ARDILL PAYNE & PARTNERS

Civil & Structural Engineers Project Managers & Town Planner

ABN 11 386 152 212

Bill Payne BE, MIE Aust. Graeme McKenzie BE, MIE Aust. Evan Elford L & ESD

5028BO-GC05 BO:bo

24th November 2003

R.J. and J.M Pidcock
"Stoneyhurst"
North Creek Road
LENNOX HEAD NSW 2478

Re: Pacific Pines Estate, Lots 215, 216 & 217 in DP1017615, North Creek Road, Lennox Head ~ Preliminary Site Investigation

Please find enclosed our Preliminary Site Investigation for the above site. This investigation was carried out in accordance with the relevant EPA guidelines to satisfy the requirements of Managing Land Contamination Planning Guideline, SEPP 55 "Remediation of Land".

Please do not hesitate to contact the undersigned if you have any queries or require further assistance.

Yours faithfully

Brian Oberdorf
ARDILL PAYNE AND PARTNERS

79 Tamar Street
PO Box 20
BALLINA NSW 2478

Ph: 02 6686 3280
Fax: 02 6686 7920
E-mail: info@ardillpayne.com.au

PRELIMINARY SITE INVESTIGATION
for: Pacific Pines Estate

Lots 215, 216 & 217 in DP1017615
North Creek Road
Lennox Head

TABLE OF CONTENTS

TABLES

APPENDICES

FIGURES

PRELIMINARY SITE INVESTIGATION
for: Pacific Pines Estate

Lots 215, 216 & 217 in DP1017615
North Creek Road
Lennox Head

1.0 Scope of Work

Proposed development comprises a residential subdivision on the above site as shown in Figure 1.

A Preliminary Site Investigation was carried out on the subject site to identify past or present contaminating activities and assess the requirement for further detailed investigations. This report relates to the remaining six stages of the subdivision which are subject to a SEPP71 Masterplan.

This investigation was carried out in accordance with the relevant EPA guidelines to satisfy the requirements of SEPP 55 "Remediation of Land".

2.0 Site Identification

The site is identified as follows:

- Lot No's: 215, 216 & 217
- Deposited Plan Number: 1017615
- Street: North Creek Road, Lennox Head, NSW 2478

The site occupies an area of about 99 hectares and is bound by Hendersons Lane and the Lennox Meadows estate to the north, residential development to the east and the early stages of the Pacific Pines Estate subdivision to the south. North Creek runs along the sites western boundary.

The following State Survey Control Marks are located adjacent to the site:

Table 2.1 - Geographic Coordinates

Mark	I.S.G. Coordinates Zone 56/2		AHD Level
	Easting	Northing	
SSM 74149	356,688.124	1,811,257.429	17.16
SSM 89279	356,702.960	1,811,431.108	12.47
SSM 90350	356,785.676	1,811,409.418	19.14

A site plan is provided in Figure 1 which provides locality details and geographic features.

3.0 Site History

3.1 General

The site is currently zoned 2b for residential development. The first four of ten stages have been or are under construction. This report relates to the remaining six stages which are the subject of a SEPP 71 Master Plan. The extent of this Master Plan is shown on Figure 1.

The site and surrounding North Creek area were settled in 1842[1] for cedar logging. Following this sugar cane was grown in the general area for a short period. However, this failed in the 1860's due to cane disease. The cleared areas around the site were subsequently used for dairy farming.

R. J and J. H Pidcock have continuously owned the site since its purchase as three portions in 1973, 1977 and 1979. Since that time the site has been operated continuously for cattle grazing. At the time of purchase each portion of the site was used for dairy farming and grazing. A copy of the site history from the current owners is presented in Appendix A.

The Pidcock's indicate horticultural activities or crop growing has not been carried out on the site in that time. Additionally fertilisers, horticultural sprays and pesticides have not been used on the site. The owners indicate that the dip site on the northern side of Hendersons Lane, external to the site, was used for treating cattle.

At the time of inspection there were no facilities for horticultural activities or dairy farming. An old timber hut is located on the central northern portion of the site. However, it is derelict and covered with lantana.

The site and surrounding land has been used for dairy farming since the 1860's with numerous references to dairy farming and grazing on the site and adjacent lots contained in the Lennox Head Heritage Committee booklet[2].

Consultation with NSW Agriculture indicates that the former "Coral" dip site some 50m north of Hendersons Lane is the only one close to the site. It is understood that the dip site has been decommissioned and capped. The dip site is on the opposite side of the northern ridge which defines the subject subdivision. The natural ground fall at the dip site is therefore away from the subdivision. Chemicals used at the dip site include arsenic and a range of organochlorine and organophosphate chemicals. Details of the dip site from NSW Agriculture are provided in Appendix B.

---

[1] *"Lennox Head Public School Centenary", (1982), Page 13 and 14.*

[2] *Wilson H. (2003) "Ringing the Bell Backwards: Memories of Early North Creek and Lennox Head", Lennox Head Heritage Committee – Page 16 – Neighbouring farms used for dairy, Page 18 – Refers to sites Norfolk Pine trees and use as dairy farm*

It is understood that there were no manufacturing processes carried out on the site and consequently there are no permits, licenses or trade waste agreements.

It is understood that chemicals were not stored on the site or that no spills or discharges of chemicals have occurred. Chemicals were restricted to the Coral dip site on the lot to the north of the subdivision.

A sewer lines runs along the western boundary of the site to a sewage pump station in the centre of the site. Elsewhere services are restricted to the adjacent residential areas.

3.2 Possible Contamination Sources

Based on the above site history it is considered unlikely that contamination exists on the site due to past activities. This is because the site has been used only for cattle grazing since prior to at least 1973. Historical records indicate that the site was used for dairy grazing prior to this. Cane farming may have occurred in the area prior to 1860, although based on the site inspection it is considered unlikely to have occurred on this site.

Contamination based on cattle grazing is typically related to chemical usage to treat livestock however this occurred on the adjacent lot north of Hendersons Lane. The owners indicated that the chemicals were not used on the site during their ownership which covers the past 30 years.

The Coral dip site is located on the opposite side of a ridge to the site and therefore it is assessed that contamination from this is unlikely to migrate to the subject site.

The fill material at the water quality control pond (WQCP) and windmill on the lower portions of the site is assessed to comprise mainly *virgin excavated natural material* and is therefore generally an inert material. Some concrete rubble was observed in the on the southern side of fill on the WQCP. However the bulk of the fill was generally free from rubble. It is noted that the fill had recently been leveled and that rubble in this area was probably mixed with the adjacent clean material from the adjacent site.

The fill on the new sporting field is assessed as virgin excavated natural material and is therefore assessed to be inert.

In view of the presence of some rubble in the fill material at the WQCP, it was considered prudent to carry out some preliminary testing on these materials. The following contaminants were tested because they are considered the most likely to occur given the history of the site and surrounding areas:

- Pesticides comprising organochlorins and organophosphates;
- Heavy metals including copper, lead, cadmium, zinc, arsenic, iron, manganese, silver, chromium, nickel, aluminium and mercury.

The presence of hydrocarbon contaminants (e.g. TPH & BTEX) was not assessed to be likely based on the site history.

The fill noted above will generally be used for the sporting fields, road embankments, WQCP embankments and below commercial areas. Fill for residential areas at the lower central area of the site will generally be won from the ridge on the northern portion of the site and will therefore comprise virgin excavated natural material. Additionally the existing site fill will generally be placed at the base of fill areas due to the scheduling of earthworks and will be topped with virgin excavated natural material.

4.0 Site Condition and Surrounding Environment

The site occupies a valley that drains west to North Creek and has side slopes to the north, east and south. The side slopes are moderately steep at around 25% to 35% with localised very steep areas up to approx. 50% on the eastern portion of the site.

The ridges fall to a broad, west facing valley that slopes gently from about RL5m to RL0.8m at the lower, western portion of the site. The lower, central portion of the site comprises generally excessively wet and soft alluvial soils.

The site is located in an established urban area that has progressively been developed from a largely grazing area.

The southern portion of the site was developed in the late 1990's as Stages 1 to 3 of the Pacific Pines Estate residential subdivision. Stage 3 was approved under DA 1999/248. As part of this work material excavated from the development area was placed in the lower western portion of the site to create sporting fields. Additionally at this time fill was dumped adjacent to a small farm dam and windmill on the lower central portion of the site. It is understood that as this material was to be reused on the site an effort was made to keep it free from deleterious materials such as organic matter and building waste.

Subsequent to this, the location of the fields was moved north-west to its current location and replaced with a WQCP.

The following areas of fill were located on the site at the time of inspection:

- Significant fill on the lower, western portion of the site at the location of the future WQCP. This is understood to comprise only excavated material from the adjacent Pacific Pines Estate. This material is outside of the SEPP71 Master plan area.
- A small amount of fill adjacent to a windmill and dam on the lower central portion of the site. This is understood to comprise only excavated material from the adjacent Pacific Pines Estate.
- A large amount of fill on the lower north-eastern portion of the site at the location of the proposed playing fields. This material is from recent earthworks for Stage 4B of the Pacific Pines Estate. This material is outside of the SEPP71 Master plan area.

Aerial photographs taken prior to this development show the subject site to be cleared, grassed grazing land that is generally free of rubbish or other foreign material. An aerial photo taken after completion of the initial portion of residential development shows the areas that have been filled as described above. Copies of the photos are attached in Appendix C.

The origin of this fill corresponds with discussions with the owners and experience of this office which carried out work on the site at this time[3].

At the time of inspection vegetation comprised mainly dense grass that appeared to be generally healthy. Some areas of bare soil or sparse grass cover were observed however these were assessed to be due to cattle on the site.

Although vacant the site appears to be well maintained. There were no signs of rubbish, drums or dumped materials on the site at the time of inspection. Wire fences generally run along the site boundaries and are in a good condition for their age.

