

APPENDIX 2

WATER MANAGEMENT PLAN

WATER MANAGEMENT PLAN
(REVISED AUGUST 9TH 2013)

LOT 5 OLD COAST ROAD
MYALUP
SHIRE OF HARVEY

PREPARED FOR

CARBONE BROS PTY LTD

BY

LUNDSTROM ENVIRONMENTAL
EARTH, WATER AND ENVIRONMENTAL CONSULTANTS
PERTH, WESTERN AUSTRALIA
mikelund1@bigpond.com
MOBILE: 0417934863

AUG 2013

TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	PROPERTY DESCRIPTION, OWNERSHIP AND LOCALITY	2
3.	BACKGROUND	3
3.1	PRESENT LAND USE	3
3.2	TOPOGRAPHY AND DRAINAGE	3
3.3	GEOLOGY AND SOILS.....	3
3.4	GROUNDWATER HYDROLOGY	3
3.5	RAINFALL	4
4.	THE DEVELOPMENT PROPOSAL	5
4.1	LIMESTONE EXTRACTION	5
4.2	REHABILITATION AND FINAL LAND SURFACE LEVELS	5
5.	STORMWATER MANAGEMENT.....	6
5.1	MONITORING AND MANAGEMENT MEASURES.....	6
6.	REFERENCES	7

TABLES

Table 1: Mean Rainfall Data for Parkfield 9634 for Period 1913 to 2011

FIGURES

Figure 1: Locality Plan

Figure 2: Aerial Photograph Showing the Site and its Surrounds

Figure 3: Stages of Extraction and Proposed Monitoring Sites

APPENDICES

Appendix 1: Hydrographs of Bores E1B and E2B

Appendix 2: Conditions of Approval from the Shire of Harvey

1. INTRODUCTION

This Water Management Plan (WMP) relates to an application for limestone extraction on 11.4ha on Lot 5 Old Coast Road, Myalup and has been requested as a condition to Planning Consent by the Shire of Harvey.

In order to address this requirement, this report provides the following information:

- A map of the property and surrounds indicating the current contours and groundwater monitoring points and production bores.
- A description of the proposed extraction program
- A description of the groundwater regime in the area.
- Storm water and erosion management measures
- A description of the proposed final land use after extraction has been completed.

2. PROPERTY DESCRIPTION, OWNERSHIP AND LOCALITY

Property Description: Lot 5 on Plan 30278
Old Coast Road
Myalup
Shire of Harvey

Area: 111.24 hectares

Ownership: Peter William Ivankovich

The subject land is described as portion of Wellington Location 48 and being Lot 5 on Plan 30278 on Certificate of Title Volume 2130, Folio number 201.

The property is situated approximately 40 km north of Bunbury, and is bounded by Lot 4 to the north, Lake Preston to the west, Lot 147 to the south and Old Coast Road to the east. Figure 1 shows the locality.

3. BACKGROUND

3.1 PRESENT LAND USE

Land use within the property is as follows

Irrigated vegetable production:	42.5ha
Sheds and outbuildings	2.5ha
Existing and proposed limestone pit:	24.7ha
Lake Preston Buffer/natural areas	14.7ha
Light aircraft runway and surrounds	3.9ha
Undeveloped areas (grass and trees)	<u>22.9ha</u>
	111.2ha

Surrounding land uses are as follows

immediately north and south is agricultural

immediately east is the Old Coast Road

immediately west is Lake Preston

Figure 2 shows the land use.

3.2 TOPOGRAPHY AND DRAINAGE

The land is essentially flat, lying at between 3 and 6m AHD, with drainage being by infiltration to groundwater. The base of the existing pit area is approximately 1.1m AHD.

3.3 GEOLOGY AND SOILS

Shallow, sandy topsoil overlies inter-bedded limestone, calcarenite, marl and shell beds of the Tamala Formation. Although limestone occurs to approximately 15m below the site, only the top four metres will be removed by extraction.

3.4 GROUNDWATER HYDROLOGY

Groundwater flow below the surface of the site is in a westerly direction and discharges into Lake Preston. The closest formal monitoring data that exists in the area is Department of Water (DOW) monitoring bores E1B and E2B which are approximately 3km north of the extraction area (Figure 2). Average data for these bores indicate that groundwater levels at E1B (close to the Lake) vary by 0.8m seasonally with an average end of winter high of 0.1m AHD. Groundwater elevation rises in an easterly direction towards E2B at a gradient of approximately 1:700. Data for these bores is illustrated in hydrographs contained in Appendix 1.

However, based on other observations over the time that the pit has been operating, it appears that groundwater levels in the vicinity of the pit could well be lower than those observed in the DoW bores. An accurate calculation of the seasonal groundwater elevations in this area can only be determined by installation of three monitoring bores on the site and the collection of water height data over several years. These data will provide a more accurate assessment of the required finished floor level of the rehabilitated pit.

