 in the Environmental Assessment. There have been no confirmed records of the species in the Glenworth Valley Offset Area, however, Cumberland Ecology has identified potential habitat in the west and south of this offset area.



The proposed development will impact Red-crowned Toadlet, but the local population would remain given its habitat in the adjoining offset area and the Popran National Park. Groundwater impacts are predicted to be low and habitat suitable for the Toadlet will remain and will continue to be supplied with adequate supplies of water.

Representative Comment(s)

The Biodiversity Offset Area does not cover the offsets required for this species.

The additional survey by DECCW only found Red-crowned Toadlet immediately below the southern boundary of Stage 4. The population is likely to be lost as a direct result of the proposed quarrying due to the alteration of existing hydrological conditions relied upon by the Red-crowned Toadlet.

The dams proposed for the final landform (refer Figure D of the EA) will permanently alter the hydrological regime of the ephemeral drainage lines upon which the Red-crowned Toadlet rely for successful breeding events.

Given the above issues DECCW is of the view that the offset needs to be supplemented to address likely impacts on amphibians.

DECCW Submission – Page 5

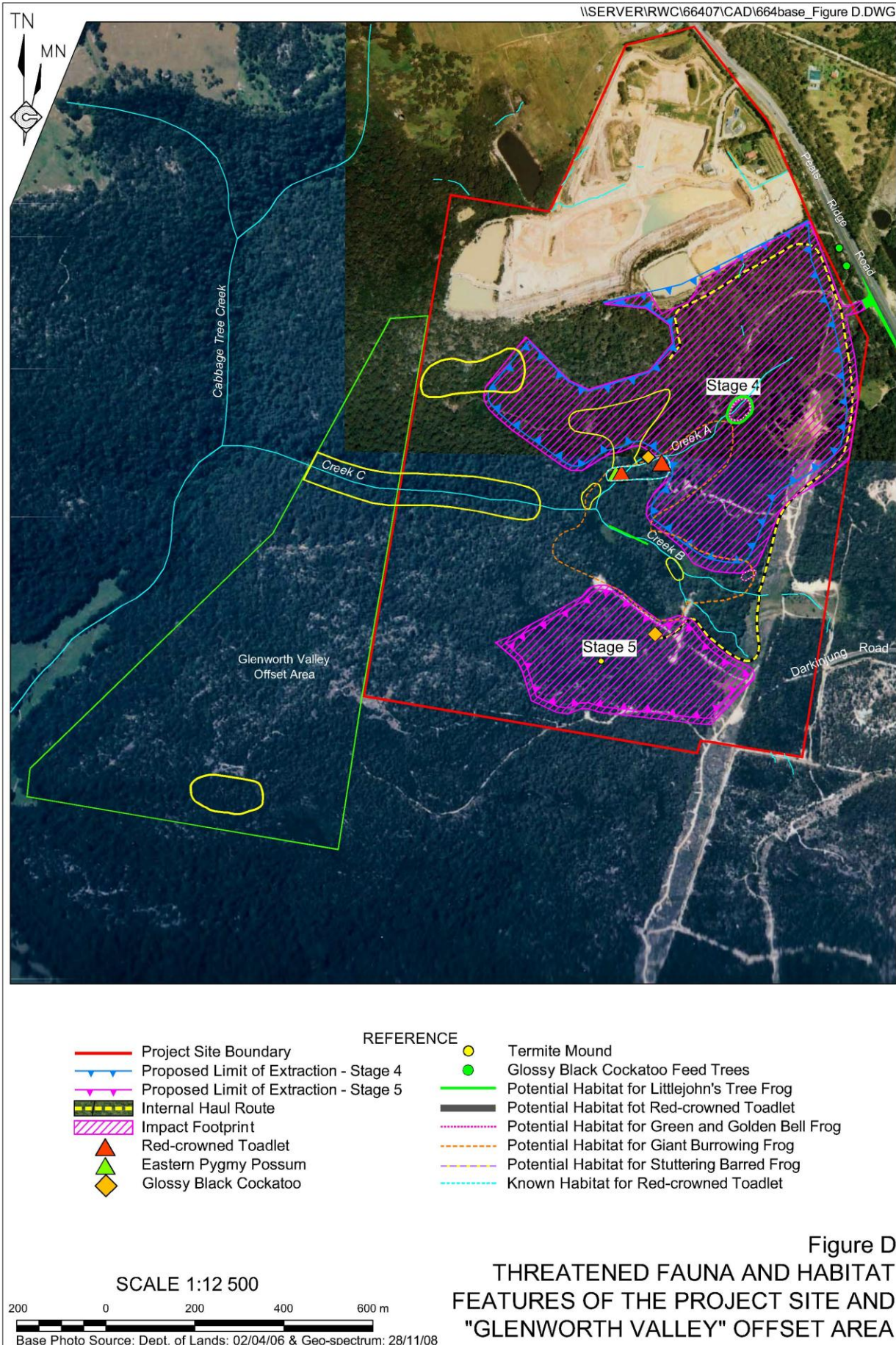
Response

Although the DECCW survey only detected the Red-crowned Toadlet at one location, the DECCW survey was only undertaken on one day in January 2010. Further surveys are likely to have yielded additional records of this species.

As identified within Figure 3.3 of Cumberland Ecology's Offsets Report (**Attachment 3**), a number of areas containing potential habitat for the Red-crowned Toadlet occur within the proposed offset areas and are known to occur in the Popran National Park.

It is acknowledged within the Ecological Assessment that the Red-crowned Toadlet will be impacted by changes to hydrological regimes. However, it is recognised that the extent of changes to hydrological regimes downslope from the proposed extraction areas will not be substantial. It is considered that the possible impacts to some individuals would not adversely affect the viability of the species as a whole, and the sub-population would be likely to survive on and surrounding the Project Site.





Representative Comment(s)

Inadequate field studies for flora and fauna have been undertaken on the Glenworth Valley offset site;

The loss of community E29a, the endangered hibernia procumbens, may not be adequately compensated for in the offset strategy, because Cumberland Ecology predicts that 91 plants will be “impacted” by the new quarry, whereas only 107 plants will be protected as part of the offset strategy. It appears doubtful that this would meet the “no net loss” requirement in relation to that species, however, we do note that the DECCW criteria is permissive and that principle 6 (discussed below) is met by an offset area that is equal to the area developed;

The loss of hollow-bearing trees may not be adequately compensated for in the offset strategy because the permanent loss of approximately 2,798 hollow-bearing trees on the proposed quarry site is offset by the protection of approximately 2,497 hollow-bearing trees in the offset areas.

Calga Peats Ridge Community Group Incorporated (Appendix C) – Page 5

Response

Flora and fauna surveys were conducted at relevant points in the study area and the information collected from these surveys was interpreted together with information from the literature review and the database assessments. There was no need to conduct surveys at each and every part of the landscape. Sufficient information was available from those other sources.

In determining adequacy of reservation of threatened species, species counts should not be the sole factor for consideration. Retention of potential habitat for these species should be taken into account. The proposed offset package has sought to maximise the number of threatened flora species and potential habitat within the offset areas. These areas will add to the conservation reserves of these species in the locality. The types of habitats that these species occur in are common on the sandstone plateaus at Calga and in surrounding areas. Large areas of suitable habitat will be retained in the proposed offset areas and the habitat to be retained is contiguous with habitat within Popran National Park.

5.6 BIODIVERSITY OFFSET STRATEGY

Representative Comment(s)

It is noted that the Supplementary Offsets Report (dated December 2009 and prepared by Cumberland Ecology) has confirmed the presence of Tetratheca glandulosa adjacent to the western boundary of Stage 5. In light of this, please review the assessment of the potential impacts upon this species from project activities, including edge effects and downstream impacts (e.g. site runoff), with clarification of the proposed impact avoidance and/or mitigation measures.

DoP Correspondence Dated 12 March 2010



Response

Tetratheca glandulosa was assessed as being at high risk should the Project proceed within the Ecological Assessment. In recognition of the high risk ranking assigned to this species (following identification in the vicinity of the Stage 5 extraction area), the proposed location of Dam 18 has been relocated to remove the threat of disturbance to this species.

There are numerous records of *Tetratheca glandulosa* in the locality, including a number of records within Popran National Park. The types of habitats *Tetratheca glandulosa* occurs in are common on the sandstone plateaus at Calga and in surrounding areas. Large areas of suitable habitat will be retained in the proposed Biodiversity Offset Areas and the habitat to be retained is contiguous with habitat within Popran National Park and therefore no isolation of habitat will occur. It is unlikely that the Project would have a negative impact on this species.

This plant is cryptic but occurs widely in sandstone habitat in the northern Sydney Bioregion. It is well represented in National Parks and other conservation reserves. According to the NSW NPWS (2000) **Environmental Impact Assessment Guidelines: *Tetratheca glandulosa*** NSW NPWS, Hurstville:

Adequacy of representation in conservation reserves

T. glandulosa is likely to be adequately conserved north of the Hawkesbury River, as there are several large populations in Dharug NP, Parr SRA, Yengo NP and Ourimbah State Forest. Populations south of the Hawkesbury are similarly adequately conserved in Berowra Valley RP, Marramarra NP and Ku-ring-gai NP. Populations in the far south of the species distribution (i.e. Kuring-gai and Warringah Local Government Areas) and the west of the species distribution (i.e. Baulkham Hills Local Government Area) are considered to be inadequately conserved.

The species is adequately conserved and is not under major threat from the proposed quarry extension. The proposed offsets and the adjacent National Park contain habitats for this species. There is no need to commission additional surveys of the species.

DECCW is concerned with the proposed offsets capability of ensuring an 'improve or maintain' outcome for threatened flora species, particularly *Hibbertia procumbens*, *Darwinia glaucophylla*, *Callistemon linearifolius* and *Tetratheca glandulosa*.

DECCW Submission – Page 3

Response

In accordance with DECCW draft guidelines the 'maintain or improve' test is identified as a key guiding objective for Part 3A determinations. However, these guidelines are in draft form, and need to be interpreted on a case by case basis. As stated previously in this response, the sandstone landscapes in the Sydney Basin Bioregion are well represented in conservation reserves. The locality of the proposed development is also well represented, with Popran National Park nearby. The proposed offset strategy in its current form will effectively add to the size of the area under conservation tenure in a landscape that is already well conserved. There is no absolute need to meet the maintain or improve test within this context. For example, the plants *Hibbertia procumbens*, *Darwinia glaucophylla*, *Callistemon linearifolius* and *Tetratheca glandulosa* are well represented in Popran National Park and occur in viable numbers over a considerable area.



The proposed offset package has sought to maximise the number of threatened flora species and potential habitat within the offset areas. These areas will add to the conservation reserves of these species in the locality. The types of habitats that these species occur in are common on the sandstone plateaus at Calga and in surrounding areas. Large areas of suitable habitat will be retained in the proposed offset areas and the habitat to be retained is contiguous with habitat within Popran National Park.

It has been recommended that the proposed offset areas be managed in a way to encourage the growth of these species.

DECCW will only accept that plants located within the defined offset Area are being adequately conserved.

DECCW Submission – Page 4

Plants located outside of the defined Offset Area (e.g. within the proposed buffers to quarrying activities) are to be included in the Impact Area (Note: the proponent has proposed infrastructure such as sedimentation and roads in these buffers).

DECCW Submission – Page 4

Individual plants located within the electricity easement that are not being impacted (either directly or indirectly) by the Internal Haul Route and "Glenworth Valley" Access Route are to be excluded from the calculations

DECCW Submission – Page 4

Plants being impacted by stormwater facilities (such as sediment basins and diversion bank and controlled waterways) are to be included in the calculations of plants being removed.

DECCW Submission – Page 4

DECCW requires the provision of revised calculations and information that takes the above issues into consideration.

DECCW Submission – Page 4

Response

Counts of identified threatened species have been reviewed and **Table EA5.21** (updated) (see Page 50) has been revised to reflect a number of the comments made by DECCW. A summary of the revisions presented in **Table EA5.21** (updated) are as follows.

1. An increased impact footprint has been identified around most areas of disturbance on the Project Site. The impact footprint provides for the following additions to the disturbance footprint of the Project.
 - A disturbance zone of 30m from the extraction area. This zone provides for the construction of drainage features, material stockpiles and the proposed acoustic bund around selected sections of the extraction area. Notably, where the extraction area has already been modified to avoid areas of particular environmental or cultural heritage significance, no 30m buffer has been identified as Rocla has committed to marking these areas to prevent additional disturbance.



- A buffer of 10m on both sides of internal roads, e.g. Site Entrance Road, “Glenworth Valley” Property Access Road, Stage 5 Access Road.

Any identified threatened species identified within this impact footprint are considered to be disturbed by the Project.

2. Threatened species identified as occurring within the power line easement have been excluded from calculations within the proposed offset areas³. A separate column has been provided in **Table 5.21** (updated) for the identified threatened species identified within the power line easement.
3. Dam 18 has been relocated to ensure no disturbance to the single identified location of *Tetradlea glandulosa*.
4. The proposed waterways from the Stage 4 and Stage 5 extraction areas have been included in disturbance calculations.

It is worthy to note that the numbers of threatened species within the Project Site have been derived from counts of targeted threatened flora searches in 2007 and 2009. The recorded survey results of the 2007 survey assumed that each recorded location signified one plant. However, in the 2009 survey where species were prolific in number, estimates were made of abundance. It is acknowledged therefore that the flora species counts are considered to be indicative, rather than absolute numbers (both for the areas of consideration and disturbance). Furthermore, previous and current land management practices, e.g. clearing to create internal tracks and maintenance of the power line easement has aided the growth of a number of threatened flora species resulting in prolific number of these species within the Project Site. Critically, species numbers are likely to readily fluctuate as a result.

In determining adequacy of reservation of these species, therefore, species counts should not be the sole factor for consideration. Retention of potential habitat for these species should be taken as a more appropriate method of assessing the value provided by the Biodiversity Offset Strategy in the conservation of each species. Importantly, the proposed offset package has sought to maximise the number of threatened flora species and areas of potential habitat areas. These areas will add to the conservation reserves of these species in the locality. Finally, the appropriateness and adequacy of the proposed Biodiversity Offset Strategy ought to be considered against the fact that the types of habitats that these species occur in are common on the sandstone plateaus at Calga and in surrounding areas. Importantly, large areas of additional suitable habitat will be retained within the proposed offset areas which will be contiguous with similar habitat within Popran National Park. This continuity of habitat conserved will therefore provide for the direct conservation of significant numbers of the identified threatened species, provide for the conservation of known and potential habitat for these and other threatened species and will also increase the conservation value of the adjoining Popran National Park. This will be achieved in several ways.

- i) The addition of a managed conservation zone adjoining the offset area will create a managed buffer to the park. This will aide in the attainment of objectives related to the management of edge effects within the park.

³ Notably, those individual locations identified as being disturbed by either the extraction area, miscellaneous disturbance or internal roads have been included in counts of numbers to be disturbed.

- ii) The perimeter to area ratio of conservation areas will be improved, reducing the 'edge effect' on the habitat conserved.
- iii) An improved and (more importantly) conserved wildlife corridor would be created between the park and remnant native vegetation to the east and northeast of Peats Ridge Road (ultimately improving the habitat connectivity between Popran and Brisbane Waters National Parks).
- iv) Greater security of access to the conservation areas will be created. Currently the Project Site provides an access point for illegal entry of the general public to Popran National Park (trail bikes and rubbish dumping contravenes the objectives of the Popran National Park Plan of Management). Whilst Rocla has attempted to restrict this illegal entry through its property, the fact that current activities are located away from this property makes enforcement of controlled activities difficult. Should the Project be approved and the Biodiversity Offset Strategy implemented, Rocla will be more able to control entry through the Project Site by way of a controlled entry point.

Justification for the placement of the overburden storage (stockpile or acoustic bund) areas within the buffer areas is to be provided.

