

# Moreton Bay Regional Council Acid Sulfate Soils – Bribie Island Area



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## Summary

In 2000, approximately 4000 ha of acid sulfate soils on relatively undisturbed land was identified in the Caboolture Shire, southeast Queensland (Smith *et al.* 2000) based on broad scale 1:100 000 maps. This mapping did not however assess any islands associated with the southeast Queensland coast. Increased development pressure in Caboolture Shire has resulted in the need for more precise data to guide the Council's processes consistent with the *State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils*, and *Integrated Planning Act 1997*.

In 2006, Caboolture Shire Council focussed on the identification of acid sulfate soils in three priority areas along the Shire's coastal zone. The project aim was to develop maps based on medium resolution (ie. 1:50 000) ASS mapping undertaken by the Department of Natural Resources and Water (NRW). This report focuses on 1:50 000 scale acid sulfate soil investigations of 1656 ha of land at the southern end of Bribie Island.

Eighty-two boreholes were undertaken within the study area. Borehole depths ranged from 1.2 m to 10.5 m with all soil profiles described according to McDonald *et al.* (1990) and field pH tests carried out at 0.25 m intervals according to the *Sampling Guidelines* (Ahern *et al.* 1998). Collected samples were submitted for laboratory analysis using the Suspension Peroxide Oxidation Combined Acidity and Sulfur (SPOCAS) method (Ahern *et al.* 2004) and/or the Chromium Reducible Sulfur ( $S_{CR}$ ) method (Sullivan *et al.* 2004). All laboratory analyses were carried out in accordance with the *Acid Sulfate Soils Laboratory Methods Guidelines* (Ahern *et al.* 2004). Map units were allocated a mapping code (S) and a depth code according to the depth at which the first PASS layer was encountered based on laboratory data. Colouring on the acid sulfate soil map displays the depth and associated risk.

This assessment identified potential acid sulfate soils (PASS) throughout the study area. Depth to PASS ranged from less than 0.5 m to greater than 8 m with a maximum of 1.9 %S recorded (as measured by the SPOCAS and or Chromium Reducible Sulfur methods). Although no actual acid sulfate soil (AASS) layers were identified; some boreholes were found to have measurable amounts of existing acidity generally associated with organic acids and indurated sands. Natural buffering agents in the form of shell were observed in a number of the boreholes; however quantities were generally insufficient for self neutralisation.

These results indicate the need for caution in planning and managing developments in the Bribie area so as to avoid costly damage to the environment and local infrastructure. Additional investigation will be required prior to construction or excavation to satisfy the recommendations of the *Sampling Guidelines* (Ahern *et al.* 1998).



## 1. Introduction

In recent years, increasing development pressures, particularly in coastal areas of southeast Queensland, have resulted in the need for more detailed information about acid sulfate soils (ASS). In 2006 a jointly funded project between the Caboolture Shire Council and the Department of Natural Resources and Water led to the commencement of medium intensity (1:50 000) ASS mapping in low lying areas of Caboolture Shire ie. below 5 m Australian Height Datum (AHD). Three key areas were identified by Shire representatives (Beachmere, Bribie Island and Toorbul–Donnybrook).

This report details the 1:50 000 scale ASS mapping undertaken by the Department of Natural Resources and Water on the southern end of Bribie Island (**Figure 1**). The aim of the medium intensity work was to identify the presence, depth and net acidity of ASS and present the results as a map along with an accompanying report. This information will enable better management of ASS on Bribie Island.

## 2. Overview of acid sulfate soils

Acid sulfate soil (ASS) is the name given to naturally occurring sediments (sands, silts, or clays) that commonly occur in low-lying, very poorly drained, coastal land at elevations less than 5 m AHD. These sediments contain sulfides—primarily iron sulfides or pyrite ( $\text{FeS}_2$ ). Excavating soil or sediment, extracting groundwater or filling land may cause disturbance of ASS resulting in the oxidation of sulfides and the subsequent production of sulfuric acid. This can have major environmental, health, and engineering impacts.

Disturbed land can release acid, aluminium, iron and heavy metals into drainage waters affecting aquatic plants and animals (Sammut *et al.* 1996). Concrete and steel infrastructure including pipes, foundations and bridges are susceptible to acidic corrosion leading to accelerated structural failure. Other potential impacts include deoxygenation of waterways (Bush *et al.* 2002) and blooms of cyanobacteria such as *Lyngbya majuscula* due to the excess iron.

In an undisturbed, waterlogged state ASS may range from dark grey silty clays to grey sands and peat with pH values close to neutral (6.5–7.5). In this state they are termed potential acid sulfate soils (PASS) because they have the potential to oxidise and produce sulfuric acid. When ASS are exposed to air, the sulfides oxidise and sulfuric acid is produced (for example: one tonne of iron sulfides can produce about 1.5 tonnes of sulfuric acid when oxidised). In this state they are known as actual acid sulfate soils (AASS). AASS are very acidic (pH <4), and often contain a straw yellow coloured mineral called jarosite. The term ASS includes both AASS and PASS. AASS and PASS are often found in the same soil profile, with AASS generally overlying PASS as surface layers are more likely to be exposed to oxidation.

In general the sediments in which ASS form were laid down during periods of high sea level similar to those we know today. These high sea levels (which correlate with interglacial periods), have occurred twice in the last 150 000 years. Although it is generally recognised that the majority of ASS occur in sediments deposited in the last 10 000 years (Holocene epoch), it is useful to look further back in time to gain a better understanding of their deposition. The key features are (i) the limits of sea level inundation and (ii) the conditions for sediment deposition in these areas. These are explored below.

During the previous interglacial period within the Pleistocene epoch (120 000 to 140 000 years BP), evidence suggests that sea levels rose several metres higher than present (Pickett *et al.* 1985). This caused the drowning of river valleys and low lying coastal areas. In general, shorelines and floodplains were pushed many kilometres west and estuaries similar to those of today were formed. After this high, sea level receded and then fluctuated between 80 m and 140 m below present (Hekel and Day 1976). During this time, rivers and creeks cut deep channels through the previously deposited fluvial and estuarine sediments removing some and isolating others.

The most recent sea level rise (post glacial marine transgression) commenced approximately 18 000–19 000 years ago. At this time sea level was estimated to be 140 m lower than present with the shoreline up to 40 km east of where it is today (Jones 1992). At the commencement of the Holocene (10 000 years ago), sea level was approximately 25 m below present and still rising (Thom 1981) with present sea level being

reached around 6500 years ago (Thom and Roy 1985). There is evidence to suggest that minor rises of up to 1.5 metres occurred along the southern Queensland coast sometime after this with sea level returning to its present position around 4000 years ago (Lang *et al.* 1998).

The rapid rate of sea level rise during the Holocene exceeded the rates of coastal deposition and thus valleys and low lying coastal areas were drowned just as they were during the Pleistocene. Once sea level rise stabilised (termed still stand), new estuaries were formed and coastal deposition processes were able to commence filling the newly created subaqueous space (Graham and Larsen 1999).

### 3. Survey area

The Bribie Island high priority ASS study area comprises 1656 ha at the southern end of the Island (excluding the Bribie Island National Park). The boundary of the study area can be seen in red on **Figure 1**. Land use in the study area is dominated by residential development north of First Avenue. South of First Avenue there is some development at Bongaree and Woorim whilst the remainder of the land is relatively undisturbed apart from the sewerage treatment plant and local golf course.

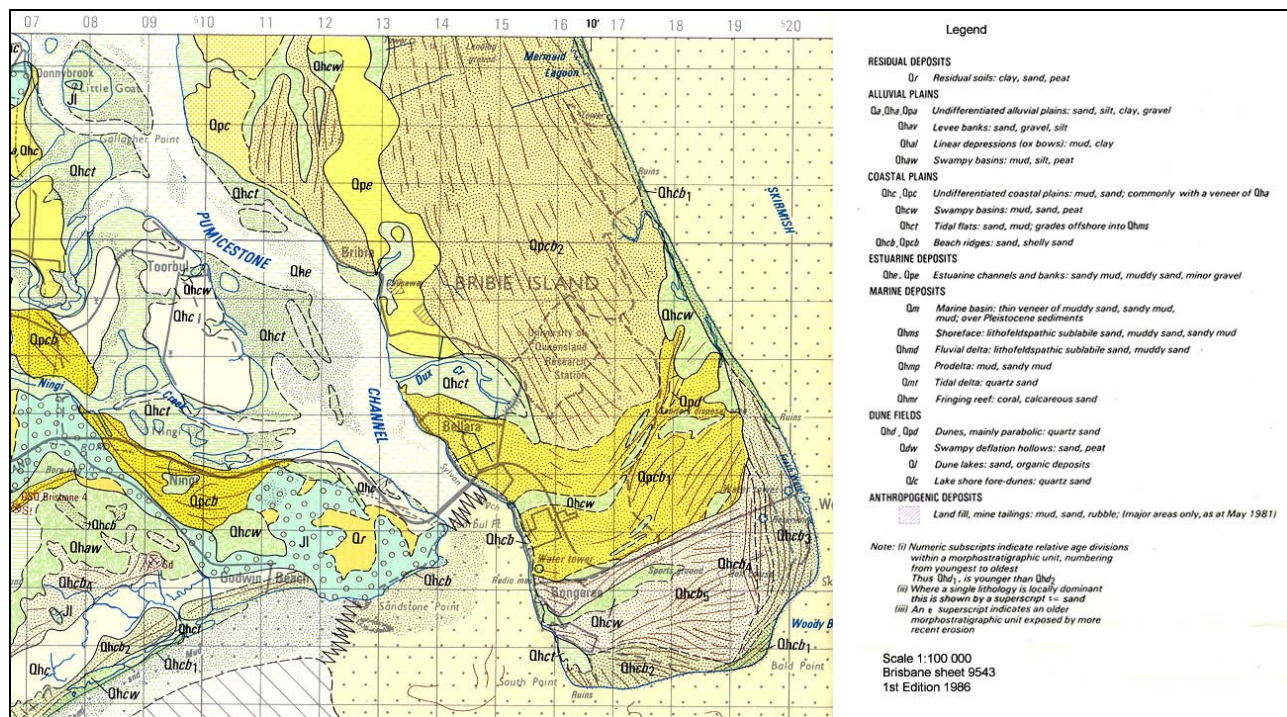


**Figure 1.** Bribie Island high priority acid sulfate soil study area

Bribie Island is described as a strand plain, formed during Pleistocene sea level highs approximately 120 000 to 140 000 years ago (Armstrong 1990). The southern end of the island (south of the current First Avenue road alignment) was re-inundated by Holocene sea level highs approximately 6500 years ago and the elaborate beach ridge formations which now dominate south of First Avenue appear to have been accreted as sea level fell back to its current level (Armstrong 1990).

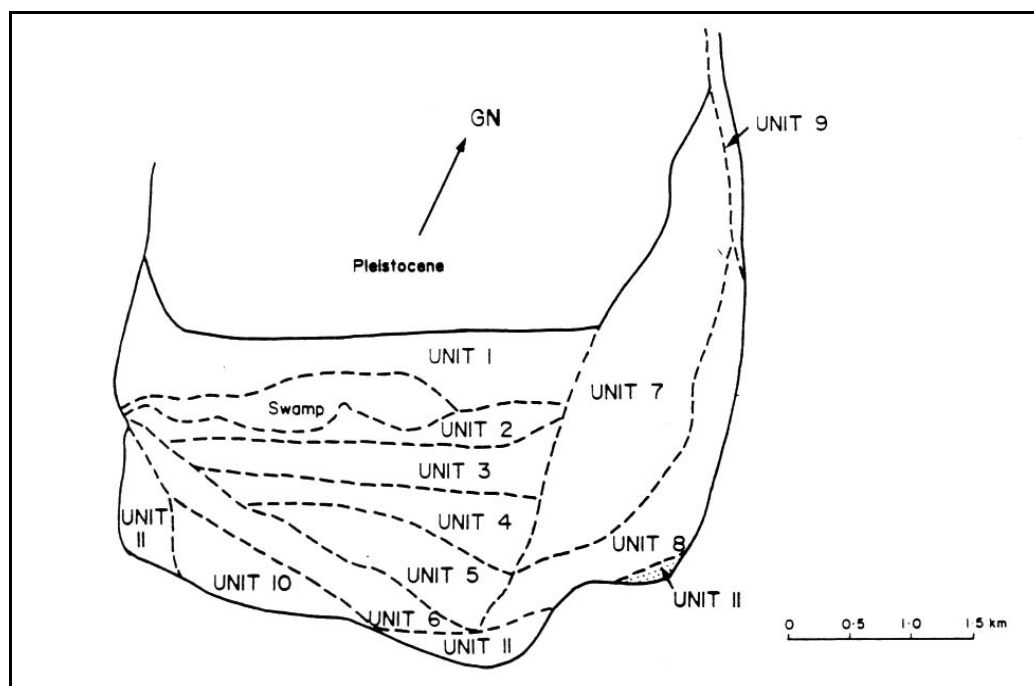


Geology mapping shows the project area to be characterised by coastal plain beach ridge deposits dominated by sands and shelly sands of Holocene and Pleistocene age (Cranfield *et al.* 1986). The road running from Bongaree to Woorim (First Avenue) marks the general boundary between the Pleistocene sediment deposits to the north and the Holocene deposits to the south (**Figure 2**).



**Figure 2.** Geology map of the study area. (from: Brisbane 1:100 000 Geology sheet Cranfield *et al.* 1986)

Armstrong (1990) identified eleven Holocene beach-ridge units south of First Avenue (**Figure 3**). Each unit consists of a set of parallel foredune sand ridges comprised of well sorted fine to medium grained sands. The units are numbered from 1 to 11 with the oldest (number 1) being adjacent to the Pleistocene dunes near First Avenue and the youngest (number 11) being toward on the southern end of the island. The low felspar and lithic content is evidence that the sands are of marine origin and from a similar source (Lang *et al.* 1990).



**Figure 3.** Holocene sedimentary evolution of southern Brisbane Island: unit 1 oldest, unit 11 youngest (1986 coastline shown) (Armstrong 1990) (GN = grid north)

Ishaq (1980) investigated the depth of Holocene and Pleistocene sediments on Bribie Islands southern end as part of a hydro-geological survey in the area. This work showed that sandstone of the Landsborough sandstone formation underlies much of the study area at depths which vary from 6 m in the north to 26 m in the southeast. By interpreting borehole logs from his hydrogeological survey, Ishaq (1980) produced a 3-dimensional geological block diagram (Figure 4) which shows the subsurface variability of the study area.

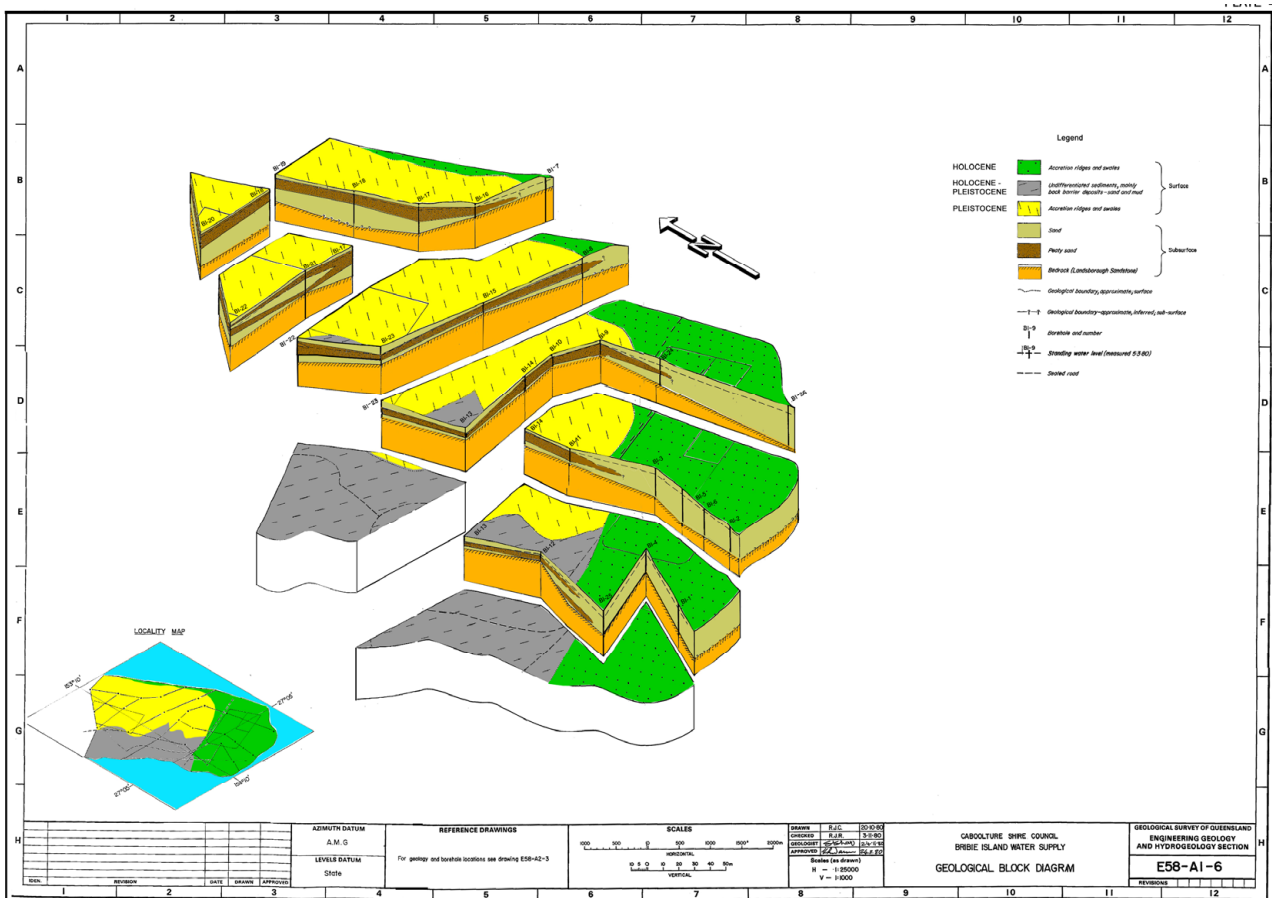


Figure 4. Geological block diagram from Ishaq (1980)

#### 4. Methodology

Prior to the commencement of field work, 1958 black and white aerial photography, geological maps and elevation data were reviewed and used to determine possible borehole locations. A pre-field reconnaissance and inspection identified access difficulties due to dense natural vegetation and the limited number of vehicle access tracks. During the following field work phase, 1656 ha of land was investigated for ASS using the free survey technique of Reid (1988). Eighty-two boreholes were completed (primarily along vehicle tracks to avoid vegetation damage) at an average intensity of 1 borehole per 20 hectares which is within the limits of 1:50 000 scale mapping according to Reid (1988). Borehole depth<sup>1</sup> ranged from 1.2 m to 10.5 m and in all, 1428 soil samples were collected and stored, with 726 of these samples submitted for laboratory analysis.

<sup>1</sup> In general, for ASS mapping purposes, it is assumed that the top of most ASS deposits commence at a level correlating to Holocene high sea levels which have been estimated to be the same or up to one metre higher than present. Borehole depth is therefore determined by ground surface elevation relative to sea level with aim being to sample at least to 0 m AHD where possible. To ascertain maximum depth of sulfidic sediments in an area an attempt will be made in some boreholes to reach non-sulfidic basement materials. In areas where ground surface elevations are below 5 m, the standard depth is approximately 6 m unless basement materials are encountered.

#### 4.1. Sampling equipment

The majority of boreholes were completed using a Geoprobe® model 6610DT coring machine. The Geoprobe (Plate 1) is a track-mounted machine that obtains a 38 mm soil core in 1.5 m long removable clear PVC liners. The samples were logged immediately after retrieval. Other sampling equipment used included dormer brand gouge augers and soil augers (Plate 2).



Plate 1. Geoprobe model 6610DT coring machine



Plate 2. Dormer gouge auger and hand augers

## 4.2. Soil profile recording and sampling

All profiles were described according to the methodology of McDonald *et al.* (1990) and classified by the Australian Soil Classification (Isbell 1996). Soil properties described included horizon depth, colour, mottles, texture, segregations and coarse fragments (eg. shell). Soil pH was recorded with an electronic meter at 0.25 m intervals down the profile at all sites, firstly in a soil:water paste ( $\text{pH}_F$ ), and secondly after oxidation with 30% hydrogen peroxide ( $\text{pH}_{\text{FOX}}$ ). The level of effervescence produced during the  $\text{pH}_{\text{FOX}}$  test was also recorded.

Profiles were sampled for laboratory analysis according to the *Sampling Guidelines* (Ahern *et al.* 1998) at the following intervals (except where these crossed horizon boundaries): 0–0.1 m, 0.2–0.3 m, 0.5–0.6 m, 0.8–1.0 m and then at intervals of 0.5 m. Samples of approximately 500 grams were placed in sealed plastic bags and refrigerated immediately. Upon returning to the laboratory, all samples were dried and ground. Due to budget restrictions, not all of these soil samples were submitted for laboratory analysis—with sample selection based on field pH test results and soil morphological descriptions. The remaining soil samples have been kept for long term storage in the event that further analysis is required.

## 4.3. Database recording

All field and laboratory data was entered into the Soil and Land Information (SALI) database, designed specifically for land resource surveys conducted by the Department of Natural Resources and Water. Terminology and codes in SALI are fully compliant with the *Australian Soil and Land Survey Field Handbook* (McDonald *et al.* 1990).

## 4.4. Laboratory analysis

Laboratory analyses are performed to quantify net acidity (ie. actual acidity plus potential acidity less any naturally occurring acid buffering capacity) with the choice of the methodology being determined by whether the soil layer in question, is deemed AASS or PASS according to field morphology. Two laboratory methods have been used to determine the net acidity with all laboratory analysis carried out in accordance with the *Acid Sulfate Soils Laboratory Methods Guidelines* (Ahern *et al.* 2004). Please see the Glossary (Section 8) for detailed explanation of laboratory terms and acronyms.

A summarised version of the laboratory data displaying actual acidity, potential acidity, net acidity and liming rate (including a 1.5 safety factor) is provided in **Appendix 2**. (Full details of laboratory analysis are available upon request from NRW). Due to budget constraints only selected samples were analysed for full SPOCAS analysis to determine actual acidity and self neutralising capacity. The samples selected for analysis were based on the morphological data collected at the site. The method column in **Appendix 2** shows the method used to calculate net acidity.

### 4.4.1. Chromium Reducible Sulfur ( $S_{\text{CR}}$ )

The Chromium Reducible Sulfur ( $S_{\text{CR}}$ ) method (Method 22B) is described by Sullivan *et al.* (2004). This method measures reduced inorganic sulfur compounds including pyrite (and other iron disulfides), acid volatile sulfides (AVS) and elemental sulfur. The method can be made specific to the iron disulfide fraction with appropriate pre-treatments to remove AVS and elemental sulfur fractions. The Chromium Reducible Sulfur method is the preferred method for low analysis sands and for highly organic or peaty soil because of its specificity to reduced inorganic sulfur, while not determining organic sulfur. The method does not measure existing acidity. A total of 663 samples were analysed using this method.

### 4.4.2. Suspension Peroxide Oxidation Combined Acidity and Sulfur method (SPOCAS)

The Suspension Peroxide Oxidation Combined Acidity and Sulfur (SPOCAS) method (Method 23) is described by Ahern *et al.* (2004). This method measures both the ‘acid trail’ and the ‘sulfur trail’ providing data on pH, retained acidity ( $S_{\text{RAS}}$ ), actual acidity (TAA) and potential acidity ( $S_{\text{POS}}$ , TPA). The method also provides a measure of neutralising capacity ( $\text{Ca}_A$ ,  $\text{Mg}_A$ ). A total of 63 samples were analysed using this method.

### 4.4.3. Peroxide Residual Acid Soluble Sulfur ( $S_{\text{RAS}}$ )

The Peroxide Residual Acid Soluble Sulfur ( $S_{\text{RAS}}$ ) method (Method 23R) is described by Ahern *et al.* (2004). After peroxide digest and TPA titration the soil residue may contain insoluble sulfur (eg. in jarosite or

similar relatively insoluble iron and aluminium hydroxy sulfate compounds) which was either present initially in the soil or formed during peroxide oxidation. This sulfur represents a store of retained acidity (not measured in the TPA titration) that may be estimated after overnight (16 hrs) 4M HCl extraction of the washed soil residue. On soil where the presence of jarosite is suspected (eg. if  $\text{pH}_{\text{KCl}} < 4.5$  or jarosite has been noted in accompanying field sampling notes), it is strongly recommended that residue analysis for sulfur is performed.

#### 4.4.4. Determination of PASS or AASS

The determination of which horizons constitute an actual acid sulfate soil (AASS) or potential acid sulfate soil (PASS) was based on an assessment of field morphological properties (eg. texture, soil colour, mottles and coarse fragments such as shell), field pH test results and laboratory results. The texture-based action criteria of Ahern *et al.* (1998) were used to identify ASS based on laboratory results. The action criteria are based on soil texture and the sum of existing acidity plus potential acidity less any neutralising capacity (ie. net acidity) (**Table 1**). Potential acidity (PASS) was assessed using  $S_{\text{CR}}$  and  $S_{\text{POS}}$  analytical results. If these values met or exceeded the action criteria, the soil was identified as PASS. AASS were determined by the presence of jarosite, TAA results as well as field pH ( $\text{pH}_{\text{F}}$ ) and/or laboratory ( $\text{pH}_{\text{KCl}}$ ) values of 4 or less. Neutralising capacity was assessed using a combination of  $\text{ANC}_{\text{E}}$ ,  $\text{Ca}_{\text{A}}$ ,  $\text{Mg}_{\text{A}}$ , TPA,  $\text{ANC}_{\text{BT}}$  and pH results. Analytical results are displayed in **Appendix 2**.

**Table 1.** Texture based action criteria (after Ahern *et al.* 1998)

Soil Texture (clay content %)	Equivalent sulfur (%S)	Equivalent acidity (moles $\text{H}^+$ /tonne soil)
Sands to loamy sands ( $\leq 5$ )	0.03	18
Loams to light clays (5–40)	0.06	36
Medium to heavy clays ( $\geq 40$ )	0.1	62

- **Potential acid sulfate soils (PASS)** were assessed using  $S_{\text{CR}}$  and  $S_{\text{POS}}$  analytical results.
- **Actual acid sulfate soils (AASS)** were determined by the presence of jarosite, TAA results as well as field pH ( $\text{pH}_{\text{F}}$ ) and/or laboratory ( $\text{pH}_{\text{KCl}}$ ) values of 4 or less.
- **Neutralising capacity** was assessed using a combination of  $\text{ANCE}$ ,  $\text{CaA}$ ,  $\text{MgA}$ , TPA,  $\text{ANCBT}$  and pH.

#### 4.5. Description of ASS mapping units

The mapping process is a way of presenting complex 3-dimensional data in a 2-dimensional format, so that it can be input to management decisions. At 1:50 000 scale, it is broadly possible to identify areas of high hazard. It is not possible however to delineate small areas under several hectares in size.

Where variability in depth to acid sulfate soils occurs between boreholes in an area and it is difficult to determine map unit boundaries then the unit is generally classified according to the shallowest depth that ASS materials were encountered.