3.5 RAINFALL

The closest rainfall recording station is Parkfield (12km) and it has a mean annual rainfall of 824 mm. The wettest months are June, July and August and the driest months are December, January and February. The highest recorded rainfall was 1249mm in 1921 and the lowest was 478 in 2006. Table 1 shows the average monthly and annual rainfall for Parkfield.

Table 1: Mean Rainfall Data for Parkfield 9634 for Period 1913 to 2011

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
11.4	11.7	20.0	41.5	117.4	170.2	159.1	113.8	79.5	48.5	27.1	12.4	824.2

It should be noted that the Parkfield record has a number of years of incomplete data and therefore the data cannot be used for further robust statistical calculations. However, based on an examination of the daily rainfall occurrences from the available record since 1913, it is estimated that the 1:100 year 24 hour storm intensity is approximately 115mm.

4. THE DEVELOPMENT PROPOSAL

4.1 LIMESTONE EXTRACTION

Carbone Bros have operated this limestone pit since 2006 and this WMP is a requirement of the latest approval for 11.3ha granted on 30th May 2013. This approval provides for the extraction of limestone within 3 stages of approximately 3.7ha over the next 8 years. Figure 3 illustrates the past and future extraction areas.

Dust management will be undertaken by the use of a water cart to damp down areas that may generate dust from time to time. This water cart will be filled at independently licensed, commercial premises in the near vicinity. Groundwater will not be used for water cart refill.

No dewatering activities will be undertaken nor will any groundwater be exposed.

The proposed extraction activities will be at least 100 meters away from the closest groundwater production well on the property. Figure 2 shows the groundwater abstraction points on the property.

4.2 REHABILITATION AND FINAL LAND SURFACE LEVELS

According to the Planning Consent granted by the Shire for western portion of the pit (28th November 2008), the final landsurface should be 400mm above the highest seasonal water table level, whilst the most recent Planning Consent (30th May 2013) states that the final level should be at least 1m above the highest seasonal water table level (Appendix 2). In order to maintain the required separation between the final landsurface and the highest water table (1m), the final level of the pit will be determined after several years of data observation from three monitoring bores to be placed on the site in close proximity to each of the three stages. The position of these monitoring bores is shown on Figure 3. In order to determine the water table gradient, a water level will be taken in Lake Preston as well as from production wells on the property, to the east of the extraction area.

At all times the limestone extraction activities will be at least 500mm above the water table.

5. STORMWATER MANAGEMENT

The sand and limestone materials that form the site have a hydraulic conductivity of between 15 and 30m/day (Deeny 1989). Since the estimated 1:100 year rainfall intensity is 115mm/day, it can be seen that any water striking the surface of these materials will immediately infiltrate and there will be no surface runoff of any consequence.

If this type of event coincides with the end of winter high groundwater levels then it can be seen that the proposed final land surface of 1m above the average end of winter water table level will not result in long term standing water on the surface.

Since the existing pit, as well as the proposed final surface, will be internally draining, no off-site stormwater damage arising from these works will be incurred. Stormwater management will thus be restricted to on-site activities and these will be to cease work during high flood events until water has infiltrated into the ground. There will be no surface flows that arise from this property that will impact any off-site areas.

5.1 MONITORING AND MANAGEMENT MEASURES

During the extraction and early rehabilitation phase, the pit will be inspected after every significant rainfall event to check erosion damage. If any repairs are required, this will be attended to immediately.

After pit closure and rehabilitation, monitoring of rehabilitated areas will ensure that any areas requiring remedial work are identified. Monitoring will be carried out on an annual basis to assess:

- The physical stability of the landform in the rehabilitated areas.
- The success of the sown pasture grasses and planted native vegetation.
- The emergence of weeds.

Maintenance procedures will be carried out where necessary and may include:

- Repair of any erosion damage.
- Replanting/seeding areas that may not have regenerated.
- Weed control.

6. REFERENCES

Bureau of Meteorology. 2012. Rainfall records for Parkfield (9634) and Bunbury (9965). www.bom.gov.au

Commander, D.C. 1988. Geology and hydrogeology of the "superficial formations" and the coastal lakes between Harvey and Leschenault Inlets (Lake Clifton Project): Western Australia Geological Survey, Hydrogeology Report 23, pp 37-50.

Deeny, A. C., 1989. Geology and groundwater resources of the superficial formations between Pinjarra and Bunbury, Perth Basin: Western Australia Geological Survey, Report 26, pp. 7-16.

Kearn, A. M., 1998. Results of a study for the re evaluation of groundwater allocation policy – Myalup Sub-Area. Water and Rivers Commission Unpublished Report.