DECCW Submission – Page 4

Response

The placement of the overburden around the perimeter of the extraction areas has been proposed to provide noise mitigation. It is worthy of note that placement of overburden in those locations is sub-optimal from an operational perspective, i.e. the placement of overburden in temporary stockpiles within the extraction area (awaiting use for silt cell capping and rehabilitation) would be a preferred method of management. The use of the overburden in the manner proposed has been proposed as an environmental control.

It is also considered reasonable that the Proponent not reduce the proposed extraction area any further to incorporate the bund wall within the extraction area. Firstly, significant reduction in the size of the extraction area has already been made to conserve areas of environmental or cultural heritage sensitivity, i.e. the Proponent is already making significant concessions to improve environmental outcomes. Secondly, the use of the buffer zone for activities such as stockpiling is a reasonable one, being the reason for establishing such a buffer area and incorporating this into the impact footprint in the first place. Finally, the areas around the perimeter of the extraction area represent deep sections of friable sandstone and reductions in this area would lead to a large sterilisation of resource (in the order of 15% to 20% of currently identified resource).



Due to the apparent lack of abundance of the identified threatened flora and fauna species within the biodiversity Offset Area compared to what will be impacted by this proposal, DECCW is not in a position to accept the offsetting proposal in its current form. The proponent needs to provide further information on additional offsets that will be supplied to address the impacts of the proposal.

DECCW Submission – Page 6

Response

As stated previously in this response, the sandstone landscapes in the Sydney Basin Bioregion are well represented in conservation reserves. The locality of the proposed development is also well represented, with Popran National Park nearby. The proposed offset package will effectively add to the size of the area under conservation tenure in a landscape that is already well conserved. There is no absolute need to meet the “maintain or improve” test within this context. For example, the plants *Hibbertia procumbens*, *Darwinia glaucophylla*, *Callistermon linearifolius* and *Tetradlea glandulosa* are well represented in Popran National Park and occur in viable numbers over a considerable area.

In determining adequacy of reservation of these species, species counts should not be the sole factor for consideration. Retention of potential habitat for these species should be taken into account. The proposed offset package has sought to maximise the number of threatened flora species and potential habitat within the offset areas. These areas will add to the conservation reserves of these species in the locality.

The neighbouring "Glenworth Valley" property held in separate ownership is not considered an adequate offset and considering the offset is zoned 7(a) Conservation and restricted by development by the virtue of its zoning.

Gosford City Council Submission – Page 2

Response

Development for the purpose of agriculture is permitted within Zone 7(a) Conservation. By virtue of the *State Environmental Planning Policy (SEPP) (Mining, Petroleum Production and Extractive Industry) 2007*, development for the purpose of these activities is permissible. Therefore, the incorporation of the nominated section of the “Glenworth Valley” property would afford this land additional protection from future development to that which currently exists. It is further noted that the Biobanking guidelines recognise that zoning does not provide for the level of management (e.g. weeding, feral animal control) that is preferred for land set aside for biodiversity offsets.

It has not been demonstrated how the neighbouring "Glenworth Valley" property will be set aside for permanent conservation purposes.

Gosford City Council Submission – Page 2



Response

Section 5.3.6.4 of the *Environmental Assessment* states, that Rocla would secure the Calga Biodiversity Offset Area through an enduring covenant or restriction on the use of the land under Section 88B of the *Conveyancing Act 1919*, or Part 4, Division 12 of the *National Parks and Wildlife Act 1974* or similar arrangement to the satisfaction on DECCW.

Access to the neighbouring "Glenworth Valley" property through the offset area will have direct impacts on the area intended for conservation.

Gosford City Council Submission – Page 2

Response

The alignment of the access road has been designed to make best use of existing access roads and the natural topography of the Project Site. In doing so, the area of disturbance required would be minimised (by utilising existing disturbance and avoiding the necessity to undertake cut and fill to negotiate steeper slopes).

It is unreasonable to assume that any conservation area, e.g. national parks, would be managed without some form of access being created or maintained (at the very least access for fire control would be necessary). It is therefore reasonable that the proposed biodiversity offset area include some form of access through the nominated lands. Therefore, like any road within a conservation area some edge effects may occur. However, the overall impact of these, when considered against the ecological benefit of the conservation area itself, would be very small.

The EDO has established that there is no contract in place between the proponent and the owner of the 44.7 hectares of Glenworth Valley land proffered for biodiversity offsetting.

Calga Peats Ridge Community Group Incorporated – Page 15

Response

The EDO correctly identified the absence of a contract between Rocla and the owner of "Glenworth Valley" back in late 2010, however, see discussion below.

Broadly speaking Rocla and I have reached an informal agreement to consider using an area of our land as an environmental offset area for their quarry expansion plans in return for Rocla providing us with a right of way or easement through their land. That said no formal agreement exists and it is dependent on many issues such as Rocla getting approval to expand the existing quarry. From our point of view we need to be satisfied that it is technically and economically feasible to construct the proposed access way due to the steepness of the terrain. We will also need to be satisfied that we can get consent to construct it and finally the terms of the ongoing covenant will need to be satisfactory to both parties. If these matters are not resolved to both parties satisfaction then it is likely that we would not be making our land available as an environmental offset area for the quarry expansion proposal.

Glenworth Valley Outdoor Adventures – Page 11



Response

The owner of “Glenworth Valley” has provided Rocla with an unequivocal commitment to provide Rocla with the vegetation offset within the “Glenworth Valley” property nominated on **Figure 2.14** of the *Environmental Assessment*. A copy of the correspondence from the owner of “Green Valley” has been provided to the Department of Planning and Infrastructure.

Conservation agreements to be registered to the title of the offset sites prior to commencement of any quarry activities, a management plan that sets out the management actions to be undertaken on the offset sites for conservation, biodiversity protection and enhancement, and restoration and ongoing management actions to be undertaken on the quarry sites. The actions will need to comprise clear, unambiguous measures so that the plan is capable of enforcement.

Calga Peats Ridge Community Group Incorporated

Response

As noted in Section 5.3.6.4, the proposed biodiversity offset strategy would be implemented to satisfy Principle 7 of “*principles for the use of Biodiversity Offsets in NSW*” (DECC, 2007). That is:

“Rocla would secure the Calga Biodiversity Offset Area through an enduring covenant or restriction on the use of the land under Section 88B of the Conveyancing Act 1919, Part 4, Division 12 of the National Parks and Wildlife Act 1974 or similar arrangement, to the satisfaction of the Department of Planning and Infrastructure.”

Commitment 4.12 also provides for “*a legally binding arrangement on the land titles on which the biodiversity offsets occur such that these remain as conservation areas for as long as the titles remain valid.*”

Should project approval be granted, Rocla would prepare a Biodiversity Offset Management Plan that addresses the issues identified in the submission. It is expected that the preparation of a Biodiversity Offset Management Plan will be included a condition of project approval.

5.7 MISCELLANEOUS ISSUES

Representative Comment(s)

The ecological assessment (SCSC Volume 1 Part 3, s 6.3) indicates that all extraction areas will be rehabilitated with native vegetation, however the rehabilitation strategy in the EA (s 2.13) indicates that a proposed future use of the site is industrial, and only Stage 5 would be rehabilitated with native vegetation. Please clarify.

DoP Correspondence dated 12 March 2010

Response

The rehabilitation strategy referred to in Section 2.13 of the *Environmental Assessment* is the correct interpretation of the proposed rehabilitation of the quarry. The isolated statement made in the Ecological Assessment refers to a previous option being considered for rehabilitation of the Project Site. This should have been edited to reflect the strategy nominated in the



Environmental Assessment, however, it is confirmed that the overall assessment provided by Cumberland Ecology considers the rehabilitation of the Project Site as nominated in Section 2.13 of the *Environmental Assessment*.

A Vegetation and Threatened Species Management Plan to the satisfaction of the consent authority has not been prepared.

Gosford City Council Submission – Page 2

Response

As noted in Section 5.3.6.3 of the *Environmental Assessment*, Rocla has committed to providing for vegetation management and threatened species (and threatened species habitat) management. Should project approval be granted for the proposed Southern Extension, a Vegetation and Threatened Species Management Plan would be prepared as part of the Rehabilitation and Landscape Management Plan (Commitment 16.3) to formalise the commitments made with respect to vegetation and threatened species management included in Section 5.2.6.3 and Commitments 6.1 to 6.13.

Animals and residents at Australia Walkabout Wildlife Park already suffer eye, skin and breathing problems plus sleep disturbance from the dust and noise generated by the existing mine 2km away. This will be magnified with the much larger and proximal new quarry.

Australia Walkabout Wildlife Park – Page 29

Response

Claims by Management of the Australia Walkabout Wildlife Park that the animals and residents are already experiencing eye, skin and breathing problems are not consistent with observations within the Calga Quarry itself. None of the symptoms referred to are experienced by the operators within the quarry.

Please include consideration of the potential impacts of night lighting on fauna and the visual landscape and any proposed avoidance/mitigation measures.

DoP Correspondence dated 12 March 2010

Response

See Response in Section 10.10.



6. ABORIGINAL HERITAGE

6.1 ABORIGINAL COMMUNITY CONSULTATION

Representative Comment(s)

Please provide evidence of consultation with Aboriginal groups including the Guringai Tribal Link, including their confirmation or otherwise that the proposed management measures are acceptable to them.

DoP Correspondence dated
12 March 2010

The Aboriginal Cultural Heritage Assessment report for this project states that I did not want to be involved. This is totally inaccurate and I have been advocating for the past 3 years to inform people how important this area is to our people and especially the woman, as there is a highly significant, and the last remaining female site with the development footprint.

Tracey Howie – Guringai Tribal Group

Guringai Tribal Link Corporation (GTLC) has contacted DECCW with concerns about the adequacy of the consultation process, the findings of the field surveys and the significance of the ACH values identified within the project area. DECCW notes that GTLC concerns and/or comments have not been included in the amended ACH report.

DECCW Submission – Page 7

Although Rocla may have advertised in newspapers, they did not provide “sufficient detail about activities which may impact on Aboriginal heritage, so that [interested bodies’ and individuals’] concerns can be identified in sufficient detail”. The following groups are widely known to be interested groups yet were not consulted with either at all or adequately.

- Guringai Tribal Link Aboriginal Corporation
- Aboriginal Cultural Heritage Advisory Committee (National Parks and Wildlife)
- Amaroo College
- Mingaletta Aboriginal and Torres Strait Islander Corporation

The Darkinjung Land Council had only two days’ on the land, grossly inadequate considering the size of the property to be surveyed as well as the density of the undisturbed bush.

Calga Peats Ridge Community Group Incorporated – Page 18

The Rocla EA says they contacted some of these bodies and the bodies failed to respond. The converse is actually true. Rocla has failed to respond to subsequent repeat approaches by these bodies. Representatives were allowed access to the land with Rocla in attendance. This land inspection proved to be unsatisfactory as whenever sites were located that were not mentioned in the EA, e.g. grinding grooves, women’s site and 20’ high emu-like figure, Rocla’s response was that they had been identified by the Rocla commissioned archaeologist John Appleton but had been omitted from the EA.



Rocla said that the 20' emu-animal-like figure was omitted deliberately because Appleton did not know what type of animal it represented. In the case of the grinding grooves Rocla said they had been noted by Appleton but omitted from the Environmental Assessment in error.

Calga Peats Ridge Community Group Incorporated – Page 18

Response

Since the receipt of the various submissions regarding the coverage of the Aboriginal heritage issues in the 2010 *Environmental Assessment*, a comprehensive program of consultation has been undertaken with the local Aboriginal Community to ensure that the assessment of the application for the Southern Extension reflects the input of the community.

Attachment 7 provides the consultation records maintained by Mr John Appleton (Archaeological Surveys & Reports Pty Ltd) and Ms Amanda Atkinson (Forward Heritage Planning Solutions). It is noted that three key Aboriginal stakeholders have been involved throughout the ongoing assessment of Aboriginal heritage issues, namely:

- Darkinjung Local Aboriginal Land Council;
- Guringai Tribal Link Aboriginal Corporation; and
- Mingaletta Aboriginal & Torres Strait Islander Corporation.

Representatives of each group were involved in a supplementary 5-day archaeological survey of the Study Area (see **Attachment 4**). Similarly, representatives of each group participated in the cultural heritage assessment undertaken by Dr Anne Ross of University of Queensland (see **Attachment 5**).

Whilst it is acknowledged uncertainties existed regarding the extent of consultation within the Aboriginal Community prior to the exhibition of the *Environmental Assessment*, it is recognised that considerable constructive consultation has been undertaken with the Aboriginal community since to achieve the two key documents attached to this response, namely:

- Supplementary Aboriginal Heritage Assessment (**Attachment 4**); and
- Cultural Heritage Assessment, AHIMS Site 45-3-0119 and its Cultural Landscape Setting (**Attachment 5**).

6.2 SURVEY METHOD AND RESULTS

Representative Comment(s)

I fail to see how 2 people can possibly investigate and assess the area adequately in 3 days. I believe that this assessment is incredibly flawed and needs to be redone by a person who will conduct consultation with more than just the LALC, and also take into consideration the local and broader significance of this area to us.

Tracey Howie – Guringai Tribal Group



Representatives have asked for unsupervised unfettered access to the land so that they can conduct a proper independent assessment and produce a report independently of Rocla's Environmental Assessment and Rocla's 'on-the-spot' revisions thereto. Representatives argue, too, that two days' access to the site was grossly inadequate. Requests to Parks and Wildlife and to Rocla for unsupervised land access have been declined.

Calga Peats Ridge Community Group Incorporated – Page 19

Response

The issue which centred on the duration of the initial archaeological survey has been overcome through a supplementary 5-day survey conducted by two archaeologists and three Aboriginal community representatives. A copy of the survey report from the supplementary survey is attached as **Attachment 4**.

I believe it is only reasonable to expect that the application should not be determined until such time as a hazard reduction burn has occurred and the site re inspected for Aboriginal heritage items.

Glenworth Valley Outdoor Adventures – Page 11

Response

The issue of burning to increase visibility of artefacts or sites has been canvassed with all Aboriginal stakeholders since 2010. There is common agreement amongst all stakeholders that no further reference should be made to this practice.

6.3 “GLENWORTH VALLEY” ROAD CORRIDOR

Representative Comment(s)

The proponent has not provided any documentation detailing the potential impacts to ACH values associated with this proposed route or developed any appropriate management strategies in consultation with the local Aboriginal community, despite a number of known Aboriginal sites being located in the immediate vicinity of the proposed route. As previously recommended, DECCW notes that prior to finalising the design of the proposed road corridor alignment, the proponent should commit to undertaking a detailed ACH archaeological survey, in consultation with the local Aboriginal community, along the proposed road alignment to assess the scale, nature and significance of ACH values within the route footprint and ascertain whether the proposal will likely impact on any identified ACH values. In the event that impact on ACH values is likely, it is also recommended that the proponent develop management strategies in consultation with the local Aboriginal community. Given the above request for further investigations into Aboriginal heritage sites we recommend that these investigations be conducted prior to any determination being made on this development application.

DECCW Submission – Page 8

Response

The road beyond the Project Site through the “Glenworth Valley” property is not part of the project application to be determined by the Minister for Planning and Infrastructure (or his nominee). Rocla's application incorporates a proposal for a road corridor through the southern



side of the Project Site to allow the owner of the “Glenworth Valley” property to use only in the event the owner of the “Glenworth Valley” property obtains approval for the entire road. In light of this, it will remain the responsibility of the owner of the “Glenworth Valley” property to commission an Aboriginal Cultural Heritage Survey of their property to accompany their application to Gosford City Council. In the event development consent is obtained from Gosford City Council, Rocla would allow the construction of the road to their tourism facility through the corridor across Rocla’s land.

It is noted that since the preparation of the *Environmental Assessment*, the Supplementary Aboriginal Heritage Assessment (**Attachment 4**) has re-defined the most suitable alignment of the corridor through the southern side of Rocla’s property.