Surface water quality on the site is variable and is subject to tidal influences from North Creek. Discussions with personnel from Greenloaning Biostudies Pty Ltd who are undertaking predevelopment water quality monitoring at the site, indicate that at times during dry weather the site water has elevated levels of nutrients and iron.

Small watercourses run through the site. However based on discussions with the owners, these generally clog with vegetation and have been frequently cleaned out in the past.

The lower portions of the site are below the 1 in 100 year flood level however approvals are in place for those to be filled to minimum Council levels.

Vegetation between North Creek and the western boundary of the site is a sensitive area. However, approvals exist to construct a wetland buffer to the sensitive waters. As part of this approval monitoring of flora, fauna and water quality is being carried out prior to and following development. Stormwater will be treated to provide a "no-net increase" in pollutants from the site.

At the time of inspection there were no other significant earthworks or ground modification on the site other than those noted above.

5.0 Geology and Hydrogeology

Soil landscape maps indicate the site occupies the Bangalow soil landscape which generally comprises moderately deep to deep (1m to 2m) well drained brownish-red krasnozem clays. Deep (>2m) poorly drained alluvial krasnozem clays occur in drainage lines.

[3] *Ardill Payne and Partners, "Environmental Impact Statement for the Construction of an Artificial Waterbody on part Lot 217 DP1017615", - Section 4.1.1*

The valley comprises the "Disputed Plan" formation which consists of deep, poorly drained alluvial soils. These soils include reactive clays and material with low, wet-bearing strength.

Geological maps indicate the sites to be underlain by the Lismore Basalt formation which is part of the Lamington Volcanic Group.

Geotechnical investigations by this Company generally confirm the above soil information except that very stiff clays were found which significantly reduced the soil's permeability. At the time of this investigation groundwater or seepage inflows were observed only in the lower portion of the site.

Surface flow is expected to comprise mainly surface runoff with some subsurface percolation that may surface as springs in downslope areas. Although no springs were observed at the time of inspection, springs have been identified by the owners during wetter periods.

6.0 Sampling Methodology

As described in Section 3.2, some sampling of the fill materials was undertaken. The aim of this sampling was to provide background information on likely contaminant levels in these materials and assess the need for further investigations or testing.

A judgmental sampling pattern was adopted for the Preliminary Site Investigation, in accordance with the EPA's "Sampling Design Guidelines". This was because of the preliminary nature of the investigation, the large area fill and the variability of the materials. Sampling locations and soil descriptions are shown on Figure 2.

Samples were collected from below the root zone (where applicable) to 150mm below surface level in accordance with the EPA's "Sampling Design Guidelines".

Samples were collected using a stainless steel auger that was washed between each use with phosphate free detergent and thoroughly rinsed in clean, potable water.

Sampling containers comprised laboratory prepared glass jars. Following sampling the containers were placed in cold storage condition and delivered to Environmental Analysis Laboratory. A wash blank was prepared midway during the investigation using laboratory prepared rinseate and containers to assess the effectiveness of sampling procedures.

7.0 Field Quality Assurance

Fieldwork was carried out by one of our engineers, Brian Oberdorf who has carried out previous work on the site and liased with the client and owners regarding the site history and chemical usage.

Decontamination procedures are described in Section 6.

Soil descriptions for each sample are provided on Figure 2.

The chain of custody documents are provided in Appendix D.

Laboratory rinseate blanks were collected but not analysed based on the wash blank test results.

8.0 Laboratory QA/QC

Environmental Analysis Laboratory is a research facility of the Southern Cross University. It is understood that the laboratory has registration by Quality Assurance Services for the Australian Standards CLP scheme (Certified Laboratory Practice).

EAL is not NATA certified however it is understood to be commonly used in the area and suitable for this preliminary stage of investigation.

9.0 Basis for Assessment Criteria

Soil investigation levels (SIL) were adopted from the EPA's "Guidelines for the NSW Site Auditor Scheme". The following categories are considered relevant to the site:

- NEHF A - "residential with gardens and accessible soils" was adopted for residential lots
- NEHF E - "Parks, recreational open space, playing fields" was adopted for sports fields and the WQCP
- NEHF F - "Commercial or Industrial" sites

SIL's are the levels below which a contaminant concentration does not require further consideration of health risks for the intended land use and are summarised below.

Table 9.1 – Health Based Soil Investigation Levels (SIL) mg/kg

		Residential		**Commercial**		**Open Space & Fields**	
Contaminant		Single	Composite of 3	Single	Composite of 3	Single	Composite of 3
OC/OP	Aldrin + Dieldrin	10	3.3	20	7	50	16.6
	Chlordane	50	17	100	33	250	83.3
	DDT	200	67	400	133	1,000	333
	Heptachlor	10	3.3	20	6.6	50	17
Metals	Arsenic	100	33	200	67	500	166
	Cadmium	20	6.6	40	13	100	33
	Chromium (VI/III)	100/12%	33	200/24%	67	500/60%	166
	Copper	1,000	333	2,000	666	5,000	1,666
	Lead	300	100	600	200	1,500	500
	Manganese	1,500	500	3,000	1000	7,500	2500
	Mercury	15	5	30	10	75	25
	Nickel	600	200	600	200	3,000	1,000
	Zinc	7,000	2,333	14,000	3666	35,000	11,666
PCB		10	3.3	20	6.6	50	17

10.0 Results

The results of composite soil and wash blank samples tested from the investigation are shown in the following table. Sample locations and details are shown on Figure 2. Results above the composite residential SIL are shown in bold. Results above the composite commercial SIL are shown underlined. No results are above the composite open space and field SIL.

Table 10.1 – Laboratory Test Results

	Composite No.	C1	C2	C3	C4
	Depth	0-0.15m	0-0.15m	0-0.15m	0-0.15m
	Individual Sample No's.	S1, S2, S3	S4, S5, S6	S7, S8, S9	S10,S11,S12
	Location	WQCP	WQCP	Playing Fields	Windmill/Dam
SIL – Composites thresholds (mg/kg)	Aldrin + Dieldrin	<0.02	<0.02	<0.02	<0.02
	Chlordane	<0.02	<0.02	<0.02	<0.02
	DDT	<0.02	<0.02	<0.02	<0.02
	Heptachlor	<0.02	<0.02	<0.02	<0.02
	Arsenic	2.9	4.0	2.6	2.2
	Cadmium	<0.1	<0.1	<0.1	<0.1
	Chromium	**36.1**	**41.6**	28.1	**50.6**
	Copper	15	30.1	24.3	27.7
	Lead	9.3	7.0	10.9	6.1
	Manganese	369	**798**	**1103**	**1203**
	Mercury	<0.1	**5.0**	**7.4**	3.2
	Nickel	28.6	60.1	50.7	69.5
	Zinc	62.2	117.4	133.8	132.9
	PCB	<0. 2	<0. 2	<0. 2	<0. 2

Table 10.2 – Wash Blank Results from Site Soils

	Wash Blank (mg/L)
Aldrin + Dieldrin	<0.0003
Chlordane	<0.0003
DDT	<0.0003
Heptachlor	<0.0003
Arsenic	<0.015
Cadmium	<0.001
Chromium	<0.002
Copper	0.002
Lead	<0.001
Manganese	<0.001
Mercury	<0.001
Nickel	0.001
Zinc	0.006
PCB	<0.003

The wash blank test result indicates that the sampling procedure was satisfactory and did not contaminate or cross-contaminate the samples.

It is noted that Chromium has two investigation levels depending on the form that it is in. Chromium (VI) is the toxic form with the lower health limit that has been used to assess the above data. Chromium (III) has a significantly higher investigation limit and is generally inert and insoluble.

Due to the elevated levels of some metals, leachate tests were carried out and are provided in the following table. These tests were carried out to provide further information on the above results and to help assess the "waste classification" of the sites fill based on the NSW EPA "Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes". The waste classification of the soil is also shown in the following table.

Table 10.3 – Leachate Test Results

Composite No.	C1	C2	C3	C4
Depth	0-0.15m	0-0.15m	0-0.15m	0-0.15m
Individual Sample No's.	S1, S2, S3	S4, S5, S6	S7, S8, S9	S10,S11,S12
Location	WQCP	WQCP	Playing Fields	Windmill/Dam
TCLP Chromium	0.017	0.009	0.012	0.017
TCLP Manganese	2.989	1.535	1.520	2.443
TCLP Mercury	-	<0.001	<0.001	-
Waste Classification	INERT	INERT	INERT	INERT

The above results are discussed further below.

10.1 Discussion and Analysis of Results

Generally the soils have elevated levels of chromium and manganese above the EPA levels for residential and commercial areas. Additionally two samples have mercury levels marginally above the EPA limits for residential development, but below the limits for open space and commercial/industrial sites. It is noted that the high mercury levels were associated with the fill outside of the SEPP71 Master Plan area.

Therefore based on the above results, all of the existing fill on the site would be suitable for its proposed use on the sporting field and road embankments. However as described below, due to the volcanic origin of the sites fill, it is assessed that chromium and manganese are naturally high and this is in an inert state. Therefore all of the existing site fill will also be suitable for commercial sites.

The mercury levels in Composite samples C2 and C3 are above the criteria for residential use. Therefore this fill should not be used in residential areas without further investigation, but fill materials from C1 and C4 are suitable for residential usage. The locations of the fill materials is shown on Figure 2.

Discussions with Ms Abigail Jenkins[4], a soil scientist from NSW Agriculture indicates that the red krasnozem soils are naturally high in heavy metals such as chromium and manganese, with manganese levels up to >>10,000mg/kg can be expected in soils of volcanic origin. It is understood that this is mostly in a form that is not available to plants except under very low pH conditions. It is understood that in volcanic soils manganese can be present in greater

[4] *Personal Communications with Ms Abigail Jenkins from NSW Agriculture on 28-2-2003 based on Ms Jenkins literature investigations and discussions with Justine Cox, Ian Vimpany and others.*

quantities[5] than other elements excluding iron, and in particular for the darker volcanic rocks such as Basalt[4].