The map units identify areas delineated by:

- the depth of soil at which actual or potential acidity is first encountered; the prefix “A” refers to an actual acid sulfate soil layer ( $\text{pH} \leq 4$ ), while the prefix “a” refers to an acidic soil layer ( $\text{pH} > 4 \leq 5$ ) that may or may not be the result of ASS oxidation. The prefix “S” refers to a potential acid sulfate soil layer. The numeric component of the map code refers to the depth at which these layers occur [0 = (0 to 0.5 m), 1 = (>0.5 to 1.0 m), 2 = (>1 to 2 m), 3 = (>2 to 3 m), 4 = (>3 to 4 m), 5 = (>4 to 5 m)];
- the codes can be used separately (eg. S0, S1); or in combination where a map unit contains both AASS and PASS layers or acidic layers (eg. A0S1, a0S2);
- where major disturbance such as that from development has taken place the suffix  $\text{DL}$  is used (eg. a0S2DL)
- where an area is likely to have ASS but access is restricted, the code SLA is used.

## 5. Mapping units of the study area

The attached acid sulfate soils map displays the map units identified in the study area.

Table 2 shows the total area of each mapping unit along with the percentage of the 1656 ha total area that is occupied by each unit.

Table 2. Area of mapping units

Map Unit	Area (ha)	Mapping area (%)
S0	18.1	1.1
S2	172.0	10.4
S2 <sub>DL</sub>	207.2	12.5
S3	77.1	4.7
S4 <sub>DL</sub>	85.0	5.1
S5	249.3	15.1
S5 <sub>DL</sub>	64.0	3.9
S5 <sup>+</sup>	474.0	28.5
S5 <sup>+</sup> <sub>DL</sub>	197.1	11.9
SLA	112.2	6.8
TOTAL	1656.0	100.0

### 5.1. S0 – Relatively undisturbed land with PASS within 0.5 m of the soil surface

Two small S0 map units totalling 18.1 ha were mapped on the western side of the study area. Both of these units represent the lower ends of drainage lines that run into Pumicestone Passage. The southern most S0 unit of 8.4 ha in size is connected to the large swamp that runs parallel and immediately south of First Avenue. Elevations were approximately 1–2 m and it is likely that this area represented the former southern end of Bribie Island at the end of the Pleistocene. Cab site 171 (Plate 3) was classified as a Sulfidic Redoxic Hydrosol and was sampled to a depth of 7.2 m. The soil profile consisted of dark loamy sands to 0.4 m over pale grey brown sulfidic (0.12 %S) sands to 1 m over sulfidic (up to 0.16 %S) grey sands to approximately 5 m. Below this were dark grey sulfidic clayey sands containing shell fragments to 7.2 m (Plate 4).



Plate 3. CAB site 171 location



**Plate 4.** CAB site 171 soil profile composite

The northern S0 unit covers approximately 9.7 ha with elevations ranging from 1.5 to 2.5 m. This unit is comprised of a small creek which drains the area to the south and southeast of Bribie gardens estate. At the lower end adjacent to Pumicestone Passage small areas tidal flats occur. Two boreholes were undertaken in this unit. CAB 180 was sampled using a dormer gouge auger on a tidal flat (**Plate 5**) whilst CAB 181 was undertaken with mechanical equipment on the more slightly elevated adjacent sand plain (**Plate 6**).

The soil profile of CAB 180 (**Plate 7**) was classified as a Sulfidic Intertidal Hydrosol and displayed sulfidic (up to 0.82 %S) grey sandy clay loams from the surface to 0.85 m over sulfidic (0.92 %S) dark greenish grey clay to 1.2 m. Below 1.2 m impenetrable dark indurated sands were encountered. CAB 181 showed an aquic podosol over sulfidic horizons. The profile (**Plate 8**) showed mottled dark grey sandy loams to 0.55 m over sulfidic (0.04 %S) dark grey and brown loamy sands to 0.95 m over sulfidic (0.075 %S) dark brown to black loamy indurated sands to 2.6 m. Below this were sulfidic (up to 1.14 %S) loamy sands containing rounded quartz pebbles 6–20 mm in diameter.



**Plate 5.** CAB 180 site location



**Plate 6.** CAB 181 site location



**Plate 7.** CAB site 180 soil profile



**Plate 8.** CAB site 181 soil profile



## 5.2. S2 and a0S2 – Relatively undisturbed land with PASS within 1 to 2 m of the soil surface

Three S2 units and one a0S2 unit totalling approximately 172 ha were mapped all of which are associated with broad drainage depressions of 1.5 to 2.5 m elevation, dominated by *Melaleuca* vegetation. The a0S2 unit along with two of the other S2 units occur in the Bellara area immediately north, east and south of Bribie Gardens Canal Estate. The other unit occurs in the large *Melaleuca* swamp that runs in an east-west direction parallel to and just south of First Avenue.

CAB site 123 (**Plate 9**) was located at the edge the large *Melaleuca* swamp south of First Avenue. The soil profile (**Plate 10**) displayed black sandy clay loams to 0.3 m over dark grey and brownish grey loamy sands to 1.10 m grading into sulfidic (up to 0.22 %S) grey sands. From 4.7 m, dark brown indurated sands with lower sulfide levels (0.05 %S) continued to 6 m.



**Plate 9.** CAB site 123 location



**Plate 10.** CAB site 123 soil profile

CAB site 186 (**Plate 11**) was located on the southern edge of the northern S2 unit which appears to feed into the upper reaches of Dux Creek. The unit has been cleared of native vegetation and disturbed. The soil profile (**Plate 12**) consisted of dark sandy clay loams to 0.85 m over grey brown loamy sands to 2 m over sulfidic grey brown loamy sands with up to 0.33 % S to 5.7 m where an abrupt change to non sulfidic clays occurred. These pale clays continued to the borehole depth of 7.5 m and further analyses would likely show

them to be weathered sandstone of the Landsborough group that underlies much of the area. Although the sulfidic layers in this profile were intercepted at approximately 2 m, a conservative approach has been taken resulting in this unit being classified S2 as the site location was undertaken on the more elevated edges of the unit due to inaccessibility of lower areas.



**Plate 11.** CAB 186 location

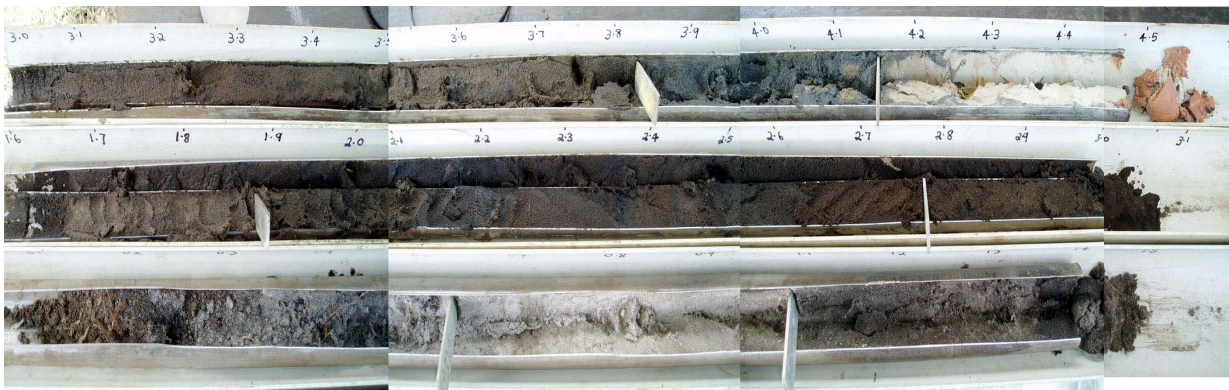


**Plate 12.** CAB site 186 soil profile

CAB site 187 was located in a dense stand of native vegetation within the a0S2 unit East of Bribe Gardens Estate (**Plate 13**). The soil profile (**Plate 14**) displayed dark grey loamy sands to 0.6 m over bleached sands to 1.1 m over dark grey loamy sands to 1.9 m over indurated sand layers with up to 0.07 %S to 3.8 m. Between 3.8 and 4.1 m, a small band of dark sulfidic grey loamy sands with 0.9 %S was deposited above non sulfidic mottled white clay to 4.5 m. Again this white clay is likely to represent older basement materials formed from weathered sandstone. Values of pH 3.8 to 4.0 were recorded in surface samples hence the a0 classification.



**Plate 13.** CAB site 187 location



**Plate 14.** CAB site 187 soil profile

CAB site 174 was located on the western edge of the S2 unit south of Bribie Gardens Estate (**Plate 15**). The soil profile (**Plate 16**) was comprised of grey loamy sands to 0.3 m over pale loamy sands to 0.6 m over yellow brown clayey sands to 0.9 m over grey loamy sand to 1.2 m. Black to brown indurated sands containing up to 0.15 %S continued to 4.1 m with non sulfidic olive brown sandy loams extending to 7.2 m. Below this to 7.5 m were dark grey sulfidic sandy loams with up to 0.13 %S.



**Plate 15.** CAB site 174 location



**Plate 16.** CAB site 174 soil profile

### 5.3. a0S2DL – Disturbed land with PASS within 1 to 2 m of the soil surface

Two a0S2DL units were mapped in the Bellara area. Development in the area made mapping difficult however boreholes undertaken in park areas showed sulfidic sediments to occur at varying depths. CAB site 182 (**Plate 17**) located in a small park reserve in the northern most unit. The soil profile (**Plate 18**) displayed various layers of grey and brown sands to 1.9 m over sulfidic grey sand layers with up to 0.15 %S extending to 5.8 m. Values of pH 4 to pH 5 were recorded in surface samples. Some complexity exists in this unit as borehole 183 had similar profile morphology to CAB site 174 shown on page 18 with sulfidic horizons occurring at greater depth.



**Plate 17.** CAB site 182 location



**Plate 18.** CAB site 182 soil profile

#### 5.4. a0S3 – Relatively undisturbed land with PASS within 2 to 3 m of the soil surface

Two a0S3 units totalling 77 hectares were mapped at the southern end of the study area in beach ridge units 6 and 11 as described by Armstrong (1990). Elevations were generally 2.5 to 3 m and surface pH values ranged from pH 4 to pH 5. CAB site 136 was located in a small swamp (**Plate 19**) within unit 6 approximately 700 metres inland of Bald Point. The profile (**Plate 20**) consisted of dark loamy sands to 0.25 m over pale bleached sands to 1 m over brown sands to 2.7 m. Below this, sulfidic grey brown sands with up to 0.06 %S continued to 4.2 m and overlaid sulfidic (up to 0.18 %S) grey sands and sandy clay loams which continued to 8 m.



**Plate 19.** CAB site 136 location



**Plate 20.** CAB site 136 soil profile

CAB site 131 (**Plate 21**) was located in the second a0S3 unit within beach ridge unit 11 at Bald Point as described by Armstrong (1990). The soil profile (**Plate 22**) was very similar to CAB site 136 described previously with sulfidic grey sands (up to 0.12 %S) extending from 2.7 m to 6.6 m.



**Plate 21.** CAB site 131 location



**Plate 22.** CAB site 131 soil profile

### 5.5. a0S4DL – Disturbed land with PASS within 3 and 4 m of the soil surface

One a0S4<sub>DL</sub> unit of 85 hectares with elevations of 3 to 4 m was mapped in the Bellara area within the Bribie Gardens Estate. CAB site 185 was located in a small reserve (**Plate 23**) where site disturbance was unknown. The soil profile (**Plate 24**) displayed a dark sandy loam to 0.3 m over grey brown sandy loam to 1.4 m over dark brown sandy loams to 3.4 m. Sulfidic sediments commenced at 3.4 m and were comprised of dark brown sandy loams (0.08 %S) to 5 m, over dark sulfidic sands (0.09 %S) to 5.4 m over dark silty light clays (0.4 %S) to 6 m.



**Plate 23.** CAB site 185 location



**Plate 24.** CAB site 185 soil profile

### **5.6. a0S5 and a0S5DL – relatively undisturbed and disturbed land with PASS within 4 to 5 m of the soil surface**

These units occur in Pleistocene beach ridges north of First Avenue as well as in Holocene beach ridge systems to the south. Elevations are generally 4 to 5 m depending whether you are situated on a ridge or in a swale. Determination of map unit boundaries was extremely difficult with final line work being determined using a conservative approach (shallowest depth) combining contour information (supplied by Caboolture Shire), air photo interpretation as well as both field and laboratory data. Whilst the minimum depth to PASS is 4 to 5 m, the maximum depth can be up to 8 m.

CAB site 146 (**Plate 25**) represents the typical soil profile found in these areas (**Plate 26**) with grey sands to 0.7 m over pale bleached sands to 3.6 m over brown loamy sands to 4.8 m over yellow brown sands to 6.7 m. Grey sands containing shell continued to 7.3 m. All layers below 4.8 m contained sulfides with up to 0.06 %S in the yellow brown sands and 0.09 %S in the grey shelly sands.





**Plate 25.** CAB site 146 location



**Plate 26.** CAB site 146 soil profile

**5.7. S5+ and S5+DL – undisturbed and disturbed land with PASS at depths greater than 5 m**

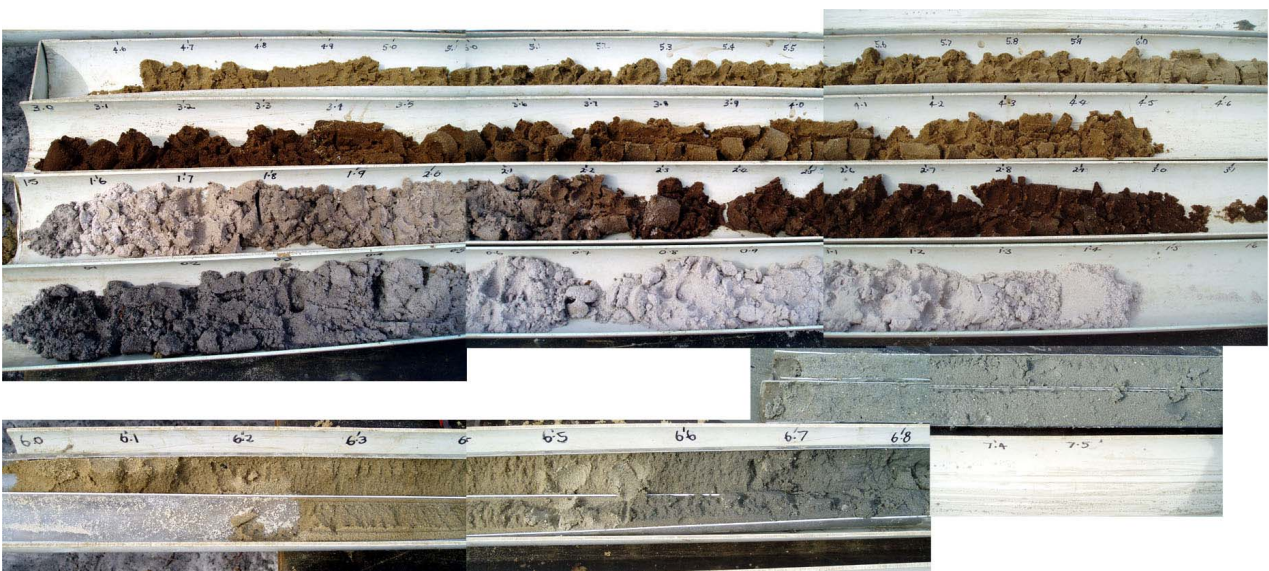
Like the a0S5 units, the a0S5+ and a0S5+DL units are found primarily in the Holocene beach ridge systems that dominate the southern end of the island (south of First Avenue). These areas are slightly more elevated (5 to 6 m). The S5+ units represent the relatively undisturbed areas whilst the S5+DL unit represent those areas that have been developed in some way.

The large variability in depth to PASS due to the alternating ridges and swales in these complex beach ridge systems made mapping acid sulfate soils difficult and map unit boundaries could not be determined by borehole morphology and chemistry alone. Generally in those boreholes where PASS was identified, the depth to PASS varied from 5 to 8 m. There were a number of boreholes where PASS was not identified, however given that the depth to basement in this area is up to 26 m (Ishaq 1980), it is highly likely that PASS does exist at some depth below most of these areas.

CAB site 115 (**Plate 27**) was located in a swale (depression between sand ridges) not far from the sewerage treatment plant at the southern end of the island. The profile described (**Plate 28**) is similar to those already presented, the main difference being the greater depth at which the PASS layers occur. In this example sulfidic grey sands containing shell fragments and with up to 0.13 %S were identified between 6 and 7 m. The soil profile of CAB site 116 (**Plate 29**) undertaken on the adjacent ridge 120 metres north shows the difference between ridge and swale with no PASS identified to 7 m.



**Plate 27.** CAB site 115 location



**Plate 28.** CAB site 115 soil profile



**Plate 29.** CAB site 116 soil profile

**5.8. SLA – Limited or no field assessment but occurs in a landscape position where there is a reasonable probability of ASS occurrence**

This unit encompasses the Buckley's Hole conservation reserve where no boreholes were undertaken to avoid environmental damage. Aerial photograph interpretation indicates that acid sulfate soils are highly likely to occur at shallow depths particularly in the near vicinity of Buckley's Hole itself.

## 6. Discussion

The large area of Holocene sand ridges south of First Avenue proved difficult to map due to dense vegetation, limited access and sands up to 26 m deep (as recorded by Ishaq (1980) in a hydro geological survey of the southern end of Bribie Island). Except for the large swamp (**Figure 3**) just south of First Avenue, the average elevation of the beach ridges varied from 3 metres at the southern end to 6 metres in the north. The close spacing of the sand ridges means that surface elevations vary by several metres over short distances. **Table 3** gives a summary of boreholes showing depth to ASS and liming rate.

Fifty-seven of the 82 boreholes were located in this part of the survey area. Due to the variation in surface elevation, coring was undertaken to an average depth of approximately 7 m with 16 boreholes investigated to depths of 8 m to 10 m. PASS with up to 0.24 %S were encountered in 26 of the 57 boreholes (**Table 3**) at depths from 3 m to 9 m. The large swamp was an exception with PASS ranging from <0.5 m to 2 m below surface. PASS was not encountered in the remaining 31 boreholes, however interpretation of borelogs described by Ishaq (1980) indicate that sulfidic sediments may have been encountered had the NRW boreholes been undertaken to greater depth. It is for this reason that much of the area was mapped as S5+.

Soil forming conditions have been conducive to the development of Podzols in the beach ridge sands overlying the PASS layers. Soil profiles generally exhibit well bleached A horizons up to 2 metres thick over well developed brown B2s horizons (with little or no induration) ranging up to 3 metres thick. The occurrence of sulfides was not restricted just to the reduced grey coloured sands with significant levels measured in olive coloured sands. These values are similar to results found in other acid sulfate soil mapping projects in southeast Queensland such as Pointon *et al.* (2007) and Malcolm *et al.* (2002).

The geology map presented in section 3 shows the land to the north of First Avenue is dominated by Pleistocene aged beach ridges. Elevations range from <2 m AHD on Pumicestone Passage around Bellara up to 5 m AHD on the eastern boundary adjoining the Bribie Island national park. There is evidence of Holocene high sea level influence particularly in lower lying areas associated with current and former drainage lines such as Shirley and Dux Creeks. These areas are likely to have been subjected to more estuarine conditions and as a result, soil profiles tend to exhibit PASS with higher sulfide levels (1.93 %S site CAB 166) at shallower depths (**Table 3**).

Soil profiles throughout this part of the study area displayed well developed Podzols over PASS. Pre Holocene basement material of weathered sandstone was encountered directly below the PASS in most boreholes. These Podzols differ from those south of First Avenue by having much deeper (up to several metres), darker and more indurated B2h horizons. Many of these B2h horizons contained sulfide levels above the action criteria with the highest levels (up to 0.9 %S, CAB 187) being in those horizons immediately above the more traditional grey PASS layer. Further work needs to be done to ascertain if there is any link between the formation of sulfides in the B2h horizon and the PASS layers below. Some dating of sediments would also be useful to determine ages of sediments although not unusual, it is uncommon to find PASS in Pleistocene deposits that has survived periods of low sea level and therefore oxidation.

Values of pH 4 to pH 5 are not uncommon in the upper horizons of south east Queensland's coastal sand formations and results show the southern end of Bribie Island to be no exception. The small 'a' prefix on the mapping codes is used to highlight the low pH values of 4 to 5. Titratable actual acidity (TAA) measurements undertaken on a range of samples showed low levels of actual acidity, mostly below the action criteria of sands (18 moles H<sup>+</sup> tonne). Although it is unlikely that this low level acidity is of sulfidic origin, it must be noted that irrespective of acid form these pH values are still very low and care should be exercised when disturbing large quantities of material to avoid acid export into water bodies. The low buffering capacity of most sands means that only small amounts of lime (approx 1–2 kg CaCO<sub>3</sub> per tonne) are required.

**Table 3.** Borehole summary

Site	Site code	Maximum <sup>1</sup> % S	Lime rate <sup>2</sup>	Site	Site code	Maximum <sup>1</sup> %S	Lime rate <sup>2</sup>
107	Nil to 7.2 m		-	151	Nil to 8.8 m		-
108	Nil to 6.7 m		-	152	S8	0.03	1.6
109	Nil to 6.0 m		-	153	Nil to 7.5 m		-
110	Nil to 6.8 m		-	154	Nil to 8.7 m		-
111	S5	0.04	1.7	155	Nil to 8.7 m		-
112	Nil to 6.8 m		-	156	Nil to 7.0 m		-
113	Nil to 6.8 m		-	157	Nil to 8.2 m		-
114	Nil to 6.8 m		-	158	S6	0.07	3.3
115	S7	0.13	5.9	159	Nil to 8.6 m		-
116	Nil to 6.9 m		-	160	Nil to 8.1 m		-
117	S7	0.05	2	161	S4	0.03	1.5
118	Nil to 7.0 m		-	162	Nil to 6.8 m		-
119	Nil to 6.5 m		-	163	Nil to 7.2 m		-
120	Nil to 6.8 m		-	164	S2	0.1	4.9
121	Nil to 6.9 m		-	165	S3	0.07	3.4
122	S8	0.04	1.7	166	S2	1.93	90
123	S2	0.22	10.1	167	S6	0.78	36.5
124	Nil to 8.0 m		-	168	S8	0.42	19.5
125	Nil to 6.8 m		-	169	S5	0.15	8.2
126	Nil to 6.8 m		-	170	S5	0.04	2.1
127	Nil to 5.6 m		-	171	S0	0.17	7.8
128	Nil to 7.0 m		-	172	S5	0.06	2.9
129	S2	0.04	1.7	173	S5	0.09	4.3
130	S8	0.15	6.9	174	S2	0.15	7.1
131	S3	0.12	5.7	175	S8	0.05	2.5
132	S5	0.07	3.2	176	S3	0.24	11.1
133	S6	0.036	1.7	177	Nil to 9.0 m		-
134	S3	0.12	5.7	178	Nil to 6.8 m		-
135	S7	0.11	5	179	Nil to 9.8 m		-
136	S3	0.18	8.6	180	S0	0.92	43.2
137	Nil to 9.0 m		-	181	S1	1.14	53.2
138	S8	0.18	8.3	182	S2	0.19	8.94
139	S5	0.07	3.1	183	S2	0.12	5.4
140	Nil to 6.7 m		-	184	S5	0.07	3.4
141	Nil to 7.1 m		-	185	S4	0.41	19.1
142	S7	0.07	3.5	186	S3	0.33	15.3
143	S7	0.14	6.3	187	S2	0.9	42.1
144	A0S0	0.24	11	188	S5	0.13	6.3
145	S7	0.05	2.3				
146	S5	0.09	4.4				
147	S6	0.05	2.4				
148	S4	0.04	1.9				
149	Nil to 7.3 m		-				
150	A0S9	0.03	4.9				

<sup>1</sup> maximum oxidisable sulfur<sup>2</sup> kg CaCO<sub>3</sub>/T soil including 1.5 safety factor

## 7. Conclusions

This project has identified that PASS dominated by sulfidic sands occur at varying depths throughout the study area. The occurrence of sulfides in brown and olive sands associated with the B2s and B2h horizons of some Podosols has shown that sulfides are not restricted to the dark grey reduced layers usually associated with PASS. This unfortunately makes identification of PASS on Bribie more difficult. Although sulfide levels and therefore acid generation potential is relatively low, large disturbances can still result in substantial quantities of acid generation. Another complicating factor is that acidity from other sources such as Iron, Aluminium and organics is also present.

It is recommended that any proposed excavations particularly in the study area will require appropriate sampling according to the *Sampling Guidelines* (Ahern *et al.* 2004) and management in accordance with the *Soil Management Guidelines* (Dear *et al.* 2002). It is recommended that construction techniques limit disturbance of profiles containing potential acid sulfate soil to minimise the risk of oxidation, and initiate management of existing acidity.

Additional investigation will be required prior to construction for any excavations that are outside the required limits of the relative to the sampling already undertaken in this investigation. Any disturbance of soils in these areas needs to be carefully considered because when acid and heavy metals are released, then there are both *in situ* and off-site effects. This is particularly important on sand islands such as Bribie where watertables occur at relatively shallow depth and can therefore be easily contaminated.

## 8. References

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## 9. Glossary

**Acid sulfate soils (ASS):** Soil or sediment containing highly acidic soil horizons or layers affected by the oxidation of iron sulfides (actual ASS) and/or soil or sediment containing iron sulfides or other sulfidic material that has not been exposed to air and oxidised (potential ASS). This includes:

- non-oxidised and therefore non-acidic soils or sediments with significant amounts of oxidisable iron sulfides (ie. PASS);
- partially oxidised soils or sediments with variable ratios of existing acidity and unoxidised iron sulfides (ie. PASS/AASS); through to
- completely oxidised (no remnant sulfides) soils or sediments with significant existing acidity (ie. AASS).

The term acid sulfate soil generally includes both actual and potential ASS. Actual and potential ASS are often found in the same soil profile, with actual acid sulfate soils generally overlying potential acid sulfate soil horizons.

**Actual acid sulfate soils (AASS):** Soil or sediment containing highly acidic soil horizons or layers affected by the oxidation of soil material that are rich in iron sulfides, primarily pyrite. This oxidation produces hydrogen ions in excess of the sediment's capacity to neutralise the acidity, resulting in soils of pH 4 or less. These soils can sometimes be identified by the presence of secondary sulfate salts such as jarosite.

**Action criteria:** The critical net acidity values (expressed in units of equivalent % pyrite sulfur, or equivalent mol H<sup>+</sup>/t) for different soil texture groups and sizes of soil disturbance that trigger the need for ASS management.

**Actual acidity:** A component of existing acidity. The soluble and exchangeable acidity already present in the soil, often as a consequence of previous oxidation of sulfides. It is this acidity that will be mobilised and discharged following a rainfall event. It is measured in the laboratory using the TAA method. It does not include the less soluble acidity (ie. retained acidity) held in hydroxy-sulfate minerals such as jarosite.

**Agricultural lime:** A neutralising agent used to treat acidic soils; by composition, it is commonly 95–98% pure calcium carbonate, CaCO<sub>3</sub>; it is sparingly soluble in pure water, with a pH of ~8.3; application rates will depend on the purity and fineness of the product.

**AHD:** Australian Height Datum. The datum used for the determination of elevations in Australia. The determination used a national network of benchmarks and tide gauges, and sets mean sea level as zero elevation.

**ANC:** Acid neutralising capacity. A measure of a soil's inherent ability to buffer acidity and resist the lowering of the soil pH.

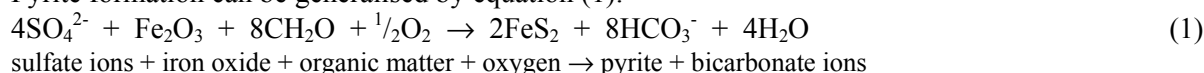
**ANC<sub>BT</sub>:** Acid neutralising capacity by back titration. Acid neutralising capacity measured by acid digest followed by back titration of the acid that has not been consumed.

**Borehole:** The actual hole created when an auger, push-tube or similar is inserted into the soil body; the portion removed (the core) will demonstrate the soil profile.