Lake Preston

Lot 5 Old Coast Road

Myalup

OLD COAST ROAD

Blindingup

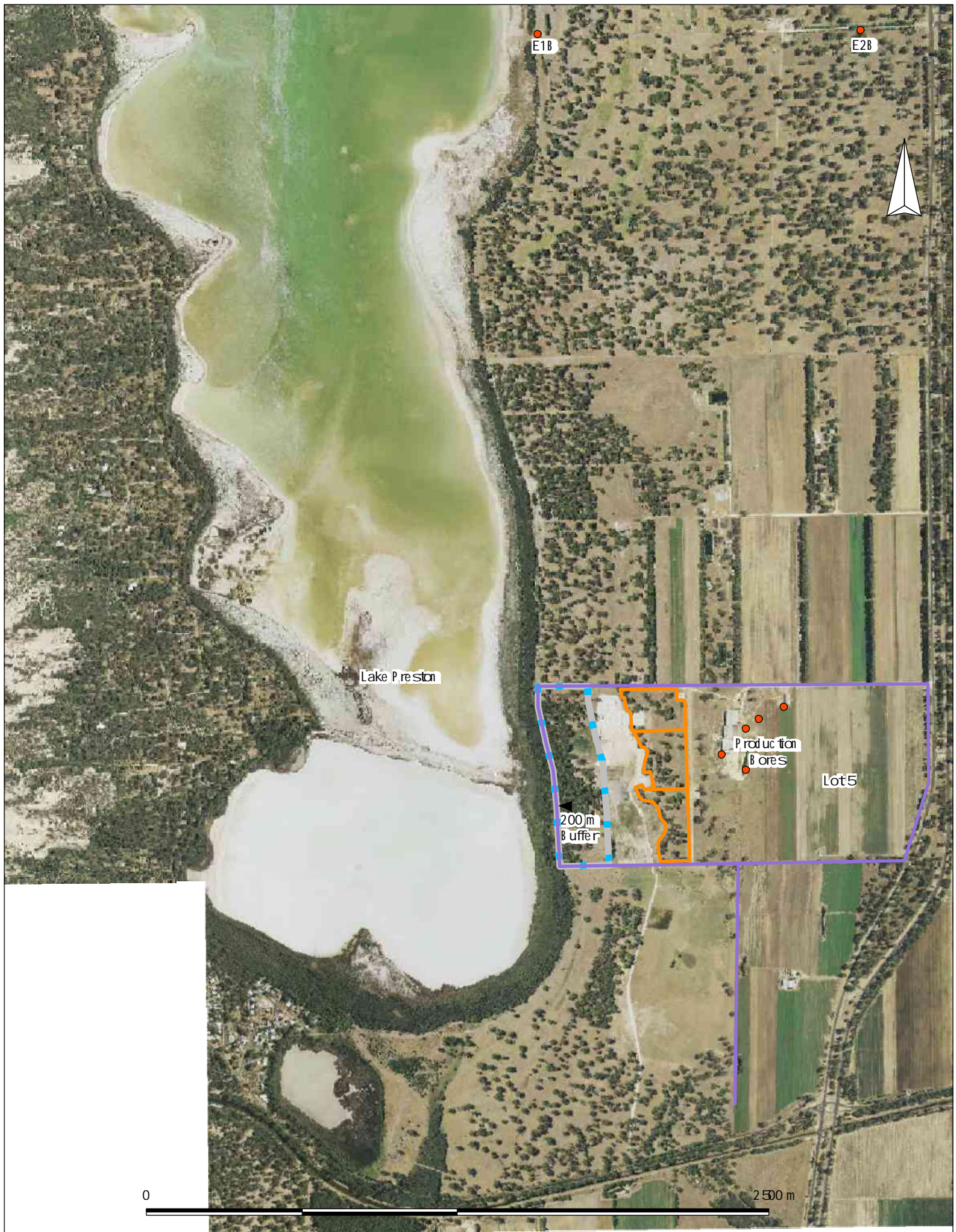
Lundstrom Environmental
 21 Sellen Court, Leeming, WA 6149
 Mob: 0417934863
 mikelund1@bigpond.com