This corresponds with previous investigations carried out in the area by Ardill Payne and Partners on red krasnozem soils[6] that indicate manganese levels range typically from 2600-4500mg/kg and is in a relatively immobile form so that less than ≈0.6% is available in the leachate. Testing for this site indicates that typically 0.1-0.8% is available in the leachate from the fill.

Additionally for previous investigations tests on chromium[6] indicate levels ranging from 64-154mg/kg and is in a relatively immobile form so that less than ≈0.02% is available in the leachate. This corresponds with work by Environmental and Earth Sciences[7] that indicate that chromium in soils derived from the Lamington Group Basalt may have chromium levels ranging from 45 to 90mg/kg (average 72mg/kg). Testing for this site indicates that typically 0.2-0.3% of chromium is available in the leachate from the fill. Due to the low availability, it is assessed that the chromium in the sites fill is Chromium (III) and therefore well below the higher investigations levels.

Discussions with Mr Graham Lancaster[8] from Environmental Analysis Laboratory indicate that tests on "red" soils commonly have elevated levels of some heavy metals including chromium and manganese.

Based on the above, the area's soil would be classified as "inert" material in accordance with the EPA's "Assessment, Classification & Management of Liquid and Non-Liquid Wastes".

11.0 Site Characterisation

Based on the site history, contamination is assessed to be unlikely to occur on the site except at the three fill locations described in Section 4.0.

The laboratory testing indicated that some of the site fill material had manganese, chromium and mercury levels above the SIL recommended by

---

[5] *Incitec Fertilizers, (Nov 2001) "Manganese Fact Sheet" – Manganese may be up to 130,000mg/kg (13%) in volcanic soils.*

[6] *A Preliminary Site Investigation for a residential subdivision, 4 and 12 Minshul Crescent, Tullera (Ref:5416BO-GC03 6th September 2002) indicated the site soils to have high levels of manganese/chromium ranging from 1400-4500mg/kg and 108-124 mg/kg (7 tests). Leachate testing indicated that less than 0.6%/0.02% was available for plant growth and therefore was relatively immobile. Average manganese/chromium levels of ≈2600mg/kg and 105mg/kg were found in undisturbed "natural areas" adjacent to the site (3 samples).*

A Preliminary Site Investigation for a residential dwelling, Lot 6 in DP607705 Federal Rd (Ref:5512BO-CS01 4th March 2003) indicated the site soils to have high levels of manganese ranging from 2600-3100mg/kg (9 tests). Leachate testing indicated that less than 0.5% was available for plant growth and therefore the manganese was immobile.

A Preliminary Site Investigation for a residential dwelling, Lot 1 DP246970 41 Federal Road, Eureka (Ref:5616BO-CS01 17th March 2003) indicated the site soils to have high levels of manganese ranging from 1200-190000mg/kg (3 tests).

[7] *"Down to Earth Solutions", Number 13, Winter 2003, Environmental and Earth Sciences – Article: Chromium in the natural and human environments – Table 1.*

[8] *Personal Communications with Mr Graham Lancaster from EAL on 27-2-2003*

the EPA's guidelines for residential sites. The remaining heavy metals and the OC/OP pesticides tested were well below the residential SIL.

Based on the site history and the above investigation it is assessed that the elevated manganese is naturally occurring and in a form that is not available for plant growth or unlikely to leach from the soil. Based on the above investigation and significant other urban development on manganese rich soils in the area, the fill is assessed to be suitable for residential sites.

Chromium in the fill is assessed to be in the inert and insoluble form and is therefore also assessed to be below the EPA limits for residential sites.

Slightly elevated mercury levels were detected in two samples that were above the EPA's limit for residential development. These results were below the EPA limits for commercial/industrial development and open space/recreation areas. Leachate testing indicated that the mercury levels in the leachate was below laboratory limits and therefore it is most likely to be in a relatively stable form.

Based on the above testing the site fill is assessed as "inert". It is noted however that this fill will be used generally in the fields, WQCP or at the base of residential fill and covered with natural soils.

Where the fill is used in a residential area it is covered with at least 300mm of virgin excavated natural material unless further investigation is carried out.

12.0 Conclusions

A preliminary site investigation was carried out on the site to assess the likelihood of contamination and the need for further investigation.

The history search indicated that contamination was unlikely on the sites undisturbed, natural soils.

However testing was performed on fill material that was identified on the site. The origin of the fill was from the previous stages of the Pacific Pines Estate. Laboratory testing indicate naturally elevated levels of chromium and manganese consistent with other areas with similar soils of volcanic origin.

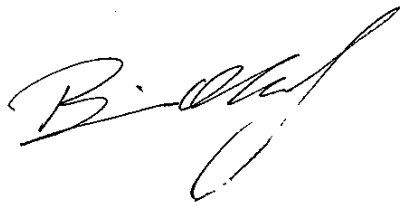
Mercury levels in two composited samples were above the limits for residential sites, but satisfactory for commercial/industrial and open space/recreational areas. Leachate testing indicated that the mercury was in a stable form and below detectable limits. Based on this the site fill material is assessed as "Inert" in accordance with EPA guidelines. Soils with elevated mercury levels were outside of the SEPP71 Master Plan area.

Generally the fill will be used in sporting fields, road embankments or below commercial areas. Therefore further investigation is not considered necessary on undisturbed areas of the site subject to the following:

- The fill material identified in this investigation may be used with-out restriction on open space/recreational areas or commercial/industrial sites, however should be covered with at least 0.3m depth of virgin excavate natural material if it is to be used on residential sites unless further investigation is carried out.

Please do not hesitate to contact the undersigned if you have any queries or require further assistance.

Yours faithfully



Brian Oberdorf
ARDILL PAYNE AND PARTNERS

Reviewed by

W. E. Payne

Site History

Statement

Appendix A

22 August 2003. – R.J. & J.M. Pidcock. / North Beach Rd. Hermox Head.

1/

① Purchased 102 Acres. – Lot 6, DP 241585 / Vol 11687 Fol. 73.
8 October. 1973. (Hector Brien).

② Purchased 35 Acres. – Vol 12099 Fol 246.
13 September. 1977. (Jameson, Richards & Robinson).

③ Purchased 208 Acres.
27 February 1979. (Tom Ruane).

2/ 'Cattle grazing' continuously on property since 1973.

3/ When purchased, all properties had 'cattle grazing' and

*Early useage – frequently recorded use as 'dairying' since the late 1800's...

Ref: "Ringing the bell backwards" published 2003
"Hermox Head Public School Centenary" – 1982.

*Previous owners. ① Albert Hodgkinson / 1871.
Jack Meaney / early 1900's.

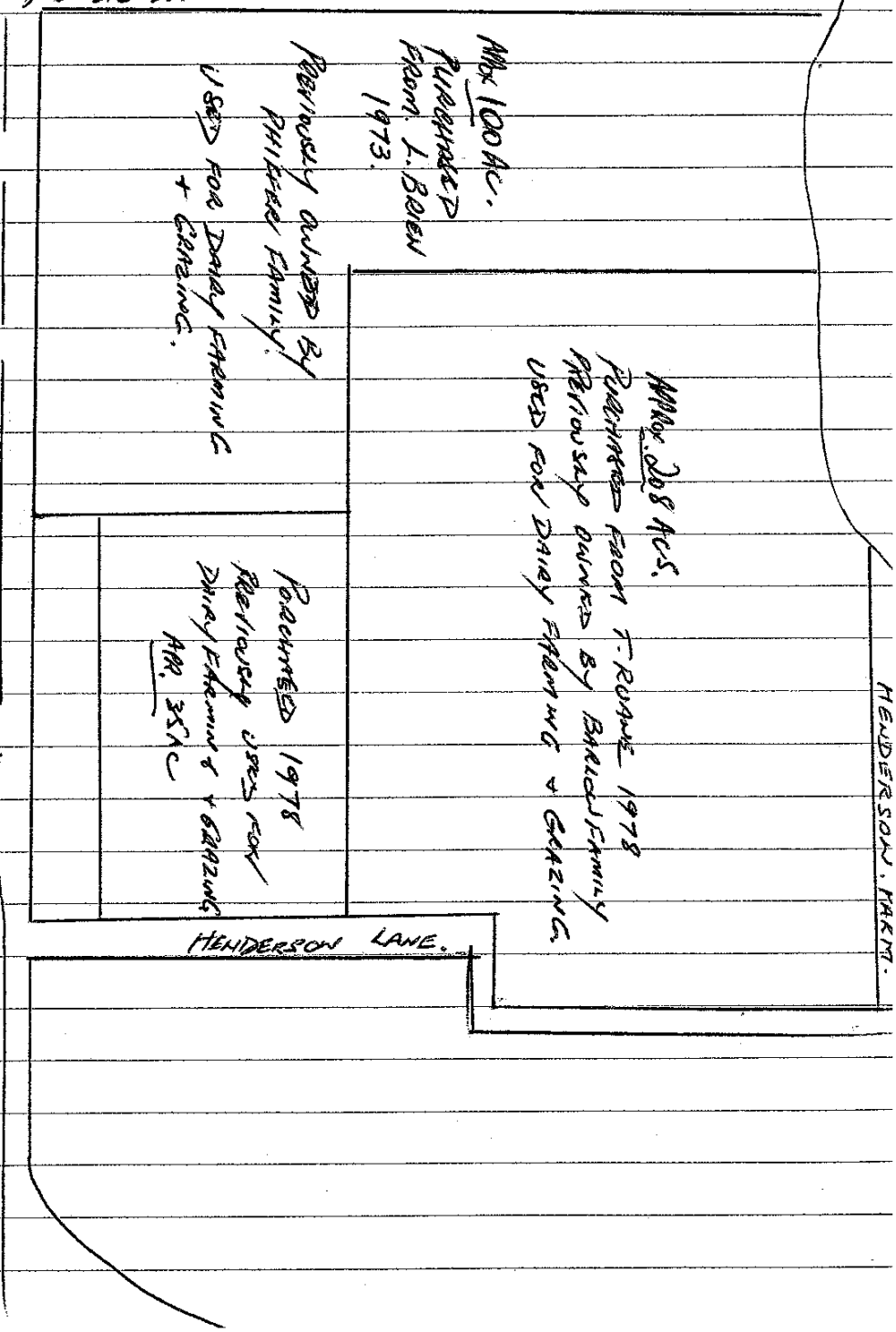
4/ Horticultural use. : NO crop growing is our ownership.