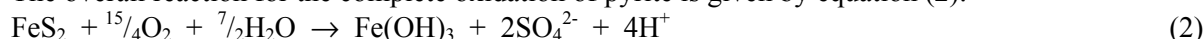
**Ca<sub>A</sub>:** Reacted calcium. The calcium soluble after the peroxide digest and TPA titration that was not soluble following KCl-extraction and TAA titration. (Ca<sub>P</sub> – Ca<sub>KCl</sub>). It can be used (in combination with Mg<sub>A</sub>) to provide an estimate of the soil carbonate content, but may be an underestimate if the HCl-titration to pH 4 has not been performed as part of the TPA/ANC<sub>E</sub> procedure.

**Chemical equations:** There is a wide range of chemical equations involved in acid sulfate soils. Some of these are detailed below. Further information (especially regarding the intermediate steps involved in pyrite oxidation) can be found in the *Acid Sulfate Soils Laboratory Methods Guidelines* (Ahern *et al.* 2004).

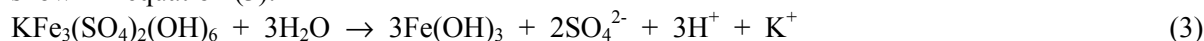
Pyrite formation can be generalised by equation (1):



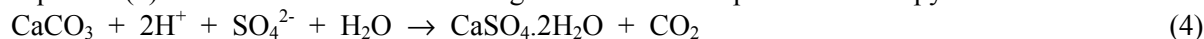
The overall reaction for the complete oxidation of pyrite is given by equation (2):



In moist environments, jarosite slowly decomposes (usually by hydrolysis) releasing iron and acid, as shown in equation (3):



Equation (4) shows the reaction between aglime and the acid produced from pyrite oxidation:



**Disturbance of ASS:** Any activity or action that will or is likely to expose ASS to oxidising conditions eg. movement, excavation or drainage of ASS.

**Existing Acidity:** The acidity already present in soils, usually as a result of oxidation of sulfides, but which can also be from organic material or acidic cations. It can be further sub-divided into actual and retained acidity, ie. Existing Acidity = Actual Acidity + Retained Acidity.

**Fineness factor:** A factor applied to the acid neutralising capacity result in the acid base account to allow for the poor reactivity of coarser carbonate or other acid neutralising material. The minimum factor is 1.5 for finely divided pure agricultural lime, but may be as high as 3.0 for coarser shell material.

**Holocene:** A period of time from about 10 000 years ago to the present, an epoch of the Quaternary time period.

**Horizon:** A soil layer that differs in physical, chemical or biological properties such as colour, texture, structure, consistency, pH etc from the layers above and below.

**Jarosite:** An acidic pale yellow (straw or butter coloured) iron sulfate mineral:  $\text{KFe}_3(\text{SO}_4)_2(\text{OH})_6$ . Jarosite is a by-product of the acid sulfate soil oxidation process, formed at pH less than 3.7; commonly found precipitated along root channels and other soil surfaces exposed to air.

**Mg<sub>A</sub>:** Reacted magnesium. The magnesium soluble after the peroxide digest and TPA titration that was not soluble following KCl-extraction and TAA titration. ( $\text{Mg}_P - \text{Mg}_{\text{KCl}}$ ). It can be used (in combination with  $\text{Ca}_A$ ) to provide an estimate of the soil carbonate content, but may be an underestimate if the HCl-titration to pH 4 has not been performed as part of the TPA/ $\text{ANC}_E$  procedure.

**Net Acidity:** The result obtained when the values for various components of soil acidity and acid neutralising capacity are substituted into the Acid Base Accounting equation. Calculated as: Net Acidity = Potential Acidity + Existing Acidity – (Acid Neutralising Capacity/Fineness Factor).

**Neutralisation:** The process whereby acid produced (by the oxidation of soil iron sulfides) is counteracted by the addition of an ameliorant such as aglime ( $\text{CaCO}_3$ ); there are formulae for calculating the amount of ameliorant needed to bring the soil closer to a pH value of 7.

**NR&M:** Queensland Department of Natural Resources and Mines.

**NRW:** Queensland Department of Natural Resources and Water.

**pH:** A measure of the acidity or alkalinity of a soil or water body on a logarithmic scale of 0 to 14 units. A pH reading less than 7 indicates an acid, pH equal to 7 indicates a neutral substance, while pH more than 7 indicates an alkaline substance. Note that one unit change in pH is equivalent to a ten-fold change in acidity.

**pH<sub>F</sub>**: Field pH. Field determination of pH in a soil:water paste.

**pH<sub>FOX</sub>**: Field peroxide pH. Field determination of pH in a soil:water mixture following reaction with hydrogen peroxide. (pH 3 test).

**pH<sub>KCl</sub>**: Potassium chloride pH. pH in a 1:40 (W/V) suspension of soil in a solution of 1 M potassium chloride measured prior to TAA titration.

**pH<sub>OX</sub>**: Peroxide oxidised pH. pH in a suspension of soil in a solution after hydrogen peroxide digestion in the SPOCAS method.

**Potential acid sulfate soils (PASS)**: Soil or sediment containing iron sulfides or sulfidic material that have not been exposed to air and oxidised. The field pH of these soils in their undisturbed state is pH 4 or more, and may be neutral or slightly alkaline.

**Potential (sulfidic) acidity**: The latent acidity in ASS that will be released if the sulfide minerals they contain (eg. pyrite) are fully oxidised. It can be estimated by titration (ie. TSA) if no acid neutralising material is present, or calculated from  $S_{POS}$  or  $S_{CR}$  results.

**Pyrite**: Pale-bronze or brass-yellow, isometric mineral:  $FeS_2$ ; the most widespread and abundant of the sulfide minerals.

**QASSIT**: Queensland Acid Sulfate Soils Investigation Team.

**Quaternary**: A geological time period extending from 1.8 million years ago to present time; incorporates both the Pleistocene and Holocene time periods.

**Retained Acidity**: The 'less available' fraction of the existing acidity (not measured by the TAA) that may be released slowly into the environment by hydrolysis of relatively insoluble sulfate salts (such as jarosite, natrojarosite, and other iron and aluminium hydroxy-sulfate minerals).

**S<sub>CR</sub>**: The symbol given to the result from the Chromium Reducible Sulfur method (Method 22B). The  $S_{CR}$  method provides a measure of reduced inorganic sulfide content using iodometric titration after an acidic chromous chloride reduction. This method is not subject to interferences from organic sulfur.

**S<sub>POS</sub>**: Peroxide oxidisable sulfur from the SPOCAS method. The sulfur soluble after the peroxide digest and TPA titration that was not soluble following KCl-extraction and TAA titration. ( $S_P - S_{KCl}$ ). It provides an estimate of the soil sulfide content, but is affected by the presence of organic sulfur.

**S<sub>RAS</sub>**: Residual acid soluble sulfur. The sulfur measured by 4 M HCl extraction on the soil residue remaining after peroxide digestion and TPA titration of the SPOCAS method. It provides an estimate of the sulfate contained in jarosite and similar low solubility hydroxy-sulfate minerals (and can be used to estimate retained acidity).

**Self-neutralising soils**: This term is given to ASS where there is sufficient acid neutralising capacity (with the relevant safety factor applied) to neutralise the potential sulfidic acidity held in the soil (ie. the net acidity from the Acid Base Account is zero or negative). Soils may be 'self-neutralising' due to an abundance of naturally occurring calcium or magnesium carbonates (eg. crushed shells, marine animal exoskeletons, coral) or other acid-neutralising material.

**SPOCAS**: An acronym standing for Suspension Peroxide Oxidation Combined Acidity and Sulfur method (Method Code 23), the peroxide-based method that supersedes the previous POCAS and POCASm methods.

**TAA**: Titratable actual acidity. The acidity measured by titration with dilute NaOH following extraction with KCl-solution in the SPOCAS method. Previously referred to as Total Actual Acidity in the POCAS and POCASm methods.

**TPA:** Titratable peroxide acidity. The acidity measured by titration with dilute NaOH following peroxide digestion in the SPOCAS method. Previously referred to as Total Potential Acidity in the POCAS and POCASm methods.

**Appendix 1**  
**Decoded Borehole Descriptions**

CAB

Site: 107

Location: GDA 94	ZONE 56	518710mE 7004062mN	Lat: -27.08566	Long: 153.18872
Location: AGD 84	ZONE 56	518604mE 7003874mN	Lat: -27.08735	Long: 153.18766
Location: AGD 66	ZONE 56	518605mE 7003876mN	Lat: -27.08734	Long: 153.18766

Described By: S (Shane) Pointon (POIS)

Date: 24/JUL/06

**Landscape:**

Landform Pattern: beach ridge plain	Element: beach ridge
Surface Condition: Loose	
Disturbances: Limited clearing	

**Classifications:**

ASC: AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Grey (2.5Y51) moist; loamy sand; single grain structure; dry when sampled; clear to
A2	.4 to 2.2	White (2.5Y81) moist; sand; single grain structure; dry when sampled; clear to
Bh1	2.2 to 2.7	Brown (7.5YR42) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
Bh2	2.7 to 4.1	Dark brown (7.5YR33) moist; loamy sand; single grain structure; moist when sampled; gradual to
2C	4.1 to 4.5	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled; gradual to
3C	4.5 to 5.2	Brown (10YR43) moist; sand; wet when sampled; diffuse to
4C	5.2 to 7.2	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.3	3.0	3.75	4.5	4.5
.3	4.2	3.4	4	4.7	4.5
.6	4.4	4.3	4.25	4.7	4.7
.8	4.9	4.0	4.5	4.8	4.7
1	4.8	4.5	4.75	4.8	3.0
1.25	4.6	4.2	5	4.9	2.2
1.5	4.6	4.6	5.25	5.1	2.6
1.75	4.8	4.5	5.5	5.0	4.4
2	4.8	4.3	5.75	5.3	3.8
2.25	4.4	3.9	6	5.3	4.0
2.5	4.3	4.0	6.25	5.3	4.2
2.75	4.3	4.2	6.5	5.1	4.4
3	4.5	4.4	6.75	5.0	4.4
3.25	4.3	4.6	7	5.0	4.1
3.5	4.1	4.1	7.2	6.0	3.9

**Observation Notes:**

Location	First site on Bribie Island
Vegetation	Corymbia intermedia, Acacia Spp, Casuarina torulosa?

**Project:** CAB

**Site:** 108

**Location:** GDA 94      **ZONE** 56      518708mE 7004049mN      **Lat:** -27.08578

**Long:** 153.1887

**Location:** AGD 84      **ZONE** 56      518602mE 7003861mN      **Lat:** -27.08747

**Long:** 153.18764

**Location:** AGD 66      **ZONE** 56      518603mE 7003863mN      **Lat:** -27.08746

**Long:** 153.18764

**Described By:** S (Shane) Pointon (POIS)

**Date:** 24/JUL/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Surface Condition:** Loose

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .15	Grey (10YR51) moist; sand; single grain structure; dry when sampled
2A11	.15 to .3	Black (10YR21) moist; loamy sand; weak structure; dry when sampled
2A12	.3 to .6	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled
2A21	.6 to .75	Light grey (10YR71) moist; sand; single grain structure; dry when sampled
2A22	.75 to 1.05	White (10YR81) moist; sand; single grain structure; moderately moist when sampled
2Bh1	1.05 to 1.4	Brown (10YR53) moist; sand; single grain structure; moist when sampled
2Bh2	1.4 to 1.8	Brown (7.5YR44) moist; sand; single grain structure; wet when sampled
3C1	1.8 to 2.3	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled
3C2	2.3 to 2.9	Brown (10YR53) moist; sand; single grain structure; wet when sampled
3C3	2.9 to 3.8	Brown (10YR43) moist; sand; single grain structure; wet when sampled
3C4	3.8 to 5	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled
3C5	5 to 6.7	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.8	3.8	3.5	5.4	2.6
.3	5.0	4.2	3.75	5.2	2.5
.6	5.2	4.8	4	5.7	2.8
.8	5.5	4.7	4.25	5.4	3.0
1	5.8	5.0	4.5	5.7	3.1
1.25	5.1	4.4	4.75	5.7	3.2
1.5	5.0	4.7	5	5.7	3.6
1.75	5.2	4.3	5.25	5.8	3.8
2	4.9	4.7	5.5	5.8	4.5
2.25	5.1	4.6	5.75	6.0	4.4
2.5	4.1	4.8	6	5.5	4.6
2.75	5.5	4.3	6.25	3.1	4.7
3	5.9	3.0	6.5	5.2	4.7
3.25	5.3	3.3			

**Observation Notes:**

**Observation** no photos, v. similar to site 107

**Vegetation** Melaleuca quinquenervia, Leptospermum Spp, Casuarina torulosa?

**Project:** CAB

**Site:** 109

**Location:** GDA 94      **ZONE** 56      518725mE 7003950mN      **Lat:** -27.08668      **Long:** 153.18887  
**Location:** AGD 84      **ZONE** 56      518619mE 7003762mN      **Lat:** -27.08837      **Long:** 153.18781  
**Location:** AGD 66      **ZONE** 56      518620mE 7003764mN      **Lat:** -27.08835      **Long:** 153.18782

**Described By:** S (Shane) Pointon (POIS)

**Date:** 25/JUL/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** swale  
**Surface Condition:** Firm  
**Disturbances:** Limited clearing

**Classifications:**

**ASC:** OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .1	Dark grey (10YR41) moist; loamy sand; common 10-20% angular shale large pebbles 20-60 mm; single grain structure; moderately moist when sampled; clear to
2A11	.1 to .15	Very dark grey (10YR31) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
2A12	.15 to .3	Dark greyish brown (10YR42) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
2A2	.3 to .9	Dark greyish brown (10YR42) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
2B	.9 to 2.3	Brown (10YR53) moist; sand; single grain structure; wet when sampled; gradual to
2C1	2.3 to 3.8	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; gradual to
2C2	3.8 to 6	Light brownish grey (2.5Y62) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	5.2	4.5	3.25	5.4	2.1
.3	5.1	4.8	3.5	5.5	2.6
.6	5.0	4.9	3.75	5.7	3.6
.8	5.2	4.9	4	5.4	3.5
1	5.3	5.6	4.25	5.9	3.7
1.25	5.4	4.9	4.5	5.5	3.4
1.5	5.9	4.6	4.75	5.4	3.2
1.75	5.2	5.0	5	5.4	3.1
2	5.1	5.0	5.25	5.5	3.8
2.25	5.3	3.9	5.5	5.6	4.7
2.5	5.3	3.7	5.75	5.3	5.1
2.75	5.4	3.8	6	5.4	3.0
3	5.6	3.7			

**Observation Notes:**

**Vegetation** Melaleuca quinquenervia, Leptospermum Spp, Acacia Spp



**Project:** CAB

**Site:** 110

**Location:** GDA 94      **ZONE** 56      518740mE 7003702mN      **Lat:** -27.08891      **Long:** 153.18903  
**Location:** AGD 84      **ZONE** 56      518634mE 7003514mN      **Lat:** -27.0906      **Long:** 153.18797  
**Location:** AGD 66      **ZONE** 56      518635mE 7003516mN      **Lat:** -27.09059      **Long:** 153.18797

**Described By:** S (Shane) Pointon (POIS)

**Date:** 25/JUL/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Surface Condition:** Firm

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .3	Dark grey (10YR41) moist; sand; single grain structure; moderately moist when sampled; gradual to
A12	.3 to .7	Grey (10YR61) moist; sand; single grain structure; moderately moist when sampled; gradual to
A2	.7 to 1.9	White (10YR81) moist; sand; single grain structure; moderately moist when sampled; clear to
Bh1	1.9 to 2.1	Very dark brown (7.5YR23) moist; loamy sand; single grain structure; moist when sampled; clear to
2A2	2.1 to 2.3	Dark grey (7.5YR41) moist; sand; single grain structure; moist when sampled; clear to
2Bh	2.3 to 2.7	Very dark brown (7.5YR2.5/2) moist; loamy sand; massive structure; moist when sampled; clear to
3Bh	2.7 to 3.2	Brown (7.5YR42) moist; loamy sand; single grain structure; wet when sampled; clear to
4A2	3.2 to 3.8	Brown (7.5YR52) moist; sand; single grain structure; wet when sampled; gradual to
4B21	3.8 to 4.2	Brown (7.5YR42) moist; sand; single grain structure; wet when sampled; clear to
4B22	4.2 to 4.5	Brown (7.5YR53) moist; sand; single grain structure; wet when sampled; gradual to
5C	4.5 to 5.5	Brown (10YR53) moist; sand; single grain structure; wet when sampled; diffuse to
6C	5.5 to 6.75	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.0	3.7	3.5	4.3	4.0
.3	4.0	4.0	3.75	4.8	4.2
.6	4.3	4.5	4	5.0	4.0
.8	4.8	4.5	4.25	4.7	4.1
1	5.3	4.7	4.5	6.0	3.0
1.25	4.9	4.7	4.75	6.0	2.1
1.5	4.7	4.8	5	5.7	2.4
1.75	3.2	4.7	5.25	5.0	3.3
2	4.9	4.4	5.5	4.9	2.6
2.25	4.9	4.2	5.75	4.6	2.8
2.5	4.4	3.8	6	5.3	2.5
2.75	4.2	3.9	6.25	4.9	2.7
3	3.9	3.4	6.5	5.0	2.1
3.25	4.3	4.1	6.75	5.8	2.5

**Observation Notes:**

**Vegetation** Banksia integrifolia (?), Corymbia intermedia, Acacia spp, Leptospermum spp

**Project:** CAB

**Site:** 111

**Location:** GDA 94    **ZONE** 56    518757mE 7003545mN    **Lat:** -27.09033  
**Location:** AGD 84    **ZONE** 56    518651mE 7003357mN    **Lat:** -27.09202  
**Location:** AGD 66    **ZONE** 56    518652mE 7003359mN    **Lat:** -27.09201

**Long:** 153.1892  
**Long:** 153.18814  
**Long:** 153.18814

**Described By:** S (Shane) Pointon (POIS)

**Date:** 25/JUL/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Surface Condition:** Firm

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Very dark grey (10YR31) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
A2	.3 to 1	Light brownish grey (10YR62) moist; sand; single grain structure; wet when sampled; diffuse to
A3	1 to 1.7	Greyish brown (10YR52) moist; sand; single grain structure; wet when sampled; clear to
Bh1	1.7 to 2.3	Brown (7.5YR44) moist; loamy sand; single grain structure; wet when sampled; gradual to
2B31	2.3 to 3	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled; gradual to
2B32	3 to 4.1	Brown (10YR43) moist; sand; very few <2% angular charcoal large pebbles 20-60 mm; single grain structure; wet when sampled; gradual to
2B33	4.1 to 4.5	Light brownish grey (2.5Y62) moist; sand; single grain structure; wet when sampled; gradual to
3C	4.5 to 7	Grey (2.5Y61) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.3	3.4	3.5		5.3	2.6
.3		4.7	4.2	3.75		5.6	2.8
.6		4.7	4.9	4		5.5	2.4
.8		5.1	4.8	4.25		5.6	2.4
1		5.1	4.6	4.5		5.6	3.1
1.25		4.8	4.5	4.75		5.6	1.9
1.5		4.7	4.5	5	1	5.7	1.8
1.75		4.7	4.4	5.25	1	5.5	2.0
2		5.2	4.7	5.5	1	5.5	1.8
2.25		5.4	4.4	5.75	1	5.7	1.7
2.5		5.4	4.4	6	1	5.6	1.8
2.75		5.2	2.5	6.25	1	5.6	1.8
3		5.7	2.7	6.5	1	6.0	1.5
3.25		5.5	2.7	6.75	1	6.1	1.5

**Observation Notes:**

**Vegetation** Melaleuca quinquenervia, Melaleuca Spp (low shrub)

**Project:** CAB

**Site:** 112

**Location:** GDA 94      **ZONE** 56      518778mE 7003172mN      **Lat:** -27.0937

**Long:** 153.18942

**Location:** AGD 84      **ZONE** 56      518672mE 7002984mN      **Lat:** -27.09539

**Long:** 153.18836

**Described By:** S (Shane) Pointon (POIS)

**Date:** 26/JUL/06

### Landscape:

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Surface Condition:** Loose

**Disturbances:** Limited clearing

### Classifications:

**ASC:** AQUIC, Podsol

### Profile Morphology:

Horizon	Depth (m)	Description
A1	0 to .1	Dark greyish brown (2.5Y43) moist; clay loam; common 10-20% angular platy shale large pebbles 20-60 mm; weak structure; moist when sampled; abrupt to
2A11	.1 to .25	Very dark grey (10YR31) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
2A12	.25 to .5	Dark grey (10YR41) moist; sand; single grain structure; moderately moist when sampled; gradual to
2A2	.5 to 1	White (10YR81) moist; sand; single grain structure; moderately moist when sampled; gradual to
2A3	1 to 1.7	Light grey (10YR72) moist; sand; single grain structure; moist when sampled; clear to
2Bh1	1.7 to 2.1	Brown (7.5YR42) moist; loamy sand; single grain structure; moist when sampled; clear to
2Bh2	2.1 to 2.7	Dark brown (7.5YR33) moist; loamy sand; single grain structure; wet when sampled; clear to
2B3	2.7 to 3.8	Brown (7.5YR54) moist; sand; single grain structure; wet when sampled; gradual to
3C	3.8 to 6	Greyish brown (2.5Y52) moist; sand; very few <2% rounded quartz large pebbles 20-60 mm; single grain structure; wet when sampled; diffuse to
4C	6 to 6.75	Light brownish grey (2.5Y62) moist; sand; single grain structure; wet when sampled

### Field Tests:

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	6.5	6.0	3.5	5.7	5.0
.2	6.6	5.9	3.75	5.8	4.2
.3	4.10	3.9	4	5.9	2.8
.6	4.7	4.9	4.25	6.0	2.7
.8	4.9	4.7	4.5	5.8	2.6
1	5.10	5.1	4.75	5.8	2.7
1.25	4.5	5.1	5	5.1	2.8
1.5	5.4	4.7	5.25	5.2	2.4
1.75	5.3	4.7	5.5	5.3	2.7
2	5.5	4.9	5.75	5.2	2.6
2.25	5.7	4.6	6	5.3	2.6
2.5	5.8	4.9	6.25	5.2	2.8
2.75	5.9	4.8	6.5	5.5	2.8
3	5.4	4.7	6.75	5.9	2.9
3.25	5.7	4.9			

### Observation Notes:

**Vegetation** Corymbia tessellaris, Corymbia intermedia, Acacia Spp, Pteridium esculentum (bracken Fern), Imperata cylindrica (blady grass)

### Horizon Notes:

Horizon                      A1                      Road Base

**Project:** CAB

**Site:** 113

**Location:** GDA 94      **ZONE** 56      518781mE 7003212mN      **Lat:** -27.09334      **Long:** 153.18945  
**Location:** AGD 84      **ZONE** 56      518675mE 7003024mN      **Lat:** -27.09503      **Long:** 153.18839  
**Location:** AGD 66      **ZONE** 56      518676mE 7003026mN      **Lat:** -27.09502      **Long:** 153.18839

**Described By:** S (Shane) Pointon (POIS)

**Date:** 26/JUL/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** swale  
**Surface Condition:** Firm  
**Disturbances:** Limited clearing

**Classifications:**

**ASC:** AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .3	Grey (10YR51) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
A12	.3 to .9	Grey (10YR61) moist; sand; single grain structure; wet when sampled; gradual to
A2	.9 to 2.2	White (10YR81) moist; sand; single grain structure; wet when sampled; clear to
Bh1	2.2 to 3.9	Very dark greyish brown (10YR32) moist; loamy sand; very few <2% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; gradual to
Bh2	3.9 to 4.5	Dark greyish brown (10YR42) moist; loamy sand; single grain structure; wet when sampled; gradual to
Bh3	4.5 to 6	Brown (10YR43) moist; loamy sand; very few <2% rounded charcoal medium pebbles 6-20 mm; single grain structure; wet when sampled; gradual to
B3	6 to 6.75	Brown (10YR53) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	5.0	4.2	3.5	5.2	3.1
.3	5.4	4.3	3.75	5.2	2.4
.6	5.6	5.0	4	4.8	2.4
.8	6.1	5.1	4.25	4.9	2.9
1	6.2	5.3	4.5	5.7	3.1
1.25	6.1	5.2	4.75	5.5	2.8
1.5	6.3	4.8	5	5.6	2.8
1.75	5.4	4.9	5.25	5.5	3.4
2	5.7	5.1	5.5	5.4	3.1
2.25	5.5	4.9	5.75	5.7	3.2
2.5	5.1	4.8	6	6.0	3.2
2.75	5.3	2.3	6.25	6.1	4.5
3	5.2	2.1	6.5	6.1	3.5
3.25	4.7	3.2	6.75	5.8	4.2

**Observation Notes:**

**Vegetation** Melaleuca quinquenervia, Corymbia intermedia, Acacia Spp, Lomandra Spp.

**Project:** CAB

**Site:** 114

**Location:** GDA 94    **ZONE** 56    518762mE 7003337mN    **Lat:** -27.09221  
**Location:** AGD 84    **ZONE** 56    518656mE 7003149mN    **Lat:** -27.0939  
**Location:** AGD 66    **ZONE** 56    518657mE 7003151mN    **Lat:** -27.09389

**Long:** 153.18925  
**Long:** 153.18819  
**Long:** 153.1882

**Described By:** S (Shane) Pointon (POIS)

**Date:** 26/JUL/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Surface Condition:** Loose

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Grey (10YR51) moist; sand; single grain structure; moderately moist when sampled; gradual to
2A1	.4 to .9	Dark grey (10YR41) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
2A2	.9 to 2.3	Grey (10YR61) moist; sand; single grain structure; wet when sampled; gradual to
2A3	2.3 to 2.8	Brown (10YR53) moist; sand; very few <2% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; gradual to
Bh	2.8 to 4.3	Brown (10YR43) moist; sand; single grain structure; wet when sampled; gradual to
B3	4.3 to 6.75	Greyish brown (2.5Y52) moist; sand; very few <2% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.7	3.7	3.5	5.7	2.3
.3	4.8	4.2	3.75	5.6	2.0
.6	4.8	4.1	4	5.8	2.3
.8	4.6	4.5	4.25	6.0	2.4
1	4.7	4.3	4.5	6.0	3.5
1.25	4.7	4.4	4.75	5.8	3.0
1.5	5.2	4.4	5	6.1	2.6
1.75	5.1	5.0	5.25	5.9	3.0
2	5.3	5.1	5.5	6.2	3.1
2.25	5.3	5.1	5.75	6.8	2.4
2.5	5.8	5.1	6	6.2	2.7
2.75	5.9	4.7	6.25	6.4	2.7
3	6.0	1.8	6.5	6.3	2.5
3.25	6.2	2.3	6.75	6.7	2.4

**Observation Notes:**

**Vegetation** Melaleuca quinquenervia, Lophostemon suaveolens, Acacia Spp

**Horizon Notes:**

**Horizon** 2A3    Some Organics

**Project:** CAB

**Site:** 115

**Location:** GDA 94      **ZONE** 56      517965mE 7003841mN      **Lat:** -27.08767      **Long:** 153.18121  
**Location:** AGD 84      **ZONE** 56      517859mE 7003653mN      **Lat:** -27.08936      **Long:** 153.18015  
**Location:** AGD 66      **ZONE** 56      517860mE 7003655mN      **Lat:** -27.08935      **Long:** 153.18015