6.4 ENGRAVING/STONE ARRANGEMENT SITES

GTLC and a member of the local Aboriginal community have contacted DECCW to raise concern about the significance of an Aboriginal Women's site in the immediate area of the proposed quarry. Due to the very late nature of the Department being contacted we have not been in a position to verify the statements made. We have been told that the nature of a claimed Aboriginal Women's site has not been adequately portrayed from either a scientific or cultural perspective. We have been told that this site is the only of its kind in NSW. The quarry plan has been amended to avoid this site, however, concern has also been raised about the proximity of the site to the proposed boundaries of the quarried area. Concern has also, been raised about an apparent lack of assessment of the need to maintain connections between this site and other sites in the area.

The DECCW believe it would be prudent to conduct further investigations, in consultation with the local Aboriginal community, to determine if all sites have been identified and to confirm the significance of each site from an archaeological and cultural perspective.

Given what DECCW has been told for at least one of the sites, we recommend that consideration be given to the gender of those who conduct the investigations. Results of these investigations should be provided in support of the project application, taking into account any gender and cultural sensitivities associated with the site(s). DECCW also reiterates that we are seeking evidence confirming the nature and outcomes of any consultation.

DECCW Submission – Page 7

The ACH assessment has failed to take into consideration the significance and magnitude of this site and its connections with all our others sites in this area. I know from growing up in the area that there are more sites that have not been recorded in the ACG report.

The Group rejects the Proponent's “buffer zone” and considers that Regulatory Compliance with s39 is the only acceptable and appropriate safeguard to protect the rare Aboriginal Heritage sites, particularly those significant to Aboriginal women, as identified in other Group submissions.

Calga Peats Ridge Community Group Incorporated (Appendix 1) – Page 35



Response

A series of additional investigations have been undertaken involving:

- a 5-day supplementary archaeological survey;
- an anthropological study involving the cultural heritage assessment; and
- numerous visits and discussions regarding the Aboriginal women's engraving site.

The results of these investigations have enabled the two reports, included as **Attachments 4** and **5** to this report, to be assembled to address the subject issues.

We are extremely concerned about our culture being disrespected as there is a significant 'Woman's Birthing Place' in that particular area, as well as other important Aboriginal carvings that are a part of our history which the sand miners intend to disregard as nothing. These Aboriginal sites must be reserved and preserved at all cost as our Aboriginal History is not only important to us Aboriginal people, but also to all Australian people because 'our history is Australia History' and is important to the future generations of both Aboriginal and non Aboriginal people in this country.

Mingaletta ATSIC Corporation – Page 2

Response

It is understood that the issue of the area in the vicinity of the Women's site being a birthing site is not being pursued given its high elevation and its considerable distance to permanent water.



7. NOISE AND VIBRATION

7.1 DAY SHOULDER PERIOD

Representative Comment(s)

There is no satisfactory explanation for why noise levels in the ambient noise measurement charts show noise levels commencing to rise around 2am to 3am.

In addition, in many of the charts noise levels subside around 6am to 7am, yet the hourly traffic counts continue to rise until 9am to 10am. This suggests the time settings in the loggers may be wrong, or that traffic on Peats Ridge Road is not the major source of noise in the area.

Importantly and significantly, there are no attended measurements in this period, or even more importantly in the proposed 5am to 7am day shoulder period, to explain why the noise levels would be rising as shown and what is generating the noise.

The ambient noise measurements were conducted in summer only, and any increase in noise level during the 5am to 7am proposed day period could be entirely, or partially, due to bird noise ("dawn chorus"), which will not be present to the same extent during this time in winter.

DECCW Submission – Page 9

DECCW would, however, be prepared to vary EPL 11295 Condition L6.1 to include the following limits:

Location	Noise Limit ($L_{Aeq, 15\text{minute}}$) dBA			Noise Limit (LA1, 1minute or LAmax) dBA
	Day (7am-6pm)	Evening (6pm-10pm)	Night (10pm-7am)	Night (10pm-7am)
CN1 185 Peats Ridge Road	35	35	35	45
CN6 3 Jones Road	42	42	42	52
CN7 24 Jones Road	42	42	38	48
CN8 30 Jones Road	41	41	39	49
CN9 Australia Walkabout Wildlife Park	39	39	38	48

DECCW Submission – Page 9

Response

Background noise monitoring was initially conducted at four locations around the proposed Quarry Extension, namely:

- CN6- 3 Jones Road Calga (Noise logger period 25 Jan to 8 Feb, 2007);
- CN7- 24 Jones Road Calga (Noise logger period 14 Dec to 22 Dec, 2006);
- CN8- 30 Jones Road Calga (Noise logger period 14 Dec to 22 Dec, 2006); and
- CN9- Australia Walkabout Wildlife Park (Noise logger period 14 Dec to 22 Dec, 2006).



The results of the measured rating background levels presented in the *Environmental Assessment* are reproduced in **Table N-1**.

Table N-1
RBL Levels Presented in EA

	Monitoring period	RBL, Background Noise Levels, dBA			
		Day Shoulder	Day	Evening	Night
CN6	25 Jan to 8 Feb, 2007	40	38	38	37
CN7	14 Dec to 22 Dec, 2006	37	38	39	33
CN8	14 Dec to 22 Dec, 2006	41	43	41	34
CN9	14 Dec to 22 Dec, 2006	37	41	40	33

Wilkinson Murray reviewed the noise logger data sheets for the project, and confirmed that that all loggers were installed with the correct time setting. It should be noted that the measurement at CN6 was conducted approximately six weeks after the measurements at CN7, CN8 and CN9. The background measurements present a trend of increased background noise levels after 3pm. which coincided with traffic volumes on Peats Ridge Rd presented in the project Traffic Report. The measurements also indicate a trend for background noise levels reducing around 6am-7am.

Between 26 February and 5 March 2010, Wilkinson Murray undertook a series of additional noise measurements at CN-9 adjacent to the residence within the Australia Walkabout Wildlife Park. The monitoring involved both attended and unattended measurements and assisted to better define the background noise levels and sources heard at that residence.

The results of the monitoring are presented in a report compiled by Wilkinson Murray which is reproduced in **Attachment 2**.

In order to confirm the measurements recorded in **Table N-1**, Wilkinson Murray also conducted additional measurements at:

- CN6- 3 Jones Road Calga;
- 6 Jones Road Calga; and
- CN7- 30 Jones Road Calga.

The monitoring was conducted in winter, between 15 June and 22 June, 2010. The results of the measurements are reproduced in **Attachment 2**. The summary of the rated background levels are presented in the **Table N-2**:

Table N-2
Summary of the New RBL Levels Measured

		Monitoring period	RBL, Background Noise Levels, dBA			
			Day Shoulder	Day	Evening	Night
CN6	3 Jones Road Calga	15 June to 22 June, 2010	43	43	36	34
	6 Jones Road Calga	15 June to 22 June, 2010	38	41	43	36
CN7	30 Jones Road Calga	15 June to 22 June, 2010	41	42	35	31



The noise logger deployed at 3 Jones Road Calga was an ARL Ngara noise logger. The Ngara noise logger has the capability of storing raw audio data (wav files) to a hard disk for post processing. The audio files indicate that between 2am to 3am traffic noise starts to increase on Peats Ridge Road, particularly from truck passbys that are travelling to other industrial sites in the area and continues to 8am when it starts to reduce in level.

The *Environmental Assessment* noise data and the noise data measured in June 2010 are comparable. The more recent data appears to be marginally higher. The more recent noise data shows a similar trend as the noise data presented in the *Environmental Assessment* therefore indicating that the noise data measured by Wilkinson Murray for the *Environmental Assessment* is applicable for the project and is not adversely affected by incorrect time setting or summer bird noises.

As DECCW has indicated that they wish to include a CN1 noise catchment noise limit, rather than just using the closest residential receivers, noise monitoring data previously conducted at CN1 has been reviewed. A summary of the measured noise data is presented in **Table N-3**.

Table N-3
RBL Noise Levels

	Monitoring period	RBL, Background Noise Levels, dBA			
		Day Shoulder	Day	Evening	Night
CN1	15-25 Oct 2006	36.5	37.5	31.7	29.9
	24 Sept - 2 Oct 2007	36.6	37.1	37.9	31.8
	15-29 Sept 2008	35.5	37.2	39.1	32.6

DECCW appears to indicate by not including shoulder period noise limits, that they do not support the proposed shoulder period noise limits presented in the *Environmental Assessment*. As presented in the *Environmental Assessment* and the additional noise measurement results, the background noise levels steadily rise in these early morning hours (5am to 7am) and as such are suitable to be considered for a shoulder period rating background consistent with the methodology proposed in the INP. The use of night time RBL noise levels would appear to be unduly stringent. Wilkinson Murray understands from discussions with that DECCW it developed the proposed noise limits based on re-analysing the background noise data based on the assumption that the background noise data is flawed (adversely affected incorrect time setting and/or summer bird noises). As this has been an incorrect assumption from DECCW, it is proposed that the noise criteria presented in the *Environmental Assessment* be adopted with the inclusion of a more appropriate limit at CN1, derived from the background noise levels presented in **Table N-4**.

Table N-4
Noise Criteria Proposed for Calga Sand Quarry

Location	Residence	Noise Limit ($L_{Aeq, 15\text{minute}}$) dBA			Noise Limit ($L_{A1, 1\text{minute}}$ or L_{Amax}) dBA
		Day Shoulder (6am-7am)	Day (7am-6pm)	Evening (6pm-10pm)	Night (6am-7am)
CN1 185 Peats Ridge Road	3, 5, 10, 11, 19, 18, 16, 12, 6, 7	41	37	35	45
CN6 3 Jones Road	21, 22, 23, 24	45	43	43	55
CN7 24 Jones Road	9	46	43	44	52
CN8 30 Jones Road	20	42	48	45	56
CN9 Australia Walkabout Wildlife Park	13, 14, 15	42	46	45	52

7.2 GENERAL COMMENTS

Representative Comment(s)

The noise impact on homes and businesses in the area (from farm machinery) will be intolerable.

Calga Peats Ridge Community Group Incorporated – Page 22

Noise arises from sandstone ripping, wash-plant, front-end loaders and trucks engines and reversing indicators. The new mine will add stone crushing equipment which will generate even more noise.

Calga Peats Ridge Community Group Incorporated – Page 22

Although decibel levels may be low, the constant drone of background noise is impossible to ignore.

Calga Peats Ridge Community Group Incorporated – Page 22

The proposed new site and hours of operation will create noise detrimental to all living in close proximity to the new mine and/or along its planned truck route.

Calga Peats Ridge Community Group Incorporated – Page 22

Response

The noise assessment was undertaken fully in accordance with the NSW Government Industrial Noise Policy (INP) and the document entitled “Environmental Criteria for Road Traffic Noise”. The INP criteria have been “selected to protect at least 90 percent of the population living in the vicinity of the industrial noise sources from the adverse effects of noise for at least 90 percent of the time”. The noise measurements and records of noise sources at residences in the vicinity of the Calga Sand Quarry confirm the dominant source of the L_{Aeq} noise levels is traffic on the F3 and Peats Ridge Road. The claims in the submission by the CPRCG Inc are clearly overstated and/or incorrect when reviewed in the context of the actual measurements.



Noise from the mine will be heard by adjoining properties and the roar of trucks passing by residents will be intolerable.

Extract from submitted form letter.

Within only meters of Calga Village homes, increased truck traffic from 5am and until 10pm will interrupt sleep (including babies and young children) and seriously impact quality of life and wellbeing.

The vibrations associated with another 80,000 truck movements per year, every one rapidly accelerating and decelerating on their F3 approach, will cause increased structural damage to property.

Calga Peats Ridge Community Group Incorporated – Page 25

Response

Section 6 of the Noise Assessment presents an assessment of traffic noise and vibration. The traffic noise assessment was conducted in accordance with the NSW Government's Environmental Criteria for Road Traffic Noise (ECRTN) and the vibration assessment was conducted in accordance with the NSW Government Assessing Vibration: a technical guideline. The fundamental basis upon which noise impacts are assessed in these guidelines is by comparing the noise and vibration currently being experienced with the predicted level of noise and vibration. The Noise Assessment concluded that the project would result in an increase in traffic noise of less than 1dB when operating at a level of 1Mtpa. The vibration assessment similarly concluded that there is no significant difference in vibration between the ambient levels and during future truck pass-bys. It is therefore concluded that the additional truck movements would not noticeably change the impacts being experienced by those residents, particularly those living near the F3 in Calga Village.

Costs to Australia Walkabout Wildlife Park associated with the new quarry include:

Impact of noise and resultant sleep deprivation on the management of Australia Walkabout Wildlife Park who reside on the premises just meters away from the proposed extraction site, with the associated health impacts and social, productivity and financial cost.

Australia Walkabout Wildlife Park – Page 5

Response

An investigation of noise levels at the Barnard residence places considerable doubt upon the claims included in the submission. Traffic and early morning bird choruses are clearly the dominant noise sources at this residence. Rocla is supportive of ongoing monitoring at the Barnard residence to confirm this fact and to accurately record the contribution quarry-related noise has at the residence.



Rocla does not own its heavy haulage vehicles. How much control have they got over the drivers or subcontracted companies to maintain their vehicle to reduce unnecessary noise emitted from trucks??

Angela Hellyer – Individual Submission No. 97

Response

All truck drivers who travel to and from the Calga Sand Quarry are required to sign the “Drivers Code of Conduct”. The code will be modified to reflect the requirement for the driver and/or owner to maintain the vehicle to ensure all RTA noise criteria for trucks are satisfied.

How can a 102dba truck under heavy acceleration up a steep incline record <50db when the residence is immediately adjacent to ramp???

Assessment of traffic noise concludes that the noise from the project related trucks using Peats Ridge Road would not lead to an excess of the relevant road traffic criteria at all residences between the project site and F3 Freeway.

Table 5 stages truck noise is 102dba, page 18.

All front end loaders 104dba all road trucks 102dba (page 19 project site).

It is apparent that Rocla says they meet the noise standards on so many occasions, but the source of the noise is well over???

Angela Hellyer – Individual Submission No. 97

Response

The author of this submission does not understand the difference between a sound power level (SWL) (which is the measure of the total airborne acoustic power generated by a noise source, expressed on a decibel scale referenced to some standard (usually 10-12 watts)) and the noise level equivalent (Leq) received at a particular receiver (the average noise level received over a nominated time period). The rationale of the submission is that as the SWL of the individual noise sources is greater than the noise criteria, the noise levels received must also exceed the noise criteria. The use of this flawed rationale would suggest that a loud conversation on the Project Site (SWL of loud speech = 90dB) would result in an exceedance of noise criteria.

The SWL of each noise source for the Project was either measured or estimated through comparison to a database of SWLs maintained by Wilkinson Murray. Each noise source SWL was then incorporated into a noise modelling program which considers the location of each source of noise, the location of receivers, meteorological conditions, topographic conditions and any mitigation measures proposed to predict a noise level at a particular receiver. The noise level predicts a noise level equivalent over a 15 minute interval ($L_{eq(15 \text{ min})}$), i.e. the average noise level received over a 15 minute period.



It is noted that the noise modelling undertaken by Wilkinson Murray was in accordance with the NSW Industrial Noise Policy, with worst-case meteorological conditions considered for a series of operational scenarios. Through the incorporation of several noise mitigation measures, e.g. the construction of acoustic bunds, the noise model predicts the $L_{eq(15 \text{ min})}$ received at all surrounding residential receivers will comply with the nominated noise criteria (L_{90}^4 noise level + 5 decibels).

With their current 2km existing approved operations, Rocla's machinery mine noise and associated vibration caused by the ripper, wash-plant, front-end loader, reversing trucks, etc. wakes us usually between four and six times per week even with all our windows closed, and prevents our being able to fall asleep again.

Rocla was supposed to move their wash-plant into an excavated hollow in 2009 which would have reduced the noise, but have now told us that because of lower than expected production levels they cannot afford to move the plant now, and that they may do so in 2011.

Barnard Family – Individual Submission No. 105

Response

Rocla will always attempt to identify any activities/items of equipment that could contribute to sleep arousal prior to 7:00am. The use of rippers and the wash plant do not occur before 7:00am.