Scale: 1:2500
 Original Size: A4
 Air Photo Date: Nearmap Aug 2010
 NOT TO SCALE

Carbone Bros Pty Ltd
Lot 5 Old Coast Road
Myalup
Limestone Extraction

Locality Plan

Figure 1



Lundstrom Environmental

21 Sellen Court Leeming WA 6149
 Mob 0417934863
 mikelund1@bigpond.com

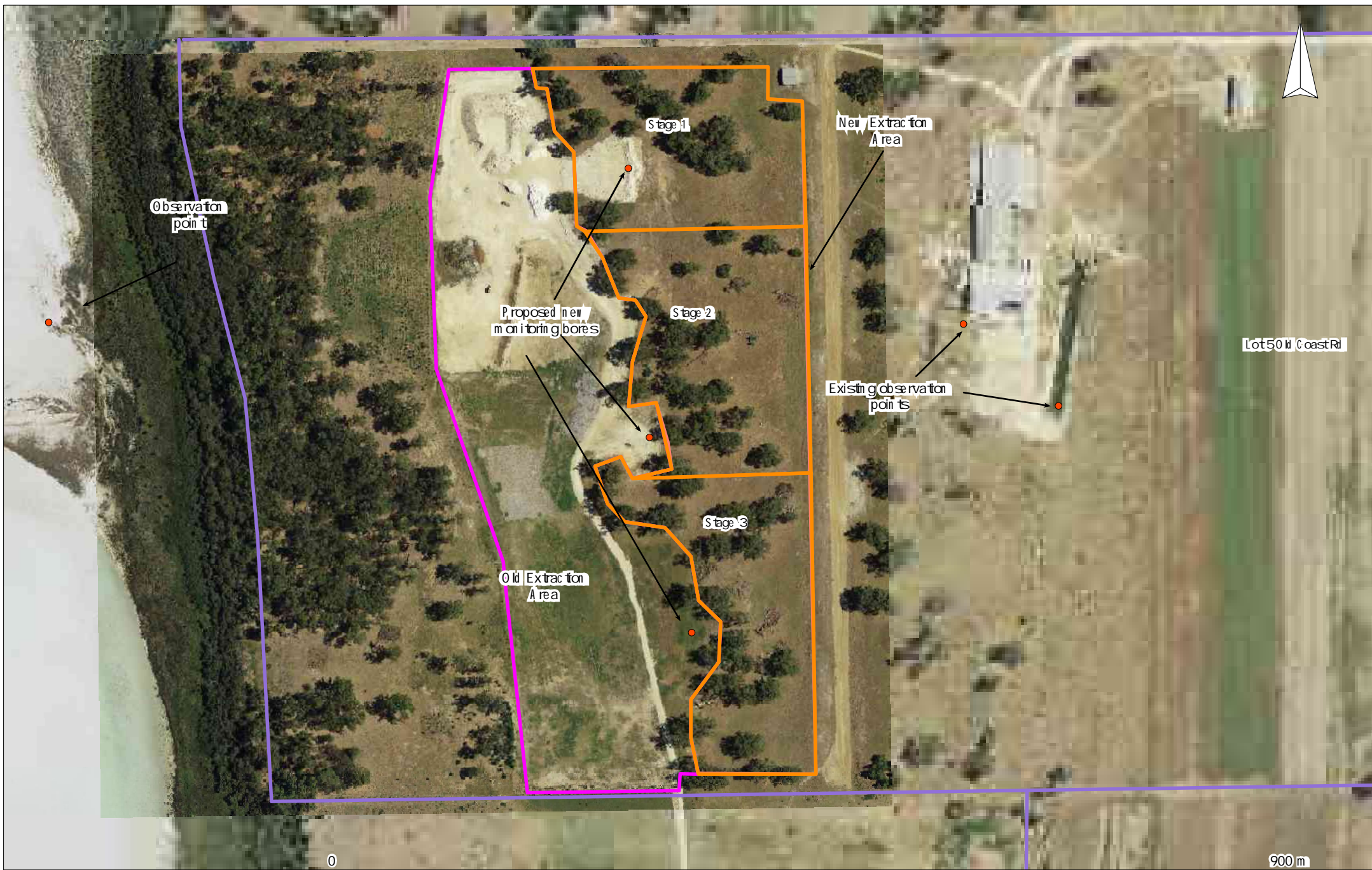
Scale: 1:19000
 Original Size: A4
 Air Photo Date: March 2012
 Datum: Australian Geocentric 1994 (GDA94)

CARBONE BROS PTY LTD

**Lot 5 Old Coast Rd, Myalup
 Limestone Extraction**

Property and Surrounds

Figure 2



Lundstrom Environmental

21 Sellen Court Leeming WA 6149
 Mob 0417934863
 mikelund1@bigpond.com

Scale: 1:4600

Original Size: A4

Air Photo Date: March 2012

Datum: Australian Geocentric 1994 (GDA94)