**Described By:** S (Shane) Pointon (POIS)

**Date:** 02/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** swale

**Surface Condition:** Loose

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Very dark grey (10YR31) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
A2e	.4 to 1.8	White (10YR81) moist; sand; single grain structure; moderately moist when sampled; gradual to
A3	1.8 to 2.2	Greyish brown (10YR52) moist; sand; single grain structure; wet when sampled; clear to
Bh1	2.2 to 3.4	Very dark brown (7.5YR2.5/2) moist; loamy sand; single grain structure; wet when sampled; diffuse to
Bh2	3.4 to 4.5	Brown (10YR43) moist; sand; very few <2% subrounded detrital sedimentary rock (unidentified) medium pebbles 6-20 mm; single grain structure; wet when sampled; diffuse to
2C	4.5 to 6.5	Greyish brown (2.5Y53) moist; sand; very few <2% subrounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled; gradual to
3C	6.5 to 8.3	Greenish grey (10Y51) moist; sand; common 10-20% angular platy shell medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.2	3.2	4.25	4.9	3.0
.3	3.3	4.2	4.5	5.1	2.6
.6	4.8	4.0	4.75	5.1	2.7
.8	4.8	4.3	5	5.4	2.7
1	4.9	4.1	5.25	5.2	2.8
1.25	4.8	4.3	5.5	5.0	2.9
1.5	4.8	2.8	5.75	5.2	2.5
1.75	4.8	4.1	6	5.5	2.9
2	5.0	4.3	6.25	6.0	1.8
2.25	4.9	3.9	6.5	7.0	1.6
2.5	4.6	3.7	6.75	7.5	2.2
2.75	4.5	3.7	7	7.8	5.5
3	4.6	3.3	7.25	7.7	5.7
3.25	4.7	3.1	7.5	8.1	5.4
3.5	4.7	3.1	7.75	8.2	5.2
3.75	4.9	2.7	8	8.2	5.7
4	4.9	2.7			

**Observation Notes:**

**Vegetation** Melaleuca quinquenervia, Leptospermum Spp, Melaleuca Spp (shrub), Casuarina Spp

**Project:** CAB

**Site:** 116

**Location:** GDA 94    **ZONE** 56    517933mE 7003969mN    **Lat:** -27.08651  
**Location:** AGD 84    **ZONE** 56    517827mE 7003781mN    **Lat:** -27.0882  
**Location:** AGD 66    **ZONE** 56    517828mE 7003783mN    **Lat:** -27.08819

**Long:** 153.18088  
**Long:** 153.17982  
**Long:** 153.17983

**Described By:** S (Shane) Pointon (POIS)

**Date:** 02/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Surface Condition:** Loose

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Very dark grey (10YR31) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
A2e	.4 to 3	White (10YR81) moist; sand; single grain structure; moderately moist when sampled; clear to
A3	3 to 3.8	Light brownish grey (10YR62) moist; sand; single grain structure; moist when sampled; clear to
Bh1	3.8 to 6.1	Very dark brown (7.5YR2.5/2) moist; loamy sand; single grain structure; wet when sampled; gradual to
2C	6.1 to 6.9	Dark greyish brown (2.5Y42) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.0	3.2	3.5	4.6	4.3
.3	3.9	3.8	3.75	4.8	3.8
.6	4.1	4.0	4	4.2	3.0
.8	4.3	4.0	4.25	3.9	2.9
1	4.5	4.4	4.5	4.4	2.4
1.25	4.9	4.0	4.75	4.3	1.9
1.5	4.8	4.5	5	4.5	1.8
1.75	4.8	3.8	5.25	4.7	2.1
2	4.9	4.6	5.5	4.4	1.9
2.25	4.7	4.8	5.75	4.4	1.8
2.5	4.3	4.7	6	4.7	2.9
2.75	4.8	4.8	6.25	4.7	2.0
3	4.9	4.1	6.5	4.7	1.9
3.25	4.7	4.5	6.75	4.6	1.7

**Observation Notes:**

**Vegetation**    *Corymbia intermedia*, *Casuarina* Spp, *Banksia integrifolia*

**Project:** CAB

**Site:** 117

**Location:** GDA 94      **ZONE** 56      517825mE 7004172mN      **Lat:** -27.08468  
**Location:** AGD 84      **ZONE** 56      517719mE 7003984mN      **Lat:** -27.08637  
**Location:** AGD 66      **ZONE** 56      517720mE 7003986mN      **Lat:** -27.08636

**Long:** 153.17979  
**Long:** 153.17873  
**Long:** 153.17873

**Described By:** S (Shane) Pointon (POIS)

**Date:** 02/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Surface Condition:** Loose

**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .5	Very dark grey (10YR31) moist; loamy sand; single grain structure; gradual to
A21e	.5 to 1.1	Light grey (10YR71) moist; sand; single grain structure; gradual to
A22e	1.1 to 2.3	White (10YR81) moist; sand; single grain structure; clear to
Bh1	2.3 to 2.4	Dark greyish brown (10YR42) moist; loamy sand; single grain structure; clear to
Bh2	2.4 to 2.6	Brown (7.5YR42) moist; loamy sand; single grain structure; clear to
Bh3	2.6 to 3.4	Very dark brown (7.5YR2.5/2) moist; loamy sand; single grain structure; gradual to
B4h	3.4 to 6.3	Brown (10YR43) moist; sand; single grain structure; wet when sampled; gradual to
2C	6.3 to 6.9	Grey (5Y51) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.2	3.4	3.5	4.6	3.5
.3	4.3	3.2	3.75	4.6	1.9
.6	4.7	3.7	4	4.7	1.9
.8	4.8	3.9	4.25	4.8	2.1
1	4.8	4.2	4.5	5.1	2.1
1.25	4.8	4.4	4.75	5.1	1.7
1.5	4.8	4.4	5	5.3	1.9
1.75	5.5	4.4	5.25	4.9	3.2
2	5.8	4.4	5.5	5.0	3.2
2.25	5.2	4.3	5.75	5.2	2.5
2.5	4.5	3.9	6	5.6	2.4
2.75	4.5	3.5	6.25	5.7	2.1
3	4.3	3.6	6.5	5.5	1.6
3.25	4.9	4.1	6.75	5.6	1.7

**Observation Notes:**

**Location**      Adjacent road, halfway into sewage plant.

**Vegetation**      *Corymbia intermedia*, *Lophostemon confertus*, *Acacia* Spp, *Casuarina* Spp., *Pteridium esculentum*, *Imperata cylindrica*



**Project:** CAB

**Site:** 118

**Location:** GDA 94      **ZONE** 56      519580mE 7004175mN      **Lat:** -27.08463      **Long:** 153.19749  
**Location:** AGD 84      **ZONE** 56      519474mE 7003987mN      **Lat:** -27.08632      **Long:** 153.19643  
**Location:** AGD 66      **ZONE** 56      519475mE 7003989mN      **Lat:** -27.08631      **Long:** 153.19644

**Described By:** S (Shane) Pointon (POIS)

**Date:** 07/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Classifications:**

**ASC:** AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Very dark grey (10YR31) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
A2e	.3 to 1.2	White (10YR81) moist; sand; single grain structure; moderately moist when sampled; clear to
A3	1.2 to 2.2	Dark greyish brown (10YR42) moist; sand; single grain structure; moderately moist when sampled; clear to
Bh1	2.2 to 2.3	Brown (7.5YR42) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
Bh2	2.3 to 2.5	Dark grey (7.5YR41) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
Bh3	2.5 to 2.6	Dark brown (7.5YR32) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
B3	2.6 to 3.7	Greyish brown (10YR52) moist; sand; single grain structure; wet when sampled; gradual to
2A2e	3.7 to 5	Light grey (10YR71) moist; sand; single grain structure; wet when sampled
2B21	5 to 5.7	Brown (10YR43) moist; sand; single grain structure; wet when sampled; clear to
2B22	5.7 to 6.5	Brown (10YR53) moist; sand; single grain structure; wet when sampled; gradual to
2B23	6.5 to 7	Dark greyish brown (10YR42) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	5.2	3.5	3.75	5.2	4.4
.3	5.1	3.5	4	5.6	4.7
.6	5.0	3.9	4.25	5.6	4.7
.8	4.8	4.4	4.5	5.8	4.6
1	5.3	4.6	4.75	5.6	4.6
1.25	5.4	3.8	5	5.0	4.4
1.5	5.0	3.9	5.25	4.7	4.1
1.75	5.2	4.1	5.5	4.6	3.7
2	5.2	4.6	5.75	4.7	2.2
2.25	4.9	4.6	6	4.6	1.8
2.5	5.0	4.4	6.25	4.9	2.2
2.75	5.3	4.3	6.5	4.8	1.9
3	5.5	4.4	6.75	5.3	2.2
3.25	5.6	4.6	7	5.2	2.5
3.5	5.2	4.5			

**Observation Notes:**

**Location**      Adjacent golf course

**Vegetation**      *Corymbia intermedia*, *Lophostemon confertus*, *Banksia integrifolia*

**Project:** CAB

**Site:** 119

**Location:** GDA 94      **ZONE** 56      520094mE 7003856mN      **Lat:** -27.0875      **Long:** 153.20268  
**Location:** AGD 84      **ZONE** 56      519988mE 7003668mN      **Lat:** -27.08919      **Long:** 153.20162  
**Location:** AGD 66      **ZONE** 56      519989mE 7003670mN      **Lat:** -27.08918      **Long:** 153.20163

**Described By:** S (Shane) Pointon (POIS)

**Date:** 07/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** plain  
**Surface Condition:** Loose  
**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** OXYAQUIC, TENOSOLIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .2	Light brownish grey (10YR62) moist; sand; single grain structure; gradual to
A2e	.2 to 1.1	Very pale brown (10YR73) moist; sand; single grain structure; wet when sampled; clear to
2C	1.1 to 3.6	Grey (10YR61) moist; sand; very few <2% angular platy shell medium pebbles 6-20 mm; single grain structure; wet when sampled; diffuse to
3C	3.6 to 5	Grey (2.5Y61) moist; sand; single grain structure; wet when sampled; diffuse to
4C	5 to 6.5	Light grey (2.5Y71) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	7.6	4.3	3.5	8.2	5.5
.3	7.6	4.9	3.75	8.3	5.6
.6	7.6	4.9	4	8.0	5.4
.8	7.7	4.9	4.25	7.9	5.5
1	7.8	5.0	4.5	7.4	5.4
1.25	7.9	5.2	4.75	7.4	4.8
1.5	8.1	5.4	5	7.2	5.7
1.75	8.0	5.4	5.25	7.8	5.2
2	7.9	5.7	5.5	7.6	4.2
2.25	8.1	5.5	5.75	6.4	3.7
2.5	7.7	5.8	6	7.0	4.9
2.75	8.0	5.6	6.25	6.7	4.7
3	8.0	5.7	6.5	6.7	4.6
3.25	7.9	5.3			

**Observation Notes:**

**Vegetation**      *Acacia* Spp, *Casuarina glauca*, *Imperata cylindrica*

**Project:** CAB

**Site:** 120

**Location:** GDA 94      **ZONE** 56      519967mE 7004025mN      **Lat:** -27.08598  
**Location:** AGD 84      **ZONE** 56      519861mE 7003837mN      **Lat:** -27.08767  
**Location:** AGD 66      **ZONE** 56      519862mE 7003839mN      **Lat:** -27.08766

**Long:** 153.2014  
**Long:** 153.20034  
**Long:** 153.20034

**Described By:** S (Shane) Pointon (POIS)

**Date:** 08/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Surface Condition:** Firm

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** OXYAQUIC, SULFIDIC, Hydroso

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Dark grey (10YR41) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
A12	.2 to .4	Grey (10YR51) moist; sand; single grain structure; wet when sampled; clear to
A2e	.4 to .8	Grey (10YR51) moist; sand; single grain structure; wet when sampled; clear to
B21	.8 to 1	Light grey (10YR71) moist; sand; single grain structure; wet when sampled; clear to
B22	1 to 1.2	Brown (10YR53) moist; sand; single grain structure; wet when sampled; clear to
B23	1.2 to 1.3	Greyish brown (10YR52) moist; sand; single grain structure; wet when sampled; clear to
2A2	1.3 to 1.5	Pale brown (10YR63) moist; sand; single grain structure; wet when sampled; gradual to
3C	1.5 to 2.6	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled; diffuse to
4C	2.6 to 4.1	Grey (2.5Y61) moist; sand; single grain structure; wet when sampled; diffuse to
5C	4.1 to 6.8	Grey (2.5Y61) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	5.6	3.9	3.5	6.0	1.9
.3	5.3	4.3	3.75	6.2	2.0
.6	5.5	4.8	4	6.1	2.1
.8	6.1	5.3	4.25	6.1	1.8
1	6.3	5.3	4.5	6.0	1.7
1.25	6.2	5.2	4.75	6.0	1.8
1.5	6.5	5.3	5	6.2	1.9
1.75	6.2	1.9	5.25	6.3	1.4
2	6.4	2.1	5.5	6.3	1.2
2.25	6.4	1.9	5.75	6.2	1.3
2.5	6.5	1.3	6	6.3	1.5
2.75	6.1	1.4	6.25	6.3	1.4
3	6.2	1.7	6.5	6.2	1.6
3.25	6.1	1.7	6.75	6.3	1.3

**Observation Notes:**

**Location** Adjacent piezometer well. ??ownership

**Vegetation** Melaleuca quinquenervia, Acacia Spp, Lophostemon suaveolens, Imperata cylindrica

**Project:** CAB

**Site:** 121

**Location:** GDA 94    **ZONE** 56    520006mE 7004001mN    **Lat:** -27.0862  
**Location:** AGD 84    **ZONE** 56    519900mE 7003813mN    **Lat:** -27.08789  
**Location:** AGD 66    **ZONE** 56    519901mE 7003815mN    **Lat:** -27.08788

**Long:** 153.20179  
**Long:** 153.20073  
**Long:** 153.20074

**Described By:** S (Shane) Pointon (POIS)

**Date:** 08/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Surface Condition:** Loose

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** BLEACHED-ORTHIC, ARENIC, Tenosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .3	Grey (10YR51) moist; loamy sand; single grain structure; wet when sampled
A12	.3 to .5	Grey (10YR61) moist; sand; single grain structure; wet when sampled
A2e	.5 to .9	White (10YR81) moist; sand; single grain structure
B21	.9 to 1.3	Light yellowish brown (10YR64) moist; sand; single grain structure
B22	1.3 to 2.2	Brownish yellow (10YR66) moist; sand; single grain structure
B23	2.2 to 2.7	Yellowish brown (10YR54) moist; sand; single grain structure
B24	2.7 to 3	Light yellowish brown (10YR64) moist; sand; single grain structure
2A21	3 to 4.2	Very pale brown (10YR73) moist; sand; single grain structure
2A22	4.2 to 4.6	Light grey (10YR72) moist; sand; single grain structure
2B2	4.6 to 5.3	Pale brown (10YR63) moist; sand; single grain structure
3C	5.3 to 6.9	Light brownish grey (2.5Y62) moist; sand; single grain structure

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	3.8	3.3	3.75	4.8	4.4
.3	4.3	3.6	4	6.3	4.9
.6	4.7	4.5	4.25	6.4	4.8
.8	4.7	4.6	4.5	6.3	4.9
1	5.1	4.4	4.75	6.4	4.7
1.25	5.4	4.6	5	6.2	4.6
1.5	5.0	4.9	5.25	6.0	4.9
1.75	5.6	5.0	5.5	6.3	3.9
2	5.5	4.7	5.75	6.2	3.9
2.25	5.6	4.7	6	6.3	3.5
2.5	5.3	4.4	6.25	6.2	4.1
2.75	5.0	4.8	6.5	6.2	3.4
3	4.5	2.5	6.75	6.4	3.7
3.25	5.8	3.8	6.9	6.4	3.2
3.5	5.4	4.4			

**Observation Notes:**

**Vegetation**    *Acacia* Spp, *Corymbia Intermedia*, *Lophostemon confertus*

**Project:** CAB

**Site:** 122

**Location:** GDA 94      **ZONE** 56      516986mE 7004156mN      **Lat:** -27.08484      **Long:** 153.17133  
**Location:** AGD 84      **ZONE** 56      516880mE 7003968mN      **Lat:** -27.08653      **Long:** 153.17027  
**Location:** AGD 66      **ZONE** 56      516881mE 7003970mN      **Lat:** -27.08652      **Long:** 153.17027

**Described By:** S (Shane) Pointon (POIS)

**Date:** 10/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** beach ridge  
**Surface Condition:** Loose  
**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .3	Dark greyish brown (10YR42) moist; sand; single grain structure; dry when sampled; gradual to
A12	.3 to .8	Grey (10YR51) moist; sand; single grain structure; dry when sampled; clear to
2A11	.8 to .9	Dark grey (10YR41) moist; sand; single grain structure; moderately moist when sampled; clear to
2A12	.9 to 2.1	Grey (10YR51) moist; sand; single grain structure; moderately moist when sampled; clear to
3C	2.1 to 2.5	Brown (10YR53) moist; sand; single grain structure; moderately moist when sampled; clear to
4A2	2.5 to 3.6	Grey (10YR61) moist; sand; single grain structure; moderately moist when sampled; clear to
5A1	3.6 to 4.8	Very dark grey (10YR31) moist; sand; single grain structure; moderately moist when sampled; abrupt to
6Bh1	4.8 to 5.2	Black (10YR21) moist; loamy sand; single grain structure; wet when sampled; abrupt to
6Bh2	5.2 to 6.7	Dark brown (7.5YR33) moist; loamy sand; single grain structure; wet when sampled; gradual to
7C	6.7 to 7.7	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; gradual to
8C	7.7 to 8	Grey (2.5Y51) moist; sand; single grain structure; wet when sampled; gradual to

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.5	2.0	4.25		4.6	2.6
.3	1	4.8	2.1	4.5		4.4	3.1
.6		4.5	2.8	4.75		4.5	4.2
.8		4.6	2.4	5		4.6	4.2
1		4.2	2.3	5.25		5.0	3.4
1.25		4.4	2.1	5.5		5.1	4.0
1.5		4.1	2.6	5.75		5.6	4.2
1.75		4.2	3.4	6		5.1	4.1
2		4.6	2.1	6.25		5.4	2.5
2.25		4.6	2.4	6.5		5.3	2.6
2.5		4.3	3.1	6.75		5.4	2.9
2.75		4.4	3.5	7		5.4	3.6
3		4.4	3.0	7.25		5.6	3.6
3.25		4.2	2.6	7.5		5.8	3.4
3.5		3.9	2.8	7.75		5.5	2.8
3.75		3.9	3.1	8	3	5.6	2.8
4		4.1	2.9				

**Observation Notes:**

Vegetation *Callitris columellaris* (Bribie Island pine), *Corymbia intermedia*, *Eucalyptus* Spp (stringybark), *Acacia* Spp.,  
*Imperata cylindrica*

**Project:** CAB

**Site:** 123

**Location:** GDA 94      **ZONE** 56      516803mE 7004013mN      **Lat:** -27.08613      **Long:** 153.16948  
**Location:** AGD 84      **ZONE** 56      516697mE 7003825mN      **Lat:** -27.08782      **Long:** 153.16842  
**Location:** AGD 66      **ZONE** 56      516698mE 7003827mN      **Lat:** -27.08781      **Long:** 153.16843

**Described By:** S (Shane) Pointon (POIS)

**Date:** 10/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge      **Element:** swale  
**Surface Condition:** Soft  
**Disturbances:** Limited clearing

**Classifications:**

**ASC:** AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .3	Black (10YR21) moist; clay loam, sandy; weak structure; moist when sampled; gradual to
A12	.3 to .5	Very dark grey (10YR31) moist; loamy sand; weak structure; moist when sampled; clear to
A2	.5 to 1.1	Light brownish grey (2.5Y63) moist; sand; single grain structure; wet when sampled; gradual to
C	1.1 to 1.7	Olive grey (5Y52) moist; loamy sand; single grain structure; wet when sampled; gradual to
2C	1.7 to 2.5	Light olive grey (5Y62) moist; sand; single grain structure; wet when sampled; gradual to
3C	2.5 to 3.8	Grey (5Y61) moist; sand; single grain structure; wet when sampled; gradual to
4C	3.8 to 4.7	Grey (5Y51) moist; sandy loam; single grain structure; wet when sampled; abrupt to
5Bh	4.7 to 6	Very dark brown (7.5YR2.5/2) moist; loamy sand; massive structure; weakly cemented continuous massive thin ironpan; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.3	3.7	3.25	4	6.0	1.9
.3	1	5.3	3.6	3.5	4	6.6	1.4
.6		5.7	4.7	3.75	4	6.5	1.9
.8		5.8	4.7	4	4	6.4	1.8
1		5.7	4.7	4.25	4	6.7	1.8
1.25	4	5.4	2.4	4.5	4	6.7	1.9
1.5	4	5.3	2.3	4.75	4	6.8	1.8
1.75	1	6.0	1.9	5	4	6.7	1.6
2	1	6.0	1.6	5.25	1	6.5	4.1
2.25	1	6.2	1.6	5.5	1	6.6	4.4
2.5	1	5.9	1.8	5.75	1	6.6	4.6
2.75	1	6.2	1.6	6	1	6.7	4.2
3	4	5.9	1.7				

**Project:** CAB

**Site:** 124

<b>Location:</b> GDA 94	<b>ZONE</b> 56	518847mE 7003022mN	<b>Lat:</b> -27.09505	<b>Long:</b> 147.19012
<b>Location:</b> AGD 84	<b>ZONE</b> 56	518732mE 7002838mN	<b>Lat:</b> -27.09671	<b>Long:</b> 147.18896
<b>Location:</b> AGD 66	<b>ZONE</b> 56	518732mE 7002839mN	<b>Lat:</b> -27.09671	<b>Long:</b> 147.18896

**Described By:** S (Shane) Pointon (POIS)

**Date:** 15/AUG/06

**Landscape:**

<b>Landform Pattern:</b> beach ridge plain	<b>Element:</b> swale
<b>Surface Condition:</b> Loose	
<b>Disturbances:</b> Limited clearing	

**Classifications:**

**ASC:** OXYAQUIC, Hydroso

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .5	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; clear to
A21e	.5 to 1.3	Light brownish grey (10YR62) moist; sand; single grain structure; dry when sampled; gradual to
A22e	1.3 to 1.5	Light grey (10YR72) moist; sand; single grain structure; moist when sampled; clear to
A31	1.5 to 1.7	Light brownish grey (10YR62) moist; sand; single grain structure; wet when sampled; clear to
A32	1.7 to 2	Pale brown (10YR63) moist; sand; single grain structure; wet when sampled; gradual to
B21	2 to 2.3	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled; gradual to
B22	2.3 to 2.7	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; gradual to
2C	2.7 to 4	Light brownish grey (10YR62) moist; sand; very few <2% rounded quartz large pebbles 20-60 mm; single grain structure; wet when sampled; gradual to
3C	4 to 5.5	Grey (10YR61) moist; sand; single grain structure; wet when sampled; gradual to
4C	5.5 to 8	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.2	2.8	4.25		5.4	2.2
.3	1	4.4	2.7	4.5		5.3	2.3
.6		4.6	4.3	4.75		5.7	2.1
.8		5.2	4.0	5		5.6	2.4
1		4.8	4.4	5.25		5.3	2.4
1.25		5.0	3.4	5.5		5.4	2.6
1.5		5.2	3.8	5.75		5.5	2.1
1.75		5.5	4.2	6	1	5.5	2.2
2		5.4	4.3	6.25	1	5.8	2.4
2.25		5.4	4.1	6.5	1	5.5	2.3
2.5	1	5.5	1.7	6.75	1	5.6	3.4
2.75		5.5	1.6	7		6.2	1.8
3		6.4	1.9	7.25		5.6	1.8
3.25		6.7	2.1	7.5		5.5	1.8
3.5		6.1	2.1	7.75		5.4	1.8
3.75		5.4	1.8	8		5.8	1.9
4		5.4	1.9				

**Observation Notes:**

**Vegetation** Melaleuca quinquenervia, Corymbia tessellaris, Acacia Spp, Leptospermum Spp, Imperata cylindrica

**Project:** CAB

**Site:** 125

**Location:** GDA 94      **ZONE** 56      518814mE 7002793mN      **Lat:** -27.09712  
**Location:** AGD 84      **ZONE** 56      518708mE 7002605mN      **Lat:** -27.09881  
**Location:** AGD 66      **ZONE** 56      518709mE 7002607mN      **Lat:** -27.0988

**Long:** 153.18979  
**Long:** 153.18873  
**Long:** 153.18873

**Described By:** S (Shane) Pointon (POIS)

**Date:** 15/AUG/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Surface Condition:** Loose

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** OXYAQUIC, RUDSOLIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .1	Dark greyish brown (10YR42) moist; sand; single grain structure
A21e	.1 to 1.2	Light yellowish brown (10YR64) moist; sand; single grain structure
A22e	1.2 to 1.8	Very pale brown (10YR73) moist; sand; single grain structure
A23	1.8 to 2.1	Very pale brown (10YR74) moist; sand; single grain structure
2C	2.1 to 2.2	Light brownish grey (10YR62) moist; sand; single grain structure
3C	2.2 to 2.4	Light yellowish brown (10YR64) moist; sand; single grain structure
4C1	2.4 to 2.7	Grey (10YR51) moist; coarse sand; common 10-20% angular platy shell medium pebbles 6-20 mm; single grain structure
4C2	2.7 to 3.6	Light brownish grey (10YR62) moist; coarse sand; few 2-10% angular platy shell medium pebbles 6-20 mm; single grain structure
5C1	3.6 to 5	Light grey (10YR71) moist; sand; single grain structure
5C2	5 to 6.75	White (10YR82) moist; sand; single grain structure

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.3	3.4	3.5	8.3	5.6
.3	5.0	4.6	3.75	7.2	4.8
.6	5.0	4.4	4	6.6	4.4
.8	4.9	4.3	4.25	7.0	4.6
1	5.3	4.5	4.5	7.2	5.0
1.25	5.4	4.7	4.75	7.5	5.7
1.5	5.7	4.8	5	6.6	4.8
1.75	6.0	5.4	5.25	6.4	4.8
2	7.1	5.0	5.5	6.3	4.8
2.15	6.0	3.0	5.75	6.5	4.7
2.25	5.8	3.9	6	6.7	5.0
2.5	7.7	6.0	6.25	6.8	5.0
2.75	8.0	6.2	6.5	6.0	5.0
3	8.2	6.2	6.75	6.1	4.9
3.25	8.3	6.0			

**Observation Notes:**

**Vegetation**      *Corymbia tessellaris*, *Banksia Integrifolia*, *Acacia* Spp, *Lantana camara*, *Imperata cylindrica*



**Project:** CAB

**Site:** 126

**Location:** GDA 94      **ZONE** 56      519536mE 7003882mN      **Lat:** -27.08728      **Long:** 153.19705  
**Location:** AGD 84      **ZONE** 56      519430mE 7003694mN      **Lat:** -27.08897      **Long:** 153.19599  
**Location:** AGD 66      **ZONE** 56      519431mE 7003696mN      **Lat:** -27.08896      **Long:** 153.196