The claim that Rocla should have moved their wash plant in 2009 is noted, however, the relocation was predicated on the planned extraction rates and sales forecast in 2005. The sand sales, particularly as a result of the Global Financial Crisis and depressed building markets in NSW resulted in the extraction rate being curtailed. The wash plant is now likely to be relocated during 2012/2013.

⁴ The L_{90} noise level refers to a noise level which is exceeded for 90% of the time.



8. TRAFFIC

8.1 GENERAL COMMENTS

Representative Comment(s)

When the F3 alternate route strategy is put in place, all the north bound traffic off the F3 must detour through this intersection, having to give way to the numerous trucks (swelled by an additional truck every 4 to 8 minutes) en-route to the F3 from Peats Ridge Rd.

Calga Peats Ridge Community Group Incorporated – Page 24

The transport proposal will put an extra truck on the F3 freeway every eight (8) minutes from 5.00am to 10.00pm Monday to Saturday every week for the next 20 to 25 years. A majority of these trucks will travel to Sydney in the heavy commuter traffic.

Paragraph in submitted Form letter

Response

On the occasions when the F3 detours are in place, the trucks travelling to and from Calga Sand Quarry would represent only a very small proportion of the total traffic. Two-way radio communication alerts drivers to avoid travelling to Calga to collect a load of sand when detour conditions are in place.

The claimed truck levels relate to total traffic – travelling to and from Sydney and the Central Coast in the circumstance of maximum production. Those levels will certainly not be sustained for **every week** of 25 years.

Peats Ridge Road and the Pacific Highway are RTA designated Scenic Routes used by tourists. These tourists are already confused. This driver behaviour in the face of an extra truck every 4 minutes will be unacceptably dangerous.

Calga Peats Ridge Community Group Incorporated - Page 24

Response

The high standard of the road network involving Peats Ridge Road, the Pacific Highway and the F3 with good signage for tourists is unlikely to cause confusion to tourists. Rather, because all motorists approach Calga via the F3, they will have already encountered a higher level of heavy vehicle traffic – a feature of the F3.

Truck drivers travelling to and from Calga Sand Quarry have advised the frequency of confused drivers as claimed is very limited and then it is simply a matter of avoiding problems through the adoption of defensive driving habits, a fact common to all truck drivers.



The existing operating hours of the quarry should be reduced not expanded due to dangerous conditions that exist as a result of regular heavy fog in the area.

Due to the severely reduced visibility and speed that vehicles are travelling along Peats Ridge Rd, some trucks are already pulling out when they cannot see if it is safe to do so. The current arrangement is a recipe for disaster.

The fog figures used for Peats Ridge (Waratah Rd Mangrove Mtn, 15kms away) are not accurate and do not reflect local conditions in this area.

Glenworth Valley Outdoor Adventures – Page 9

Response

Fog occurs on many parts of the road network in NSW that are used by heavy vehicles. In such conditions, drivers adjust their speed and drive to the conditions. When fog occurs at Calga it would be expected that all drivers would adjust their speed and drive to the conditions.

In this regard, the Calga Sand Quarry has operated without incident in all weather conditions including fog for 20 years. In addition, none of the accidents that occurred in the 5 year period from 2001-2005 on Peats Ridge Road and Calga Interchange between Cook Road and the F3 that were examined as part of the traffic assessment for the Project occurred during fog.

Rocla has a code of conduct for its drivers' which stipulates safe driver practices at all times. Accordingly, the drivers of the product trucks operate their vehicles taking into account road and weather conditions and drive to the conditions and use lights and fog lights (check) when required.

The existing and proposed traffic management in Peats Ridge Road that will provide access to the Project Site will be designed and constructed to current RTA standards and will be safe to operate in all road conditions, provided appropriate care is exercised. Based on the above, there is no evidence that indicates that the hours of operation should be curtailed due to the incidence of fog.

For decades, national and leisure cycling events and time-trials have been held along Peats Ridge Road on Saturdays. It will be too dangerous to hold these meets with an additional truck thundering by every 4 to 8 minutes.

Calga Peats Ridge Community Group Incorporated – Page 24

Response

For the past two decades, the various cycling events referred to have occurred concurrently with truck movements from Calga Quarry and all other quarries on the Somersby Plateau. In fact, trucks from Calga Quarry only travel for a distance of 1.9km on Peats Ridge Road before joining the F3. This distance will be even shorter (1.3km) once the new entrance is constructed to the Southern Quarry Extension.



Rocla has no reason to believe the past cycling practices cannot continue. In any event, the Driver's Code of Conduct will be amended to draw the attention of truck drivers to such events on Saturdays.

With increased traffic coming down a short incline from Peats Ridge Road, if Rocla's proposal goes ahead. I foresee more accidents and near misses.

Angela Hellyer – Individual Submission No. 97

Response

The Project is not expected to have any detrimental impact on road safety. Traffic volumes using Peats Ridge Road are small and existing traffic conditions are good (consistent with a level of service A operation). Adjacent intersections will continue to operate at good level of service (level of service A) with the Project operating at full capacity in 2012, and total traffic volumes using Peats Ridge Road will continue to be small.

Peats Ridge Road between the Project Site and the F3 Freeway is engineered to current standards and the proposed traffic management changes required for the Project will also be designed to current RTA standards.

Trucks exiting F3 onto Peats Ridge Road from south come around a long corner to be confronted on a two lane (each way) Peats Ridge Road section by traffic entering Peats Ridge Road from Calga Village end, having to change from right lane, to left, coming into conflict with these heavy vehicles gathering speed. Again, visibility is very poor and requires a revision mirror shift as well as a head turned visual look. With more heavy vehicles coming and going from Rocla's proposed new mine site, there will be increased accident potential.

Angela Hellyer – Individual Submission No. 97

Response

The merge referred to in this question, was constructed by the RTA as part of recent changes to provide U turn bays at Darkinjung Road. The northbound traffic merges into one lane just south of Darkinjung Road and these changes have been made by the RTA to current standards. Sight lines before and at the merge are adequate for safe merge movements to occur. The total northbound traffic volumes using Peats Ridge Road are small. In the design hour for the Project in 2012, the total northbound volume will be 87 vph which is an average of 1 vehicle per 41 seconds. This total is made up of 62 vehicles from the F3 Northbound Off Ramp and 25 vehicles using Peats Ridge Road. The total includes the 15 additional Project trucks returning to Calga Sand Quarry. These vehicles travelling northbound in Peats Ridge Road will have sufficient time to sight other vehicles travelling in the same direction and to merge safely.

With an increase in truck movements from proposed Rocla new mine, more heavy vehicles will be sitting in Calga Village when there is an accident on F3.

Angela Hellyer – Individual Submission No. 97



Response

The impacts of any accident on the F3 depend on where it occurs, (i.e. location, direction of travel etc.) and the severity of the accident.

It is considered highly unlikely that Rocla's additional trucks from the Project would result in any noticeable change in any queuing that might occur in Calga Village, in the event of any incident given the volume of other traffic that uses the F3. Rocla would usually delay the departure of any trucks in the event the F3 was blocked or experiencing heavy and extensive queuing due to an incident.

It is noted that the RTA is providing traffic signal control of one of the interchange intersections at Calga Interchange to better manage queuing when an incident occurs on the F3. These signals only operate in the event of an accident and may assist limiting any queuing that might occur in Calga village.

The Environmental Assessment does not address the issues of road safety at the new intersection opposite Jones Road. The Environmental Assessment should expressly stipulated that, if the Darkinjung Road access road is built, that it must not be used for any purpose whatsoever except as emergency vehicle access, e.g. in the case of bush fire.

Calga Peats Ridge Community Group Incorporated

Response

The Jones Road intersection will be upgraded to provide a right turn bay in Peats Ridge Road as part of the traffic management changes for Phase 2 of the Project, which incorporates the new site entry, north of Jones Road. Phase 3 incorporates full access (i.e. entry and exit) to the Project site at the new location and includes an acceleration lane in the southbound direction in Peats Ridge Road, for the right turn out of the Project site.

There are no road safety implications with the Phase 2 and 3 traffic management changes for the Project. The intersection changes will be designed and constructed to RTA standards. A road safety audit undertaken for the Phase 3 traffic management by an independent traffic consultant (RoadNet) concluded that the proposed design is essentially sound and is safe.

It is noted that the RTA recently provided U turn bays in Peats Ridge Road at Darkinjung Road for both directions of travel. These changes will have no impact on the proposed traffic management for the Project. The acceleration lane to be constructed as part of Phase 3 access to the Project site will end 360 metres north of Darkinjung Road.

The northbound U turn bay at Darkinjung Road would be expected to reduce the number of U turn movements that previously would have occurred at Jones Road. However, the right turn bay at Jones Road, as proposed in the Phase 2 and 3 traffic management changes for the Project should be retained for the right turn movement at that intersection.



9. LAND USES

9.1 COMMERCIAL AGRICULTURAL ACTIVITIES

Representative Comment(s)

Ensure there are measures in place to support the retention of vegetation (5-140) or other buffer to restrict dust and noise impacts on agricultural activities and pasture/ cropping land to the east of Peats Ridge Road.

I & I NSW Submission – Page 2

Response

The Project Site Layout (**Figure 2.1**) and Biodiversity Offset Area (**Figure 2.14**) presented in the *Environmental Assessment* clearly illustrate that a buffer of remnant vegetation is to be maintained around the extraction areas.

The rehabilitation design for any future agriculture opportunities should aim to return topsoils and subsoil drainage to a quality that at a minimum currently exists including a potential water supply source.

I & I NSW Submission – Page 2

Response

All recoverable topsoil would be stockpiled and progressively placed onto the final landform sections as they are completed. Rocla would ensure that the substrate beneath the topsoil is either deeply ripped or comprise overburden and/or oversize material that would appropriately retain subsoil moisture. Some sections may remain unripped if a subsequent land use requires good foundations.

The final landform for the project displays a number of dams which would be able to supply water for any ongoing agricultural land use undertaken on the rehabilitated landform.

There are continued concerns that remain with regard to the impacts on tourism visitation and visitor satisfaction levels at both primary attractions. The EIS fails to explore these issues in sufficient depth, even with regard to the topics covered under the Sustainable Development Principles section in the EIS Summary document produced by Rocla May 2004.

There are likely to be adverse impacts on the long term financial viability of these tourist businesses if the quarry is permitted to expand which is something that is contrary to the objectives of the zone for this area.

Central Coast Tourism requests that further investigation into the impacts of the extension of the quarry on these businesses and the local tourism industry, particularly with regards to the potential impact on visitor satisfaction are addressed, and reported on in greater detail in the terms of reference of a Commission of Enquiry.

Central Coast Tourism – Page 1



Visiting the area of Peats Ridge Road has, for decades, been “a day in the Australian countryside” for visitors from near and far. With the loss of serenity and safety with the constant roar of heavy laden trucks thundering past at over 100km per hour, this will no longer be feasible.

Calga Peats Ridge Community Group Incorporated – Page 27

Response

The two principal tourist destinations near the Calga Sand Quarry are the Glenworth Valley Horse Riding facility and the Australia Walkabout Wildlife Park.

The activities conducted on the “Glenworth Valley” property are invariably confined to the topographically lower sections of the property some considerable distance from the Calga Sand Quarry. As such, visitors would not be able to hear or see any activities at the quarry. There are some elevated cleared areas within the “Glenworth Valley” property which if frequented by visitors may afford them a view of some elevated sections of the quarry. Those views would be of sandstone faces comparable to those the tourists have driven through (on the F3) to reach “Glenworth Valley” (albeit lighter in colour – until they are vegetated and darken through natural staining.

Visitors to Australia Walkabout Wildlife Park may become aware of activities at the Calga Sand Quarry when activities are on the southern side of Stage 4 and within Stage 5, i.e. when they are within the small section of the park on its northern side and away from the constant F3 road noise. These visitors would be aware of the quarry through low levels of noise, compliant with DECCW requirements, yet audible at times when traffic noise from the F3 and Peats Ridge Road is lower than normal.

Rocla intends to enhance the vegetation on the southern side of its property to “thicken up” existing vegetation and improve the visual screening between the proposed sand extraction activities and the northern side of the Australia Walkabout Wildlife Park. This will be beneficial within about 10 years, i.e. well before Rocla advances its extraction operation into the southern sections of Stage 4 and into Stage 5. Rocla has added a new commitment to its Statement of Commitments to this effect (see Commitment 13.7).

“Enhance the vegetation between the transmission line easement and the southern boundary of the Project Site to limit visibility of on-site activities from the south.”

Timing – Commence within the first year following project approval.

Visitors to both tourist destinations would predominantly approach via the F3 and Peats Ridge Road, two roads maintained to a very high standard. Both destinations are well signposted and tourists travelling to and from the destinations may share the road with trucks from the Calga Sand Quarry or one of the other quarries on the Somersby Plateau, or from other enterprises on the plateau such as water bottling or poultry. Sharing these excellent roads should not cause any difficulties for tourists. These city-based tourists would also gain an appreciation of where their eggs, water, chickens and sand comes from!



The proposal must be rejected in its current form because it is incomplete, does not conform to the principles of ecologically sustainable development; it proposes an activity that breaches SREP 8, 9 and 20. It is also not in the public interest due to the social and environmental impacts.

Glenworth Valley Outdoor Adventures – Page 2

Response

The project has been designed with full recognition of minimising ecological impacts whilst maximising sand recovery for the NSW building industry. The design and operational safeguards would achieve the reduction of impacts whilst Rocla's biodiversity offset package would appropriately offset the areas of native vegetation removed throughout its operational life. The clearing planned for this project (37ha) represents approximately 0.9% of the land already cleared for residential/agriculture across the plateau.

The destruction of neighbouring land by sand mining will result in a permanent loss to tourism activities in the future.

Glenworth Valley Outdoor Adventures – Page 8

Response

This statement ignores the planned rehabilitation of the areas disturbed throughout the life of the quarry. Long term, there should be no reason why tourism to "Glenworth Valley" would be affected.

The subject site is zoned 7b with the stated objective of conservation and scenic protection under Gosford Council's zoning schedule and indeed the current draft LEP on exhibition. The expansion of the site as a quarry is contrary to the objectives of the zone and in fact you couldn't get a use which is more at odds with the objectives of the zone and character of the locality. Whilst extractive industries are permissible in the zone the emphasis is on the applicant to prove how they will comply with the objectives of the zone. The applicants have failed to do this. The proposal contravenes clauses a, b and c of the objects of the zone as contained in IDO 122 and most of the points of the current draft LEP for the comparable RU2 zone. The impacts of this proposal will and do prejudice a whole range of existing and proposed development which is far more in keeping with the objectives of the zone and as such demonstrates the incompatibility of the proposed development on the objectives of the zone.

Glenworth Valley Outdoor Adventures – Page 9

Response

Contrary to the submission, the relevant planning instrument in this case is the State Environmental Planning Policy (SEPP) Mining, Petroleum Production and Extractive Industries (2007) ("the Mining SEPP"). Section 7.3.4 of the *Environmental Assessment* confirms that the Project complies with the objectives of this planning instrument.



The above notwithstanding, the Mining SEPP requires that the following be demonstrated.

- Consideration is given to:
 - the existing uses and approved uses of land in the vicinity of the development;
 - the potential impact on the preferred land uses (as considered by the consent authority) in the vicinity of the development; and
 - any ways in which the development may be incompatible with any of those existing, approved or preferred land uses.
- The respective public benefits of the development and the existing, approved or preferred land uses are evaluated and compared.
- Measures are proposed to avoid or minimise any incompatibility are considered.

Achievement of these objectives would also provide for the achievement of the objectives of Zone 7(b) of IDO 122.

On the western side of the southern expansion area the proposed boundary of the quarry appears to be located immediately adjacent to the 7a zone boundary (particularly dam 16). SREP 8 requires adequate buffer zones to be created. I would like to request that a minimum 30 metre buffer zone is enforced on all boundaries in an attempt to mitigate some of the destructive impacts associated with the quarry.