CARBONE BROS PTY LTD

Lot 5 Old Coast Rd, Myalup
 Limestone Extraction

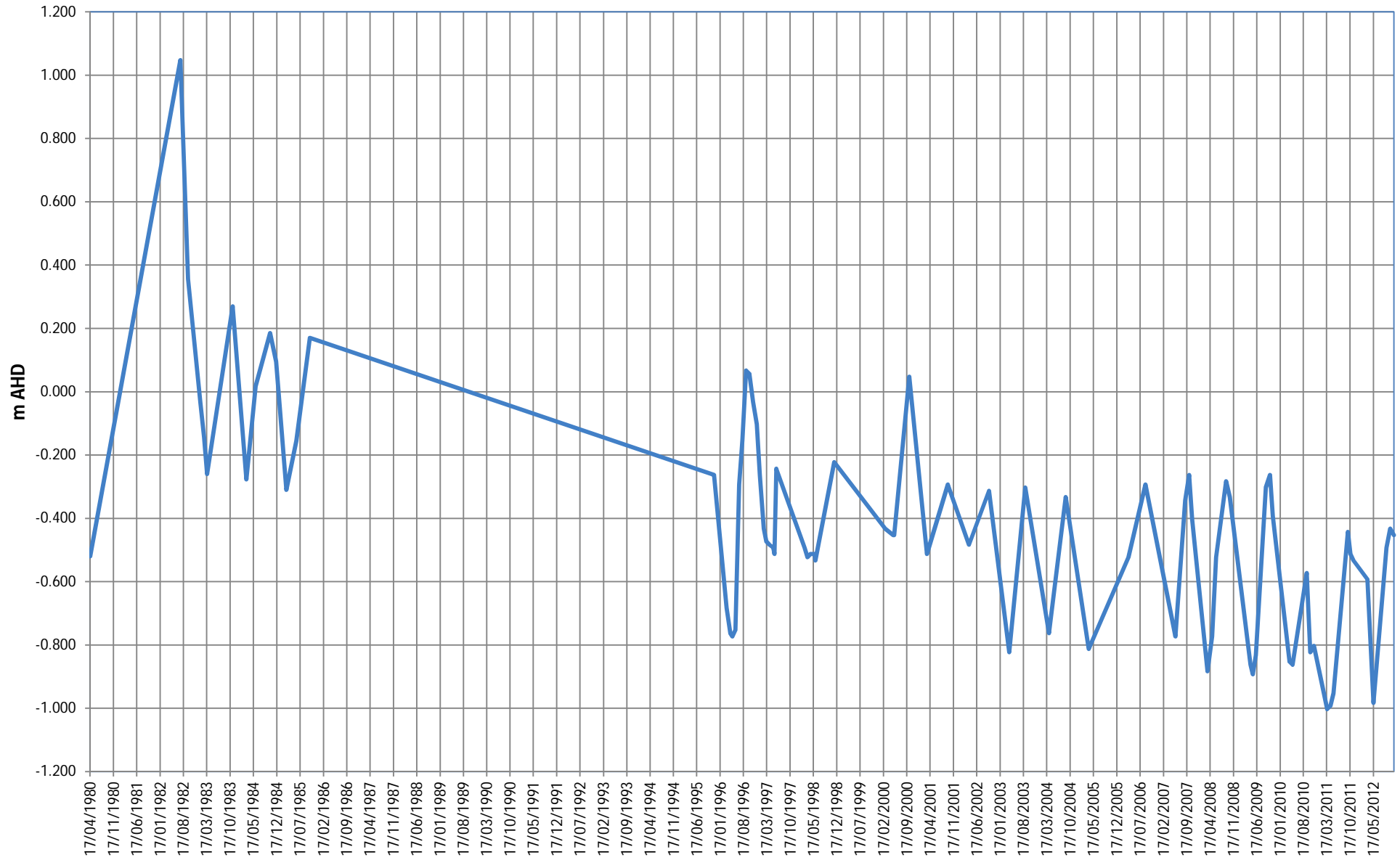
Stages of Extraction and Water Monitoring