Ref: AS ABOVE.

Limited sugar cane growing in the 1860's
Mills established – however, soon closed
due to failed crops.

5/ Chemical use. : NIL. / No chemical spills or disposal

FOR THE PAST 30 + 40 YEARS THE COMBINATION OF THESE THREE PROPERTIES TO THE BEST OF OUR KNOWLEDGE BEEN USED FOR DAIRY FARMING + THEN CATTLE GRAZING. WE HAVE BEEN GRAZING CATTLE SINCE 1973. CHEMICALS OR SPRAYS – PASTURES – CROPPING HAVE NEVER BEEN USED OR GROWN ON THIS PROPERTY IN OUR OWNERSHIP. WE HAVE OPERATED TWO WINDMILLS FOR CATTLE DRINKING WATER UP TO 2003.



NSW Agriculture
Dip Site
Information

Appendix B

NSW Agriculture

CATTLE TICK PROGRAM
Wollongbar Agricultural Institute
North Coast Region
Phone: 02 6626 1111
Fax: 02 6626 1202
email - george.nastase@agric.nsw.gov.au

Monday, 15 September 2003

TO:
Ardill Payne & Partners

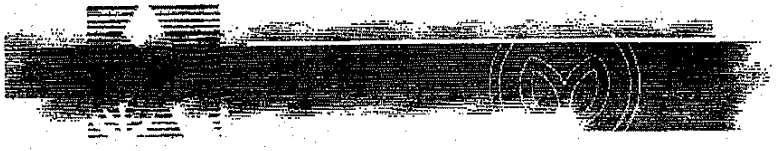
Your Ref: Job no. 5028. Lots 215,216 DP 1017615

Attention Bob Oberdorf

With regard your telephone enquiry requesting information on any cattle dipsites located near the above property at Lennox Head.
Our records indicate that the nearest recorded dip site is the **Coral** dipsite at the approximate position marked by the maltese cross **ie** about 50 metres from your subject Lot, across Henderson Lane and to the north east . This site has been demolished and cleared and its details attached.

If you have further questions please call me on 02 6626 1111.

George Nastase.
for
P.J.McGREGOR,
Program Leader , Cattle Tick Program.



Cattle dip site details

Animal Industries

Meat, Dairy & Intensive Livestock Products (MDILP)

Beef Products

Cattle dip site information

Dip site location

Dipname	CORAL	*Note all map references are in AMG for zone 56 (Northern Rivers)*	
Road	HENDERSON LANE	**Mapsheet**	9640-III-N
Town/Locality	LENNOX HEAD	**Easting**	55707
Shire Council	BALLINA	**Northing**	81345
Parish	BALLINA	**County**	ROUS

Dip site status

Dip Status	DECOMMISSION	**Licence/Lease Status**	LAPSED
Land type	LEASE	**Licence/Lease Expiry Date**	30/06/2003

Explanation of status terms

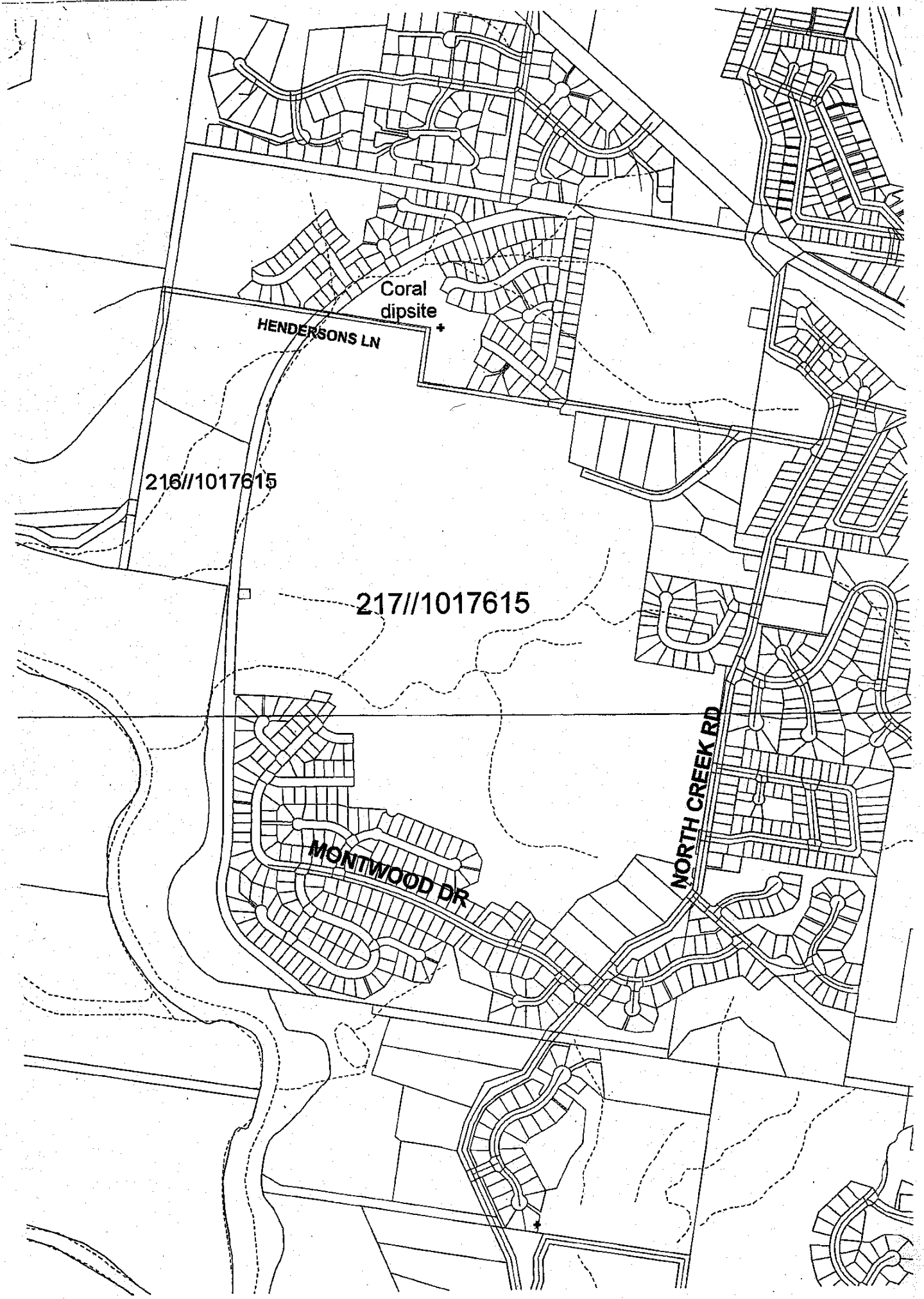
Chemical Details

Chemicals used in dip bath	Date first used
ARSENIC	6/43
ARSENIC	7/48
DDT	1/61
DIOXATHION	10/62
ETHION	10/72
ETHION CHLORDIMEFORM	10/73
PROMACYL	10/78
FLUMETHRIN	11/86