Glenworth Valley Outdoor Adventures – Page 11

Response

No buffer is required to the 7(a) zone as development for the purpose of extractive industry is a permissible land use within this zone (by virtue of the State Environmental Planning Policy (SEPP) (Mining, Petroleum Production and Extractive Industry) 2007). This planning instrument provides for development for the purposes of mining, petroleum production and extractive industry (which otherwise would not be permissible) on land on which agriculture is permissible. Notably, development for the purpose of agriculture is permitted within Zone 7(a) Conservation.

Australia Walkabout Wildlife Park shares a 2km border in common with the proposed Rocla mine site with extraction areas proposed within 40m of the park's activities in some places. The Environmental Assessment underplays this proximity, with maps showing the Australia Walkabout Wildlife Park property which runs between the new quarry site and Peats Ridge Road for the full length of the new quarry site right to its proposed new access road at the Jones Road intersection.

Australia Walkabout Wildlife Park – Page 3

Response

The Australia Walkabout Wildlife Park is currently located on the southern side of Darkinjung Road and it is acknowledged that the Barnard Family owns the land north of Darkinjung Road which in turn adjoins a strip of land owned by Gosford City Council between their land and the land owned by Rocla. Any development planned for that land would need to reflect the approved uses on Rocla's property. It is noted that the Rocla property (and the additional land owned by the Barnard family) is zoned under the Gosford/Wyong LEP 2001 to allow extractive industry and tourist developments.



In the unlikely event Australia Walkabout Wildlife Park can sustain conservation activities, the tourist and formal educational programs would not be sustainable, certain species could not be accommodated, and the employment capacity of Australia Walkabout Wildlife Park would reduce from over 30, to two (2).

Australia Walkabout Wildlife Park – Page 4

Response

Rocla has designed its project to ensure adverse impacts upon all nearby enterprises are avoided. These objectives would no doubt be re-enforced through conditions of a Project Approval for the project. The proposed monitoring would assist to demonstrate that the environmental impacts are within the defined criteria for the project.

It remains Rocla's objective to operate harmoniously with the Australia Walkabout Wildlife Park and maintain a rapport and level of communication that will underpin that relationship as neighbours.

Rocla maintains that it will achieve compliance with all necessary criteria which in turn will enable the AWWP to operate its activities in a manner that will not adversely affect employment levels at the Park.

The EA writes about the operations of Australia Walkabout Wildlife Park at great length. None of this information was collated with any input from Australia Walkabout Wildlife Park. The EA appears to have made this information up e.g. it makes wildly inaccurate statements about the number of tourist buses that Australia Walkabout Wildlife Park 'says' it gets per week.

Australia Walkabout Wildlife Park – Page 23

Response

The authors of the *Environmental Assessment* (and four Rocla representatives) visited the Australia Walkabout Wildlife Park on 14 February 2007. During this site visit, an overview of the proposed southern extension of the Calga Sand Quarry was provided, a tour of the Australia Walkabout Wildlife Park facilities was given by the operators and discussions were held with respect to the ongoing operations at the Australia Walkabout Wildlife Park and potential impacts of the Project. Photos were taken during this visit, several of which are reproduced as plates within the *Environmental Assessment* (**Plates 4.1 to 4.6 and 5.5 to 5.8**). The information quoted in the *Environmental Assessment* was drawn from notes taken during these discussions.



9.2 LICENCING OF THE AUSTRALIA WALKABOUT WILDLIFE PARK

Representative Comment(s)

Australia Walkabout Wildlife Park has been advised by its licensing authority, the Department of Industry and Investment, Animal Welfare branch, that the impact of the mine on the wellbeing of certain species will likely make it impossible for Australia Walkabout Wildlife Park to comply with its licensing requirements.

Calga Peats Ridge Community Group Incorporated – Page 27

Ms Barnard has been advised by staff within the Department's Animal Welfare Unit....."if the expansion of the mine impacts on the welfare of the animals and the park operators cannot mitigate those effects then it will impact on the licensing of the park""she has not been advised by the Animal Welfare Branch or any of its staff that sand mine expansion was likely to make licensing impossible".....The Department has also noted that "Obviously we cannot licence a park where the operators are unable to keep their animals in accordance with welfare standards. It is certainly possible that unavoidable adverse impacts from an adjoining property use may prevent an operator from achieving those welfare standards.

I&I NSW – Animal Welfare Branch (separate email)

In dealing with this issue in your response to submissions, please demonstrate how the proposal would not adversely impact upon the welfare of the animals.

Department of Planning (separate email)

Once the extraction site with its rippers, bulldozers, wash-plant and trucks is only 200 meters away from the park activities, the impact is likely to be such that Australia Walkabout Wildlife Park cannot continue to operate as the animals will have to be relocated and visitors will not want to attend a noisy dusty destination.

Calga Peats Ridge Community Group Incorporated – Page 27

Response

I&I NSW license the Australia Walkabout Wildlife Park under Part 3 (Division 1) of the *Exhibited Animals Protection Act 1986* (EAPA). The operators of the Park hold a licence to exhibit animals which is renewed annually (on 30 June). Each operator is required to display their licence at their premises. It is understood the operators of the Park also hold permits for the keeping/display of specific fauna species, however, no further details have been provided.

The operators of the Australia Walkabout Wildlife Park are required to satisfy the requirements of the EAPA and a range of standards relevant to the animals kept at the Park such as:

- *General Standards for Exhibiting Animals in New South Wales;*
- *Standards for Exhibiting Captive Reptiles in New South Wales;*
- *Standards for Exhibiting Koalas in New South Wales; and*
- *Standards for Exhibiting Capacity Macropods in New South Wales.*



The above standards have been developed to ensure the welfare of animals kept for exhibition purposes. The standards do not specifically make reference to the approach to noise/air quality issues that licencees need to consider or I&I NSW should consider when issuing/renewing licences. Rather, reference is made for example to “Stress Management and Behavioural Problems” – Clause 56 of the General Standards for Exhibiting Animals in New South Wales. A situation could arise where animals could display signs of distress and stress. The standard requires either:

- i) the causes of the stress to be removed or alleviated as much as possible; or
- ii) veterinary advice must be obtained where the cause cannot be identified.

Rocla has no intention of creating a situation on its land whereby I&I NSW is placed in a position not to re-new the licence required for the Australia Walkabout Wildlife Park to operate. Rocla recognises that its proposal involves the gradual and progressive advance of sand extraction towards the common boundary between the Park and Rocla’s land. As such, there will be sufficient opportunity to confirm the environmental setting within the Park and hence the welfare of the kept animals, is or is not adversely affected by the quarry. A range of monitoring data with respect to air quality and noise will be available to assist in the review of the environment within the Park. In any event, it will remain for an independent assessment to be undertaken by an appropriate veterinarian say every 2 years to review Rocla’s monitoring data and assess the welfare of the kept animals.

As previously noted, it is a concern that it is claimed that personnel at the Park are currently experiencing eye irritation, etc. when and Rocla personnel working within the quarry itself do not exhibit such symptoms. The independent assessment will need to determine whether localised conditions within the Park itself are contributing to the symptoms claimed by Park personnel rather than the quarry.

It is noted that noise levels on the section of the Park exposed to F3 noise are already higher than the noise levels that would be experienced from the Southern Quarry Extension. Furthermore, it needs to be recognised that Rocla has committed to complying with the INP limits at the residence within the Park which will similarly minimise noise for animals to acceptable levels.

Horse owners from all over Sydney who have become aware of the proposed mine have expressed their concerns about the health of horses they agist at Glenworth Valley, on the Ingvall’s property and at other establishments.

Calga Peats Ridge Community Group Incorporated – Page 27

Response

Air quality and noise levels will need to be within nominated criteria at the closest residences which in turn will guarantee compliance where horses are located.



10. OTHER ISSUES

10.1 REHABILITATION

Representative Comment(s)

To date Rocla has found it impossible to comply with the requirements for rehabilitation of their existing mine operations. The reasons for failure will also apply to the new mine. Years after the first phases of progressive rehabilitation should have been complete, the substrate of the exhausted mine areas remains exposed.

According to the Rocla report to the Community Consultation Committee, the mined area water table has been altered through the mining activity and the trees they have attempted to plant are dying as “they don’t like getting their feet wet”. The nutrient status has also changed significantly making it unsuitable for trees and other ground cover indigenous to this area.

Calga Peats Ridge Community Group Incorporated – Page 15

To date in the existing quarry no successful rehabilitation has occurred. So currently exhausted mines remain unsealed.

Calga Peats Ridge Community Group Incorporated (Appendix B) – Page 14

Our landholding is one of the most heavily affected by the visual scar associated with the quarry on what is an otherwise unblemished natural setting. The highly visible effect of the quarry is like a cancerous blight on the visual amenity of the landscape which continues to grow each year. No significant progress has been made on reducing the visual impacts of the quarry as viewed from the West and North West. The quarry operators have had 19 years to tone down the visual impact of the quarry and have had achieved very little if anything in this regard.

Glenworth Valley Outdoor Adventures – Page 8

Response

Rehabilitation of the disturbed areas of the quarry needs to be incorporated as the final stage of operation. Most sections of the existing quarry are approved for multiple uses – commencing with extraction, followed by silt placement, silt drying and covering and ultimately revegetation (if appropriate). Some areas are also designated for long term water storage and water management and will not be rehabilitated in the conventional manner. The water storage will be a valuable asset for a subsequent agricultural enterprise such as hydroponics.

The timetable for the completion of revegetation therefore depends on the sequence and timing of the previous uses. As previously outlined, the Global Financial Crisis and the reduced construction activity in Sydney has caused sand production to slow down. Rocla fully expects that the rehabilitation components will hasten following increases in sales and rejuvenation of Sydney’s construction industry.

The claim regarding the visibility of the exposed upper faces from a very small section of the “Glenworth Valley” property is acknowledged. The exposures observed are at the topographically higher sections of the quarry where activities including the sand washing plant, offices and Dams 10, 11 and 12 are located. These activities are to be relocated within the next



2 to 3 years and terminal extraction faces achieved. Following the completion of the terminal faces, revegetation will commence that will in turn tone down the impact of the topographically high areas of the quarry.

It is noted that revegetation of some of the lower, less visible benches has been in progress for some years.

As evidenced by the total devastation of the site despite conditions of consent dictating otherwise, preservation of anything on the new quarry site will be impossible even if their conservation is made a condition of consent.

Australia Walkabout Wildlife Park – Page 12

Response

The process of sand extraction does by its nature remove all native vegetation from the areas of disturbance, however, care is taken to retain (and enhance) the native vegetation surrounding the areas of disturbance. Rocla's commitment to the management of the surrounding native vegetation on its land will be an important component of its operation within the Southern Quarry Extension.

The proponent reported at their last community consultation (on the existing operations) that they have not complied with their rehabilitation plan. They reported that they have attempted to plant the trees listed in their management plan but these have died or are dying as "they don't like getting their feet wet". The rehabilitation site water table has altered due to aquifer destruction and other impacts of mining operations to the point where flora indigenous to this area cannot survive in the altered environment. This indicates that the proponent will not be able to comply with conditions for rehabilitation for the new quarry either, as end stage conditions will be similar.

Australia Walkabout Wildlife Park – Page 24

Response

The reasons for the slower than planned revegetation has been explained above, however, the comment attributed to Rocla in this submission are incorrect. Rocla was referring to the pine trees near the front entrance that had died due to water logging attributable to changed drainage near the front gate.

Rocla fully supports the use of native vegetation of the areas to be retained long term. In this regards, Rocla has commissioned TREES to undertake biennial planting/weeding programs in those areas. Annual reports from TREES are to be included in all future Annual Reviews reporting upon the success rate and the extent of new planting on site.



10.2 CONSULTATION

Representative Comment(s)

As per the Director General's Requirements for consultation "During the preparation of the Environmental Assessment, you should consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups or affected landowners." As per the National Parks and Wildlife Act "The consultant must consider any comments provided and explain in the final report how those comments were considered in finalising the methodology". Yet, contrary to legislation, the EA and Planning Application have been presented as final. Clearly, Rocla has not complied with either the Director General's requirements or the NPW Act requirement that comments be sought, considered and their consideration be explained in the finalised methodology in their Environmental Assessment and Planning Application.

Calga Peats Ridge Community Group Incorporated – Page 20

Response

The extent of consultation undertaken by Rocla about the Southern Extension is set out in Section 3.2.2 of the *Environmental Assessment*. Apart from this, Rocla has had regular contact with a number of its neighbours and outlined its plans at the biannual CCC meetings. All neighbours had the opportunity during the public exhibition for almost 3 months to review Rocla's plans and provide comment.

A process is provided to keep the agricultural community informed post approval and to capture issues raised by operations that may impact on commercial agricultural activities in the locality.

I & I NSW Submission – Page 2

Response

Operators of commercial agricultural activities can volunteer to be a member of the Community Consultative Committee. Any operator can review a range of documentation, including the latest monitoring data on Rocla's website. Further, Rocla operates the Calga Sand Quarry with an "open door" policy and welcomes the opportunity to discuss any component of the project with its neighbours.



Consultation with Australia Walkabout Wildlife Park regarding the operation of the business has not occurred. Australia Walkabout Wildlife Park refutes that dropping documents off at Australia Walkabout Wildlife Park and having a pleasant conversation, even with an invitation to respond to the document, constitutes consultation. Australia Walkabout Wildlife Park refutes that dropping the presence of Tassin Barnard, owner of Australia Walkabout Wildlife Park, on the 'community consultation committee' which meets two to three times per year on the existing approved operations constitutes consultation especially regarding the new quarry. On this committee Tassin Barnard represents the community and the agenda is rigid and does not broach much discussion other than on the legislated content such as the tabling of compliance reports and occasional statements to the effect that new quarry documents have been provided to the community.

Australia Walkabout Wildlife Park – Page 30

Response

The expectation of the operators of Australia Walkabout Wildlife Park for consultation is noted. Discussions were held about the business as evidenced by the coverage of the park in the *Environmental Assessment* (Page 3-5). There has been a reluctance on the part of the owners of Australia Walkabout Wildlife Park to provide information to assist in the assessment of the overall project. This particularly relates to the ongoing claims that the existing quarry has affected groundwater levels at their bore despite results to the contrary recorded in the Independent Groundwater Audit. The owners of Australia Walkabout Wildlife Park have never accepted Rocla's offer to collect information on their bore.

The Community Consultative Committee meetings operate with an agenda and is chaired by an independent chairperson. At no time has Rocla ever attempted to gag any discussion. Rather, the meetings have often been lengthy to accommodate discussion of matters raised by community representatives. The meetings are an important forum for community representatives to raise issues on behalf of the local community and similarly to provide information back to the local community that was circulated at the meeting.

Rocla has done very little consultation with Calga Village residents. Initial meeting was initiated by residents to ask why this area wasn't included in the initial preliminary assessment, and why we were left in the dark, when issues of water, dust and traffic were pertinent to our lifestyle.

Angela Hellyer – Individual Submission No. 97

Response

It is acknowledged that there was no reference to Calga village residents in the *Preliminary Environmental Assessment*, however, as studies progressed, particularly traffic, Calga village was drawn into the assessment. At the meeting held with Calga residents on 20 August 2009, residents were shown the landownership plan included at that time in the draft *Environmental Assessment*. Issues relating to land use, water bores, etc. were clarified with residents during that evening.



Rocla (and its consultants) were, and still remain, of the view that issues relating to water and dust from extraction operations on site will not be of a concern to residents of Calga village. The assessments presented in the *Environmental Assessment* support this view.

With respect to traffic, Rocla also remains of the view that its contribution to overall traffic levels on the F3 (and its access ramps) are comparatively small. Importantly, it is the predicted changes in impacts that result from the additional traffic that need to be considered. Whilst it is recognised that the residents of Calga village already live with moderately high noise levels, Rocla will ensure, through its Code of Conduct for drivers, that the contribution to increasing the existing levels of impacts are minimised.

10.3 EMPLOYMENT

Representative Comment(s)

Immediate next-door neighbour Australia Walkabout Wildlife Park would almost certainly close with loss of 31 jobs. Other employers in the vicinity include horse agistment, water extraction and farming operations all of which will be negatively impacted causing further job losses. Jobs with complimentary service providers and others will also be impacted. The Environmental Assessment and Planning Application do not address the fact that the number of jobs lost will far exceed the 22 jobs Rocla says it will provide.