Figure 3

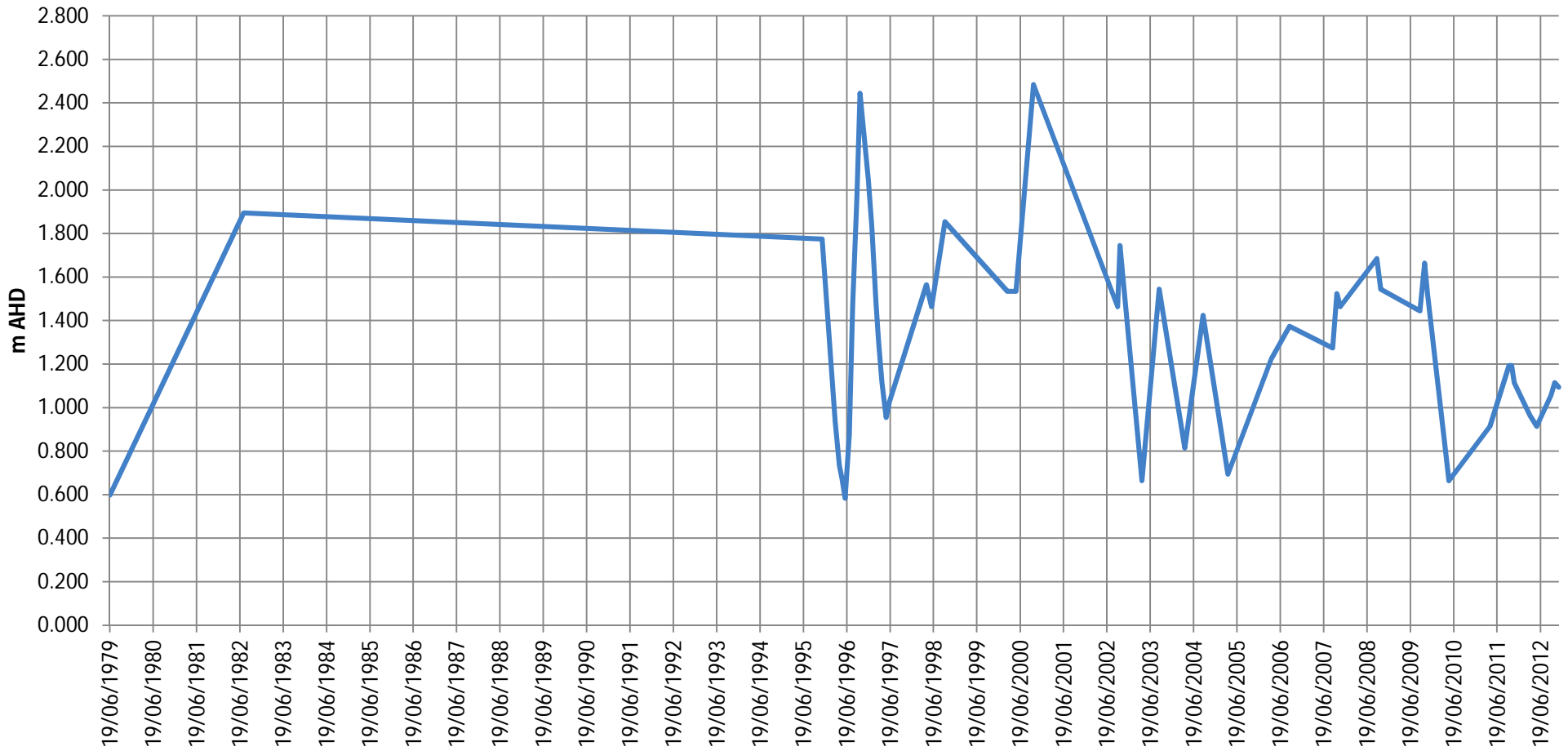
APPENDIX 1

Hydrographs for bores E1B and E2B

E1B Monitoring Bore Hydrograph



E2B Monitoring Bore Hydrograph



APPENDIX 2

Conditions of Approval from the Shire of Harvey



SHIRE OF HARVEY

ALL COMMUNICATIONS TO BE ADDRESSED TO THE CHIEF EXECUTIVE OFFICER

102 UDOC ROAD
P.O. BOX 500, HARVEY, WESTERN AUSTRALIA, 6220
TELEPHONE (08) 9729 0300
FACSIMILE (08) 9729 2053
www.harvey.wa.gov.au

Direct Line:
(08) 9729 0340

PLEASE USE DIRECT DIAL TELEPHONE WHERE NOMINATED

Our Reference: 13/05120; 13/10682
Our File: A002460
Enquiries: Mr. Simon Hall

Cornerstone Lawyers
PO Box 1620
CANNINIG VALE WA 6970

Attention: Tim Houweling

Dear Sir,

RECONSIDERATION OF EXTRACTIVE INDUSTRY APPROVAL

At its Ordinary Council Meeting on Tuesday, 28th May 2013, Council considered the abovementioned matter and resolved:

“That Council, in response to State Administrative Tribunal Mediation regarding matter DR 19/2012 held 22nd May 2013, amends original condition x. of its planning approval in relation to the matter, to read as follows:

- x. *This approval is valid until 31st May 2021, based on all “active excavation”, which includes “clearing of vegetation in preparation for extraction of materials and the extraction of materials from the excavation pit”, being limited to 1st November, to 31st May, of each year. If development is not completed within this period, a new approval must be obtained before commencing or continuing development.”*

Please contact me for any further information.

Yours sincerely,

SIMON HALL
MANAGER OF PLANNING SERVICES

30th May 2013



SHIRE OF HARVEY

ALL COMMUNICATIONS TO BE ADDRESSED TO THE CHIEF EXECUTIVE OFFICER

102 UDUC ROAD
P.O. BOX 500, HARVEY, WESTERN AUSTRALIA, 6220
TELEPHONE (08) 9729 0300
FACSIMILE (08) 9729 2053
www.harvey.wa.gov.au

Direct Line:
(08) 9729 0340

PLEASE USE DIRECT DIAL TELEPHONE WHERE NOMINATED

Our Reference: 13/05120; 13/10682
Our File: A002460
Enquiries: Mr. Simon Hall

Lundstrom Environmental
21 Sellen Court
LEEMING WA 6157

Attention: Mike Lundstrom

Dear Sir,

RECONSIDERATION OF EXTRACTIVE INDUSTRY APPROVAL – LOT 5 OLD COAST ROAD

At its Ordinary Council Meeting on Tuesday, 28th May 2013, Council considered the abovementioned matter and resolved:

“That Council, in response to State Administrative Tribunal Mediation regarding matter DR 19/2012 held 22nd May 2013, amends original condition x. of its planning approval in relation to the matter, to read as follows:

- x. *This approval is valid until 31st May 2021, based on all “active excavation”, which includes “clearing of vegetation in preparation for extraction of materials and the extraction of materials from the excavation pit”, being limited to 1st November, to 31st May, of each year. If development is not completed within this period, a new approval must be obtained before commencing or continuing development.”*

In light of the above resolution your revised Application for Planning Consent received during the consideration of DR 19/2012, dated 26th February 2013, has been approved, subject to the attached conditions.

Please note that if you are aggrieved by this decision or the conditions attached hereto, you have a right of appeal as prescribed by the Planning and Development Act 2005.