Current Details

Current Chemical	NONE
Dip bath status/contents	CAPPED

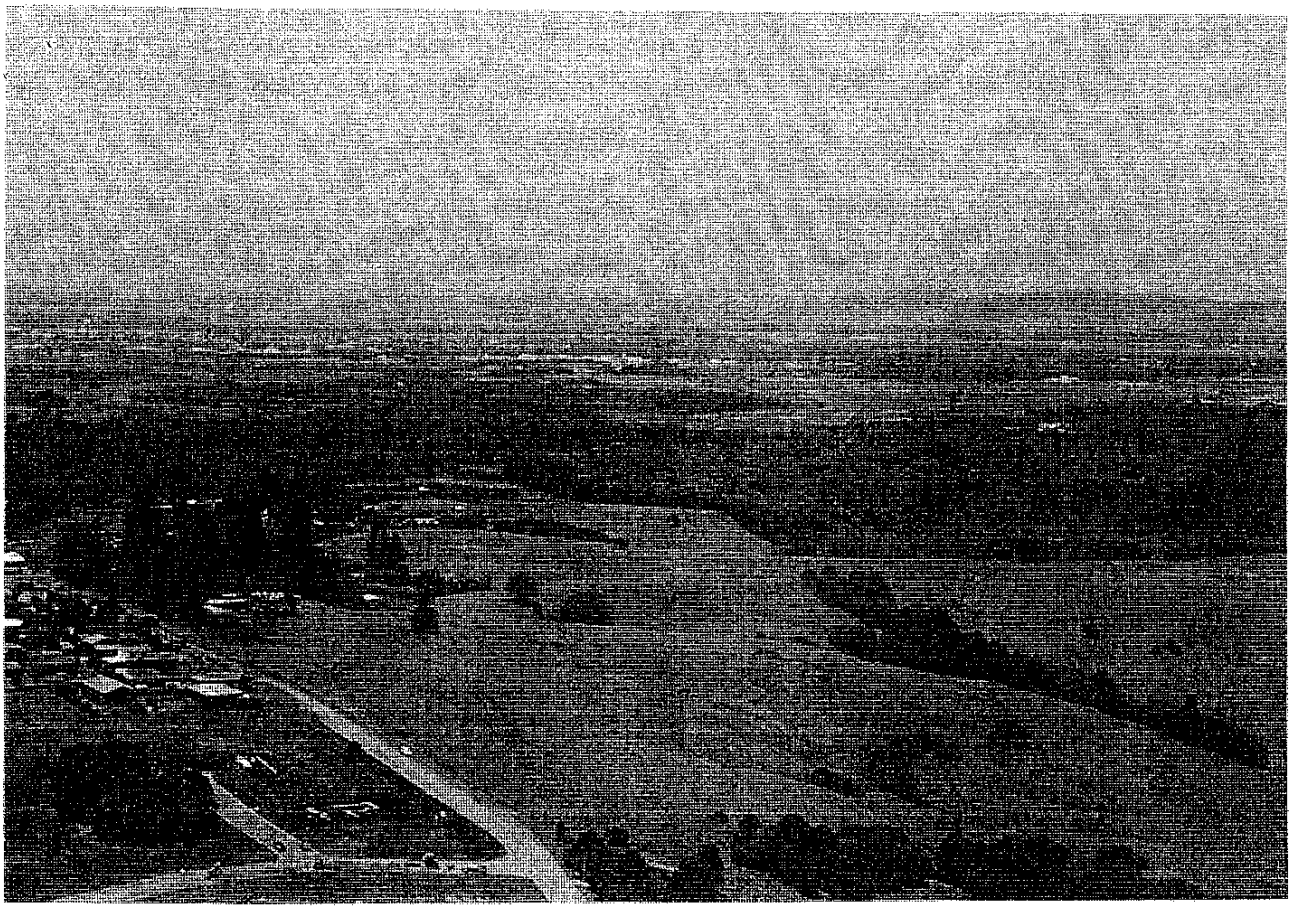
New search Back

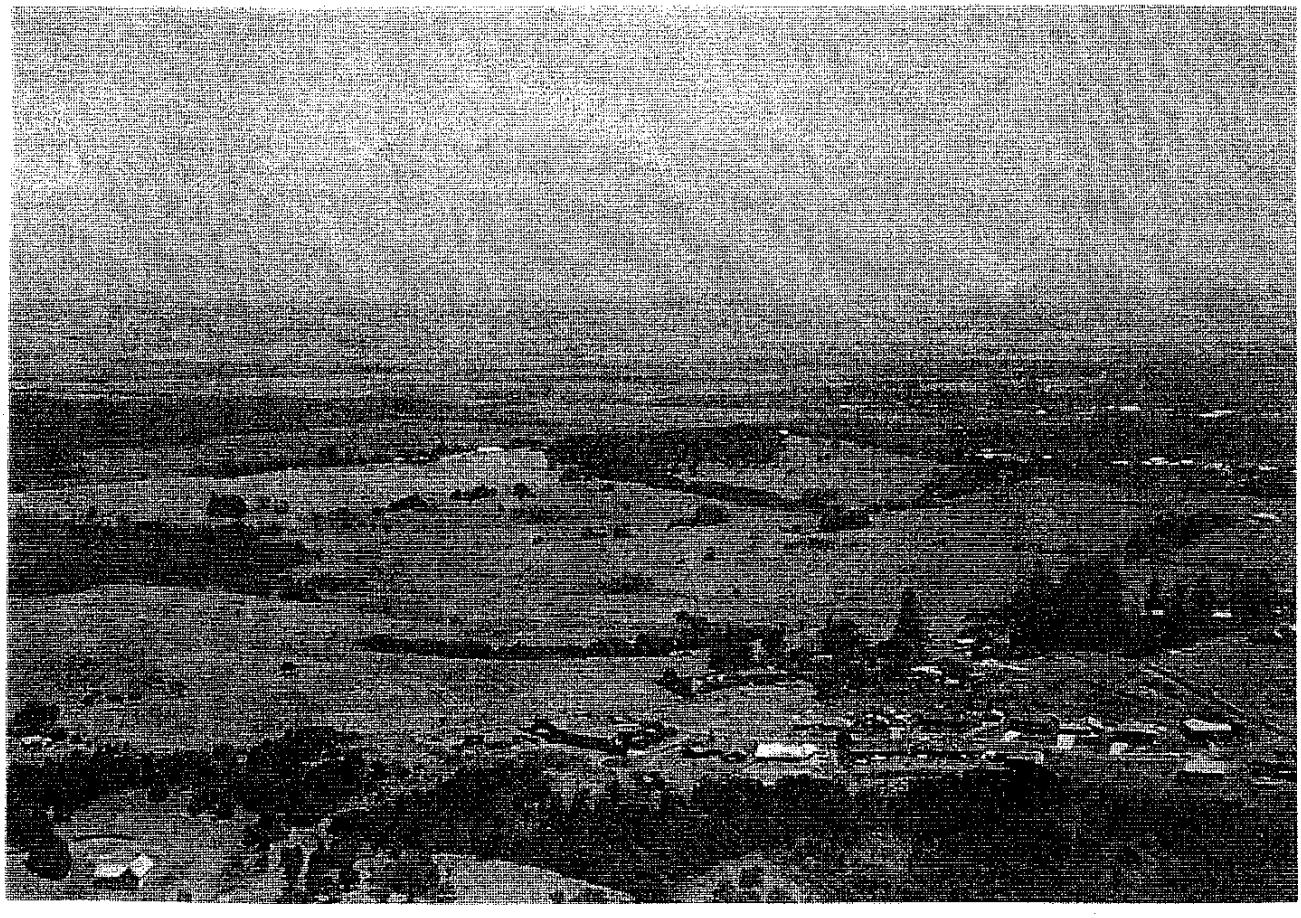

Coral
dipsite
HENDERSONS LN
216//1017615
217//1017615
MONTWOOD DR
NORTH CREEK RD

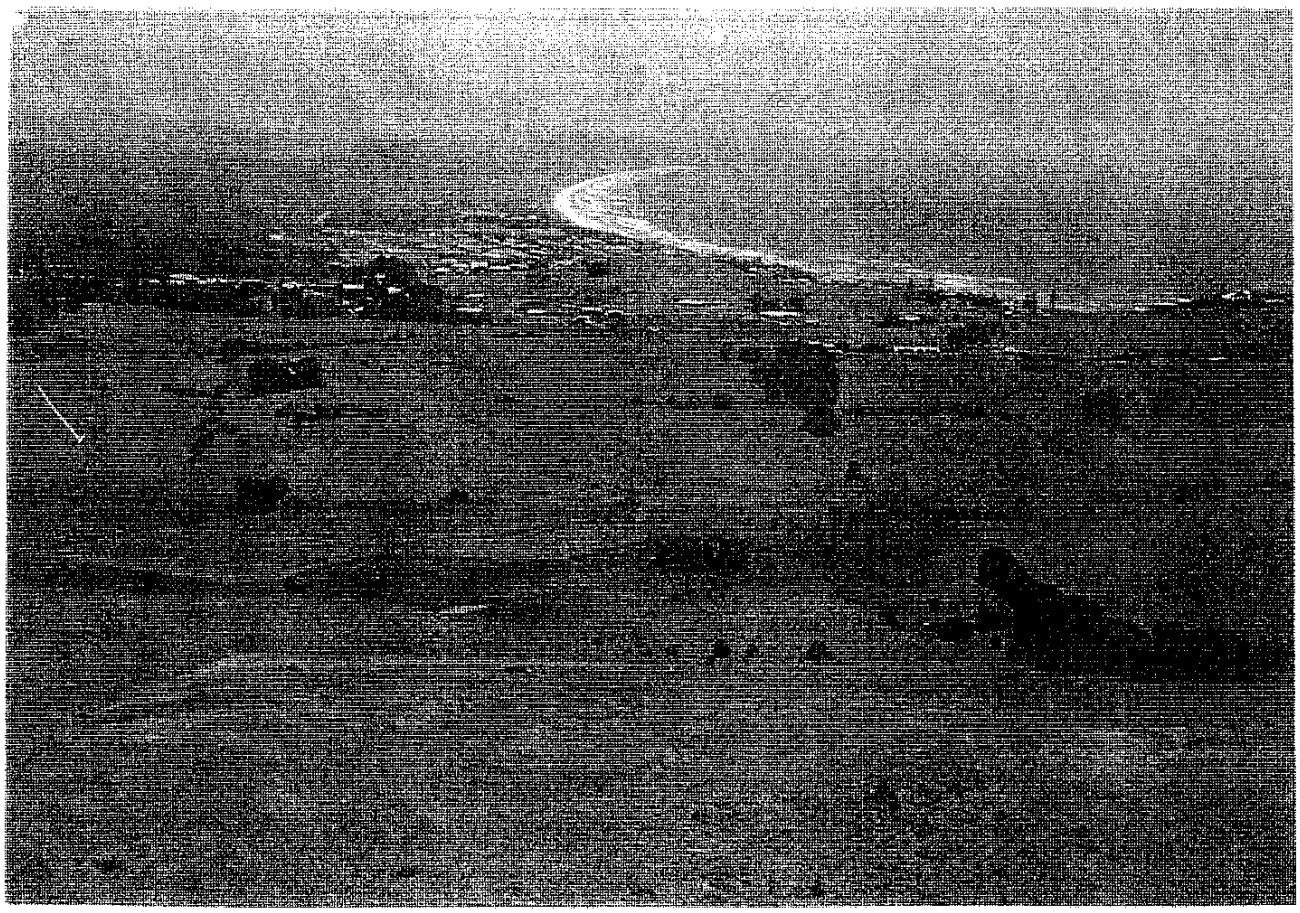
Aerial

Photographs

Appendix C







Laboratory

Documentation

Appendix D

RESULTS OF SOIL ANALYSIS (page 1 of 1)

Composite soil samples supplied by Ardil Payne & Partners on 10th September, 2003 - Lab Job No. E0979
Further analysis requested on the 28th October for TCLP extraction
Analysis requested by Brian Oberdorf.