With job losses and business closures or reduced profitability, the NSW Government tax revenues will be decreased.

Calga Peats Ridge Community Group Incorporated – Page 28

Response

Rocla rejects the claims in this submission. Since Rocla owned the land on which the proposed Southern Extension is located, it has undertaken a range of works on its land to prevent access to trail bike riders of a weekend that hitherto had been creating noise and dust very close to the boundary of the Australia Walkabout Wildlife Park.

As previously noted, Rocla does not intend for its activities to cause the non-renewal of the Park's licence – which in turn would cause the loss of employment at the Australia Walkabout Wildlife Park. It remains Rocla's intention to work closely with all adjoining and nearby landowners in managing issues of mutual interest.

10.4 SOMERSBY FIELDS

Representative Comment(s)

The reasons given by the Premier (the then Planning Minister) and in the Planning Department press releases for declining the Somersby Fields application apply equally to the Rocla Calga application. "The potential benefits do not outweigh the social and environmental consequences."

Calga Peats Ridge Community Group Incorporated – Page 29



Response

Section 5.13.4 of the *Environmental Assessment* provides both the socio-economic costs and benefits of the Project. Rocla is of the view that the project's benefits to the NSW Construction industry and the residents of Sydney and the Central Coast will continue to outweigh the adverse social and environmental consequences.

10.5 SUPPLY OF SAND PRODUCTION DATA

Representative Comment(s)

The operator is required to provide annual production data to Industry and Investment NSW – Mineral Resources.

I & I NSW Submission – Page 1

Response

Rocla will continue its current practice of providing sand production data to I&I NSW.

10.6 FENCING THE EXTRACTION AREAS

Representative Comment(s)

There is a provision for fencing to prevent animals from entering the extractive area.

I & I NSW Submission – Page 2

Response

The boundaries of the Project Site will be fenced, if necessary, in consultation with the adjoining landowners. 2m high security fencing and/or temporary earth mounds will be positioned around the active operational areas in areas identified in the quarry's Safety Management Plan.

10.7 PUMP OUT SEPTIC SYSTEM

Representative Comment(s)

Council's Waste Section does not approve of a pump out system.

Gosford City Council Submission – Page 2

Response

Rocla will install a system for the management of sewage to the satisfaction of Council.



10.8 ALTERNATIVE SAND SOURCES

Ultimately rather than adding further traffic to our roads, proposals which deliver product into major demand areas via bulk means such as via ship or rail should be given priority by comparison to supplies which further congest our roads. Sand and hard rock is currently being delivered to Sydney in this manner and such supply options should be favoured rather than allowing inefficient and highly congesting sources to clog up our roads.

Other less destructive and more highly efficient alternatives should also be given priority such as marine sands, desert sands delivered via rail and even river sand supplies in close proximity such as those that exist on the Hawkesbury River around the Windsor area.

According to the figures contained in the EA as a result of manufacturing 16.7 MT of sand from the entire site the proposal will generate the following amounts of waste and by product; 2.16MT of overburden material high in clay, 3.34 MT of oversize material and 4.13 MT of clay rich silt. To put it another way for every tonne of sand which is manufactured more than half a tonne of waste/by product will be produced. These are extraordinary volumes of waste by comparison to dune sand, marine sand and river sand extraction which produces far less waste and is far more cost effective to produce.

Glenworth Valley Outdoor Adventures – Page 12

Response

The NSW government has maintained a ban on the extraction of marine sand since the early 1990s. Extraction of marine sand is currently not an option.

The delivery of desert sand to Sydney is unviable given the considerable distances. Furthermore, the State's rail network has declined in coverage in the past 15 years and opportunities for such options, if feasible, are limited.

The extraction of river sand is not encouraged by the NSW Government – only dredging to retain operational waterways is contemplated. Sand extraction in Port Hacking for other than maintaining navigation channels is currently not supported by the NSW Government.

The generation of overburden, oversize material and silt during the process of sand extraction and processing is an operational reality for friable sandstone operations to produce sand, however, Rocla's proposal for the Calga Sand Quarry Southern Extension includes a crushing circuit to minimise the proportion of oversize material generated. The production of these materials requires responsible management to ensure they are incorporated in a productive way within the final landform – which is what is proposed for the Calga Sand Quarry Southern Extension.

It should be noted that marine, desert and river sands are unable to be used (on their own) as mortar sands. Mortar sands require approximately 10% clay to achieve the optimum workability required by bricklayers. The mortar sands produced at Calga Sand Quarry contain optimum levels of clay to create a premium product for bricklayers.



10.9 INCOMING RAW MATERIALS

Insufficient information is included in the EA about the amount of material to be brought onto the site for reprocessing and blending. No information is available to the community as to the quantity to be brought onto the site annually, the type of material to be brought onto the site, how or where it will be stored, how it will be managed to protect water contamination, testing regimes to ensure the material doesn't contain toxic or rotting matter, the frequency of these tests, the health impacts of this material and when it will be delivered.

Glenworth Valley Outdoor Adventures – Page 8

Response

Rocla's project reflects an objective of the NSW Department of Planning to maximise the recovery of resources from waste materials and VENM extracted from construction projects etc. This approach extends to the operational life of natural resources.

The raw materials that Rocla intends to import include fine rejects from hard rock quarries on the Somersby Plateau – suited for blending with Rocla's sand to produce a full graded sand suitable for concrete. Rocla expects that from time to time construction projects will generate excess sandstone – similar in fact to the friable sandstone being extracted on site. Rocla proposes to accept such loads of sandstone with a detailed acceptance protocol to ensure that no unacceptable materials are brought onto site. Details of the various raw materials brought onto site and how they have been used will be recorded in each Annual Review.

10.10 NIGHT LIGHTING/VISUAL LANDSCAPE

*Please include consideration of the potential impacts of night lighting on fauna and the **visual landscape** and any proposed avoidance/mitigation measures.*

DoP Correspondence dated 12 March 2010

Response

Lighting will be used for both operational and security purposes. Operational lighting would be located in the vicinity of the weighbridge/office and in the vicinity of the product stockpiles that will be loaded from prior to daylight (from 5:00am) and after nightfall (until 10:00pm). Apart from the fixed lighting in the vicinity of the weighbridge/office, other lighting will either be from fixed locations (supplied by underground power) or from small mobile lighting towers (with silenced generators). It is proposed that all fixed and mobile lighting will be orientated such that it is directed into the site rather than away from site. Wherever possible, lighting will be positioned at the lowest topographic level to limit the visibility of light from outside the Project Site. In any event the spread of light beyond the Project Site boundaries would be minor.

A comprehensive roadside reflector system will be adopted on site to define the roadway and minimise the need for lighting along the access road(s) from the sand stockpile area to the weighbridge/office.

In addition to the above measures, Rocla will ensure all lights (other than security lighting) remain off between 10:00pm and 5:00am.



Finally, Rocla will liaise with its neighbours, when the possibility exists for lighting to be visible from sites outside the Project Site, to ensure that it is positioned/directed in the most appropriate manner. Each of these measures have been incorporated in Part 13 of the Statement of Commitments (see Section 12).

With respect to the impacts of night lighting on fauna, the following comments are provided.

1. It is proposed that night lighting would be positioned in cleared operational areas where trucks and front-end loaders will operate. These areas will be set back from the surrounding areas of native vegetation such that nocturnal fauna would still inhabit their normal territory.
2. Night lighting in certain seasons attract insects which in turn attract some species of bats and birds.
3. Cumberland Ecology did not identify any abnormal fauna occurrences attributable to lighting within the existing quarry.

10.11 EXTENSION -V- NEW QUARRY

Rocla requested consent for an extension to an existing mine, which is misleading. Purely coincidental that the new mine is on land adjacent to the existing mine, newly purchased from the NSW Government. This application should be subject to the full rigor of any new mine application.

Community Environment Network Incorporated – Page 1

Response

Rocla expects the assessment of the project as an extension to be no less rigorous than a standalone project. The documentation prepared in support of the application is no less than for a greenfields site.

10.12 REAL ESTATE VALUES

Property values and saleability will be significantly impacted.

Calga Peats Ridge Community Group Incorporated – Page 22

Response

Rocla does not share the view of CPRCG. Sales of properties have continued since the application was lodged in 2009.



We do not believe that the Environmental Assessment adequately explains how Rocla will deal with the issues of the noise/visual amenity or devaluation on property as they specifically relate to us, our residence and the other homes in Jones Road. As we are the closest home residents to this new project surely our concerns should be addressed yet I cannot find any reference to how the quarry and entrance will be designed to mitigate our identified issues, especially those relating to the proposed new entrance!

Karen Eaton – Individual Submission No. 71

Response

The traffic assessment clearly outlines the design and configuration of the new intersection to be constructed.



11. RECOMMENDED APPROVAL CONDITIONS

11.1 INTRODUCTION

A number of submissions from both Government Agencies and various groups/individuals expressed that in the event the quarry extension is approved (not their preference), they requested certain conditions be included in a Project Approval. This section identifies a representative range of requests for such conditions and Rocla's response.

11.2 DECCW

Rocla has reviewed each of the recommended conditions and would accept all nominated conditions as presented being included in a project approval except for the following.

Attachment B to the DECCW's submission records a number of suggested conditions for inclusion in a project approval, however, noting the "conditions do not include Aboriginal Cultural Heritage or threatened species considerations as DECCW believes there are important issues still yet to be resolved".

Rocla has reviewed each of the recommended conditions included in Attachment B and would accept all nominated conditions as presented being included in an amended EPL except for the following where either clarification is sought or an alternate approach is suggested.

Condition 5.1 It is proposed to provide the DECCW with a new figure with Rocla's application modify the existing EPL 11295 that sets out the locations and referencing to the various monitoring sites on and surrounding the Project Site. Minor adjustments identified include the following.

1. A deposited dust gauge is also proposed at the residence of the Australia Walkabout Wildlife Park (identification Part No. 2) which is recorded as "CD-4", i.e. points within identification No. 2 and 3 are coincident.
2. Reference is required with the table that the monitoring can only proceed at the nominated locations subject to an agreement in place with the landowner. To date, Rocla has been asked to discontinue monitoring at some locations as the respective landowners advised they were not concerned with the parameters being measured, e.g. water quality or air quality.
3. It is noted that some of the locations nominated for either or both the High Volume Air Sampler or deposited dust gauges would not satisfy the locational requirements of the relevant Australian Standard or DECCW requirements. This needs to be resolved with the DECCW when finalising the conditions for project approval and EPL modification.



Condition 8 Wilkinson Murray has assembled an alternate table setting out more realistic operational noise limits. The need to change the noise limits arose following a series of complaints by the owners of Australia Walkabout Wildlife Park and subsequent noise monitoring that clearly identified the default 35dB(A) limit was not appropriate as background noise levels were considerably higher than the default 30dB(A).

As a consequence of these results, Rocla commissioned Wilkinson Murray to accurately define the background noise levels at the residences grouped together on the DECCW's table with the default noise limits. It is considered appropriate that the levels set out in the following table are more appropriate for the ongoing operation of the existing Calga Sand Quarry and its southern extension.

Table N-4
Noise Criteria Proposed for Calga Sand Quarry

Location	Residence	Noise Limit (L _{Aeq} , 15minute) dBA			Noise Limit (L _{A1} , 1minute or L _{Amax}) dBA
		Day Shoulder (6am-7am)	Day (7am-6pm)	Evening (6pm-10pm)	Night (6am-7am)
CN1 185 Peats Ridge Road	3, 5, 10, 11,19, 18, 16, 12, 6, 7	41	37	35	45
CN6 3 Jones Road	21,22, 23, 24	45	43	43	55
CN7 24 Jones Road	9	46	43	44	52
CN8 30 Jones Road	20	42	48	45	56
CN9 Australia Walkabout Wildlife Park	13, 14, 15	42	46	45	52

Condition 17 It is requested that a more practical sampling frequency is adopted for Points 7-10 requiring sampling daily during discharge would be appropriate if the frequency of sampling is low. It is possible that some of the dams nominated may overflow (discharge) on a regular basis albeit at low volumes. An alternative frequency may be "monthly and within 24 hours of the recording a level of rainfall exceeding 50mm in 24 hours".

Condition 23 Clarification is sought with the requirement of this condition as it assumes there will be water flowing at all sites each month. It is respectfully requested to reword the condition to introduce some flexibility, e.g. "12 samples when the creeks are flowing with sample collections at intervals not less than one month".

11.3 GOSFORD CITY COUNCIL

Council provided the DoP a total of 63 conditions for consideration in the event project approval is issued.

Rocla has reviewed each of the recommended conditions and would accept all nominated conditions as presented being included in the project approval except for the following.

Condition 1 It is more appropriate to include "carried out ... **generally** ... in accordance".

Condition 2 For consistency, include "in the vicinity of the site" after "work shall cease".



- Condition 5 It is requested the road upgrading requirements in this condition clearly specify when they are required during the life of the project.
- Condition 17 The hours of operation proposed by Council are not acceptable to Rocla. Access for trucks between 5:00am and 10:00pm is essential if trucks are to avoid peak traffic periods and provide materials required for out-of-hours projects. The NSW State Government is requiring more and more construction/repair work to be undertaken overnight on the State roads.
- Condition (a)b – No work is permitted on is definitely not feasible for the construction industry and other areas of sand, e.g. landscapers.
- Condition 18 The nominated instruments are over-ridden by other planning instruments.
- Condition 23 Add “unless they are double-lined” after “any fuel tank on site”.
- Condition 26 Delete – Repetition with Condition 2.
- Condition 30 Delete – Repetition with Condition 23.
- Conditions 33 to 41 and 44 These conditions as written are more appropriate for a suburban allotment. An alternate approach is reflected in the Commitments in Part 6 of the Statement of Commitments (See Section 12 of this document).
- Condition 42 This condition is not supported in favour of the Commitments in Part 12 of the Statement of Commitments (see Section 12 of this document).
- Condition 48 Fencing on the boundary (if required) and throughout the site will have a number of functions. All fencing will be outlined in the quarry’s Safety Management Plan, which is regularly updated. Emphasis, where appropriate, will be placed upon erecting fauna-friendly fencing.
- Condition 49 Rocla only intends to erect a security fence around the active extraction area.
- Condition 50 This condition is superfluous as the expectation of this condition is firstly covered in Commitment 1.1 which requires the surveying and marking out of the approved area(s) of disturbance and the native vegetation to be retained.
- Condition 53 Each of these requirements are covered by standard conditions included in the Project Approval by the Department of Planning and are therefore redundant.
- Condition 54 The Biodiversity Offset Strategy shall be approved by the Director-General of Planning.
- Condition 56 It is proposed to progressively obtain the required licences, particularly the Water Access Licences every 5 years (see Commitment 5.14 in Section 12).
- Condition 58 Not applicable – the southern extension area is not contaminated.
- Condition 59 AS 1940:1993 has been superseded by AS 1940:2004. Delete reference to underground regulation as no underground tanks are proposed.



Condition 62 The requirements of Condition 62 are considered excessive as servicing of equipment requiring this level of control is not intended on site.

11.4 NSW OFFICE OF WATER

The NSW Office of Water (NOW) provided the DoP with a number of conditions for consideration in the event project approval is issued. Rocla has reviewed each of the recommended conditions and would accept all nominated conditions as presented being included in a project approval except for the following.

At the outset, Rocla respectfully requests that all references to management plans, etc. for water and other related issues should be submitted “prior to commencement of any vegetation clearance for extraction purposes within Stage 4”. A comprehensive set of approved plans are already in existence for Stage 3 and operations will continue to be undertaken in accordance with these plans before works commence in Stage 4. In any event, the plans prepared for Stage 4 will incorporate relevant management issues for Stage 3 where there is a continuing requirement.



12. REVISED STATEMENT OF COMMITMENTS

12.1 INTRODUCTION

As a result of the issues raised in the submissions, Rocla has reviewed a number of the commitments in Section 6 of the *Environmental Assessment* and modified (and added) a number of commitments/actions for consideration by the Department of Planning. The set of commitments follows with all modifications and new commitments/actions highlighted through tracked text.