Yours sincerely,

SIMON HALL
MANAGER OF PLANNING SERVICES

30th May 2013

SHIRE OF HARVEY

DISTRICT PLANNING SCHEME NO. 1

NOTICE OF PLANNING PERMISSION

Name and address of Landowner:

Carbone Bros.
South West Highway
BRUNSWICK JUNCTION WA 6224

Planning Consent is hereby GRANTED in respect of:

Revised Application No. 13/05120 made on 26th February 2013, by Carbone Bros. for land situated and described as: Lot 5 Old Coast Road

1. To be used for the purposes of:

Extractive Industry

2. To have development carried out in accordance with the endorsed plan/s subject to the following condition/s:

- a) A person shall not without the written approval of Council, undertake a landuse in respect of which Council has granted planning consent subject to conditions, until all of those conditions have been complied with to the satisfaction of Council.
- b) The development must be carried out in 3 stages of 3.76ha each in compliance with the approved plans submitted to the Shire by Lundstrom Environmental on 26th February 2013 (Shire Ref: 13/05120) and in accordance with the time frames shown on those plans.
- c) Clearing of vegetation and extraction works are to be undertaken only within the period between 1st November in any one year and 31st May in the following year.
- d) The pit must be setback 20 metres from all property boundaries at all times, and all vegetation located within the 20 metre setback areas is to be retained.
- e) Compliance with the Shire of Harvey Extractive Industry Local Laws, including the holding of a valid licence for all periods of operation.
- f) Compliance with the Department of Industry and Resources (DoIR) "*Environmental Management of Quarries: Development, Operation and Rehabilitation Guidelines*".
- g) Compliance with the Department of Environmental South West Region Guideline Series "*Extractive Industries within the Coastal Strip of the Shire of Harvey (Limestone and Sand)*".

- h) Where screening is proposed the Department of Environment is to be contacted to determine whether the proposed works require registration/works approval and/or licensing.
- i) The proponent is to submit and implement a dust management plan to the satisfaction of Council. Such plan is to be submitted and approved by Council prior to the issue of an Extractive Industry Licence.
- j) Access to the site is limited to the existing access track from Myalup Beach Road and such access is to be to the specifications and satisfaction of the Executive Manager of Technical Services.
- k) Stockpiles are to be located on the pit floor and kept to a maximum height below the top edge of the pit as shown in figure 2 of the Revised Visual Management Plan (Rev 1) (Shire Ref 13/10682) to avoid visual impact and/or material wind drift.
- l) The proponent shall provide a weed management plan to control the spread of declared weed species to the satisfaction of the Department of Agriculture and Food (DAFWA).
- m) The proponent must provide to the Shire a detailed staged Rehabilitation Management Plan which corresponds to the staging of the development and is to be submitted and approved by Council, prior to the issue of an Extractive Industry Licence. Such plan should also provide details of planting rates, species types and maintenance and monitoring measures.
- n) All rehabilitation is to comply with the rehabilitation plans submitted including slopes of the batters at the end of excavation, being retained at no more than 1:6 vertical to horizontal.
- o) The screen planting to the east of Stage 3 is to be planted prior to 31 July 2013 and undertaken and maintained in accordance with the Revised Visual Management Plan (Rev1) Shire Ref 13/10682.
- p) A reinstatement bond of \$56,400 is to be received prior to the issue of an Extractive Industry Licence (**Bond**). One third of the Bond (\$18,800) is to be returned to the proponent upon rehabilitation in accordance with the conditions of this approval of the area shown as Stage 1 on the approved plans. A further third of the Bond (\$18,800) is to be returned to the proponent upon rehabilitation in accordance with the conditions of this approval of the area shown as Stage 2 on the approved plans. The final third of the Bond (\$18,800) is to be returned to the proponent upon rehabilitation in accordance with the conditions of this approval of the area shown as Stage 3 on the approved plans.
- q) The applicant is to have the approved pit boundaries surveyed and pegged by a suitably qualified surveyor, with the location of such pegs being confirmed by Council Staff prior to the issue of an Extractive Industry Licence. The pegs are to remain in place for the duration of the operation.
- r) Provision of a detailed Water Management Plan for endorsement by the Department of Water prior to the issue of an Extractive Industry Licence. The Water Management Plan should contain monitoring and management measures in addition to mapping at a scale of no less than 1:500 indicating:
 - i. contours.
 - ii. watershed boundaries.

- iii. property boundaries. and
 - iv. proposed extraction areas.
- s) A 500mm buffer must be maintained at all times between the ground water level and the lowest level of any extraction works.
- t) Within six months of the completion of each stage, the stage area must be reinstated with a minimum of 400mm cover of overburden and topsoil to a finished rehabilitated level at least one (1) metre above the highest water table level in the area the subject of the development.
- u) No fuel or lubricants to be stored onsite without the prior approval of Council.
- v) A levy of \$0.50/m³ of extracted material being paid to Council to assist in the maintenance and upgrade of Myalup Beach Road.
- w) The proponent is to engage a suitably qualified independent expert to carry out an annual Compliance Report addressing the conditions of planning consent and extractive industries licence. This report must be submitted prior to an annual renewal licence being issued by Council.
- x) This approval is valid until 31st May 2021, based on all "active excavation", which includes "clearing of vegetation in preparation for extraction of materials and the extraction of materials from the excavation pit", being limited to 1st November, to 31st May, of each year. If development is not completed within this period, a new approval must be obtained before commencing or continuing development.