**Described By:** S (Shane) Pointon (POIS)

**Date:** 10/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Classifications:**

**ASC:** Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled; gradual to
A2e	.4 to 1.5	Grey (10YR61) moist; sand; single grain structure; dry when sampled; gradual to
B1	1.5 to 2.2	Dark greyish brown (10YR42) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
Bh1	2.2 to 2.5	Brown (7.5YR42) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
Bh2	2.5 to 2.7	Very dark brown (7.5YR2.5/2) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
Bh3	2.7 to 3.2	Dark brown (7.5YR32) moist; loamy sand; single grain structure; moist when sampled; clear to
B4h	3.2 to 3.8	Brown (7.5YR42) moist; very few <2% medium 5-15mm distinct dark mottles; loamy sand; single grain structure; wet when sampled; clear to
2C	3.8 to 4.2	Greyish brown (10YR52) moist; sand; single grain structure; wet when sampled; gradual to
3C	4.2 to 5.3	Light brownish grey (10YR62) moist; sand; single grain structure; wet when sampled; gradual to
4C	5.3 to 6.2	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled; clear to
5C	6.2 to 6.4	Brown (10YR53) moist; coarse sand; single grain structure; wet when sampled; clear to
6C	6.4 to 6.75	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		3.8	2.5	3.5	1	5.0	2.4
.3		3.8	2.7	3.75	1	5.4	2.0
.6		3.9	3.1	4		5.6	2.7
.8		4.1	3.4	4.25		5.8	3.7
1		4.4	3.4	4.5		5.6	4.0
1.25		4.5	3.4	4.75		5.5	4.3
1.5		4.4	3.0	5		5.0	4.0
1.75		4.1	2.1	5.25		4.9	3.9
2		4.2	2.9	5.5		5.0	3.8
2.25		4.3	2.8	5.75		4.8	3.8
2.5		4.5	3.1	6		4.7	3.9
2.75	1	5.5	2.2	6.25		4.8	3.8
3		5.4	2.1	6.5		4.7	2.5
3.25	1	5.1	2.4	6.75		5.1	2.5

**Project:** CAB

**Site:** 127

**Location:** GDA 94      **ZONE** 56      519455mE 7003730mN      **Lat:** -27.08865

**Long:** 153.19624

**Location:** AGD 84      **ZONE** 56      519349mE 7003542mN      **Lat:** -27.09034

**Long:** 153.19518

**Location:** AGD 66      **ZONE** 56      519350mE 7003544mN      **Lat:** -27.09033

**Long:** 153.19518

**Described By:** S (Shane) Pointon (POIS)

**Date:** 10/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Classifications:**

**ASC:** Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to 1.3	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled; clear to
A2e	1.3 to 2.1	Grey (10YR61) moist; sand; single grain structure; moderately moist when sampled; abrupt to
Bh1	2.1 to 2.5	Very dark grey (7.5YR31) moist; very few <2% medium 5-15mm faint dark mottles; loamy sand; single grain structure; moderately moist when sampled; clear to
Bh2	2.5 to 3	Dark greyish brown (10YR42) moist; loamy sand; single grain structure; moist when sampled; clear to
2A2	3 to 4.1	Light grey (10YR71) moist; sand; single grain structure; wet when sampled; gradual to
3C	4.1 to 5.1	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; clear to
4C	5.1 to 5.3	Greyish brown (2.5Y53) moist; coarse sand; few 2-10% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; clear to
5C	5.3 to 5.6	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	3.7	2.1	3	6.5	4.4
.3	3.7	2.4	3.25	6.7	5.4
.6	3.8	2.3	3.5	6.9	4.9
.8	3.8	2.3	3.75	6.7	5.0
1	3.6	2.3	4	6.5	5.1
1.25	3.8	2.1	4.25	6.6	5.0
1.5	5.7	2.4	4.5	6.6	5.0
1.75	5.9	2.6	4.75	6.6	5.0
2	6.1	3.1	5	6.5	4.9
2.25	6.0	2.1	5.25	6.6	4.6
2.5	5.5	3.6	5.5	6.6	2.8
2.75	6.4	4.3			

**Project:** CAB

**Site:** 128

**Location:** GDA 94      **ZONE** 56      519381mE 7003534mN      **Lat:** -27.09042      **Long:** 153.19549  
**Location:** AGD 84      **ZONE** 56      519275mE 7003346mN      **Lat:** -27.09211      **Long:** 153.19443  
**Location:** AGD 66      **ZONE** 56      519276mE 7003348mN      **Lat:** -27.0921      **Long:** 153.19444

**Described By:** S (Shane) Pointon (POIS)

**Date:** 10/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .5	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled; gradual to
A2e	.5 to 1.2	Greyish brown (10YR52) moist; sand; single grain structure; dry when sampled; clear to
B1	1.2 to 1.8	Dark grey (7.5YR41) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
Bh1	1.8 to 2.1	Very dark grey (7.5YR31) moist; loamy sand; single grain structure; moist when sampled; clear to
Bh2	2.1 to 2.5	Brown (7.5YR42) moist; loamy sand; single grain structure; moist when sampled; clear to
2C	2.5 to 3	Brown (10YR53) moist; sand; single grain structure; wet when sampled; clear to
3A2e	3 to 3.9	White (10YR81) moist; sand; single grain structure; wet when sampled; clear to
4C	3.9 to 5.8	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled; gradual to
5C	5.8 to 7	Brown (10YR53) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.5	3.3	3.75	7.0	5.8
.3	4.0	3.2	4	7.4	5.7
.6	4.1	3.6	4.25	7.3	5.8
.8	4.3	3.6	4.5	7.5	5.4
1	4.5	3.5	4.75	7.5	5.6
1.25	4.5	3.2	5	7.5	5.7
1.5	4.8	3.3	5.25	7.5	5.8
1.75	5.2	4.7	5.5	7.6	5.8
2	6.5	4.6	5.75	7.5	5.5
2.25	6.2	4.5	6	7.5	5.5
2.5	6.1	4.4	6.25	7.7	5.7
2.75	6.2	4.5	6.5	7.8	5.9
3	6.3	4.7	6.75	7.8	5.6
3.25	6.8	5.5	7	7.7	5.6
3.5	7.2	5.6			

**Project:** CAB

**Site:** 129

**Location:** GDA 94      **ZONE** 56      518261mE 7003507mN      **Lat:** -27.09068  
**Location:** AGD 84      **ZONE** 56      518155mE 7003319mN      **Lat:** -27.09237  
**Location:** AGD 66      **ZONE** 56      518156mE 7003321mN      **Lat:** -27.09236

**Long:** 153.1842  
**Long:** 153.18314  
**Long:** 153.18314

**Described By:** JA (Jeremy) Manders (MANJ)

**Date:** 16/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Disturbances:** No effective disturbance

**Classifications:**

**ASC:** SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .1	Very dark grey (10YR31) moist; sapric sandy loam; weak structure; moist when sampled; abrupt to
B1	.1 to .3	Dark greyish brown (10YR42) moist; few 2-10% medium 5-15mm distinct dark mottles; sand; single grain structure; moist when sampled; clear to
B2s	.3 to .9	Yellowish brown (10YR54) moist; few 2-10% coarse 15-30mm faint dark mottles; sand; single grain structure; moderately moist when sampled; diffuse to
B3	.9 to 1.5	Light brownish grey (10YR62) moist; very few <2% coarse 15-30mm faint dark mottles; sand; single grain structure; wet when sampled; diffuse to
C1	1.5 to 4.2	Grey (2.5Y51) moist; sand; single grain structure; wet when sampled; gradual to
2C2	4.2 to 6.3	Dark grey (2.5Y41) moist; sand; very few <2% angular shell small pebbles 2-6 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.5	3.4	3.25	4	7.7	1.2
.3		6.3	4.2	3.5	4	7.4	1.6
.6		7.0	4.2	3.75		7.5	1.3
.8		7.1	4.8	4	4	8.1	1.2
1		7.5	4.9	4.25		7.9	5.3
1.25		7.6	4.8	4.5		8.4	5.5
1.5		7.5	1.5	4.75		8.3	5.6
1.75		7.1	1.4	5		8.3	5.7
2	4	7.5	1.8	5.25		8.5	5.5
2.25	4	7.6	1.7	5.5		7.9	5.5
2.5	4	7.4	1.0	5.75		8.4	5.5
2.75	4	7.5	1.2	6		8.3	5.4
3	3	7.6	1.3	6.25		8.5	5.5

**Observation Notes:**

**Location** Site South of STP and north of disused discharge pond.

**Vegetation** Melaleuca quinquenervia roots to 12m

**Horizon Notes:**

**Horizon** C1 Sapric loam layer (10YR21) 1cm thick at 2.5m depth

**Project:** CAB

**Site:** 130

**Location:** GDA 94      **ZONE** 56      518233mE 7003651mN      **Lat:** -27.08938

**Long:** 153.18391

**Location:** AGD 84      **ZONE** 56      518127mE 7003463mN      **Lat:** -27.09107

**Long:** 153.18285

**Described By:** JA (Jeremy) Manders (MANJ)

**Date:** 16/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Depth to Water** 1.5

**Disturbances:** No effective disturbance

**Classifications:**

**ASC:** SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .15	Very dark grey (10YR31) moist; sand; single grain structure; dry when sampled; diffuse to
A12	.15 to .7	Dark grey (10YR41) moist; light grey (10YR72) dry; sand; single grain structure; dry when sampled; gradual to
A2e	.7 to 2	Greyish brown (10YR52) moist; light grey (10YR72) dry; sand; single grain structure; moderately moist when sampled; diffuse to
B1	2 to 2.4	Brown (10YR43) moist; sand; single grain structure; wet when sampled; clear to
B2s	2.4 to 2.7	Dark yellowish brown (10YR44) moist; sand; single grain structure; wet when sampled; clear to
C1	2.7 to 3.9	Yellowish brown (10YR54) moist; sand; very few <2% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; diffuse to
C2	3.9 to 5.8	Greyish brown (2.5Y53) moist; sand; very few <2% subrounded quartz small pebbles 2-6 mm; very few <2% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; diffuse to
C3	5.8 to 7.8	Dark greyish brown (2.5Y42) moist; sand; very few <2% subrounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled; diffuse to
2C4	7.8 to 8.6	Dark grey (5Y41) moist; sand; single grain structure; wet when sampled; gradual to
2C5	8.6 to 8.9	Very dark grey (5Y31) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.0	2.7	4.75		5.2	2.9
.3		4.0	3.1	5		4.9	3.2
.6		4.3	2.7	5.25		5.3	3.3
.8		4.5	3.1	5.5		5.2	2.8
1		4.2	3.4	5.75		4.9	3.2
1.25		4.6	3.7	6		5.7	2.7
1.5		5.2	4.3	6.25		5.8	2.8
1.75		5.3	4.0	6.5		5.8	2.5
2		4.9	4.3	6.75		5.6	2.6
2.25		5.3	4.3	7		5.6	2.6
2.5		5.5	4.0	7.25	1	5.6	2.6
2.75		5.6	4.1	7.5	3	5.4	2.4
3		5.5	3.7	7.75	4	5.6	1.4
3.25		5.4	3.7	8	4	5.5	1.5
3.5		5.3	3.3	8.25	4	5.8	1.6
3.75		5.3	3.3	8.5	4	5.8	1.4
4		5.1	3.3	8.75	4	6.1	1.5
4.25		5.1	2.7	8.9	4	6.5	1.7
4.5		5.2	2.8				

**Observation Notes:**

Observation      Roots to 1.5m, Water table at 1.5m

**Project:** CAB

**Site:** 131

**Location:** GDA 94      **ZONE** 56      518115mE 7002858mN      **Lat:** -27.09654      **Long:** 153.18273  
**Location:** AGD 84      **ZONE** 56      518009mE 7002670mN      **Lat:** -27.09823      **Long:** 153.18167  
**Location:** AGD 66      **ZONE** 56      518010mE 7002672mN      **Lat:** -27.09822      **Long:** 153.18168

**Described By:** JA (Jeremy Manders (MANJ))

**Date:** 17/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Surface Condition:** Soft

**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Dark grey (10YR41) moist; grey (10YR51) dry; sand; single grain structure; dry when sampled; diffuse to
A2e	.4 to 1.6	Light grey (10YR72) dry; sand; single grain structure; dry when sampled; diffuse to
B2s	1.6 to 2.7	Light yellowish brown (10YR64) moist; sand; single grain structure; moderately moist when sampled; diffuse to
2C1	2.7 to 3.5	Greyish brown (2.5Y53) moist; sand; very few <2% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; diffuse to
2C2	3.5 to 6.6	Grey (2.5Y51) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.7	3.7	3.5		5.7	1.8
.3	1	4.2	3	3.75		5.9	1.8
.6	1	4.4	3.4	4		6.3	4.0
.8		4.9	3.7	4.25		6.0	1.9
1		5.2	4.1	4.5		5.7	1.4
1.25		5.2	4.3	4.75	4	5.6	1.5
1.5		5.1	4.3	5	4	5.6	1.6
1.75		4.8	3.9	5.25	3	5.9	1.6
2		4.9	4.3	5.5	4	6.0	1.5
2.25		5.2	4.5	5.75	4	5.9	1.5
2.5		5.1	4.5	6	3	6.2	1.7
2.75		5.3	2.5	6.25	2	6.4	1.6
3		5.5	1.6	6.5	2	6.2	1.6
3.25		5.4	1.7	6.6	2	6.1	1.6

**Observation Notes:**

Observation      Water table at 2.0m

**Horizon Notes:**

Horizon      2C1      Organic layer at 2.9m  
Horizon      2C1      Coffee rock fragment at 3.5m

Project: CAB

Site: 132

Location: GDA 94      ZONE 56      518166mE 7003139mN      Lat: -27.094

Long: 153.18324

Described By: JA (Jeremy) Manders (MANJ)

Date: 23/OCT/06

**Landscape:**

Landform Pattern: beach ridge plain

Element: Rises

Surface Condition: Soft

Disturbances: Extensive clearing

**Classifications:**

ASC: SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Greyish brown (10YR52) moist; sand; single grain structure; dry when sampled; diffuse to
A21	.3 to 1.1	Pale brown (10YR63) moist; sand; single grain structure; dry when sampled; diffuse to
A22	1.1 to 1.8	Brown (10YR53) moist; sand; single grain structure; dry when sampled; abrupt to
A23	1.8 to 2	Grey (10YR51) moist; sand; single grain structure; dry when sampled; abrupt to
A24	2 to 3	Pale brown (10YR63) moist; sand; single grain structure; dry when sampled; diffuse to
A25	3 to 4	Very pale brown (10YR73) moist; sand; single grain structure; moderately moist when sampled; gradual to
B21s	4 to 4.25	Dark greyish brown (10YR42) moist; sand; single grain structure; wet when sampled; clear to
B22s	4.25 to 4.75	Dark yellowish brown (10YR44) moist; sand; single grain structure; wet when sampled; diffuse to
2C1	4.75 to 5.5	Dark greyish brown (2.5Y43) moist; sand; single grain structure; wet when sampled; diffuse to
2C2	5.5 to 9.5	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; diffuse to
3C3	9.5 to 10.5	Olive grey (5Y52) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3				
				5.5	3	5.6	2.1
.1	1	5.3	3.5	5.75	3	5.4	1.4
.3	1	4.1	2.8	6		6.1	2.2
.6		4.5	3.5	6.25		6.2	2.2
.8		4.6	3.1	6.5		5.8	1.8
1		5.0	2.9	6.75		6.0	1.8
1.25		5.5	2.6	7		5.9	1.8
1.5		5.3	3.0	7.25	1	6.9	1.7
1.75		5.2	3.6	7.5	1	6.6	1.6
2		6.0	3.4	7.75	1	6.6	1.6
2.25		5.7	3.9	8	1	6.5	1.5
2.5		5.4	3.6	8.25	1	6.8	1.6
2.75		5.6	3.6	8.5	1	6.6	1.6
3		5.4	3.5	8.75	1	6.6	1.6
3.25		4.7	3.4	9	3	6.8	1.8
3.5		4.3	3.3	9.25	3	6.7	1.5
3.75		5.0	3.8	9.5	3	6.4	2.2
4	1	4.5	3.4	9.75	3	6.8	1.5
4.25	1	5.1	3.4	10	3	6.7	1.5
4.5	1	4.9	2.4	10.25	3	6.3	1.8
4.75	1	5.3	1.1	10.5	3	6.2	1.6
5	1	5.4	1.				
5.25	3	5.4	1.5				

Project: CAB

Site: 133

Location: GDA 94	ZONE 56	516854mE 7003118mN	Lat: -27.09421	Long: 153.17001
Location: AGD 84	ZONE 56	516748mE 7002930mN	Lat: -27.0959	Long: 153.16895
Location: AGD 66	ZONE 56	516749mE 7002932mN	Lat: -27.09589	Long: 153.16895

Described By: JA (Jeremy) Manders (MANJ)

Date: 24/OCT/06

**Landscape:**

Landform Pattern: beach ridge plain

Element: No record

**Classifications:**

ASC: SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .05	Grey (10YR51) moist; sand; single grain structure; dry when sampled; abrupt to
A12	.05 to .7	Dark grey (10YR41) moist; sand; single grain structure; dry when sampled; clear to
A21e	.7 to 1.5	Light grey (10YR71) moist; sand; single grain structure; diffuse to
A22e	1.5 to 2.5	Light grey (10YR72) moist; sand; single grain structure; wet when sampled; diffuse to
B2s	2.5 to 4.5	Dark yellowish brown (10YR34) moist; sand; very few <2% rounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled; diffuse to
B3	4.5 to 5.8	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; diffuse to
C1	5.8 to 6.45	Olive grey (5Y52) moist; sand; very few <2% angular shell small pebbles 2-6 mm; single grain structure; wet when sampled; abrupt to
2C2	6.45 to 6.55	Grey (5Y51) moist; sandy loam; few 2-10% angular shell small pebbles 2-6 mm; single grain structure; wet when sampled; clear to
2C3	6.55 to 7	Light olive grey (5Y62) moist; sand; very few <2% angular shell small pebbles 2-6 mm; very few <2% angular shell medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	3.6	3.1	3.75		4.9	2.6
.3	1	3.2	3.4	4		4.9	2.3
.6		3.6	4.3	4.25		4.9	1.6
.8		4.3	4.8	4.5	1	5.0	1.8
1		4.3	5.0	4.75	1	4.8	1.7
1.25		4.4	5.0	5	1	5.0	1.9
1.5		4.5	5.1	5.25		4.9	2.0
1.75		5.1	5.1	5.5		4.8	3.1
2		4.8	5.2	5.75		5.1	1.8
2.25		4.6	5.2	6		6.8	3.5
2.5		4.8	5.2	6.25		6.9	2.2
2.75		5.3	5.0	6.5		7.3	5.7
3		4.8	4.3	6.75		7.7	6.1
3.25		5.0	2.9	7		7.7	6.3
3.5		4.7	3.4				

**Horizon Notes:**

Horizon	A11	roots present
Horizon	2C2	less sorted than C1 horizon
Horizon	2C3	less sorted than above horizons



**Project:** CAB

**Site:** 134

**Location:** GDA 94    **ZONE** 56    517103mE 7003060mN    **Lat:** -27.09473    **Long:** 153.17252  
**Location:** AGD 84    **ZONE** 56    516997mE 7002872mN    **Lat:** -27.09642    **Long:** 153.17146  
**Location:** AGD 66    **ZONE** 56    516998mE 7002874mN    **Lat:** -27.09641    **Long:** 153.17147

**Described By:** JA (Jeremy) Manders (MANJ)

**Date:** 24/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Classifications:**

**ASC:** SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .15	Grey (10YR51) moist; sand; single grain structure; common 10-20% medium 2-6mm organic (humified) fragments; dry when sampled; gradual to
A12	.15 to .6	Grey (10YR51) moist; sand; single grain structure; dry when sampled; diffuse to
A3	.6 to 1.6	Pale brown (10YR63) moist; sand; single grain structure; dry when sampled; gradual to
B21s	1.6 to 1.95	Dark brown (10YR33) moist; many 20-50% very coarse >30mm prominent dark mottles; sand; very few <2% rounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled; clear to
B22	1.95 to 2.2	Dark yellowish brown (10YR34) moist; sand; single grain structure; wet when sampled; clear to
B23	2.2 to 2.9	Olive brown (2.5Y44) moist; very few <2% fine <5mm faint dark mottles; sand; very few <2% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; clear to
C1	2.9 to 3.45	Olive (5Y43) moist; sand; single grain structure; wet when sampled; gradual to
C2	3.45 to 5.75	Light olive grey (5Y62) moist; sand; single grain structure; wet when sampled; diffuse to
2C3	5.75 to 6.85	Olive grey (5Y52) moist; sand; very few <2% angular shell small pebbles 2-6 mm; single grain structure; wet when sampled; abrupt to
3C4	6.85 to 7	Very dark grey (5Y31) moist; loamy sand; few 2-10% angular shell small pebbles 2-6 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.5	3.6	3.75		4.3	1.8
.3		4.3	3.7	4	1	4.4	1.7
.6		4.5	4.1	4.25	1	4.5	1.9
.8		4.5	4.4	4.5	1	4.8	2.5
1		4.6	4.2	4.75	1	4.8	2.2
1.25		5.0	4.5	5	1	4.9	1.8
1.5	1	4.1	3.9	5.25	1	5.2	2.2
1.75	1	3.7	3.7	5.5	1	5.1	1.8
2		4.2	3.7	5.75	1	5.7	1.8
2.25	2	4.5	1.3	6	1	6.3	1.5
2.5	4	4.6	1.0	6.25	1	6.2	1.9
2.75	4	4.8	1.3	6.5	1	6.7	3.6
3	1	4.7	1.5	6.75	1	7.5	5.5
3.25	1	4.3	1.4	7	4	7.4	6.2
3.5		4.4	1.6				

**Project:** CAB

**Site:** 135

**Location:** GDA 94    **ZONE** 56    517278mE 7003057mN    **Lat:** -27.09476    **Long:** 153.17429  
**Location:** AGD 84    **ZONE** 56    517172mE 7002869mN    **Lat:** -27.09645    **Long:** 153.17323  
**Location:** AGD 66    **ZONE** 56    517173mE 7002871mN    **Lat:** -27.09644    **Long:** 153.17323

**Described By:** JA (Jeremy) Manders (MANJ)

**Date:** 24/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** No record

**Classifications:**

**ASC:** HUMIC/HUMOSESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .3	Very dark grey (10YR31) moist; sand; single grain structure; dry when sampled; gradual to
A21	.3 to .9	Pale brown (10YR63) moist; sand; single grain structure; dry when sampled; clear to
A22	.9 to 2.85	Yellowish brown (10YR54) moist; sand; single grain structure; dry when sampled; gradual to
A23e	2.85 to 4.25	Sand; moist when sampled; clear to
B21hs	4.25 to 4.5	Dark brown (10YR33) moist; sand; wet when sampled; gradual to
2C1	4.5 to 5.7	Light olive grey (5Y62) moist; sand; single grain structure; wet when sampled; clear to
2C2	5.7 to 6.55	Grey (5Y61) moist; sand; single grain structure; wet when sampled; gradual to
3C3	6.55 to 7.3	Dark grey (5Y41) moist; loamy sand; single grain structure; wet when sampled; gradual to
4C	7.3 to 7.5	Dark grey (5Y41) moist; loamy sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.5	4.0	4		5.0	4.4
.3	1	4.1	4.0	4.25		4.6	4.6
.6		4.2	4.9	4.5		4.2	1.8
.8		4.6	5.0	4.75		4.7	1.6
1		5.0	4.7	5	1	4.9	1.4
1.25		5.6	5.0	5.25	1	5.1	1.4
1.5		5.9	5.1	5.5	1	4.9	1.2
1.75		5.5	4.8	5.75	1	4.7	1.3
2		5.1	4.8	6	3	5.0	1.4
2.25		5.2	5.0	6.25	4	5.4	1.8
2.5		6.1	5.2	6.5	4	4.4	1.8
2.75		5.9	5.2	6.75	4	4.9	1.6
3		6.0	5.2	7	4	5.0	1.7
3.25		5.7	5.1	7.25	4	5.0	1.8
3.5		4.1	4.9	7.5	4	5.2	1.7
3.75		4.7	5.0				

**Observation Notes:**

Observation    Roots to 0.6m

**Horizon Notes:**

Horizon    A23e    Depth to water 3.9m. @3.5m, roots; @3.8m, organic stain.

**Project:** CAB

**Site:** 136

**Location:** GDA 94      **ZONE** 56      518153mE 7003340mN      **Lat:** -27.09219

**Long:** 153.18311

**Location:** AGD 84      **ZONE** 56      518047mE 7003152mN      **Lat:** -27.09388

**Long:** 153.18205

**Described By:** JA (Jeremy) Manders (MANJ)

**Date:** 25/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Classifications:**

**ASC:** SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A	0 to .05	Black (10YR21) moist; loam; single grain structure; wet when sampled; clear to
A1	.05 to .25	Black (10YR21) moist; loamy sand; single grain structure; wet when sampled; clear to
A3	.25 to .7	Light brownish grey (10YR62) moist; few 2-10% medium 5-15mm faint dark mottles; sand; single grain structure; wet when sampled; gradual to
2A2	.7 to 1.05	Pale brown (10YR63) moist; coarse sand; very few <2% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; diffuse to
2B21s	1.05 to 1.8	Dark brown (10YR33) moist; very few <2% medium 5-15mm faint dark mottles; sand; very few <2% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; diffuse to
2B22	1.8 to 2.65	Brown (10YR43) moist; sand; single grain structure; wet when sampled; gradual to
2C1	2.65 to 4.2	Dark greyish brown (2.5Y42) moist; sand; single grain structure; wet when sampled; diffuse to
3C2	4.2 to 5.4	Grey (5Y51) moist; sand; very few <2% angular shell small pebbles 2-6 mm; single grain structure; wet when sampled; diffuse to
4C3	5.4 to 5.8	Dark greenish grey (10Y31) moist; sandy clay loam; very few <2% angular shell small pebbles 2-6 mm; very few <2% angular shell medium pebbles 6-20 mm; massive structure; wet when sampled; clear to
5C4	5.8 to 8	Greenish grey (10Y51) moist; sand; very few <2% angular shell small pebbles 2-6 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		6.6	5.0	4.25	1	8.7	4.3
.3		6.4	5.1	4.5	1	8.6	4.4
.6		7.0	5.4	4.75	1	8.2	2.2
.8		6.7	5.3	5	1	7.3	4.8
1		6.9	5.3	5.25	1	8.1	6.3
1.25	1	7.4	1.6	5.5	1	8.1	6.3
1.5	1	7.0	1.6	5.75	1	8.1	6.8
1.75	1	7.2	1.6	6	1	7.4	5.5
2		7.0	1.4	6.25	1	7.7	5.9
2.25		6.6	1.3	6.5	1	7.6	5.9
2.5	4	6.4	2.4	6.75	1	7.3	6.9
2.75	4	7.1	1.8	7	1	7.1	6.3
3	4	6.9	1.9	7.25	1	8.0	5.9
3.25	4	7.1	1.7	7.5	1	8.0	6.4
3.5	4	6.9	1.8	7.75	1	7.7	5.9
3.75	4	7.2	1.9	7.95	1	7.9	6.1
4	1	8.0	1.9				

**Observation Notes:**

Observation      roots to 0.6m. fragmites present

**Horizon Notes:**

Horizon      A      roots      |      Horizon      A1      roots      |      Horizon      5C4      organic coarse frags also present

**Project:** CAB

**Site:** 137

<b>Location:</b> GDA 94	<b>ZONE</b> 56	518555mE 7003150mN	<b>Lat:</b> -27.0939	<b>Long:</b> 153.18717
<b>Location:</b> AGD 84	<b>ZONE</b> 56	518449mE 7002962mN	<b>Lat:</b> -27.09559	<b>Long:</b> 153.18611
<b>Location:</b> AGD 66	<b>ZONE</b> 56	518450mE 7002964mN	<b>Lat:</b> -27.09558	<b>Long:</b> 153.18611

**Described By:** JA (Jeremy) Manders (MANJ)

**Date:** 25/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** No record

**Classifications:**

**ASC:** SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Grey (10YR51) moist; sand; single grain structure; dry when sampled; diffuse to
A2e	.4 to 1.3	White (10YR81) moist; sand; single grain structure; dry when sampled; gradual to
A3	1.3 to 2.1	Dark yellowish brown (10YR44) moist; sand; single grain structure; dry when sampled; diffuse to
B21s	2.1 to 3	Dark brown (7.5YR33) moist; sand; very few <2% rounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled; clear to
B22	3 to 3.35	Brown (10YR43) moist; sand; very few <2% subrounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled; abrupt to
2C1	3.35 to 4.3	Greyish brown (2.5Y53) moist; coarse sand; very few <2% subrounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled; diffuse to
3C2	4.3 to 9	Greyish brown (2.5Y52) moist; sand; very few <2% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.9	4.8	4.75		7.4	3.5
.3		4.5	4.2	5		7.3	3.7
.6		5.0	5.0	5.25	1	7.5	2.2
.8		4.9	5.2	5.5	1	7.5	1.6
1		5.0	5.2	5.75	1	7.7	2.6
1.25		5.3	4.8	6	1	7.3	2.3
1.5	1	4.4	4.9	6.25	1	7.3	3.7
1.75	1	4.5	4.8	6.5	1	7.5	1.5
2	1	5.1	5.1	6.75	1	7.1	2.6
2.25		6.0	4.5	7	1	6.9	4.4
2.5		6.6	5.2	7.25	1	6.9	2.6
2.75		7.2	5.4	7.5	1	7.0	3.6
3		7.3	5.1	7.75	1	6.7	3.9
3.25		7.4	5.2	8	1	6.5	2.7
3.5		7.5	1.1	8.25	1	6.8	1.8
3.75		7.4	2.5	8.5	1	6.9	3.0
4		7.3	3.1	8.75	1	6.7	2.9
4.25		7.5	2.7	9	1	6.7	3.8
4.5		7.4	2.8				

**Horizon Notes:**

- Horizon A1: roots
- Horizon B21s: some podozol development
- Horizon 2C1 Dark organic stain at 3.5m
- Horizon 3C2: Quartz fragments at 4.6m.