12.2 REVISED STATEMENT

Final Statement of Commitments for Site Operations and Management

Page 1 of 16

Desired Outcome	Action	Timing
1. Area of Activities and Operations		
All approved activities are undertaken in the area(s) nominated on the approved plans and figures (unless moved slightly to avoid individual trees).	1.1 Survey and mark the boundaries of the areas of disturbance on the ground.	Prior to any vegetation clearing.
	1.2 Fence the Aboriginal Sites #45-3-2195, Calga SA1 and #45-3-2196 and provide appropriate signage in accordance with Commitments 8.2 to 8.4.	Prior to any vegetation clearing.
	1.3 Survey and mark the location of the Southern Entrance and peg the centre line of the access road from the Southern Entrance to the Stage 4 Processing Area(s).	Prior to construction of the Southern Entrance and Stage 4 Access Road.
Satisfaction of the requirement of Industry and Investment NSW for production data.	1.4 Provide annual production data to Industry and Investment NSW (and include in the <u>Annual Review</u>).	Annually (July)
2. Operating Hours		
Management of operations in accordance with the approved operating hours.	2.1 Undertake extraction and processing activities between 6:00am and 10:00pm on Monday to Fridays and 6:00am to 6:00pm on Saturdays.	During operations (Monday to Saturday).
	2.2 Undertake product transportation activities between 5:00am and 10:00pm, Monday to Saturday.	During operations.
	2.3 Restrict activities undertaken outside the hours identified in Commitments 2.1 and 2.2 to routine, low noise activities such as oil changes, minor welding and servicing of equipment.	During operations.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 2 of 16

Desired Outcome	Action	Timing
3. Waste Management		
Minimisation of general waste creation and maximisation of recycling, wherever possible.	3.1 Place all paper and general wastes originating from the administration area, together with routine maintenance consumables from the daily servicing of equipment in garbage bins located adjacent to the various buildings.	Ongoing.
	3.2 Segregate waste into recyclable and non-recyclable materials for removal by a licensed contractor.	Ongoing.
Minimisation of the potential risk of environmental impact due to waste creation, storage and/or disposal.	3.3 Organise the regular collection of industrial wastes.	Fortnightly
	3.4 Store waste oils and greases within the workshop area in either self-bunding containers or within suitably contained areas.	Ongoing.
	3.5 Ensure waste oil and filters are collected and removed by licensed recycling operators.	Ongoing.
	3.6 Collect all parts and packaging and transfer to the workshop area for disposal or recycling.	As required.
	3.7 Store potentially hydrocarbon-contaminated water in the oil/water separator for regular removal from site by a licensed contractor.	As required.
	3.8 Maintain a pump out septic system.	Ongoing.
4. Rehabilitation and Biodiversity Offset Management		
The creation of a stable final landform, available for the proposed future use(s) of agriculture and/or nature conservation.	4.1 Adopt a progressive approach to rehabilitation to ensure that areas are shaped and vegetated as soon as practicable, i.e. following silt deposition, consolidation and stabilisation, to provide a stable <u>final</u> landform.	As areas become available.
	4.2 Retain all soil and suitable cleared vegetation resources for use in rehabilitation of the final landform. See Commitments 12.1 to 12.7 for detail on management of soil resources.	Ongoing.
	4.3 Stabilise earthworks, drainage lines and disturbed areas no longer required for quarry-related activities.	During first year of progressive rehabilitation.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 3 of 16

Desired Outcome	Action	Timing
4. Rehabilitation and Biodiversity Offset Management (Cont'd)		
The creation of a stable final landform, available for the proposed future use(s) of agriculture and/or nature conservation.	4.4 Blend the created landforms with the surrounding land fabric. Stages 3 and 4 are to create a free-draining landform diverting water to Dams 7a, 7b/c, 16 and 17 which discharge to the Cabbage Tree Creek catchment either as surface flows or recharged groundwater base flows. Stage 5 is to be water holding, which in turn would provide recharge to groundwater base flows of the Cabbage Tree Creek catchment.	Ongoing during rehabilitation activities.
	4.5 Utilise appropriate grass, shrub and tree species to revegetate the final landform, commensurate with the intended final land use. Revegetation of the quarry benches and drainage lines of the final Stage 3 and 4 landforms would use the species (or equivalent species) presented in Table 2.8.	Ongoing during rehabilitation activities.
	4.6 Include <i>Callistemon linearifolius</i> and species of <i>Allocasuarina</i> in the revegetation of the Project Site.	Ongoing during rehabilitation activities.
	4.7 Encourage the growth of <i>Hibbertia procumbens</i> and <i>Darwinia glaucophylla</i> on the final landform.	Ongoing during rehabilitation activities.
	4.8 Undertake weed spraying and/or other appropriate weed controls over rehabilitated areas as well as areas of the Project Site and "Glenworth Valley" property managed for conservation, i.e. Biodiversity Offset Areas.	Annually.
	4.9 Remove all infrastructure from the Project Site (at the completion of the extraction and processing operations). Close, rip and cover with previously cleared, broken and stockpiled vegetation all internal roads and tracks <u>not required for the ongoing management of the property</u> .	At the completion of all extraction and processing activities on the Project Site.
	4.10 Document completed and planned rehabilitation work against the KPIs established in the VMP in each Annual Review.	Annually (July).
	4.11 Fence the biodiversity offset areas of the Project Site and "Glenworth Valley" property to prevent unauthorised access to these areas and erect signage identifying these areas as "areas managed for conservation".	Prior to commencement of the Project.
	4.12 Implement a legally binding arrangement on the land titles on which the biodiversity offsets occur such that these remain as conservation areas for as long as the titles remain valid. Figure C displays the proposed biodiversity offset – which includes Stage 5, i.e. until an offset can be located for that proposed area of extraction.	Within 12 months of the commencement of the Project.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 4 of 16

Desired Outcome	Action	Timing
5. Groundwater		
Prevention of groundwater contamination.	5.1 Securely store all hydrocarbon products within designated and bunded areas. 5.2 Refuel all earthmoving equipment within designated areas of the Project Site. 5.3 Undertake all maintenance activities within designated areas of the Project Site, i.e. workshop area. 5.4 In the event of a spillage of a potentially contaminating material, e.g. oil, a 3-phase remedial action plan would be followed. – Phase 1 – Initial Recovery: Recover as much as possible at the source by pumping free material from the surface and excavating other contaminated materials. – Phase 2 – Source Control: Begin hydraulic control of the source to prevent spreading of contamination. – Phase 3 – Recovery: If necessary, install boreholes to remove and treat contaminated groundwater.	Ongoing. Ongoing. Ongoing. Ongoing.
Continuous monitoring of groundwater throughout the life of the project and effective communication of results to landowners within 1km of the Project Site.	5.5 Maintain and monitor the monitoring piezometers on and surrounding the Project Site (CQ1 to CQ13 and MW1 to MW17) and the private bores on surrounding properties (CP1 to CP8). 5.6 Update the Site Water Management Plan currently implemented for the approved Calga Sand Quarry to include all the monitoring locations identified in Commitment 5.5. 5.7 Provide the results of monitoring on Rocla's website (http://quarry.rocla.com.au/). 5.8 Provide the results of monitoring to respective bore owners (if requested) together with a comparison of groundwater levels and those predicted in GeoTerra (2009).	Within 6 months of receiving Project Approval. Monthly - within 1 month of receiving results. On request from the relevant landowner.
<u>Validation of the site groundwater model.</u>	5.9 <u>Assemble all relevant monitoring data and validate the groundwater model to review potential groundwater impacts.</u>	<u>Every 2 years unless deemed unnecessary.</u>



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 5 of 16

Desired Outcome	Action	Timing
5. Groundwater (Cont'd)		
Ensure no local groundwater user is adversely affected by groundwater drawdown impacts attributable to the Project.	5.10 Develop replacement and/or compensatory measures in consultation with the affected landowner. These measures may include: - deepening of the affected bore to increase the available saturated thickness; - drilling and installation of a replacement bore outside the area of drawdown impact; - construction of surface water capture and containment structures such as dams or rainwater tanks to supplement reduced groundwater source; or - transfer of groundwater drawn from a Rocla-owned bore or the void itself. 5.11 Update the Calga Sand Quarry Groundwater Contingency Plan to formalise these replacement and/or compensatory measures.	As required. Within 6 months of receiving Project Approval.
<u>Maintenance of healthy, robust groundwater dependent ecosystems down-slope from extraction areas.</u>	5.12 <u>Undertake surveys of down-slope GDEs to identify any impacts suggesting reduced water availability – in conjunction with monitoring of down-slope flows and seepage.</u>	<u>Annually.</u>
<u>All Water Access Licences are in place for the predicted groundwater inflows.</u>	5.13 <u>Ensure that Water Access Licence(s) for the predicted volume of groundwater inflow are in place at the end of each five year period.</u>	<u>At the commencement of each 5 year period.</u>
6. Flora and Fauna		
Minimisation of long term impact on flora and fauna on and around the Project Site.	6.1 Limit disturbance to the footprint identified on Figure 2.1. In particular, ensure the disturbance avoids: - the sandstone hanging swamp vegetation community along Creek B; - the two identified locations of <i>Callistemon linearifolius</i>; and - the habitat areas for the Red-crowned Toadlet and Giant Burrowing Frog (see Figure 5.17). 6.2 Clearly identify the biodiversity offset areas on quarry plans and fence and sign these areas in accordance with Commitment 4.11. 6.3 Construct the access road between Stages 4 and 5 to utilise, as far as practicable, the cleared easement for the transmission lines which traverse the Project Site.	For the life of the Project. Prior to commencement of disturbance on Stage 4. Prior to commencement of disturbance on Stage 5.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 6 of 16

Desired Outcome	Action	Timing
6. Flora and Fauna (Cont'd)		
Minimisation of long term impact on flora and fauna on and around the Project Site.	6.4 Clearly define all areas to be cleared and conduct all soil stripping campaigns on an as-needs basis.	Prior to clearing in each substage.
	6.5 Limit vegetation clearing to that required for no more than the ensuing 12 months quarry development.	During clearing.
	6.6 Whenever possible, directly transfer stripped soil resources onto rehabilitation areas to maximise the opportunity for retention of the natural seed stock, and thereby maximise the revegetation of the final landform with endemic species.	Ongoing.
	6.7 Carry out, where possible, vegetation clearing, especially the mature trees in late spring and early autumn to avoid spring nesting birds and over-wintering bats.	Ongoing.
	6.8 Collect seed from felled vegetation for use in future re-vegetation programs.	Following clearing.
	6.9 Replant cleared areas of the Project Site not required for Project-related activities with <i>Allocasuarina</i> species to increase the available foraging habitat for the Glossy Black-cockatoo.	Following clearing (as relevant).
	6.10 Commence progressive rehabilitation of the Project Site as soon as possible.	Within 12 months of Project Commencement.
	6.11 Control noxious weeds at all times.	Ongoing.
	6.12 Fence the extraction area to prevent native fauna from entering and being harmed.	Ongoing.
	6.13 Complete targeted field surveys for threatened flora and fauna species within the proposed biodiversity offset areas.	Spring 2009.
7. Surface Water		
Diversion of clean water flows away from areas of project related disturbance.	7.1 Construct diversion banks DB1 to DB6 in accordance with the design specifications provided in Section 5.2.4.3.2 of the <i>Environmental Assessment</i> .	Prior to disturbance in the relevant catchment of the Project Site.
	7.2 Inspect the diversion banks and undertake maintenance work as necessary.	Monthly or following rainfall of >25mm/24hours.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 7 of 16

Desired Outcome	Action	Timing
7. Surface Water (Cont'd)		
Capture of dirty water flows from areas of project related disturbance.	7.3 Construct sediment basins SB1 and SB2, and sediment dam SD1, in the locations identified on Figures 5.9 to 5.12 , and in accordance with the design specifications provided in Section 5.2.4.3.2 of the <i>Environmental Assessment</i> .	Prior to disturbance in the relevant catchment of the Project Site.
	7.4 Inspect the sediment basins and maintain as necessary.	Monthly or following rainfall of >25mm/24hours.
	7.5 Review general performance of catchment and settlement structures and upgrade the existing structures or install additional structures to ensure all dirty water is captured and settled prior to discharge.	Ongoing.
Ensure water is discharged at non-erosive velocities.	7.6 Install 3 x 600mm diameter pipes at a grade of 1% from Dams 16, 17 and 18.	Prior to commencement of extraction activities on Stage 4.
Discharged water quality to meet nominated criteria.	7.7 Ensure drainage paths between the catchment and settlement structures are well grassed.	Ongoing.
	7.8 Ensure the quality of any water discharged from the Project Site meets the Environment Protection Licence 11295 criteria and falls within the natural variation measured at surface water monitoring sites to date.	Ongoing.
Prevention of hydrocarbon contamination of water on the Project Site.	7.9 Securely store all hydrocarbon products.	Ongoing.
	7.10 Refuel all but the less mobile equipment which would be refuelled within the active extraction area, within designated areas.	Ongoing.
	7.11 Ensure all storage tanks are either self-bunded tanks or bunded with an impermeable surface and have a capacity to contain a minimum 110% of the largest storage tank capacity.	When constructed or installed.
8. Aboriginal Heritage		
Provide appropriate protection to existing identified Aboriginal artefacts.	8.1 Erect a security fence <u>adjacent to</u> Aboriginal Site #45-3-2196 <u>providing a buffer of at least 20m from the proposed area of disturbance.</u>	Prior to commencement of disturbance on Stage 4.
	8.2 Erect a security fence <u>along the alignment displayed in Figure A</u> around Aboriginal Site #45-3-2195 (<u>#45-3-0119</u>) and Calga SA1.	Prior to commencement of disturbance on Stage 4.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 8 of 16

Desired Outcome	Action	Timing
8. Aboriginal Heritage (Cont'd)		
Provide appropriate protection to existing identified Aboriginal artefacts.	8.3 Install signage on fences of Aboriginal Sites #45-3-2195, Calga SA1 and #45-3-2196 identifying them as culturally significant and prohibiting unauthorised access. 8.4 Identify the locations of <u>all</u> identified Aboriginal sites of the Project Site on quarry plans and inform site personnel of their location, significance and the requirement for all activities to remain at least 20m from these sites. 8.5 Install appropriate erosion and sediment controls upstream of the identified sites.	Prior to commencement of disturbance on Stage 4. Prior to commencement of disturbance on Stage 4. Prior to commencement of disturbance on Stage 4.
Employees who are sensitive and respectful of possible identified Aboriginal sites and artefacts.	8.6 Conduct a Cultural Heritage Awareness Induction Course for staff, contractors and any heritage monitors working on the Project Site. This induction would include making all staff and contractors aware of their responsibilities with respect to Aboriginal heritage under the <i>National Parks and Wildlife Act 1974</i> .	Within 7 days of commencement of employment / contract activities at the Calga Sand Quarry.
Equity of Aboriginal involvement in the identification and management of Aboriginal Cultural Heritage Issues.	8.7 Inform the <u>three</u> Aboriginal stakeholder <u>groups</u> if and when any Aboriginal sites are found <u>within the Quarry Site</u>. 8.8 Maintain and continue equitable communication and involvement in the management of Aboriginal cultural heritage by all registered Aboriginal parties.	As required. Ongoing.
Achieve appropriate protection of any future identified Aboriginal artefacts.	8.9 Invite Aboriginal stakeholders to observe <u>approved</u> soil removal activities <u>near areas of high archaeological or cultural significance (as defined in the Cultural Heritage Management Plan)</u>. 8.10 Abide by the requirements of the <i>National Parks and Wildlife Act 1974</i> (as amended), which requires all earthmoving activities to cease in the event that any bone or stone artefacts, or discrete distributions of shell, or any objects of cultural association, being unearthed during earthmoving. Work should not recommence in the area of the find, until both the police (if bone has been found) and those officials or representatives have given their permission to do so.	At least <u>30</u> days prior to commencement of <u>each construction period</u>. Ongoing.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 9 of 16