Please Note: A right of appeal exists under the provisions of the Planning and Development Act 2005 against this decision or any conditions imposed.

30/5/2013
Date


Chief Executive Officer



Clearing and extraction done in Stages and rehabilitation performance based advance into following Stage.

Stockpiles to be kept below the pit crest level (ie below 4m AHD)

Tuarts to be planted by Ivankovich Farms to screen sheds. Ten metres wide (3 rows) 390 trees to be planted at 5x5 spacing

Existing trees on Old Coast Road provide additional screening.

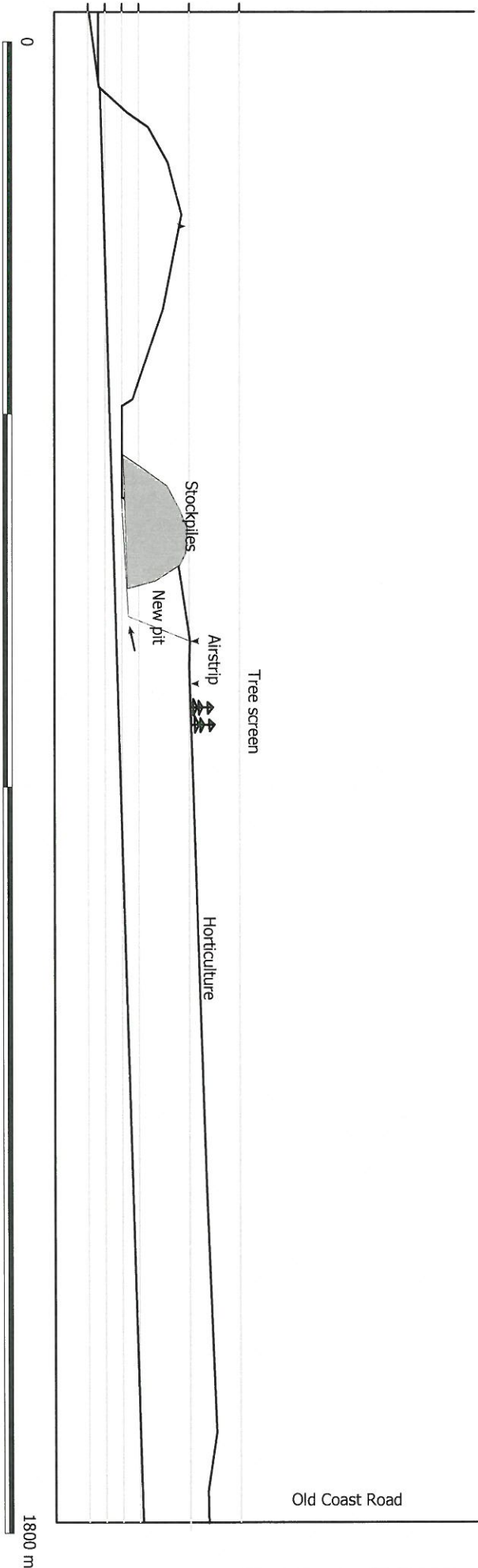
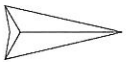
Tuarts to be planted by Carbone Bros. 20m wide (5 rows). Will be planted this year so that at the time of Stage 3 extraction (2017) they will be at least 5 metres high causing a high screening effect. 300 trees to be planted at 5x5 spacing

SHIRE OF HARVEY
 APPLICATION FOR PLANNING CONSENT
APPROVED
 AND ANY MODIFICATIONS MARKED
 AND ANY SPECIAL CONDITIONS
 30/5/2013
 Executive Officer Date

Lundstrom Environmental 21 Sellen Court, Leeming, WA 6149 Mob: 0417934863 mikalund1@bigpond.com	Scale: 1:12000 Original Size: A4 Air Photo Date: March 2012 Datum: Australian Geocentric 1994 (GDA94)	CARBONE BROS PTY LTD Lot 5 Old Coast Rd, Myalup Limestone Extraction	Visual Impact Management Plan Figure 1
---	--	---	--

13/10/82

CLAIRE OF HARVEY
 APPLICATION FOR
 PLANNING CONSENT
APPROVED
 SUBJECT TO ANY MODIFICATIONS MARKED
 IN RED AND ATTACHED CONDITIONS
 Chief Executive Officer Date 31/5/2013



Lundstrom Environmental

21 Sellen Ct, Leeming, WA 6149
 Mob 0417934863

Scale: 1:6900
 Original Size: A4
 Air Photo Date: March 2012
 Datum: Australian Geocentric 1994 (GDA94)

CARBONE BROS PTY LTD

C:\Users\Mike\Documents\Carbone\of 5 - Myalup\2010 EIL Application\Drawings\Cross section for EPFC Referral map

Lot 5 Old Coast Rd, Myalup
 Limestone Extraction

Cross section Through Property

Figure 2