SAMPLE CODE	Composite C1 (S1, S2, S3)	Composite C2 (S4, S5, S6)	Composite C3 (S7, S8, S9)	Composite C4 (S10, S11, S12)
Job Number	*E1201/1*	*E1201/2*	*E1201/3*	*E1201/4*
TCLP CHROMIUM (mg/L in extract)	0.017	0.009	0.012	0.017
TCLP MANGANESE (mg/L in extract)	2.989	1.535	1.520	2.443
TCLP MERCURY (mg/L in extract)	..	<0.001	<0.001	..

Notes:

1. Toxicity Characteristic Leaching Procedure (TCLP), 1986. Resource Conservation and Recovery Act. Subtitle C - Hazardous Waste Mge Sys, US EPA.
2. DW = Dry Weight

METHODS REFERENCE

Analysis of metals by APHA 3120 ICPMS & ICPOES

checked: .....

Environmental Analysis Laboratory

RESULTS OF SOIL ANALYSIS (page 1 of 1)

12 soil samples supplied by Ardill Payne & Partners on the 10th September, 2003 - Lab Job No. E0979
soil samples supplied were composited by EAL into 4 composite samples for analysis
Analysis requested by Brian Oberdorf. **Your Job.: 5028. Proposed Subdivision, Lennox Head.**

ANALYTE	METHOD REFERENCE	COMPOSITE C1 S1, S2, S3	COMPOSITE C2 S4, S5, S6	COMPOSITE C3 S7, S8, S9	COMPOSITE C4 S10, S11, S12
SILVER (mg/Kg DW)	a	<0.5	2.5	1.3	<0.5
ARSENIC (mg/Kg DW)	a	2.9	4.0	2.6	2.2
LEAD (mg/Kg DW)	a	9.3	7.0	10.9	6.1
CADMIUM (mg/Kg DW)	a	<0.1	<0.1	<0.1	<0.1
CHROMIUM (mg/Kg DW)	a	36.1	41.6	28.1	50.6
COPPER (mg/Kg DW)	a	15.0	30.1	24.3	27.7
MANGANESE (mg/Kg DW)	a	369	798	1103	1203
NICKEL (mg/Kg DW)	a	28.6	60.1	50.7	69.5
SELENIUM (mg/Kg DW)	a	1.4	1.8	2.3	1.7
ZINC (mg/Kg DW)	a	62.2	117.4	133.8	132.9
MERCURY (mg/Kg DW)	a	<0.1	5.0	7.4	3.2
IRON (% DW)	a	4.42	9.97	11.78	9.85
ALUMINIUM (% DW)	a	6.01	8.60	11.66	11.22
OC's (mg/Kg)	b	<0.02	<0.02	<0.02	<0 02
OP's (mg/Kg)	b	<0.1	<0.1	<0.1	<0.1
PCB's (mg/Kg)	b	<0.2	<0.2	<0.2	<0.2

METHODS REFERENCE

a. Microwave $^{1:1}$Nitric/HCl digest - APHA 3120 ICPMS
b. Analysis sub-contracted - results attached

NOTES

DW = Dry Weight
OC's = Organochlorine Insecticides
OP's = Organophosphorus insecticides
No other pesticides occurred above reportable levels for chemicals screened in the attached list

checked:.....

Environmental Analysis Laboratory

RESULTS OF WATER ANALYSIS (Page 1 of 1)

1 sample supplied by Ardill Payne & Partners on the 10th September, 2003 - Lab. Job No. E0980

Analysis requested by Brian Oberdorf. - **Your Project: 5028. Proposed Subdivision, Lennox Head.**

PARAMETER	METHODS REFERENCE	WB 1
	Job No.	*E0980/1*
SILVER (mg/L)	APHA 3120 ICPMS[note 1&2]	<0.001
ALUMINIUM (mg/L)	APHA 3120 ICPOES[note 1&2]	0.004
ARSENIC (mg/L)	APHA 3120 ICPMS[note 1&2]	0.015
CADMIUM (mg/L)	APHA 3120 ICPMS[note 1&2]	<0.001
CHROMIUM (mg/L)	APHA 3120 ICPMS[note 1&2]	0.002
COPPER (mg/L)	APHA 3120 ICPMS[note 1&2]	0.002
IRON (mg/L)	APHA 3120 ICPOES[note 1&2]	0.013
MANGANESE (mg/L)	APHA 3120 ICPMS[note 1&2]	<0.001
NICKEL (mg/L)	APHA 3120 ICPMS[note 1&2]	0.001
LEAD (mg/L)	APHA 3120 ICPMS[note 1&2]	<0.001
SELENIUM (mg/L)	APHA 3120 ICPMS[note 1&2]	0.010
ZINC (mg/L)	APHA 3120 ICPMS[note 1&2]	0.006
MERCURY (mg/L)	APHA 3120 ICPMS[note 1&2]	<0.001
Organochlorine Pesticides (mg/L)	subcontracted: results attached [5]	<0.0003
Organophosphorus Pesticides (mg/L)	subcontracted: results attached [5]	<0.001
Polychlorinated Biphenyls (PCB's) (mg/L)	subcontracted: results attached [5]	<0.003

Notes:

1. **Total Available metals** - samples acidified with nitric acid and then filtered through 0.45μm cellulose acetate
2. Metals analysed by ICP-MS (Inductively Coupled Plasma - Mass Spectrometry) or ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry)
3. 1 mg/L (milligram per litre) = 1 ppm (part per million) = 1000 μg/L (micrograms per litre)= 1000 ppb (part per billion)
4. No other pesticides occured above reportable levels for chemicals screened in the attached list
5. Analysis performed according to APHA, 1998, "Standard Methods for the Examination of Water & Wastewater", 20th Edition, except where stated otherwise.

checked: .....

Environmental Analysis Laboratory

NSW Agriculture
Diagnostic and Analytical Services
Environmental Laboratory, WOLLONGBAR NSW 2477
Phone 02 6626 1261, Fax 02 6626 1276

Report Number: **WN03/3242/R**

Owner ENVIRONMENTAL ANALYSIS LAB
EAST LISMORE

Submitter G LANCASTER

RECEIVED
5028
29.10.03/01
ANS / /

Submitted: 12.9.03
Received: 12.9.03

Samples received: 4 x sample
The samples have been assigned the following laboratory numbers. Lab No 10263-10266

Soil Pesticide Analysis

Method	Number	Date of Analysis
Soil pesticide screen	2625	19 September, 2003

Laboratory No		Limit of reporting	10263	10264	10265	10266
Sample ID	Unit		E0979/1	E0979/2	E0979/3	E0979/4
Organochlorine	mg/kg	0.02	<0.02	<0.02	<0.02	<0.02
Organophosphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
PCB	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2

Organochlorine analysis screens for the following chemicals – aldrin, cis-chlordane, trans-chlordane, oxychlordane, HCB, DDD, DDE, DDT,alpha-BHC, beta-BHC, delta-BHC, lindane, dieldrin, endrin, heptachlor, heptachlor epoxide, alpha-endosulfan, beta-endosulfan, endosulfan sulfate and methoxychlor.

Organophosphate analysis screens for the following chemicals:- bromophos ethyl, carbophenothion, chlorfenvinphos, chlorpyrifos, chlorpyrifos methyl, diazinon, dichlorvos, dimethoate, dioxathion, ethion, fenchlorphos, fenitrothion, fenthion, malathion, methacrifos, and pirimiphos methyl.

MICHAEL KARKKAINEN
TECHNICAL OFFICER
23 SEPTEMBER, 2003 MAT

FINAL REPORT G LANCASTER
VO RESIDUES

- *This report supersedes any previous report with this Report Number (see top right of this page).*
- *These results apply to the sample(s) as provided and are expressed on a dry weight basis unless otherwise stated.*
- *This report should not be reproduced except in full.*
- *Samples will be retained for one month from the date of the final report. Samples will then be discarded. Clients wishing to recover their samples must contact the laboratory within this period. The laboratory will return residual samples at client expense when requested.*
- *Test results and findings may be provided to authorised staff and used for statistical, surveillance, extension, certification and regulatory purposes in accordance with Departmental policies. The information assists disease and residue control programs and underpins market access for agricultural products. The source of the information will remain confidential unless otherwise required by Law or regulatory policies.*

4 x 19135 (EAL & OHGA) → 857-6

Report Number: **WN03/3237/R**

NSW Agriculture
Diagnostic and Analytical Services
Environmental Laboratory, WOLLONGBAR NSW 2477
Phone 02 6626 1261, Fax 02 6626 1276

Owner ENVIRONMENTAL ANALYSIS LAB
EAST LISMORE

Submitted: 10.9.03
Received: 11.9.03

Submitter G LANCASTER

Samples received: 1 x water (Order No 171288)
The samples have been assigned the following laboratory numbers. Lab No 10262/ E0980/1

Pesticide Analysis

Method	Number	Date of Analysis
Water pesticide screen	2629	16&18/9/03

Laboratory No	Limit of reporting	10262
Sample ID		E0980/1
Organochlorine mg/L	0.0003	<0.0003
Organophosphate mg/L	0.001	<0.001
PCB mg/L	0.003	<0.003

Organochlorine analysis screens for the following chemicals – aldrin, cis-chlordane, trans-chlordane, oxychlordane, HCB, DDD, DDE, DDT,alpha-BHC, beta-BHC, delta-BHC, lindane, dieldrin, endrin, heptachlor, heptachlor epoxide, alpha-endosulfan, beta-endosulfan, endosulfan sulfate and methoxychlor.

Organophosphate analysis screens for the following chemicals:- bromophos ethyl, carbophenothion, chlorfenvinphos, chlorpyrifos, chlorpyrifos methyl, diazinon, dichlorvos, dioxathion, ethion, fenchlorphos, fenitrothion, fenthion, malathion, methacrifos, and pirimiphos methyl.