Desired Outcome	Action	Timing
9. Noise and Vibration		
The Project is designed to minimise and/or mitigate noise emissions received at surrounding residences and other sensitive receivers.	9.1 Commence extraction within Stage 4/1, located at the lowest elevation on the Project Site and is most distant from the surrounding residences.	During the first year of the Project.
	9.2 Commence extraction within Stage 5 only after it is demonstrated that the noise levels from Stage 4 operations at the closest sensitive receivers complies with the noise criteria for these residences.	Prior to commencement of Stage 5.
	9.3 Position the processing sites below natural surface level (such that natural acoustic shielding is provided) and where distance between these operations and the assessment locations is maximised.	Prior to relocation of processing plant.
	9.4 Complete construction of 5m high acoustic bund wall around each extraction stage prior to commencement of extraction activities in that stage as identified.	Prior to the commencement of extraction in each extraction stage.
All activities are undertaken in such a manner as to reduce the noise level generated and minimise impacts on surrounding landholders and/or residents.	9.5 Construction of acoustic bund walls is to undertaken during the day time only.	During construction of the acoustic bund walls.
	9.6 Extraction activities to be completed at least 10m below surface in adjacent stages when the acoustic bund wall is being constructed.	During construction of the acoustic bund walls.
	9.7 Adhere to the hours of operation of Commitments 2.1 to 2.3.	Ongoing.
	9.8 Regularly service all equipment on site to ensure sound power levels remain at or below the levels specified in the noise assessment for the <i>Environmental Assessment</i> .	Ongoing.
All activities are undertaken in such a manner as to reduce the noise level generated and minimise impacts on surrounding landholders and/or residents.	9.9 Undertake all maintenance work on equipment away from noise sensitive areas and confine these activities to standard daytime operational hours.	Ongoing.
	9.10 Instruct all truck drivers to avoid the use of engine brakes when approaching the Project Site entrance and transport route intersections and whilst on site.	Ongoing.
	9.11 Upgrade the Calga Sand Quarry Noise Monitoring Program (NMP), in consultation with the DECCW (EP&RG), to allow noise modelling predictions to be validated and noise levels compared to the Project noise criteria. The NMP would include a noise monitoring protocol which would include the contingent measures to be followed should non-compliant noise levels be measured.	Within 6 months of Project Approval.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 10 of 16

Desired Outcome	Action	Timing
10. Traffic and Transport		
Intersections with public roads operate efficiently and without adversely impacting on existing road users.	10.1 Manage any construction related traffic in accordance with the relevant Australian Standards, including a short term reduction in the speed limit approaching and adjacent to road construction works.	Prior to commencement and during any road works on or adjacent to Peats Ridge Road.
	10.2 Construct an entrance to Lot 1, DP 805358 and intersection with Peats Ridge Road ("the Southern Entrance") to meet the requirements of the <i>Road Design Guide</i> (RTA, 1999) and "Part 5: Intersections at Grade" of Austroads (2005), and to the satisfaction of the NSW RTA.	Prior to commencement of Phase 2 transport operations.
	10.3 Upgrade the northern entrance to Lot 2, DP 229889 such that it operates as an exit only, and meets the requirements of the <i>Road Design Guide</i> (RTA, 1999) and "Part 5: Intersections at Grade" of Austroads (2005), and is to the satisfaction of the NSW RTA.	Prior to commencement of Phase 2 transport operations.
	10.4 Upgrade the southern entrance to Lot 1, DP 805358 and intersection with Peats Ridge Road ("the Southern Entrance") to a two-way entrance/exit such that it meets the requirements of the <i>Road Design Guide</i> (RTA, 1999) and "Part 5: Intersections at Grade" of Austroads (2005), and is to the satisfaction of the NSW RTA.	Prior to commencement of Phase 3 transport operations.
Internal roads are constructed and operated to minimise risks of traffic or other environmental incident.	10.5 Construct all internal roads with a horizontal alignment which complies with the maximum grades and changes of grade outlined in the Australian Standards for Off-Street Commercial Vehicle Facilities (approximately 10%).	Ongoing.
	10.6 Construct the Stage 3 and Stage 4 access ramps with a minimum width of 10m, i.e. combined width of 20m, to ensure two-way traffic can be undertaken safely on both ramps. Bollards or other markers would be installed between the Stage 3 and 4 ramps with signage erected at the top and bottom of each ramp identifying the correct direction of vehicle travel.	As required.
	10.7 Construct earth bunds at least ½ the height of a standard road truck tyre on the outside edge of any ramp constructed within or between Stages 3 and 4.	Ongoing.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 11 of 16

Desired Outcome	Action	Timing
10. Traffic and Transport (Cont'd)		
Transport operations are undertaken with minimal impact on other road users and local residents.	10.8 Contact all potentially affected landowners and surrounding residents prior to any road works or intersection construction to inform / discuss the proposed works.	Prior to commencement of construction activities.
	10.9 Undertake all transport activities strictly in accordance with the project approval and environment protection licence.	Ongoing.
	10.10 Adhere as closely as possible to the proposed transport schedule, i.e. minimise the volume of traffic movements during Sydney peak periods.	Ongoing.
	10.11 Undertake all deliveries of "oversize" loads in accordance with RTA and Council restrictions on transport hours and safety / warning requirements.	Ongoing.
	10.12 Ensure all exiting product carrying trucks pass over the site weighbridge, thereby preventing the exit of any overweight vehicles onto Peats Ridge Road, i.e. all vehicles to have a GVM of less than 50t unless varied by the RTA.	Ongoing.
	10.13 Ensure all vehicles exiting the Project Site pass through a wheel-wash facility to remove dust-generating material from the vehicles.	Ongoing.
	10.14 Adopt a covered load policy to all trucks transporting quarry products.	Ongoing.
	10.15 Ensure all truck drivers operate in accordance with a Drivers Code of Conduct adopted for the Project.	Ongoing.
	10.16 Immediately investigate any complaints received regarding driver behaviour or transport operations generally and act decisively on substantiated incidents, which could include the banning the offending driver(s) from the Project Site.	Ongoing.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 12 of 16

Desired Outcome	Action	Timing
11. Air Quality		
Site activities are undertaken without exceeding DECC air quality criteria or goals.	11.1 Minimise clearing ahead of extraction activities.	Ongoing.
	11.2 Minimise the construction of minor roads and access tracks for soil stripping, extraction operations and rehabilitation.	Ongoing.
	11.3 Operate a 12 000L water cart (or equivalent) to water internal roads and exposed areas. Based on experience, watering of the unsealed roads would occur at least 5 times per day with an application of at least 2L/m ² per application.	Ongoing.
	11.4 Avoid stripping soil in periods of high wind.	Ongoing.
	11.5 Minimise the drop heights between front-end loader buckets and trucks carrying sand, soil or overburden through operator training and education on the management of dust.	Ongoing.
	11.6 If required, water sandstone and sand stockpiles to prevent dust lift off during high winds.	As required.
	11.7 Install bund walls and wind breaks as required.	Ongoing.
	11.8 Seed topsoil stockpiles, acoustic bund walls and areas where landform preparation is complete with either native or pasture species to assist in stabilising the exposed surface.	Within 3 months of construction.
	11.9 Operate a wheel-wash facility within the Project Site to minimise the tracking of mud onto Peats Ridge Road which in turn could generate dust.	Ongoing.
	11.10 Commence progressive rehabilitation on available areas as soon as available.	As soon as areas available for rehabilitation.
Site activities are undertaken without exceeding DECC air quality criteria or goals.	11.11 Temporarily cease operation in the event of protracted dry periods, high winds and significant dust generation and dispersal towards the surrounding residences.	Ongoing.
	11.12 Update the existing Air Quality Monitoring Program to demonstrate compliance with the nominated goals. - Deposited dust <u>on the boundaries of the Project Site.</u> - PM₁₀ at the <u>Gauci Residence.</u> - <u>Personal PM₁₀ samplers for all site employees.</u>	Within 6 months of Project Approval. <u>Annual basis</u>
Personnel do not suffer adverse health impact as a consequence of exposure to particulate matter.	11.13 Provide enclosed cabs on all mobile equipment used for ripping and loading of friable sandstone.	Ongoing.
	11.14 Undertake annual monitoring of personal exposure to particulate matter and silica.	Annual.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 13 of 16

Desired Outcome	Action	Timing
12. Soils		
Maintenance of soil value for rehabilitation and minimisation of soil loss through erosion.	12.1 Place stripped soil directly onto an area prepared and awaiting rehabilitation (when practicable).	Whenever possible.
	12.2 Limit topsoil and subsoil stockpiles to 2m and 3m in height respectively.	Ongoing.
	12.3 Seed any stockpiles retained for over three months with a non-persistent cover crop.	Within 3 months of stockpile construction.
	12.4 Avoid handling the soils when wet to protect any structure that may have developed.	Ongoing.
	12.5 Avoid driving on the topsoil and subsoil stockpiles, as well as the respread soil, to maximise soil aggregation and prevent compaction, particularly when the stockpiles are moist.	Ongoing.
	12.6 Divert surface water flow away from soil stockpile areas.	Prior to commencement of stockpiling.
	12.7 Install silt-stop fencing or similar immediately down-slope of stockpiles, until stable vegetation cover is established,	Immediately following stockpile construction.
13. Visibility		
Reduce the impact of the Project on the visual amenity of private and public vantage points.	13.1 Minimise the extent of land disturbance / clearing in advance of extraction.	Complete.
	13.2 Commence progressive rehabilitation of the Project Site.	As soon as areas available for rehabilitation.
	13.3 Maintain a high standard of housekeeping to achieve a visually attractive site.	Ongoing.
	13.4 Maintain the vegetated acoustic bund wall and colorbond fence around the Stage 3 extraction area.	Ongoing.
	13.5 Retain the existing vegetation along the eastern boundary of the Project Site.	Ongoing.
	13.6 Retain at least 80m of the existing vegetation along the southern boundary of the Project Site to restrict views onto the Project Site from the Australia Walkabout Wildlife Park to the south.	Ongoing.
	13.7 <u>Enhance the vegetation between the transmission line easement and the southern boundary of the Project Site to limit visibility of on-site activities from the south.</u>	<u>Commence within the first year following project approval.</u>
	13.8 Clad new buildings with dark, non reflective material, e.g. dark green colour-bond cladding or similar.	Ongoing.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 14 of 16

Desired Outcome	Action	Timing
13. Visibility (Cont'd)		
<u>To limit light spillage and observation beyond the Project Site.</u>	13.9 <u>Ensure all lighting is directed away from the closest site boundary and faces downwards as much as practicable.</u>	<u>Continuous.</u>
	13.10 <u>Ensure all lights (other than security lighting) are turned off between 10:00pm and 5:00am.</u>	<u>Continuous.</u>
	13.11 <u>Liaise with surrounding landowners when relocating internal lighting to ensure impacts are avoided / minimised.</u>	<u>When the proposed lighting may be visual from locations external to the Project Site.</u>
	13.12 <u>Maximise the use of roadside reflectors to clearly define internal roads (and limit lighting).</u>	<u>Ongoing.</u>
14. Bushfire Hazard		
Minimise potential for initiation of fire.	14.1 Undertake refuelling within designated fuel bays or within cleared area of the Project Site.	Ongoing.
	14.2 Turn vehicles off during refuelling.	Ongoing.
	14.3 Enforce no smoking policy in designated areas of the Project Site.	Ongoing.
	14.4 Maintain fire extinguishers within all site vehicles.	Ongoing.
Manage potential and actual bushfire occurrences in accordance with local bushfire control plans.	14.5 Regularly liaise with Gosford City Council and DECCW (NPWS) personnel in relation to bushfire hazard posed Popran National Park.	Ongoing.
15. Socio-Economic		
Adverse impacts on members of the local community are minimised.	15.1 Ensure all of the commitments 1.1 to 14.5 are adhered to.	Ongoing.
	15.2 Continue and expand if necessary the Calga Sand Quarry Community Consultative Committee (CCC) and ensure that the community is appropriately represented on the CCC.	Following receipt of Project Approval.
	15.3 Implement a complaint management procedure or protocol to ensure that any complaint received is dealt with decisively and appropriately.	In place.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 15 of 16

Desired Outcome	Action	Timing
16. Documentation		
A systematic set of documents are in place to guide the planning and implementation of all environmental management strategies.	16.1. Incorporate the environmental procedures in an on-site management system.	Prior to relevant activity.
	16.2. Incorporate relevant environmental data / information in Annual Environmental Reports.	Annually.
	16.3. Prepare or update the following environmental plans for the Project.	Variously.
	- Air Quality Monitoring Program. - Noise Monitoring Program. - Cultural Heritage Management Plan. - Site Water Management Plan <u>incorporating a Groundwater and Surface Water Contingency Plan.</u> - Groundwater Monitoring Program. - Rehabilitation and Landscape Management Plan <u>incorporating a Biodiversity Offset Management Plan and Threatened Species Management Plan.</u>	
17. Environmental Monitoring		
Groundwater		
Regular monitoring of groundwater throughout the life of the project and effective communication of results to landowners within 1km of the Project Site.	17.1. Monitor standing water levels in the piezometers on and surrounding the Project Site (CQ1 to CQ13 and MW7 to MW10, MW13 & MW16) and the private bores on surrounding properties (CP1 to CP11).	Monthly.
	17.2. Monitor water chemistry parameters in the piezometers on and surrounding the Project Site (CQ1 to CQ13 and MW7 to MW10, MW13 & MW16) and the private bores on surrounding properties (CP1 to CP11).	Six monthly.
	17.3. Update the Site Water Management Plan currently implemented for the approved Calga Sand Quarry to include all the monitoring locations identified in Commitment 17.1.	Following Project Approval.
	17.4. Provide the results of monitoring on Rocla's website (http://quarry.rocla.com.au/).	Ongoing.
	17.5. Provide the results of monitoring to respective bore owners (if requested) together with a comparison of groundwater levels and those predicted in GeoTerra (2009).	As requested.
	17.6. Update the Calga Sand Quarry Groundwater Monitoring Program.	As required by Project Approval.



Final Statement of Commitments for Site Operations and Management (Cont'd)

Page 16 of 16

Desired Outcome	Action	Timing
17. Environmental Monitoring (Cont'd)		
Surface Water		
Monitor and record environmental impacts on the local environment	17.7. Monitor surface water at the locations identified on Figure 5.7 and others to be determined through consultation with the DECCW.	Quarterly.
	17.8. Prepare and implement a surface water monitoring program, in consultation with the DECCW (NOW) and DoP.	As required by Project Approval.
Noise		
Monitor and record environmental impacts on the local environment	17.9. Complete attended monitoring at Residences CN-1 to CN-4 and CN-6 to CN-9.	Quarterly or as modified in consultation with DECCW.
	17.10. Complete unattended monitoring at Residences CN-1 to CN-4 and CN-6 to CN-9.	Annually or as modified in consultation with DECCW.
	17.11. Update the Calga Sand Quarry Noise Monitoring Program.	As required by Project Approval.
Air Quality		
Monitor and record environmental impacts on the local environment	17.12. Monitor wind speed and direction at the Project Site weather station.	Continuous.
	17.13. Continue to monitor deposited dust at gauges CD-1, CD-2 _c and CD-3 to CD-6.	Monthly.
	17.14. Update the Calga Sand Quarry Noise Air Quality Monitoring Program.	As required by Project Approval.



13. REFERENCES

Australian Senate Committee (2005)

“Workplace exposure to toxic dust”, Community Affairs References Committee, May 2006. Available from:

http://www.aph.gov.au/senate/committee/clac_ctte/completed_inquiries/2004-07/toxic_dust/report/index.htm

Department of Health, 2007

“Literature review and report on potential health impacts of exposure to crustal material in Port Hedland” Department of Health, Western Australia, April 2007. Available from http://www.dsd.wa.gov.au/6656_7049.aspx

NSW Health (2007)

Rainwater Tanks Brochure

http://www.health.nsw.gov.au/pubs/2007/pdf/rainwater_tanks.pdf



This page has intentionally been left blank