**Project:** CAB

**Site:** 138

**Location:** GDA 94    **ZONE** 56    517864mE 7002958mN    **Lat:** -27.09564  
**Location:** AGD 84    **ZONE** 56    517758mE 7002770mN    **Lat:** -27.09733  
**Location:** AGD 66    **ZONE** 56    517759mE 7002772mN    **Lat:** -27.09732

**Long:** 153.1802  
**Long:** 153.17914  
**Long:** 153.17915

**Described By:** JA (Jeremy) Manders (MANJ)

**Date:** 26/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Classifications:**

**ASC:** TENOSOLIC, OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .5	Very dark grey (10YR31) moist; sand; single grain structure; few 2-10% fine <2mm organic (humified) weak non-magnetic fragments; dry when sampled
A2e	.5 to 1.1	Grey (10YR61) moist; sand; single grain structure; dry when sampled
B1	1.1 to 2	Pale brown (10YR63) moist; sand; single grain structure; dry when sampled
B2	2 to 2.7	Coarse Sand; single grain structure; wet when sampled
2B31	2.7 to 3	Greyish brown (2.5Y53) moist; coarse sand; single grain structure; wet when sampled
2B32	3 to 3.4	Greyish brown (2.5Y52) moist; sand; very few <2% rounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled
2C1	3.4 to 7.1	Grey (10YR61) moist; sand; single grain structure; wet when sampled; diffuse to
2C2	7.1 to 8.4	Grey (5Y51) moist; sand; wet when sampled; diffuse to
3C3	8.4 to 9.5	Grey (2.5Y51) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.4	3.5	5		5.8	3.7
.3		4.4	2.6	5.25		5.6	3.7
.6		4.7	3.7	5.5		5.8	4.1
.8		4.4	3.6	5.75		5.8	3.6
1		5.0	3.9	6		6.0	4.0
1.25		5.0	3.8	6.25		6.1	3.7
1.5		5.1	4.2	6.5		5.8	2.9
1.75		5.2	4.2	6.75		5.8	2.8
2		5.2	4.2	7		6.0	3.1
2.25		5.2	4.3	7.25		6.1	1.4
2.5		5.3	4.2	7.5		6.2	1.3
2.75		5.4	4.1	7.75		6.0	1.3
3		5.4	3.3	8		6.2	1.3
3.25		5.6	2.7	8.25	4	6.0	1.1
3.5		5.7	3.7	8.5	4	6.1	1.2
3.75		5.6	3.7	8.75	4	6.3	1.2
4		5.5	4.1	9	4	5.9	1.3
4.25		5.6	3.8	9.25	4	5.6	1.4
4.5		5.7	4.2	9.5	4	5.8	1.3
4.75		5.7	4.3				

**Project:** CAB

**Site:** 139

**Location:** GDA 94    **ZONE** 56    517643mE 7002984mN    **Lat:** -27.09541    **Long:** 153.17797  
**Location:** AGD 84    **ZONE** 56    517537mE 7002796mN    **Lat:** -27.0971    **Long:** 153.17691  
**Location:** AGD 66    **ZONE** 56    517538mE 7002798mN    **Lat:** -27.09709    **Long:** 153.17692

**Described By:** JA (Jeremy) Manders (MANJ)

**Date:** 26/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** No record

**Classifications:**

**ASC:** AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Black (2.5Y2.5/1) moist; clayey sand; single grain structure; common 10-20% fine <2mm organic (humified) weak non-magnetic fragments; dry when sampled; abrupt to
A21	.3 to .6	Dark grey (2.5Y41) moist; clayey sand; single grain structure; dry when sampled; gradual to
A22e	.6 to 1	Light brownish grey (2.5Y62) moist; sand; single grain structure; dry when sampled; clear to
B21	1 to 2.25	Brown (10YR43) moist; sand; single grain structure; dry when sampled; gradual to
B22	2.25 to 3	Dark yellowish brown (10YR34) moist; sand; few 2-10% rounded pumice medium pebbles 6-20 mm; single grain structure; dry when sampled; gradual to
B23s	3 to 3.8	Dark yellowish brown (10YR44) moist; coarse sand; single grain structure; wet when sampled; gradual to
C1	3.8 to 4.25	Light olive brown (2.5Y54) moist; sand; single grain structure; wet when sampled; abrupt to
C2	4.25 to 4.9	Olive grey (5Y52) moist; sand; single grain structure; wet when sampled; gradual to
C3	4.9 to 7.8	Olive grey (5Y52) moist; sand; single grain structure; wet when sampled; gradual to
C4	7.8 to 9.5	Grey (5Y61) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		5.6	3.1	5		5.7	2.4
.3		4.6	3.1	5.25	1	5.5	1.3
.6		5.5	3.4	5.5	1	5.7	1.4
.8		5.6	3.6	5.75	1	4.8	2.2
1		6.2	4.0	6	1	5.4	2.2
1.25		5.7	3.5	6.25	1	5.5	1.7
1.5		6.0	4.3	6.5	1	5.6	2.4
1.75		6.3	4.5	6.75	1	5.4	1.6
2		6.3	4.3	7	1	5.8	1.7
2.25		6.0	4.2	7.25	1	5.3	2.0
2.5		6.3	4.3	7.5	1	5.4	1.4
2.75		5.5	4.2	7.75	1	5.5	1.5
3		5.6	2.5	8	1	5.6	1.5
3.25		5.1	3.6	8.25	1	6.1	2.0
3.5		5.4	3.9	8.5	1	6.7	1.7
3.75		5.6	4.0	8.75	1	7.1	1.6
4		5.6	3.8	9	1	7.1	2.0
4.25		5.6	2.0	9.25	1	8.3	5.8
4.5		5.5	2.6	9.5	1	8.6	5.7
4.75		5.7	2.9				

**Project:** CAB

**Site:** 140

**Location:** GDA 94      **ZONE** 56      518870mE 7004210mN      **Lat:** -27.08433      **Long:** 153.19033  
**Location:** AGD 84      **ZONE** 56      518764mE 7004022mN      **Lat:** -27.08602      **Long:** 153.18927  
**Location:** AGD 66      **ZONE** 56      518765mE 7004024mN      **Lat:** -27.08601      **Long:** 153.18927

**Described By:** S (Shane) Pointon (POIS)

**Date:** 31/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Depth to Water** 2.4

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .5	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; gradual to
A21e	.5 to 1.5	Grey (10YR61) moist; sand; single grain structure; dry when sampled; gradual to
A22	1.5 to 2	Greyish brown (10YR52) moist; sand; single grain structure; moderately moist when sampled; clear to
B21h	2 to 2.4	Dark brown (7.5YR34) moist; loamy sand; single grain structure; moist when sampled; clear to
B22h	2.4 to 2.9	Brown (7.5YR44) moist; loamy sand; single grain structure; wet when sampled; gradual to
B23h	2.9 to 3.3	Brown (7.5YR43) moist; loamy sand; single grain structure; wet when sampled; gradual to
2C	3.3 to 3.8	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled; gradual to
3C1	3.8 to 4.9	Light yellowish brown (10YR64) moist; sand; single grain structure; wet when sampled; diffuse to
3C2	4.9 to 6.7	Pale brown (10YR63) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3			
.1	4.1	3.7	3.5	4.6	4.2
.3	4.1	3.5	3.75	4.7	4.0
.6	4.4	4.0	4	5.0	4.5
.8	4.6	4.3	4.25	5.0	4.5
1	4.5	4.5	4.5	5.4	4.4
1.25	4.7	4.2	4.75	5.1	4.5
1.5	4.5	4.2	5	5.5	4.6
1.75	4.4	3.9	5.25	5.1	4.5
2	4.4	3.9	5.5	5.3	4.3
2.25	4.6	4.0	5.75	5.6	4.5
2.5	4.7	4.4	6	5.6	4.7
2.75	4.6	4.3	6.25	5.2	4.6
3	4.6	4.2	6.5	5.5	4.3
3.25	4.9	4.2	6.7	5.5	4.5

**Observation Notes:**

**Vegetation** Corymbia intermedia, Banksia integrifolia, Lophostemon confertus, acacia spp, leptospermum spp

**Horizon Notes:**

**Horizon** A1 tree roots

Project: CAB

Site: 141

Location: GDA 94      ZONE 56      518834mE 7004293mN      Lat: -27.08358      Long: 153.18997  
Location: AGD 84      ZONE 56      518728mE 7004105mN      Lat: -27.08527      Long: 153.18891  
Location: AGD 66      ZONE 56      518729mE 7004107mN      Lat: -27.08526      Long: 153.18891

Described By: S (Shane) Pointon (POIS)

Date: 31/OCT/06

### Landscape:

Landform Pattern: beach ridge plain  
Depth to Water 4.4

Element: beach ridge

### Classifications:

ASC: SEMIAQUIC, Podsol

### Profile Morphology:

Horizon	Depth (m)	Description
A11	0 to .2	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled
A12	.2 to .6	Grey (10YR51) moist; loamy sand; single grain structure; dry when sampled
A2e	.6 to 2.4	Light brownish grey (10YR62) moist; sand; single grain structure; dry when sampled
A3	2.4 to 3.2	Brown (7.5YR42) moist; sand; single grain structure; dry when sampled
B21	3.2 to 3.4	Brown (7.5YR43) moist; loamy sand; single grain structure; few 2-10% medium 2-6mm organic (humified) soft segregations; few 2-10% medium 2-6mm manganiferous soft segregations; dry when sampled
B22	3.4 to 3.6	Dark reddish brown (5YR33) moist; very few <2% medium 5-15mm distinct brown mottles; loamy sand; single grain structure; few 2-10% medium 2-6mm organic (humified) soft segregations; few 2-10% medium 2-6mm manganiferous soft segregations; dry when sampled
B23	3.6 to 4	Very dark brown (7.5YR2.5/2) moist; very few <2% medium 5-15mm distinct brown mottles; loamy sand; single grain structure; few 2-10% medium 2-6mm organic (humified) soft segregations; few 2-10% medium 2-6mm manganiferous soft segregations; dry when sampled
2C	4 to 4.4	Brown (7.5YR42) moist; sand; single grain structure; moist when sampled
3B21	4.4 to 4.9	Brown (7.5YR43) moist; sand; single grain structure; wet when sampled
3B22	4.9 to 6.7	Dark brown (7.5YR32) moist; sand; single grain structure; wet when sampled
4C	6.7 to 7.1	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled

### Field Tests:

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.4	3.2	3.75		5.0	3.6
.3	1	4.3	2.4	4		5.1	3.4
.6		4.7	3.5	4.25		4.5	2.3
.8		4.7	2.9	4.5		4.7	2.8
1		5.3	3.6	4.75		4.3	3.0
1.25		4.8	3.8	5		4.6	3.4
1.5		5.1	3.8	5.25		4.8	2.7
1.75		5.3	3.6	5.5		4.5	2.5
2		5.3	3.6	5.75		4.3	1.9
2.25		5.9	3.6	6		4.3	2.2
2.5		6.1	2.0	6.25		4.6	2.0
2.75		5.4	3.2	6.5		4.4	2.3
3		5.0	2.5	6.75		4.5	2.4
3.25		4.7	3.4	7	1	5.0	2.0
3.5	1	4.2	2.9				

### Observation Notes:

Vegetation Corymbia intermedia, Banksia integrifolia, casuarina?, acacia, lophostemon confertus.



**Project:** CAB

**Site:** 142

**Location:** GDA 94      **ZONE** 56      518741mE 7004520mN      **Lat:** -27.08153      **Long:** 153.18902  
**Location:** AGD 84      **ZONE** 56      518635mE 7004332mN      **Lat:** -27.08322      **Long:** 153.18796  
**Location:** AGD 66      **ZONE** 56      518636mE 7004334mN      **Lat:** -27.08321      **Long:** 153.18797

**Described By:** S (Shane) Pointon (POIS)

**Date:** 31/OCT/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Classifications:**

**ASC:** TENOSOLIC, OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .6	Very dark grey (10YR31) moist; fibric sandy loam; single grain structure; dry when sampled; gradual to
A2	.6 to 1.4	Dark grey (10YR41) moist; sand; single grain structure; dry when sampled; clear to
B21	1.4 to 1.9	Black (7.5YR2.5/1) moist; loamy sand; single grain structure; very few <2% medium 2-6mm manganiferous soft segregations; dry when sampled; diffuse to
B22	1.9 to 3	Very dark brown (7.5YR2.5/2) moist; loamy sand; single grain structure; wet when sampled; diffuse to
B23	3 to 5.5	Dark brown (7.5YR33) moist; loamy sand; single grain structure; wet when sampled; abrupt to
2C	5.5 to 6.3	Greyish brown (2.5Y52) moist; sand; common 10-20% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; clear to
3C	6.3 to 6.7	Dark grey (2.5Y41) moist; sand; common 10-20% angular platy shell medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.3	2.6	3.5	1	4.5	1.9
.3	1	4.4	3.1	3.75	1	4.7	1.9
.6		4.3	4.0	4	1	4.8	1.9
.8		4.3	4.1	4.25	1	4.9	2.0
1		4.0	3.6	4.5	1	5.2	2.3
1.25		4.2	4.0	4.75	1	4.9	2.8
1.5		4.6	3.9	5	1	5.0	2.8
1.75		4.2	3.0	5.25	1	6.0	2.6
2		4.2	3.1	5.5	1	6.1	2.1
2.25		4.4	2.6	5.75	3	6.5	1.4
2.5		4.6	2.5	6	3	6.0	1.2
2.75		4.8	2.4	6.25	3	6.6	1.2
3		4.8	2.8	6.5	3	7.1	5.0
3.25	1	4.6	2.1	6.7	3	7.5	5.7

Project: CAB

Site: 143

Location: GDA 94	ZONE 56	518496mE 7004548mN	Lat: -27.08128	Long: 153.18655
Location: AGD 84	ZONE 56	518390mE 7004360mN	Lat: -27.08297	Long: 153.18549
Location: AGD 66	ZONE 56	518391mE 7004362mN	Lat: -27.08296	Long: 153.1855

Described By: S (Shane) Pointon (POIS)

Date: 01/NOV/06

**Landscape:**

Landform Pattern: beach ridge plain

Element: beach ridge

**Classifications:**

ASC: SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .1	Grey (10YR61) moist; sand; very few <2% angular shell cobbles 60-200 mm; very few <2% angular charcoal medium pebbles 6-20 mm; single grain structure; dry when sampled; clear to
A12	.1 to .6	Very dark grey (10YR31) moist; loamy sand; very few <2% angular charcoal medium pebbles 6-20 mm; single grain structure; dry when sampled; abrupt to
A21	.6 to 2.3	Light grey (10YR71) moist; sand; single grain structure; moderately moist when sampled; gradual to
A22	2.3 to 3.2	Light brownish grey (10YR62) moist; sand; single grain structure; moist when sampled; clear to
B21s	3.2 to 4.3	Very dark brown (7.5YR2.5/2) moist; loamy sand; massive structure; wet when sampled; gradual to
B22s	4.3 to 5.3	Dark brown (10YR33) moist; loamy sand; very few <2% rounded quartz medium pebbles 6-20 mm; massive structure; wet when sampled; gradual to
2C1	5.3 to 6.5	Dark yellowish brown (10YR34) moist; loamy sand; wet when sampled; gradual to
2C2	6.5 to 7.1	Brown (10YR43) moist; loamy sand; massive structure; wet when sampled; clear to
3C1	7.1 to 7.6	Olive grey (5Y42) moist; loamy sand; common 10-20% angular other medium pebbles 6-20 mm; massive structure; wet when sampled; clear to
3C2	7.6 to 8.2	Dark grey (5Y41) moist; loamy sand; very few <2% angular other medium pebbles 6-20 mm; massive structure; wet when sampled; clear to
4C	8.2 to 8.7	Dark grey (5Y41) moist; loamy sand; few 2-10% angular platy shell medium pebbles 6-20 mm; massive structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	6.7	5.1	4.5		4.2	3.5
.3	1	6.0	3.8	4.75	1	4.6	1.7
.6		4.9	4.3	5	1	4.6	2.4
.8		4.9	4.3	5.25	1	4.9	1.7
1		5.9	4.9	5.5	1	5.0	1.4
1.25		5.2	5.0	5.75	1	4.8	1.7
1.5		5.2	4.7	6	1	5.1	1.4
1.75		5.3	4.8	6.25	1	5.1	1.5
2		5.8	5.0	6.5	1	5.3	1.1
2.25		5.8	4.8	6.75	1	5.1	0.9
2.5		5.5	4.7	7	1	5.3	1.1
2.75		5.5	4.9	7.25	4	5.8	1.2
3		5.3	4.5	7.5	4	6.1	1.3
3.25		5.1	4.6	7.75	4	6.5	1.7
3.5		4.6	4.2	8	4	7.5	1.7
3.75		4.5	3.9	8.25	3	7.9	6.0
4		4.5	4.4	8.5	3	7.2	1.7
4.25		4.9	3.9	8.7	3	7.9	5.7

**Horizon Notes:**

Horizon	A11	from road
Horizon	3C1	coarse frags are roots/organics
Horizon	3C2	coarse frags are organic particles

**Project:** CAB

**Site:** 144

**Location:** GDA 94      **ZONE** 56      518362mE 7004493mN      **Lat:** -27.08178

**Long:** 153.1852

**Location:** AGD 84      **ZONE** 56      518256mE 7004305mN      **Lat:** -27.08347

**Long:** 153.18414

**Described By:** S (Shane) Pointon (POIS)

**Date:** 01/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swamp

**Classifications:**

**ASC:** SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Black (10YR21) moist; loamy sand; single grain structure; dry when sampled; clear to
A12	.2 to .4	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled; clear to
A2	.4 to .7	Greyish brown (10YR52) moist; loamy sand; single grain structure; dry when sampled; gradual to
B1	.7 to 1	Dark greyish brown (10YR42) moist; sand; single grain structure; moderately moist when sampled; clear to
B2	1 to 1.35	Brown (7.5YR42) moist; loamy sand; massive structure; moist when sampled; clear to
2C1	1.35 to 2.05	Dark brown (10YR33) moist; loamy sand; single grain structure; moist when sampled; clear to
2C2	2.05 to 2.6	Dark brown (10YR33) moist; loamy sand; single grain structure; moist when sampled; abrupt to
3C1	2.6 to 2.8	Dark greyish brown (2.5Y42) moist; few 2-10% coarse 15-30mm distinct grey mottles; sand; single grain structure; moist when sampled; clear to
3C2	2.8 to 3.3	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled; gradual to
3C3	3.3 to 4	Grey (5Y51) moist; sand; single grain structure; wet when sampled; gradual to
3C4	4 to 4.3	Dark greyish brown (2.5Y42) moist; sand; single grain structure; wet when sampled; gradual to
3C5	4.3 to 5.35	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled; sharp to
4C1	5.35 to 5.6	Greenish grey (10Y51) moist; sandy loam; common 10-20% angular platy shell medium pebbles 6-20 mm; massive structure; wet when sampled; clear to
4C2	5.6 to 6.9	Greenish grey (10Y61) moist; sand; few 2-10% angular platy shell large pebbles 20-60 mm; weak structure; wet when sampled; gradual to
4C3	6.9 to 7.8	Greenish grey (10Y61) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.0	2.7	4	2	5.3	1.5
.3	1	4.1	2.9	4.25	2	5.5	1.2
.6	1	4.2	3.6	4.5	2	5.0	1.3
.8		3.9	3.4	4.75	2	5.6	1.4
1		3.4	3.3	5	2	6.0	2.0
1.25		4.0	3.2	5.25	4	6.7	1.9
1.5		4.6	3.8	5.5	3	7.1	5.2
1.75	2	4.3	1.7	5.75	1	8.0	5.6
2	2	4.7	1.4	6	1	7.9	5.5
2.25	2	4.8	1.1	6.25	1	7.9	5.7
2.5	3	4.8	1.2	6.5	1	7.6	5.6
2.75	3	5.2	1.2	6.75	1	7.6	5.8
3	3	5.2	1.2	7	1	8.0	5.9
3.25	2	4.2	1.2	7.25	1	7.9	6.0
3.5	2	5.1	1.7	7.5	1	8.1	6.2
3.75	2	4.5	1.5	7.8	1	8.0	6.4

**Observation Notes:**

**Vegetation** 90% Lophostemon confertus regrowth 2-2.5m high, pteridium esculentum, burnt Melaleuca quinquenervia.

**Project:** CAB

**Site:** 145

**Location:** GDA 94      **ZONE** 56      518211mE 7004277mN      **Lat:** -27.08373      **Long:** 153.18368  
**Location:** AGD 84      **ZONE** 56      518105mE 7004089mN      **Lat:** -27.08542      **Long:** 153.18262  
**Location:** AGD 66      **ZONE** 56      518106mE 7004091mN      **Lat:** -27.08541      **Long:** 153.18263

**Described By:** S (Shane) Pointon (POIS)

**Date:** 01/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Classifications:**

**ASC:** SEMIAQUIC, Podosol

**Vegetation:**

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled; clear to
A12	.2 to .6	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; gradual to
A2e	.6 to 1.6	Grey (10YR61) moist; sand; single grain structure; moderately moist when sampled; clear to
B21	1.6 to 3	Light yellowish brown (10YR64) moist; common 10-20% medium 5-15mm distinct brown mottles; loamy sand; single grain structure; moderately moist when sampled; clear to
B22	3 to 3.5	Very dark greyish brown (10YR32) moist; common 10-20% medium 5-15mm distinct brown mottles; loamy sand; single grain structure; moderately moist when sampled; clear to
B23	3.5 to 4.2	Dark greyish brown (10YR42) moist; few 2-10% coarse 15-30mm distinct brown mottles; loamy sand; single grain structure; wet when sampled; clear to
2A2	4.2 to 5.2	Light brownish grey (10YR62) moist; sand; single grain structure; moderately moist when sampled; abrupt to
2B21	5.2 to 6.9	Dark brown (10YR33) moist; sand; single grain structure; wet when sampled
3C	6.9 to 7.8	Dark greyish brown (2.5Y42) moist; sand; single grain structure; wet when sampled
4C	7.8 to 8.5	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled
5C	8.5 to 9.7	Grey (2.5Y51) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.7	3.7	5		5.0	4.1
.3		4.3	3.0	5.25		4.5	3.9
.6		4.7	3.8	5.5		4.8	4.1
.8		5.0	4.2	5.75		4.9	3.8
1		5.0	4.2	6		5.1	3.1
1.25		5.3	4.4	6.25		4.9	3.7
1.5		5.2	4.5	6.5		5.0	4.1
1.75		4.9	3.5	6.75		4.9	4.1
2		4.9	3.3	7	1	5.1	1.4
2.25		5.1	3.9	7.25	1	5.3	1.6
2.5		5.2	3.8	7.5	1	5.3	1.9
2.75		5.2	3.9	7.75	1	5.1	1.8
3		4.9	2.7	8	1	5.2	1.4
3.25		5.1	4.1	8.25	1	5.2	1.3
3.5		5.0	3.9	8.5	1	5.2	1.2
3.75		5.3	4.1	8.75	2	4.9	0.9
4		5.3	4.0	9	2	5.4	0.9
4.25		5.6	4.3	9.25	4	5.5	0.4
4.5		5.4	3.9	9.5	2	5.5	1.0
4.75		4.9	4.3				

**Project:** CAB

**Site:** 146

**Location:** GDA 94      **ZONE** 56      518028mE 7004224mN      **Lat:** -27.08421      **Long:** 153.18184  
**Location:** AGD 84      **ZONE** 56      517922mE 7004036mN      **Lat:** -27.0859      **Long:** 153.18078  
**Location:** AGD 66      **ZONE** 56      517923mE 7004038mN      **Lat:** -27.08589      **Long:** 153.18078

**Described By:** D (Don) Malcolm (MALD)

**Date:** 02/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Classifications:**

**ASC:** SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Dark grey (10YR41) moist; sand; single grain structure; dry when sampled
A12	.2 to .4	Grey (10YR61) moist; sand; single grain structure; dry when sampled
A21	.4 to .7	Grey (10YR61) moist; sand; single grain structure; dry when sampled
A22e	.7 to 2	Light grey (10YR72) moist; white (10YR81) dry; sand; single grain structure; dry when sampled
A3	2 to 3.6	Light brownish grey (10YR62) moist; sand; single grain structure; moderately moist when sampled
B21hs	3.6 to 4.2	Dark brown (7.5YR33) moist; loamy sand; single grain structure; moist when sampled
B22s	4.2 to 4.8	Dark yellowish brown (10YR44) moist; sand; single grain structure; wet when sampled
2B21	4.8 to 5.4	Dark yellowish brown (10YR44) moist; sand; few 2-10% subrounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled
2B22	5.4 to 5.9	Dark yellowish brown (10YR44) moist; sand; very few <2% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled
3B2	5.9 to 6.7	Dark brown (10YR33) moist; sand; single grain structure; wet when sampled
4C1u	6.7 to 7.1	Grey (2.5Y51) moist; sand; few 2-10% angular shell small pebbles 2-6 mm; single grain structure; wet when sampled
5C2u	7.1 to 7.3	Dark grey (5Y41) moist; sand; common 10-20% angular shell medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.7	4.4	3.75		4.5	3.8
.3	1	4.4	3.9	4		4.6	3.8
.6	1	4.9	3.9	4.25		5.3	4.2
.8		6.0	4.8	4.5		5.6	4.5
1		6.1	4.8	4.75		4.8	3.1
1.25		6.3	4.8	5		5.1	1.4
1.5		5.9	4.9	5.25	1	5.1	2.3
1.75		6.5	4.9	5.5	1	5.4	2.3
2		6.2	4.8	5.75	1	5.7	2.9
2.25		6.0	4.5	6	1	6.1	2.4
2.5		5.9	4.7	6.25	1	6.9	2.8
2.75		5.8	4.3	6.5	1	7.1	1.7
3		6.4	4.4	6.75	1	8.4	4.7
3.25		5.7	4.7	7	1	9.0	4.7
3.5		5.1	4.2	7.25	1	9.3	5.6

**Horizon Notes:**

Horizon      A11      roots present

**Project:** CAB

**Site:** 147

**Location:** GDA 94    **ZONE** 56    518595mE 7004872mN    **Lat:** -27.07835  
**Location:** AGD 84    **ZONE** 56    518489mE 7004684mN    **Lat:** -27.08004  
**Location:** AGD 66    **ZONE** 56    518490mE 7004686mN    **Lat:** -27.08003

**Long:** 153.18755  
**Long:** 153.18649  
**Long:** 153.18649

**Described By:** D (Don) Malcolm (MALD)

**Date:** 02/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Classifications:**

**ASC:** SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Very dark greyish brown (10YR32) moist; loamy sand; massive structure
A12	.2 to .6	Grey (10YR51) moist; sand; single grain structure
A21e	.6 to .8	Grey (10YR61) moist; sand; single grain structure
A22	.8 to 1.3	Light brownish grey (10YR62) moist; sand; single grain structure
B21s	1.3 to 4	Dark brown (7.5YR34) moist; sand; single grain structure
B22s	4 to 4.7	Brownish yellow (10YR66) moist; sand; single grain structure
C1	4.7 to 5.5	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled
2C2u	5.5 to 7	Grey (5Y61) moist; sand; very few <2% angular shell medium pebbles 6-20 mm; single grain structure; wet when sampled
3C3w	7 to 7.5	Dark grey (5Y41) moist; sand; very few <2% angular shell medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		6.9	4.3	4		7.2	4.8
.3		6.9	4.1	4.25		6.9	3.3
.6		7.6	4.9	4.5		7.3	3.8
.8		7.6	4.8	4.75		7.3	3.7
1		7.6	4.8	5		7.3	2.8
1.25		7.4	4.9	5.25	1	7.4	7.1
1.5		7.5	5.0	5.5	1	7.1	2.0
1.75		7.5	4.9	5.75	1	7.6	1.8
2		7.6	4.8	6	1	8.0	1.9
2.25		7.7	4.8	6.25	4	8.2	1.9
2.5		7.6	5.0	6.5	1	8.3	2.0
2.75		7.6	4.8	6.75	1	8.3	1.7
3		7.4	4.9	7	1	8.2	1.9
3.25		7.5	4.9	7.25	4	8.2	6.1
3.5		7.3	5.1	7.5	1	8.3	5.6
3.75		7.1	5.0				

**Observation Notes:**

**Location**            Site at track junction 50m from water trench  
**Observation**        5.5-7.6m had bands of shell and clay + organics (compressed).  
**Vegetation**         Euc spp, Acacia spp, Casuarina Spp.