MICHAEL KARKKAINEN
TECHNICAL OFFICER
22 SEPTEMBER, 2003 MAT

FINAL REPORT G LANCASTER

- *This report supersedes any previous report with this Report Number (see top right of this page).*
- *These results apply to the sample(s) as provided.*
- *This report should not be reproduced except in full.*
- *Samples will be retained for one month from the date of the final report. Samples will then be discarded. Clients wishing to recover their samples must contact the laboratory within this period. The laboratory will return residual samples at client expense when requested.*
- *Test results and findings may be provided to authorised staff and used for statistical, surveillance, extension, certification and regulatory purposes in accordance with Departmental policies. The information assists disease and residue control programs and underpins market access for agricultural products. The source of the information will remain confidential unless otherwise required by Law or regulatory policies.*

1 x 19190(contract only) - 857-6

NSW Agriculture
Diagnostic and Analytical Services
Environmental Laboratory, WOLLONGBAR NSW 2477
Phone 02 6626 1261, Fax 02 6626 1276

Report Number: **WN03/3275/P**

Owner ENVIRONMENTAL ANALYSIS LAB'
EAST LISMORE

Submitted: 15.9.03
Received: 15.9.03

Submitter MR G LANCASTER
ENVIRONMENTAL ANALYSIS LAB, EAST LISMORE NSW 2480

Samples received: 2 x soil - Order # 171288
The samples have been assigned the following laboratory numbers. Lab No 10299 / E1002/1; 10300 / E1002/2

Soil Pesticide Analysis

Method	Number	Date of Analysis
Soil pesticide screen	2625	19 September, 2003

Laboratory No		Limit of reporting	10299	10300
Sample ID	Unit		E1002/1	E1002/2
Organochlorine	mg/kg	0.02	<0.02	<0.02
Organophosphate	mg/kg	0.1	<0.1	<0.1
PCB	mg/kg	0.2	<0.2	<0.2

Organochlorine analysis screens for the following chemicals -- aldrin, cis-chlordane, trans-chlordane, oxychlordane, HCB, DDD, DDE, DDT,alpha-BHC, beta-BHC, delta-BHC, lindane, dieldrin, endrin, heptachlor, heptachlor epoxide, alpha-endosulfan, beta-endosulfan, endosulfan sulfate and methoxychlor.

Organophosphate analysis screens for the following chemicals:- bromophos ethyl, carbophenothion, chlorfenvinphos, chlorpyrifos, chlorpyrifos methyl, diazinon, dichlorvos, dimethoate, dioxathion, ethion, fenchlorphos, fenitrothion, fenthion, malathion, methacrifos, and pirimiphos methyl.

MICHAEL KARKKAINEN
TECHNICAL OFFICER
23 SEPTEMBER, 2003 MAT

FINAL REPORT G LANCASTER
VO RESIDUES

- *This report supersedes any previous report with this Report Number (see top right of this page).*
- *These results apply to the sample(s) as provided and are expressed on a dry weight basis unless otherwise stated.*
- *This report should not be reproduced except in full.*
- *Samples will be retained for one month from the date of the final report. Samples will then be discarded. Clients wishing to recover their samples must contact the laboratory within this period. The laboratory will return residual samples at client expense when requested.*
- *Test results and findings may be provided to authorised staff and used for statistical, surveillance, extension, certification and regulatory purposes in accordance with Departmental policies. The information assists disease and residue control programs and underpins market access for agricultural products. The source of the information will remain confidential unless otherwise required by Law or regulatory policies.*

2 x 19135 (EAL & OHGA) → 857-6

NSW Agriculture
Diagnostic and Analytical Services
Environmental Laboratory, WOLLONGBAR NSW 2477
Phone 02 6626 1261, Fax 02 6626 1276

Report Number: **WN03/3276**

Owner ENVIRONMENTAL ANALYSIS LABORATORY
EAST LISMORE

Submitted: 15.9.03
Received: 15.9.03

Submitter MR G LANCASTER
ENVIRONMENTAL ANALYSIS LAB, EAST LISMORE NSW 2480

Samples received: 1 x soil - Order # 171288
The samples have been assigned the following laboratory numbers. **Lab No 10298 / E1003/1**

Pesticide Analysis

Method	Number	Date of Analysis
Water pesticide screen	**2629**	**16&18/9/03**

Laboratory No	**Limit of reporting**	**10298**
Sample ID		**E1003/1**
Organochlorine mg/L	0.0003	**<0.0003**
Organophosphate mg/L	0.001	**<0.001**
PCB mg/L	0.003	**<0.003**

Organochlorine analysis screens for the following chemicals -- aldrin, cis-chlordane, trans-chlordane, oxychlordane, HCB, DDD, DDE, DDT,alpha-BHC, beta-BHC, delta-BHC, lindane, dieldrin, endrin, heptachlor, heptachlor epoxide, alpha-endosulfan, beta-endosulfan, endosulfan sulfate and methoxychlor.

Organophosphate analysis screens for the following chemicals:- bromophos ethyl, carbophenothion, chlorfenvinphos, chlorpyrifos, chlorpyrifos methyl, diazinon, dichlorvos, dioxathion, ethion, fenchlorphos, fenitrothion, fenthion, malathion, methacrifos, and pirimiphos methyl.

MICHAEL KARKKAINEN
TECHNICAL OFFICER
22 SEPTEMBER, 2003 MAT

FINAL REPORT G LANCASTER

- *This report supersedes any previous report with this Report Number (see top right of this page).*
- *These results apply to the sample(s) as provided.*
- *This report should not be reproduced except in full.*
- *Samples will be retained for one month from the date of the final report. Samples will then be discarded. Clients wishing to recover their samples must contact the laboratory within this period. The laboratory will return residual samples at client expense when requested.*
- *Test results and findings may be provided to authorised staff and used for statistical, surveillance, extension, certification and regulatory purposes in accordance with Departmental policies. The information assists disease and residue control programs and underpins market access for agricultural products. The source of the information will remain confidential unless otherwise required by Law or regulatory policies.*

1 x 19190(contract only) - 857-6

Laboratory Test Request

Ardill Payne and Partners

Client: Ardill Payne and Partners
Address: PO Box 20, Ballina, NSW, 2478
Phone: 02 6686 3280 *Fax:* 02 6686 7920
Sampler Brian Oberdorf

Please Quote Job No on Invoices: **5028**
Project: Proposed Subdivision
Location: Lennox Head

Lab ID	Sample ID	Description	Date	Time	Matrix	Container	Laboratory Analysis Required: Composite - C1	Composite - C2	Composite - C3	Composite - C4		Metals - S4	Pesticide Screen						
		S1	9/09/03	1:30pm	S	GL	X												
		S2	9/09/03		S	GL	X					X	X						
		S3	9/09/03		S	GL	X												
		S4	9/09/03		S	GL		X											
		S5	9/09/03		S	GL		X				X	X						
		S6	9/09/03	to	S	GL		X											
		S7	9/09/03		S	GL			X										
		S8	9/09/03		S	GL			X			X	X						
		S9	9/09/03		S	GL			X										
		S10	9/09/03		S	GL				X									
		S11	9/09/03		S	GL				X		X	X						
		S12	9/09/03	4:00pm	S	GL				X									

Chain of Custody
Relinquished By: Brian Oberdorf Date/Time: 10/09/03
Signature: B. Oberdorf
Received By: BAC Date/Time: 10/9/03
Signature: Kate Whitney

Requests or Special Instructions: Samples kept chilled

HOW QUICKLY CAN WE GET THESE RESULTS? CAN YOU PLEASE CALL ME THANKS BO

Laboratory Test Request

Ardill Payne and Partners

Client: Ardill Payne and Partners
Address: PO Box 20, Ballina, NSW, 2478
Phone: 02 6686 3280 *Fax:* 02 6686 7920
Sampler Brian Oberdorf

Please Quote Job No on Invoices: **5028**
Project: Proposed Subdivision
Location: Lennox Head

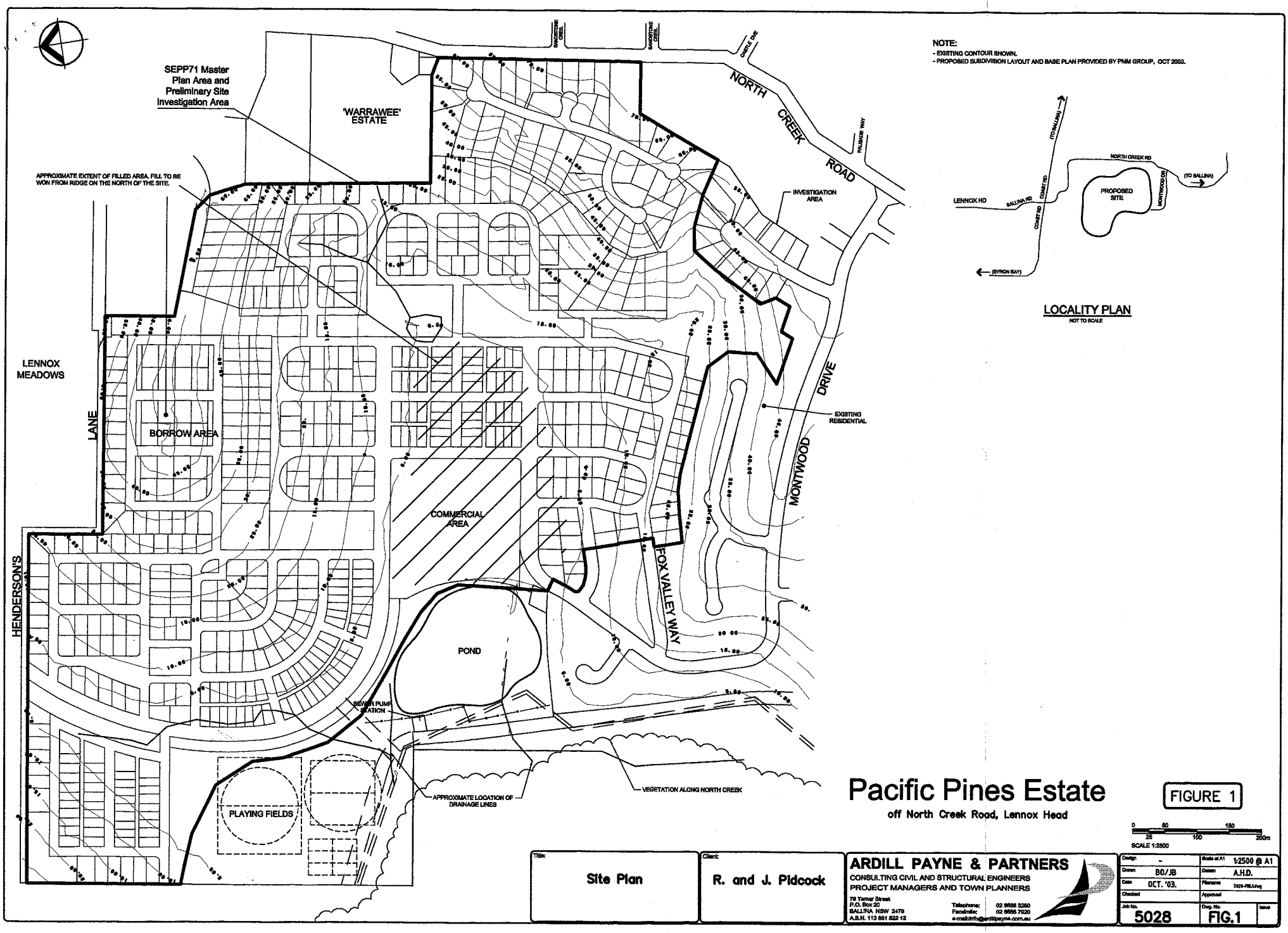
Lab ID	Sample ID	Description	Date	Time	Matrix	Container	Laboratory Analysis Required: Metals - S4	Pesticide Screen											
		WB1	9/09/03	3:30pm	W	GL	x	x											

Chain of Custody
Relinquished By: Brian Oberdorf
Signature:
Date/Time: 10/09/03

Received By: EAC
Signature: Katie Watkins
Date/Time: 10-9-03

Requests or Special Instructions: Samples kept chilled

Figure Pages



Pacific Pines Estate

off North Creek Road, Lennox Head

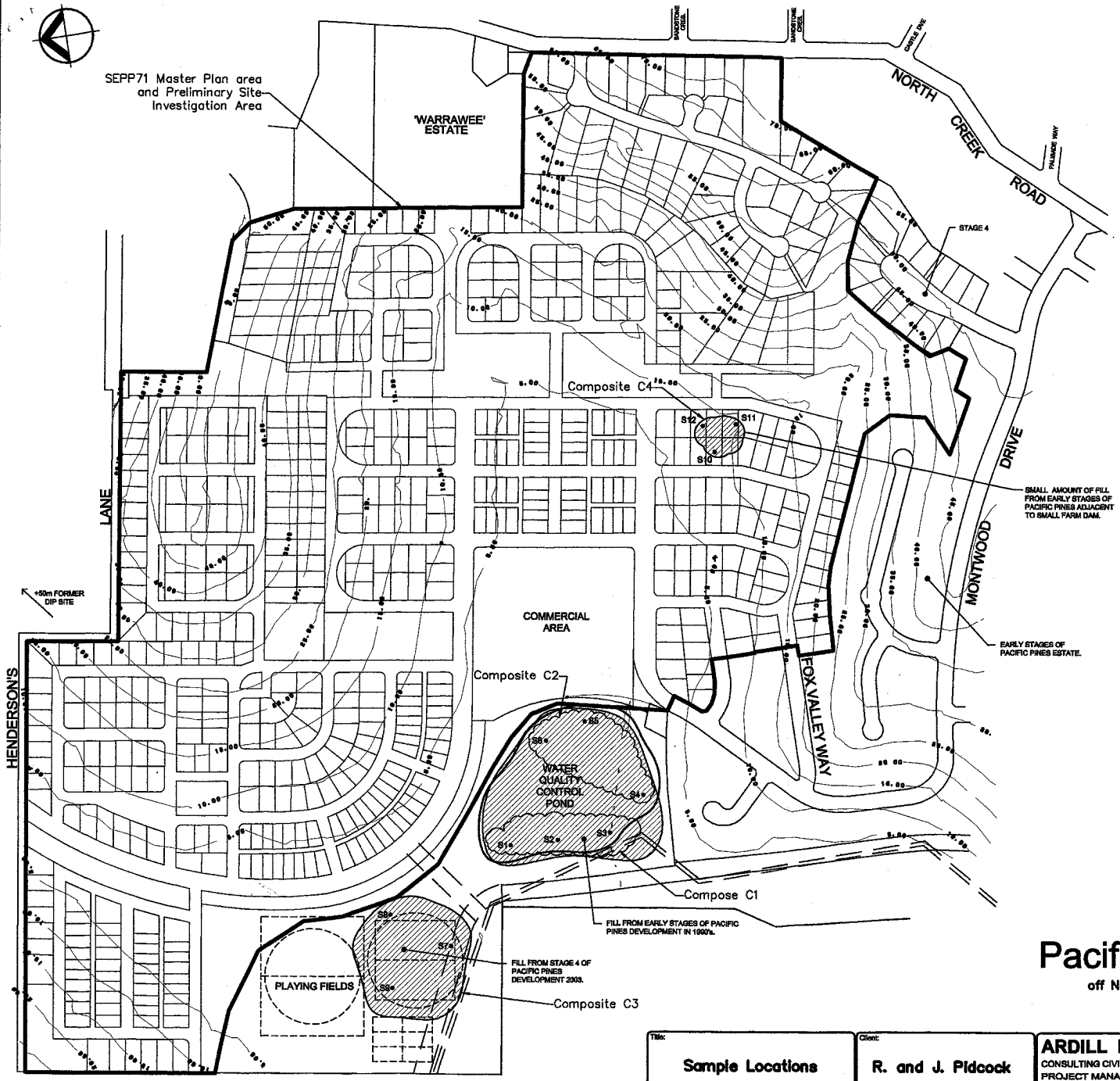
FIGURE 1

SCALE 1:2500

Title:	Site Plan
Client:	R. and J. Pidcock

ARDILL PAYNE & PARTNERS
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
PROJECT MANAGERS AND TOWN PLANNERS
79 Tamar Street
P.O. Box 20
BALLINA NSW 2478
A.B.N. 113 661 822 12
Telephone: 02 6686 3280
Facsimile: 02 6686 7020
e-mail:info@ardillpayne.com.au

Design	-	Scale at A1	1:2500 @ A1
Drawn	BO/JB	Datum	A.H.D.
Date	OCT. '03.	Filename	5028-FIG1.dwg
Checked		Approved	
Job No.	5028	Dwg. No.	FIG.1
		Issue	



NOTE:
- EXTENT OF FILL APPROXIMATE ONLY BASED ON SITE INSPECTION.
- FILL FROM WQCP AND ADJACENT TO SMALL FARM DAM TO BE PLACED ON PLAYING FIELD AND TO BE DRESSED WITH SUITABLE TOPSOIL.
- REMAINDER OF SITE ESSENTIALLY NATURAL CONTOURS COMPRISING CLEARED GRAZING LAND.

SAMPLE TABLE

SAMPLE	DESCRIPTION
S1	0-0.5m FILL STOCKPILE ON WQCP – CLAYEY SILT
S2	0-0.15m FILL STOCKPILE ON WQCP – CLAYEY SILT/SILTY CLAY
S3	0-0.15m FILL STOCKPILE ON WQCP – CLAYEY SILT/SILTY CLAY
S4	0-0.15m FILL ON WQCP – SANDY CLAY, SOME CONCRETE RUBBLE OBSERVED
S5	0-0.15m FILL ON WQCP – SANDY SILTY CLAY.
S6	0-0.15m FILL ON WQCP – SANDY SILTY CLAY.
S7	0-0.15m OVAL FILL – GRAVELY SILTY CLAY.
S8	0-0.15m OVAL FILL – GRAVELY SILTY CLAY.
S9	0-0.15m OVAL FILL – GRAVELY SILTY CLAY.
S10	0-0.15m FILL STOCKPILE SMALL FARM DAM – GRAVELLY SILTY CLAY.
S11	0-0.15m FILL STOCKPILE SMALL FARM DAM – GRAVELLY SILTY CLAY.
S12	0-0.15m FILL STOCKPILE SMALL FARM DAM – GRAVELLY SILTY CLAY.

NOTE

•Fill associated with Composite Samples C1 and C4 may be used without restriction.

•Fill associated with Composite Samples C2 and C3 had slightly elevated Mercury levels and can be used without restriction on Commercial/Industrial sites or open space/recreational areas. When used on Residential sites it should be covered with 300mm (minimum) of virgin excavated natural material.

Pacific Pines Estate

off North Creek Road, Lennox Head

FIGURE 2

0 50 150
25 100 200m
SCALE 1:2500

Title: Sample Locations

Client: R. and J. Pidcock

ARDILL PAYNE & PARTNERS
CONSULTING CIVIL AND STRUCTURAL ENGINEERS
PROJECT MANAGERS AND TOWN PLANNERS
76 Tamar Street
P.O. Box 20
BALLINA NSW 2478
A.B.N. 113 661 522 12
Telephone: 02 6686 3280
Facsimile: 02 6686 7920
e-mail:info@ardillpayne.com.au

Design	–	Scale at A1	1:2500 @ A1
Drawn	B.O.	Datum	A.H.D.
Date	OCT. '03.	Filename	5028-FIG2.dwg
Checked		Approved	
Job No.	5028	Dwg. No.	FIG.2
		Issue	