**Project:** CAB

**Site:** 148

**Location:** GDA 94    **ZONE** 56    518809mE 7004855mN    **Lat:** -27.0785    **Long:** 153.1897  
**Location:** AGD 84    **ZONE** 56    518703mE 7004667mN    **Lat:** -27.08019    **Long:** 153.18864  
**Location:** AGD 66    **ZONE** 56    518704mE 7004669mN    **Lat:** -27.08018    **Long:** 153.18865

**Described By:** D (Don) Malcolm (MALD)

**Date:** 02/JUL/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Classifications:**

**ASC:** SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled
A12	.2 to .5	Grey (10YR51) moist; sand; single grain structure; dry when sampled
A2e	.5 to 1.2	Grey (10YR61) moist; sand; single grain structure; dry when sampled
A3	1.2 to 1.8	Light brownish grey (10YR62) moist; sand; single grain structure; dry when sampled
B21s	1.8 to 2.2	Brown (7.5YR43) moist; sand; single grain structure; dry when sampled
B22s	2.2 to 3.6	Dark yellowish brown (10YR44) moist; sand; single grain structure; moderately moist when sampled
C1	3.6 to 4	Pale brown (10YR63) moist; sand; single grain structure; moist when sampled
2C2	4 to 5.6	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled
3C3u	5.6 to 7.25	Dark grey (5Y41) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		7.1	3.8	3.75		7.6	5.5
.3		7.1	3.8	4		7.7	5.1
.6		7.5	5.1	4.25	1	7.7	1.7
.8		7.4	5.4	4.5	1	7.6	1.8
1		7.4	5.2	4.75		7.5	2.8
1.25		7.2	5.2	5	1	7.4	1.7
1.5		7.1	4.3	5.25		7.7	2.1
1.75		7.2	4.9	5.5		7.6	2.0
2		6.9	4.9	5.75	4	7.6	2.2
2.25		7.2	4.7	6	4	7.9	1.7
2.5		7.4	5.2	6.25		8.2	2.9
2.75		7.5	5.1	6.5		8.4	3.0
3		7.4	4.8	6.75		8.4	4.8
3.25		7.3	5.0	7		8.4	5.2
3.5		7.6	4.9	7.25		8.5	5.7

**Observation Notes:**

**Vegetation**    Eucalyptus integrifolia, Acacia spp

**Project:** CAB

**Site:** 149

**Location:** GDA 94      **ZONE** 56      519465mE 7004824mN      **Lat:** -27.07877      **Long:** 153.19632  
**Location:** AGD 84      **ZONE** 56      519359mE 7004636mN      **Lat:** -27.08046      **Long:** 153.19526  
**Location:** AGD 66      **ZONE** 56      519360mE 7004638mN      **Lat:** -27.08045      **Long:** 153.19527

**Described By:** S (Shane) Pointon (POIS)

**Date:** 08/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** plain

**Depth to Water** 3.2

**Surface Condition:** Loose, Firm

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .3	Very dark grey (10YR31) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
A12	.3 to .8	Dark grey (10YR41) moist; sand; single grain structure; moderately moist when sampled; gradual to
A2e	.8 to 2.05	Grey (10YR61) moist; sand; single grain structure; moderately moist when sampled; gradual to
B1	2.05 to 2.2	Brown (7.5YR42) moist; sand; single grain structure; moderately moist when sampled; gradual to
B21s	2.2 to 2.5	Dark brown (7.5YR33) moist; very few <2% coarse 15-30mm distinct dark mottles; loamy sand; single grain structure; moist when sampled; gradual to
B22s	2.5 to 3.2	Brown (7.5YR43) moist; few 2-10% coarse 15-30mm distinct dark mottles; loamy sand; single grain structure; wet when sampled
B23	3.2 to 4.2	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled
2C	4.2 to 4.9	Light brownish grey (2.5Y63) moist; sand; single grain structure; wet when sampled
3C	4.9 to 5.6	Greyish brown (2.5Y52) moist; coarse sand; common 10-20% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled
4C	5.6 to 7.3	Light brownish grey (2.5Y62) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.1	3.3	3.75		4.7	3.5
.3		4.1	2.8	4		4.6	3.1
.6		4.3	2.9	4.25		4.6	2.1
.8		4.3	3.2	4.5	1	4.7	2.3
1		4.6	3.4	4.75	1	4.6	1.9
1.25		4.9	3.6	5	1	4.8	1.5
1.5		4.7	3.4	5.25	1	4.9	1.8
1.75		5.0	3.7	5.5	2	4.8	1.9
2		4.8	3.6	5.75	2	5.0	2.1
2.25		4.8	3.4	6	2	5.4	2.1
2.5		4.8	3.5	6.25	2	5.1	2.4
2.75		4.6	3.4	6.5	2	4.9	2.1
3		5.2	2.8	6.75	2	5.0	1.8
3.25		4.5	3.7	7	2	5.5	1.4
3.5		4.6	3.6	7.25	2	5.9	1.6



Project: CAB

Site: 150

Location: GDA 94      ZONE 56      519001mE 7004890mN      Lat: -27.07818      Long: 153.19164  
Location: AGD 84      ZONE 56      518895mE 7004702mN      Lat: -27.07987      Long: 153.19058  
Location: AGD 66      ZONE 56      518896mE 7004704mN      Lat: -27.07986      Long: 153.19059

Described By: S (Shane) Pointon (POIS)

Date: 06/NOV/06

### Landscape:

Landform Pattern: beach ridge plain      Element: swale

Depth to Water 3.9

Surface Condition: Loose

Disturbances: Limited clearing

### Classifications:

ASC: SEMIAQUIC, Podosol

### Profile Morphology:

Horizon	Depth (m)	Description
A11	0 to .2	Black (10YR21) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
A12	.2 to .6	Dark grey (10YR41) moist; sand; single grain structure; moderately moist when sampled; gradual to
A2	.6 to 2	Grey (10YR61) moist; very few <2% coarse 15-30mm faint dark mottles; sand; single grain structure; moderately moist when sampled; gradual to
B21s	2 to 3.9	Dark brown (7.5YR32) moist; loamy sand; single grain structure; moist when sampled; clear to
B22	3.9 to 4.5	Brown (10YR43) moist; loamy sand; single grain structure; wet when sampled
2C	4.5 to 5.7	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; gradual to
3C	5.7 to 7	Dark greyish brown (2.5Y42) moist; sand; single grain structure; wet when sampled; gradual to
4C	7 to 8.5	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled; clear to
5C	8.5 to 8.8	Olive grey (5Y52) moist; sand; single grain structure; wet when sampled

### Field Tests:

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		3.1	1.4	4.5		4.8	2.2
.3		4.0	1.7	4.75	4	4.8	1.5
.6		4.1	1.9	5	4	4.5	1.1
.8		4.6	2.5	5.25	1	4.7	0.9
1		4.4	2.6	5.5	1	4.7	0.9
1.25		4.4	2.3	5.75	1	4.8	1.1
1.5		4.4	2.4	6	1	6.0	1.1
1.75		4.3	2.8	6.25	1	5.4	1.1
2		4.1	2.7	6.5	1	5.0	1.0
2.25		4.1	2.6	6.75	3	5.3	1.0
2.5		4.2	2.3	7	3	4.9	1.0
2.75		4.4	2.0	7.25	3	5.3	1.0
3		4.3	2.6	7.5	3	5.0	1.0
3.25		4.2	2.5	7.75	3	6.1	1.7
3.5		4.2	2.6	8	3	4.2	1.1
3.75		4.4	2.7	8.25	3	5.5	1.1
4		4.3	2.4	8.5	3	5.4	0.9
4.25		4.7	2.4	8.75	3	5.4	1.8

### Observation Notes:

Vegetation Corymbia intermedia, Banksia integrifolia, Melaleuca bracteata, Acacia spp.

### Horizon Notes:

Horizon A11 roots present

Horizon A12 roots

**Project:** CAB

**Site:** 151

**Location:** GDA 94      **ZONE** 56      519065mE 7004708mN      **Lat:** -27.07983      **Long:** 153.19229  
**Location:** AGD 84      **ZONE** 56      518959mE 7004520mN      **Lat:** -27.08152      **Long:** 153.19123  
**Location:** AGD 66      **ZONE** 56      518960mE 7004522mN      **Lat:** -27.08151      **Long:** 153.19123

**Described By:** S (Shane) Pointon (POIS)

**Date:** 06/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Depth to Water** 4.4

**Surface Condition:** Loose

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; clear to
A12	.2 to .5	Very dark grey (10YR31) moist; loamy sand; very few <2% angular charcoal large pebbles 20-60 mm; moderately moist when sampled; gradual to
A2e	.5 to 2.2	Light grey (10YR71) moist; sand; single grain structure; moderately moist when sampled; diffuse to
A3	2.2 to 2.55	Grey (10YR51) moist; sand; single grain structure; moderately moist when sampled; clear to
B1	2.55 to 3	Brown (7.5YR42) moist; few 2-10% medium 5-15mm distinct dark mottles; sand; single grain structure; moderately moist when sampled; clear to
B21s	3 to 3.5	Dark brown (7.5YR32) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
B22s	3.5 to 4.4	Brown (7.5YR43) moist; sand; single grain structure; moderately moist when sampled; gradual to
B23s	4.4 to 5.3	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled; diffuse to
2C	5.3 to 7	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; diffuse to
3C	7 to 7.5	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled; clear to
4C	7.5 to 8.8	Grey (5Y51) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.8	3.0	4.5		5.4	3.6
.3		3.9	2.4	4.75		5.1	3.8
.6		5.0	2.8	5		5.4	3.5
.8		5.4	3.2	5.25		4.9	3.5
1		6.1	3.4	5.5		5.3	2.0
1.25		5.9	3.5	5.75		5.0	2.2
1.5		6.4	3.6	6	1	5.1	1.9
1.75		6.0	3.7	6.25	1	5.5	2.0
2		6.3	3.7	6.5		5.4	1.8
2.25		5.9	3.1	6.75		5.7	1.5
2.5		4.4	2.2	7		4.7	2.0
2.75		4.2	2.6	7.25	2	4.9	4.4
3		4.2	2.7	7.5	3	5.4	1.8
3.25		4.1	2.9	7.75	4	6.1	1.7
3.5		4.5	3.1	8	4	5.8	1.7
3.75		4.7	3.4	8.25	4	5.7	1.5
4		4.6	2.8	8.5	4	6.0	1.5
4.25		4.6	2.8	8.75	4	6.0	1.3

**Observation Notes:**

**Vegetation** Corymbia intermedia, Acacia spp, Lophostemon confertus, Banksia integrifolia.

**Project:** CAB

**Site:** 152

**Location:** GDA 94      **ZONE** 56      519297mE 7004992mN      **Lat:** -27.07726  
**Location:** AGD 84      **ZONE** 56      519191mE 7004804mN      **Lat:** -27.07895  
**Location:** AGD 66      **ZONE** 56      519192mE 7004806mN      **Lat:** -27.07894

**Long:** 153.19462  
**Long:** 153.19356  
**Long:** 153.19357

**Described By:** S (Shane) Pointon (POIS)

**Date:** 06/NOV/06

**Landscape:**

**Landform Pattern:** made land

**Element:** trench

**Depth to Water** 1.5

**Surface Condition:** Loose

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Grey (10YR61) moist; sand; single grain structure; moderately moist when sampled; gradual to
B2	.3 to .7	Yellowish brown (10YR54) moist; sand; single grain structure; moderately moist when sampled; gradual to
2A2	.7 to 1.5	Pale brown (10YR63) moist; sand; single grain structure; moderately moist when sampled; gradual to
2B2	1.5 to 2.8	Brown (10YR53) moist; sand; single grain structure; wet when sampled; gradual to
3C	2.8 to 7.8	Pale brown (10YR63) moist; sand; very few <2% rounded quartz large pebbles 20-60 mm; very few <2% rounded detrital sedimentary rock (unidentified) large pebbles 20-60 mm; single grain structure; wet when sampled; clear to
4C	7.8 to 8	Greyish brown (2.5Y53) moist; loamy sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.9	3.7	4.25	6.5	4.0
.3	5.6	4.2	4.5	5.7	3.4
.6	5.8	3.8	4.75	6.5	3.3
.8	6.0	3.8	5	6.7	4.2
1	5.7	3.9	5.25	6.0	3.4
1.25	6.0	4.0	5.5	5.9	3.7
1.5	5.9	4.0	5.75	5.6	4.0
1.75	5.9	4.1	6	5.3	4.1
2	5.7	3.6	6.25	5.0	4.2
2.25	5.0	3.9	6.5	5.75	4.4
2.5	4.8	4.0	6.75	6.2	4.6
2.75	4.9	4.0	7	5.7	4.2
3	4.4	2.9	7.25	5.8	4.3
3.25	6.1	4.3	7.5	5.6	4.3
3.5	6.4	4.1	7.75	5.3	2.8
3.75	6.3	4.0	8	5.3	2.2
4	6.1	4.1			

**Horizon Notes:**

Horizon            A1            roots  
Horizon            4C            thin band of organics

**Project:** CAB

**Site:** 153

**Location:** GDA 94      **ZONE** 56      519607mE 7005077mN      **Lat:** -27.07649      **Long:** 153.19775  
**Location:** AGD 84      **ZONE** 56      519501mE 7004889mN      **Lat:** -27.07818      **Long:** 153.19669  
**Location:** AGD 66      **ZONE** 56      519502mE 7004891mN      **Lat:** -27.07817      **Long:** 153.19669

**Described By:** S (Shane) Pointon (POIS)

**Date:** 08/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swamp

**Depth to Water** 4.2

**Surface Condition:** Soft

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** SAPRIC, Organosol

**Profile Morphology:**

Horizon	Depth (m)	Description
O1	0 to .2	Black (10YR21) moist; sapric peat; abundant 50-90% angular unconsolidated material (unidentified) large pebbles 20-60 mm; massive structure; moderately moist when sampled; clear to
O2	.2 to .8	Very dark brown (7.5YR2.5/2) moist; sapric peat; abundant 50-90% angular unconsolidated material (unidentified) large pebbles 20-60 mm; massive structure; moderately moist when sampled; sharp to
A2	.8 to 1.5	Greyish brown (10YR52) moist; sand; single grain structure; moderately moist when sampled; diffuse to
B1	1.5 to 2.2	Dark brown (7.5YR32) moist; sand; single grain structure; moderately moist when sampled; diffuse to
2C	2.2 to 2.8	Brown (10YR43) moist; sand; single grain structure; wet when sampled; diffuse to
3C	2.8 to 4.2	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled; diffuse to
4C	4.2 to 4.9	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; diffuse to
5C	4.9 to 7.2	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled; gradual to
6C	7.2 to 7.5	Light brownish grey (2.5Y62) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	4	6.2	4.6	4	1	5.2	3.3
.3	4	6.2	5.4	4.25	1	5.4	2.5
.6	4	6.5	4.5	4.5	2	5.8	2.2
.8	1	6.2	3.7	4.75	2	5.6	1.6
1	1	6.2	3.8	5	2	5.8	2.1
1.25	1	6.0	4.1	5.25		5.8	2.1
1.5	1	5.6	3.9	5.5		5.6	1.9
1.75	1	5.8	3.9	5.75		5.7	1.9
2	1	6.0	4.1	6		6.1	2.0
2.25	1	5.9	3.8	6.25		6.0	1.9
2.5	1	5.6	3.7	6.5		6.1	2.0
2.75	1	4.9	3.5	6.75		6.1	1.8
3	1	3.0	3.1	7		5.8	2.0
3.25	1	4.8	3.4	7.25		6.0	2.0
3.5	1	4.8	3.5	7.5		6.3	1.9
3.75	1	5.2	3.4				

**Observation Notes:**

**Observation** Surface v. soft, able to sink ~30cm by jumping

**Vegetation** Melaleuca quinquenervia, Casuarina spp.

**Project:** CAB

**Site:** 154

**Location:** GDA 94

**ZONE** 56

519685mE 7004849mN **Lat:** -27.07855

**Long:** 153.19854

**Described By:** S (Shane) Pointon (POIS)

**Date:** 08/NOV/06

### Landscape:

**Landform Pattern:** beach ridge plain

**Element:** plain

**Depth to Water** 4.9

**Surface Condition:** Hard setting

**Disturbances:** Highly disturbed e.g. mining, urban

### Classifications:

**ASC:** SESQUIC, SEMIAQUIC, Podosol

### Profile Morphology:

Horizon	Depth (m)	Description
A	0 to .15	Dark greyish brown (10YR42) moist; very few <2% medium 5-15mm distinct red mottles; sandy loam; many 20-50% rounded ironstone large pebbles 20-60 mm; subangular blocky weak 2-5mm structure; moderately moist when sampled; sharp to
2A11	.15 to .3	Very dark grey (10YR31) moist; loamy sand; very few <2% rounded ironstone large pebbles 20-60 mm; single grain structure; moderately moist when sampled; gradual to
2A12	.3 to .6	Dark grey (10YR41) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
2A2e	.6 to 1.8	Light brownish grey (10YR62) moist; sand; single grain structure; moderately moist when sampled; clear to
2B2s	1.8 to 2.3	Brown (7.5YR42) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
3A2	2.3 to 3.3	Light brownish grey (10YR62) moist; sand; single grain structure; moderately moist when sampled; gradual to
3B1	3.3 to 3.6	Brown (10YR53) moist; sand; single grain structure; moist when sampled; diffuse to
3B2	3.6 to 4.9	Brown (10YR43) moist; sand; single grain structure; wet when sampled; diffuse to
4C	4.9 to 5.7	Dark greyish brown (2.5Y43) moist; coarse sand; common 10-20% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; gradual to
5C	5.7 to 7	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; diffuse to
6C	7 to 8.7	Grey (2.5Y61) moist; sand; single grain structure; wet when sampled

### Field Tests:

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.0	2.7	4.5		5.1	2.5
.3		3.7	2.6	4.75		4.8	2.3
.6		4.0	2.8	5		4.3	1.9
.8		4.4	3.4	5.25	1	4.7	1.9
1		4.7	3.3	5.5	1	4.8	2.0
1.25		5.0	3.5	5.75	1	4.7	1.8
1.5		4.8	3.6	6	1	5.0	1.8
1.75		4.7	3.8	6.25	1	5.1	1.9
2		4.8	3.9	6.5	1	4.7	2.3
2.25		5.0	3.9	6.75	1	4.9	2.2
2.5		5.0	3.9	7	1	4.7	2.6
2.75		5.0	3.8	7.25	1	4.9	2.4
3		5.1	3.7	7.5	1	6.1	2.6
3.25		5.4	3.6	7.75	1	6.2	3.1
3.5		5.3	3.9	8	1	6.3	3.4
3.75		5.4	4.1	8.25	1	6.4	3.1
4		5.6	4.1	8.5	1	6.3	3.6
4.25		5.4	3.0	8.7	1	6.3	2.5

Project: CAB

Site: 155

Location: GDA 94

ZONE 56

518971mE 7005135mN Lat: -27.07597

Long: 153.19133

Described By: S (Shane) Pointon (POIS)

Date: 14/NOV/06

**Landscape:**

Landform Pattern: beach ridge plain

Element: beach ridge

Depth to Water 4.6

Surface Condition: Firm

Disturbances: Extensive clearing

**Classifications:**

ASC: SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Very dark grey (N30) moist; loamy sand; single grain structure; dry when sampled; gradual to
A21e	.4 to 1.3	Grey (10YR61) moist; sand; single grain structure; dry when sampled; diffuse to
A22	1.3 to 2	Greyish brown (10YR52) moist; few 2-10% coarse 15-30mm distinct dark mottles; sand; single grain structure; moderately moist when sampled; gradual to
B1	2 to 2.4	Very dark greyish brown (10YR32) moist; very few <2% coarse 15-30mm distinct dark mottles; loamy sand; single grain structure; moderately moist when sampled; gradual to
B21s	2.4 to 2.7	Very dark brown (7.5YR2.5/2) moist; loamy sand; single grain structure; very few <2% fine <2mm earthy soft segregations; moderately moist when sampled
B22s	2.7 to 3.6	Dark brown (7.5YR33) moist; loamy sand; single grain structure; few 2-10% fine <2mm earthy soft segregations; moist when sampled; gradual to
B23s	3.6 to 4	Brown (7.5YR43) moist; loamy sand; single grain structure; very few <2% fine <2mm earthy soft segregations; moist when sampled; gradual to
B24	4 to 4.6	Dark yellowish brown (10YR44) moist; loamy sand; very few <2% rounded quartz medium pebbles 6-20 mm; single grain structure; few 2-10% coarse 6-20mm earthy nodules; wet when sampled; clear to
2C	4.6 to 5.3	Dark greyish brown (2.5Y43) moist; sand; single grain structure; wet when sampled; diffuse to
3C	5.3 to 6.7	Greyish brown (2.5Y53) moist; sand; wet when sampled; gradual to
4C	6.7 to 7.3	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled; gradual to
5C	7.3 to 8.7	Olive grey (5Y52) moist; sand; few 2-10% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3				
.1	4	3.6	2.2	4.25		4.2	2.6
.3	4	3.9	2.4	4.5		4.3	2.6
.6		4.2	2.6	4.75	4	4.5	1.4
.8		4.4	2.9	5	4	4.4	1.3
1		4.5	2.8	5.25	4	4.3	1.4
1.25		4.3	3.1	5.5	4	4.3	1.4
1.5		4.1	2.9	5.75	4	4.3	1.5
1.75		4.1	2.9	6	4	3.5	1.6
2		3.9	2.9	6.25	4	4.1	1.7
2		3.7	2.8	6.5	4	4.0	1.5
2.25		3.9	2.3	6.75	4	4.4	1.4
2.5		4.0	2.8	7	4	4.2	1.5
2.75		4.1	2.8	7.5	4	4.0	2.0
3		4.2	2.5	8	4	4.1	2.0
3.25		4.2	2.6	8.5	4	3.9	2.2
3.5	4	4.3	2.4	8.7	4	4.3	2.1
3.75	4	4.4	2.3				
4		4.2	2.6				
Depth	H2O2-	PH-2	PH-3				

**Project:** CAB

**Site:** 156

**Location:** GDA 94      **ZONE** 56      519064mE 7005042mN      **Lat:** -27.07681      **Long:** 153.19227  
**Location:** AGD 84      **ZONE** 56      518958mE 7004854mN      **Lat:** -27.0785      **Long:** 153.19121  
**Location:** AGD 66      **ZONE** 56      518959mE 7004856mN      **Lat:** -27.07849      **Long:** 153.19122

**Described By:** S (Shane) Pointon (POIS)

**Date:** 14/NOV/06

**Landscape:**

**Landform Pattern:** No record      **Element:** beach

**Depth to Water** 4.5

**Surface Condition:** Hard setting

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** SULFIDIC, OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .25	Brownish yellow (10YR66) moist; common 10-20% medium 5-15mm prominent red mottles; coarse sandy light clay; abundant 50-90% rounded ironstone medium pebbles 6-20 mm; angular blocky weak structure; dry when sampled; sharp to
2A	.25 to .5	Dark grey (10YR41) moist; sand; single grain structure; dry when sampled; clear to
3A11	.5 to .65	Very dark grey (N30) moist; loamy sand; single grain structure; dry when sampled; gradual to
3A12	.65 to .9	Very dark grey (10YR31) moist; sand; single grain structure; dry when sampled; gradual to
3A2	.9 to 1.5	Light brownish grey (10YR62) moist; sand; single grain structure; moderately moist when sampled; gradual to
3B21	1.5 to 1.8	Very dark brown (7.5YR2.5/2) moist; sand; single grain structure; moderately moist when sampled; gradual to
3B22	1.8 to 2.8	Yellowish brown (10YR54) moist; sand; single grain structure; moderately moist when sampled
4A2	2.8 to 3.5	Light grey (10YR72) moist; sand; single grain structure; moderately moist when sampled
5C	3.5 to 4.5	Light brownish grey (10YR62) moist; sand; single grain structure; moist when sampled
6C	4.5 to 5.1	Light brownish grey (2.5Y62) moist; sand; single grain structure; wet when sampled
7C	5.1 to 7	Grey (5Y61) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		5.5	3.6	3.75		4.8	3.4
.3	4	4.8	3.0	4		4.6	3.7
.6		3.2	0.9	4.25		4.9	3.5
.8		4.1	1.9	4.5	4	4.6	1.7
1		4.3	2.7	4.75	4	4.2	2.2
1.25		4.6	3.0	5		4.1	2.2
1.5		3.4	2.5	5.25	4	4.1	2.2
1.75		3.9	3.0	5.5	4	3.9	2.1
2		4.7	3.6	5.75	4	3.9	2.1
2.25		4.8	3.6	6	4	4.0	2.0
2.5	4	4.9	2.6	6.25	4	4.1	2.0
2.75	4	4.8	2.8	6.5	4	4.1	1.9
3	4	4.6	3.3	6.75	4	4.4	1.9
3.25		4.9	3.4	7	4	4.7	1.8
3.5		4.8	3.4				

**Observation Notes:**

**Observation** Road base surface; Adjacent 'water trench'.

**Vegetation** Acacia Spp, Casuarina Spp., Melaleuca quinquenervia.

**Project:** CAB

**Site:** 157

**Location:** GDA 94      **ZONE** 56      519351mE 7005249mN      **Lat:** -27.07494

**Long:** 153.19517

**Described By:** S (Shane) Pointon (POIS)

**Date:** 14/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Depth to Water** 5.1

**Surface Condition:** Loose

**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** SEMIAQUIC, Podosol

**Profile Morphology:**

<b>Horizon</b>	<b>Depth (m)</b>	<b>Description</b>
A11	0 to .35	Grey (10YR51) moist; sand; single grain structure; dry when sampled; clear to
A12	.35 to .7	Grey (10YR61) moist; sand; single grain structure; dry when sampled; gradual to
A2e	.7 to 1.3	Light grey (10YR72) moist; sand; single grain structure; moderately moist when sampled; clear to
B1	1.3 to 2	Dark grey (10YR41) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
B21	2 to 2.6	Greyish brown (10YR52) moist; loamy sand; moderately moist when sampled; clear to
B22	2.6 to 2.8	Dark brown (7.5YR32) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
B23	2.8 to 3	Dark yellowish brown (10YR44) moist; sand; single grain structure; moderately moist when sampled; gradual to
2B21	3 to 3.65	Light yellowish brown (10YR64) moist; sand; single grain structure; few 2-10% coarse 6-20mm ferruginous soft segregations; moderately moist when sampled; gradual to
2B22	3.65 to 4	Pale brown (10YR63) moist; sand; single grain structure; moderately moist when sampled; gradual to
2B23	4 to 5.1	Brown (10YR53) moist; sand; single grain structure; moist when sampled; abrupt to
2B24	5.1 to 5.6	Light brownish grey (2.5Y63) moist; sand; single grain structure; wet when sampled; clear to
3C	5.6 to 6.6	Greyish brown (2.5Y53) moist; sand; many 20-50% rounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled
4C	6.6 to 8	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled
5C	8 to 8.1	Greyish brown (2.5Y52) moist; coarse sand; few 2-10% rounded quartz medium pebbles 6-20 mm; single grain structure; few 2-10% medium 2-6mm earthy soft segregations; wet when sampled
6C	8.1 to 8.2	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled



Project: CAB

Site: 157

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.7	2.2	4.25		5.1	3.9
.3		4.0	2.2	4.5		4.9	3.9
.6		4.4	2.8	4.75		4.7	3.9
.8		4.6	3.0	5		4.7	3.6
1		4.8	3.3	5.25		4.6	3.4
1.25		4.6	2.9	5.5		4.6	2.7
1.5		4.3	2.7	5.75		5.1	2.2
1.75		4.5	3.1	6		4.3	2.1
2		4.9	3.1	6.25		4.2	2.4
2.25		4.3	3.3	6.5		4.1	2.5
2.5		4.6	3.1	6.75		4.1	2.5
2.75		4.4	3.6	7		4.6	2.5
3		4.9	3.9	7.25		4.5	2.9
3.25		4.9	3.9	7.5		4.4	2.8
3.5		4.7	3.6	7.75		4.4	2.9
3.75		4.8	3.8	8	4	4.4	0.7
4		5.0	4.0	8.2		4.3	2.7

**Observation Notes:**

Observation Road to water treatment plant  
Vegetation *Corymbia intermedia*, *Melaleuca bracteata*, *acacia* spp, *casuarina* spp

**Horizon Notes:**

Texture 3C Coarse layers throughout.  
Horizon 5C segs may be coffee rock?

**Project:** CAB

**Site:** 158

**Location:** GDA 94      **ZONE** 56      520349mE 7004039mN      **Lat:** -27.08585

**Long:** 153.20525

**Location:** AGD 84      **ZONE** 56      520243mE 7003851mN      **Lat:** -27.08754

**Long:** 153.20419

**Location:** AGD 66      **ZONE** 56      520244mE 7003853mN      **Lat:** -27.08753

**Long:** 153.2042

**Described By:** S (Shane) Pointon (POIS)

**Date:** 15/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Depth to Water** .9

**Surface Condition:** Loose

**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** RUDOSOLIC, OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .9	Very pale brown (10YR73) moist; few 2-10% medium 5-15mm distinct orange mottles; sand; single grain structure; moderately moist when sampled; clear to
A12	.9 to 2.1	Light grey (10YR71) moist; sand; single grain structure; wet when sampled; gradual to
2C	2.1 to 2.5	Grey (10YR61) moist; sand; wet when sampled; gradual to
3C	2.5 to 5	Light grey (10YR71) moist; sand; single grain structure; wet when sampled; clear to
4C	5 to 5.7	Grey (N50) moist; sand; very few <2% angular platy shell small pebbles 2-6 mm; single grain structure; wet when sampled; sharp to
5C	5.7 to 6.3	Dark grey (N40) moist; sand; few 2-10% angular platy shell small pebbles 2-6 mm; very few <2% angular platy shell medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		5.4	3.7	3.25		7.6	5.4
.3		5.6	4.3	3.5		7.9	5.4
.6		5.6	4.5	3.75		8.2	5.4
.8		5.4	4.4	4		7.5	5.8
1		5.7	4.3	4.25		7.7	5.6
1.25		6.0	4.0	4.5		7.5	5.9
1.5		6.0	3.7	4.75		7.8	6.0
1.75		6.2	3.8	5	1	7.4	5.4
2		6.6	4.7	5.25	1	7.6	5.2
2.25		7.1	6.0	5.5	1	7.6	5.0
2.5		7.3	4.7	5.75	1	7.6	5.4
2.75		7.5	5.6	6	1	7.8	5.6
3		7.8	6.0	6.2	3	8.1	2.6

**Horizon Notes:**

Horizon 5C      Rotted wood fragments in this horizon

**Project:** CAB

**Site:** 159

**Location:** GDA 94      **ZONE** 56      520314mE 7004223mN      **Lat:** -27.08419  
**Location:** AGD 84      **ZONE** 56      520208mE 7004035mN      **Lat:** -27.08588  
**Location:** AGD 66      **ZONE** 56      520209mE 7004037mN      **Lat:** -27.08587

**Long:** 153.20489  
**Long:** 153.20384  
**Long:** 153.20384

**Described By:** S (Shane) Pointon (POIS)

**Date:** 15/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** SESQUIC, AERIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Grey (10YR51) moist; loamy sand; single grain structure
B2	.3 to .8	Pale brown (10YR63) moist; few 2-10% medium 5-15mm faint orange mottles; sand; single grain structure
2A1	.8 to 1.1	Dark grey (10YR41) moist; loamy sand; single grain structure
2A2	1.1 to 1.5	Light brownish grey (10YR62) moist; sand; single grain structure
2B21	1.5 to 2.1	Brown (10YR43) moist; sand; single grain structure
2B22	2.1 to 2.8	Yellowish brown (10YR54) moist; sand; single grain structure
3C	2.8 to 4.4	White (10YR81) moist; sand; single grain structure
4C	4.4 to 5.6	Pale brown (10YR63) moist; sand; single grain structure; wet when sampled
5C	5.6 to 6.3	Light brownish grey (2.5Y62) moist; sand; very few <2% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled
6C	6.3 to 8.6	Grey (2.5Y61) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.1	2.6	4.5	3.9	2.8
.3	4.3	2.0	4.75	4.9	3.8
.6	4.3	2.2	5	5.2	3.8
.8	4.3	2.3	5.25	4.7	3.9
1	4.3	2.0	5.5	5.1	4.1
1.25	4.4	2.4	5.75	4.9	2.4
1.5	4.8	2.5	6	5.4	2.3
1.75	4.2	2.9	6.25	4.7	1.8
2	4.4	2.3	6.5	4.7	1.8
2.25	5.2	3.7	6.75	4.9	1.9
2.5	4.9	4.2	7	4.8	2.1
2.75	5.5	4.5	7.25	5.0	2.1
3	5.7	4.5	7.5	5.2	2.4
3.25	6.1	4.6	7.75	5.3	2.1
3.5	6.0	4.8	8	5.3	2.1
3.75	5.8	5.7	8.25	5.4	2.5
4	5.6	4.6	8.5	5.6	2.4
4.25	4.7	4.4			

**Observation Notes:**

**Observation**      Roots to 3.6m

**Vegetation**      *Corymbia intermedia*, *Corymbia tessellaris*, *Acacia* spp, *Alphitonia excelsa*.

**Horizon Notes:**

**Horizon**      2B21      Bands of dark and light colours

**Project:** CAB

**Site:** 160

**Location:** GDA 94      **ZONE** 56      520370mE 7004447mN      **Lat:** -27.08216      **Long:** 153.20546  
**Location:** AGD 84      **ZONE** 56      520264mE 7004259mN      **Lat:** -27.08386      **Long:** 153.2044  
**Location:** AGD 66      **ZONE** 56      520265mE 7004261mN      **Lat:** -27.08384      **Long:** 153.2044

**Described By:** S (Shane) Pointon (POIS)

**Date:** 15/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** beach ridge

**Depth to Water** 2.8

**Surface Condition:** Loose

**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .5	Dark grey (N40) moist; loamy sand; single grain structure; dry when sampled; gradual to
A2e	.5 to 1.5	White (10YR82) moist; sand; single grain structure; dry when sampled; clear to
B1	1.5 to 2	Light brownish grey (10YR62) moist; sand; single grain structure; moderately moist when sampled; clear to
B21	2 to 2.8	Greyish brown (10YR52) moist; sand; single grain structure; moderately moist when sampled; abrupt to
2C	2.8 to 4	Light yellowish brown (10YR64) moist; sand; single grain structure; wet when sampled; gradual to
3C	4 to 8.1	Greyish brown (2.5Y52) moist; sand; few 2-10% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	4.6	2.0	4.25	4.6	2.5
.3	3.9	2.2	4.5	5.3	2.2
.6	3.9	2.3	4.75	4.8	1.8
.8	4.4	2.6	5	4.5	1.5
1	4.4	2.8	5.25	4.6	2.4
1.25	4.5	2.9	5.5	4.7	2.3
1.5	4.4	2.7	5.75	5.1	2.1
1.75	4.5	2.7	6	5.4	2.3
2	4.5	2.5	6.25	4.8	2.8
2.25	4.6	2.6	6.5	5.0	2.3
2.5	4.8	3.1	6.75	5.1	2.5
2.75	4.4	3.3	7	5.8	2.6
3	4.1	4.0	7.25	5.5	3.1
3.25	4.0	4.0	7.5	5.6	2.7
3.5	4.1	4.3	7.75	5.6	2.9
3.75	4.5	4.3	8	5.3	2.8
4	4.3	3.9			

**Observation Notes:**

**Observation** Side of road toward 'turn around'  
**Vegetation** *Corymbia intermedia*, *Corymbia tessellaris*, *Acacia* spp, *Alphitonia excelsa*, *Lantana camara*, *Pteridium esculentum*, *Panicum maximum*.

**Horizon Notes:**

**Project:** CAB

**Site:** 161

**Location:** GDA 94      **ZONE** 56      519963mE 7004825mN      **Lat:** -27.07876      **Long:** 153.20134  
**Location:** AGD 84      **ZONE** 56      519857mE 7004637mN      **Lat:** -27.08045      **Long:** 153.20028  
**Location:** AGD 66      **ZONE** 56      519858mE 7004639mN      **Lat:** -27.08044      **Long:** 153.20029

**Described By:** S (Shane) Pointon (POIS)

**Date:** 16/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** beach ridge

**Depth to Water** 3.4

**Surface Condition:** Loose

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .4	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled
A12	.4 to 1	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled
A2e	1 to 1.45	Greyish brown (10YR52) moist; sand; single grain structure; dry when sampled
B1	1.45 to 1.9	Brown (7.5YR42) moist; loamy sand; single grain structure; moderately moist when sampled
B21	1.9 to 2.5	Dark brown (7.5YR33) moist; loamy sand; single grain structure; moderately moist when sampled
2C	2.5 to 3	Light yellowish brown (10YR64) moist; sand; single grain structure; moderately moist when sampled
3C	3 to 3.4	Yellowish brown (10YR54) moist; sand; single grain structure; moist when sampled
4C	3.4 to 3.6	Dark yellowish brown (10YR44) moist; loamy sand; single grain structure; wet when sampled
5C	3.6 to 3.9	Olive brown (2.5Y44) moist; loamy sand; single grain structure; wet when sampled
6C1	3.9 to 5.6	Greyish brown (2.5Y53) moist; loamy sand; single grain structure; wet when sampled
6C2	5.6 to 7	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled
6C3	7 to 8.2	Grey (2.5Y51) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.5	3.3	4.25		6.7	3.4
.3		4.3	3.0	4.5		6.2	3.1
.6		4.1	2.7	4.75		6.1	3.4
.8		4.2	3.2	5		6.7	2.2
1		5.1	4.1	5.25		6.1	2.3
1.25		6.1	3.9	5.5	1	6.2	2.1
1.5		5.7	4.0	5.75	1	6.1	2.0
1.75		6.3	4.2	6		6.0	3.5
2		5.9	4.2	6.25		6.7	3.6
2.25		6.4	4.3	6.5		6.8	2.8
2.5		6.7	4.4	6.75		6.9	3.2
2.75		7.2	4.4	7		7.0	2.3
3		7.3	4.5	7.25		6.3	4.1
3.25		6.9	4.2	7.5		6.4	2.7
3.5		6.6	4.3	7.75		6.6	3.3
3.75		6.5	3.9	8		6.5	2.5
4		6.4	3.4	8.2		6.9	2.3

**Observation Notes:**

**Vegetation** Corymbia intermedia, Lophostemon confertus, Acacia spp, Banksia integrifolia.

**Project:** CAB

**Site:** 162

**Location:** GDA 94      **ZONE** 56      519779mE 7005155mN      **Lat:** -27.07578  
**Location:** AGD 84      **ZONE** 56      519673mE 7004967mN      **Lat:** -27.07747  
**Location:** AGD 66      **ZONE** 56      519674mE 7004969mN      **Lat:** -27.07746

**Long:** 153.19948  
**Long:** 153.19842  
**Long:** 153.19843

**Described By:** S (Shane) Pointon (POIS)

**Date:** 16/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** swale  
**Surface Condition:** Loose  
**Disturbances:** Extensive clearing, Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .4	Grey (10YR51) moist; loamy sand; single grain structure; gradual to
A12	.4 to 1.1	Greyish brown (10YR52) moist; sand; single grain structure; gradual to
A2e	1.1 to 2	Brown (10YR53) moist; sand; single grain structure; gradual to
B2	2 to 3.5	Yellowish brown (10YR54) moist; loamy sand; single grain structure; gradual to
2C	3.5 to 4.2	Greyish brown (2.5Y53) moist; sand; single grain structure; clear to
3C	4.2 to 4.5	Greyish brown (2.5Y53) moist; sand; common 10-20% subrounded detrital sedimentary rock (unidentified) medium pebbles 6-20 mm; single grain structure; clear to
4C	4.5 to 6.8	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	7.1	5.2	3.5	6.5	4.2
.3	6.6	4.8	3.75	6.6	2.6
.6	7.2	4.7	4	6.6	1.9
.8	7.2	4.5	4.25	6.0	1.9
1	7.2	4.5	4.5	5.4	2.1
1.25	7.1	4.6	4.75	6.5	2.3
1.5	7.1	4.5	5	6.4	2.2
1.75	7.2	4.6	5.25	6.6	
2	7.1	4.6	5.5	6.6	2.0
2.25	6.8	4.6	5.75	6.2	2.0
2.5	6.8	4.4	6	6.4	2.4
2.75	6.9	4.3	6.25	6.4	2.9
3	6.8	3.2	6.5	6.3	2.8
3.25	6.4	4.0	6.75	5.9	2.5

**Observation Notes:**

**Vegetation**      Melaleuca quinquenervia, Banksia integrifolia, Acacia spp, Pteridium esculentum

**Project:** CAB

**Site:** 163

**Location:** GDA 94      **ZONE** 56      519673mE 7005512mN      **Lat:** -27.07256      **Long:** 153.19841  
**Location:** AGD 84      **ZONE** 56      519567mE 7005324mN      **Lat:** -27.07425      **Long:** 153.19735  
**Location:** AGD 66      **ZONE** 56      519568mE 7005326mN      **Lat:** -27.07424      **Long:** 153.19735

**Described By:** S (Shane) Pointon (POIS)

**Date:** 16/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Depth to Water** 2.5

**Classifications:**

**ASC:** OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Dark grey (10YR41) moist; sand; single grain structure; dry when sampled
2A	.3 to .5	Black (10YR21) moist; sandy loam; many 20-50% angular other medium pebbles 6-20 mm; single grain structure; dry when sampled
3A1	.5 to .8	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled
3A2	.8 to 1.2	Light brownish grey (10YR62) moist; sand; single grain structure; dry when sampled
4C1	1.2 to 1.5	Brown (10YR53) moist; sand; single grain structure; dry when sampled
4C2	1.5 to 2.5	Yellowish brown (10YR54) moist; sand; single grain structure; moderately moist when sampled
4C3	2.5 to 2.9	Brown (10YR53) moist; sand; single grain structure; wet when sampled
5C	2.9 to 3.7	Light yellowish brown (10YR64) moist; sand; single grain structure; wet when sampled
6C	3.7 to 5.2	Greyish brown (2.5Y53) moist; sand; few 2-10% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled
7C	5.2 to 7.2	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.3	2.4	3.75		5.9	2.1
.3		5.3	4.0	4		5.6	1.9
.6		6.1	4.3	4.25		5.6	2.0
.8		6.2	4.3	4.5	1	5.7	1.6
1		6.1	4.6	4.75		5.7	1.9
1.25		6.0	4.4	5		5.2	2.1
1.5		5.9	4.2	5.25		5.3	1.6
1.75		5.2	4.0	5.5		5.9	1.4
2		5.7	4.2	5.75		5.8	1.9
2.25		5.7	4.0	6		8.6	3.6
2.5		5.9	4.1	6.25		5.2	3.1
2.75		5.9	4.4	6.5		5.4	2.6
3		6.1	4.4	6.75		5.3	2.6
3.25		5.8	4.0	7		5.4	2.6
3.5		5.9	3.8				

**Observation Notes:**

**Vegetation** Corymbia intermedia, Melaleuca quinquenervia, Acacia spp

**Horizon Notes:**

**Horizon** A1 horizon composed of fill material  
**Horizon** 2A coarse frags may be some kind of organic resin  
**Horizon** 2A horizon composed of fill material

**Project:** CAB

**Site:** 164

**Location:** GDA 94      **ZONE** 56      516884mE 7005283mN      **Lat:** -27.07466      **Long:** 153.17028  
**Location:** AGD 84      **ZONE** 56      516778mE 7005095mN      **Lat:** -27.07635      **Long:** 153.16922  
**Location:** AGD 66      **ZONE** 56      516779mE 7005097mN      **Lat:** -27.07634      **Long:** 153.16923

**Described By:** S (Shane) Pointon (POIS)

**Date:** 20/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** plain

**Surface Condition:** Firm

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .2	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; clear to
A2	.2 to .4	Very pale brown (10YR73) moist; sand; few 2-10% rounded ironstone large pebbles 20-60 mm; single grain structure; dry when sampled; sharp to
B2	.4 to .8	Pale brown (10YR63) moist; many 20-50% coarse 15-30mm prominent orange mottles; sandy clay loam; subangular blocky weak 10-20mm structure; dry when sampled; sharp to
2A2	.8 to .9	White (10YR81) moist; sand; single grain structure; dry when sampled; sharp to
2B1	.9 to 1	Greyish brown (10YR52) moist; few 2-10% medium 5-15mm faint orange mottles; loamy sand; weak structure; moderately moist when sampled; clear to
2Bh	1 to 1.3	Black (10YR21) moist; loamy sand; massive structure; moderately moist when sampled; clear to
3A2	1.3 to 1.5	Light brownish grey (10YR62) moist; sand; single grain structure; moderately moist when sampled; clear to
3Bh1	1.5 to 4.4	Dark brown (7.5YR32) moist; loamy sand; massive structure; wet when sampled; gradual to
3Bh2	4.4 to 4.6	Dark greyish brown (2.5Y43) moist; loamy sand; massive structure; wet when sampled; gradual to
3Bh3	4.6 to 5.5	Brown (10YR43) moist; loamy sand; common 10-20% rounded detrital sedimentary rock (unidentified) small pebbles 2-6 mm; massive structure; wet when sampled; clear to
4D	5.5 to 6.6	White (N80) moist; light medium clay; massive structure; moderately moist when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.6	2.0	3.5	1	5.4	.9
.3	1	5.7	2.9	3.75	4	5.5	1.3
.6	1	5.5	3.8	4	4	5.6	2.3
.8	1	5.8	4.3	4.25	2	5.8	2.8
1	1	5.3	2.6	4.5	4	6.1	3.8
1.25	1	5.4	2.5	4.75	2	6.0	0.6
1.5	1	5.2	1.8	5	2	6.1	0.6
1.75	1	5.9	0.9	5.25	4	6.1	2.0
2	1	5.9	.8	5.5	4	6.1	1.7
2.25	1	5.9	.7	5.75	2	6.9	3.4
2.5	1	6.0	.9	6	2	7.3	4.0
2.75	1	5.8	0.9	6.25	2	7.7	4.4
3	1	5.6	.8	6.5	4	7.7	6.4
3.25	1	5.5	3.0				

**Observation Notes:**

**Location** Little relief in this area, low in landscape, edge of swamp.



**Project:** CAB

**Site:** 165

<b>Location:</b> GDA 94	<b>ZONE</b> 56	516915mE 7005039mN	<b>Lat:</b> -27.07687	<b>Long:</b> 153.1706
<b>Location:</b> AGD 84	<b>ZONE</b> 56	516809mE 7004851mN	<b>Lat:</b> -27.07856	<b>Long:</b> 153.16954
<b>Location:</b> AGD 66	<b>ZONE</b> 56	516810mE 7004853mN	<b>Lat:</b> -27.07855	<b>Long:</b> 153.16954

**Described By:** S (Shane) Pointon (POIS)

**Date:** 20/NOV/06

**Landscape:**

<b>Landform Pattern:</b> beach ridge plain	<b>Element:</b> plain
<b>Depth to Water</b> 1.4	<b>Surface Condition:</b> Loose <b>Disturbances:</b> Limited clearing

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Grey (10YR51) moist; sand; single grain structure; dry when sampled; clear to
B1	.3 to .4	Greyish brown (10YR52) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
B2	.4 to .8	Very pale brown (10YR84) moist; few 2-10% medium 5-15mm prominent orange mottles; loamy sand; single grain structure; moderately moist when sampled; clear to
2A2	.8 to 1	White (10YR81) moist; sand; single grain structure; moist when sampled; clear to
2B11	1 to 1.2	Greyish brown (2.5Y52) moist; sand; single grain structure; moist when sampled; clear to
2B12h	1.2 to 1.4	Dark reddish grey (2.5YR31) moist; loamy sand; massive structure; moist when sampled; clear to
2B13h	1.4 to 2.4	Black (10YR21) moist; loamy sand; massive structure; wet when sampled; clear to
2B14h	2.4 to 2.7	Very dark brown (10YR22) moist; loamy sand; massive structure; moderately cemented broken massive organic pan; wet when sampled; clear to
2B15h	2.7 to 2.9	Very dark brown (7.5YR2.5/2) moist; loamy sand; massive structure; wet when sampled; clear to
2B16h	2.9 to 3.5	Black (10YR21) moist; loamy sand; massive structure; wet when sampled; clear to
2B17h	3.5 to 4.1	Very dark brown (7.5YR22) moist; loamy sand; massive structure; wet when sampled; clear to
2B18h	4.1 to 4.5	Dark yellowish brown (10YR34) moist; loamy sand; massive structure; wet when sampled; clear to
3C	4.5 to 5.7	Dark yellowish brown (10YR44) moist; loamy sand; massive structure; wet when sampled; clear to
4C	5.7 to 6.9	Grey (2.5Y61) moist; sand; single grain structure; wet when sampled; clear to
5D	6.9 to 7	Greenish grey (5GY61) moist; coarse sandy light medium clay; common 10-20% subrounded detrital sedimentary rock (unidentified) medium pebbles 6-20 mm; common 10-20% subrounded quartz medium pebbles 6-20 mm; moderate structure; moist when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		5.5	3.2	3.75		6.8	1.6
.3	1	4.9	3.3	4		6.5	1.9
.6		5.6	4.5	4.25		6.6	1.6
.8		5.5	3.8	4.5		6.5	1.9
1		5.6	4.9	4.75		6.4	1.8
1.25	1	6.1	1.8	5		6.0	1.7
1.5		6.2	1.4	5.25		6.0	1.9
1.75		6.3	3.5	5.5		6.1	3.4
2		6.2	4.1	5.75		6.3	2.2
2.25		6.4	4.6	6	4	7.0	1.4
2.5		6.3	3.8	6.25	4	7.1	1.4
2.75		6.6	3.8	6.5	4	7.0	1.6
3		6.6	4.1	6.75	4	6.6	1.4
3.25		7.0	2.1	7	4	7.5	2.8
3.5		7.0	1.9				

**Observation Notes:**

<b>Location</b>	Behind retirement village
<b>Vegetation</b>	Melaleuca quinquenervia, Corymbia intermedia, Casuarina spp, Banksia integrifolia

**Project:** CAB

**Site:** 166

**Location:** GDA 94      **ZONE** 56      517239mE 7005457mN      **Lat:** -27.07309      **Long:** 153.17386  
**Location:** AGD 84      **ZONE** 56      517133mE 7005269mN      **Lat:** -27.07478      **Long:** 153.1728  
**Location:** AGD 66      **ZONE** 56      517134mE 7005271mN      **Lat:** -27.07477      **Long:** 153.17281

**Described By:** S (Shane) Pointon (POIS)

**Date:** 21/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** plain

**Surface Condition:** Firm

**Disturbances:** Limited clearing, Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Very dark grey (N30) moist; loamy sand; weak structure; wet when sampled; gradual to
A2e	.4 to .8	Grey (2.5Y51) moist; sand; single grain structure; moderately moist when sampled; gradual to
B1	.8 to 1.1	Greyish brown (10YR52) moist; sand; single grain structure; wet when sampled; gradual to
Bh1	1.1 to 1.7	Black (10YR21) moist; loamy sand; massive structure; weakly cemented continuous massive organic pan; wet when sampled; gradual to
Bh2	1.7 to 3.5	Very dark brown (7.5YR2.5/2) moist; loamy sand; very few <2% rounded quartz medium pebbles 6-20 mm; massive structure; wet when sampled; gradual to
Bh3	3.5 to 4.9	Very dark greyish brown (2.5Y32) moist; loamy sand; few 2-10% rounded detrital sedimentary rock (unidentified) medium pebbles 6-20 mm; massive structure; wet when sampled; gradual to
2C	4.9 to 5.4	Dark grey (N40) moist; sand; few 2-10% rounded quartz medium pebbles 6-20 mm; few 2-10% rounded detrital sedimentary rock (unidentified) medium pebbles 6-20 mm; single grain structure; wet when sampled; sharp to
3D1	5.4 to 5.7	Light grey (2.5Y72) moist; light medium clay; massive structure; moist when sampled; gradual to
3D2	5.7 to 6	White (N80) moist; sandy light medium clay; very few <2% subrounded quartz small pebbles 2-6 mm; massive structure; moist when sampled; gradual to
3D3	6 to 6.3	Light greenish grey (5G81) moist; coarse sandy light medium clay; common 10-20% subrounded quartz small pebbles 2-6 mm; massive structure; moist when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		3.7	1.9	3.25	4	5.0	1.7
.3		4.0	2.2	3.5	4	5.0	2.1
.6		4.5	2.5	3.75	4	4.8	2.3
.8		4.6	2.6	4	4	5.0	2.5
1		4.1	2.3	4.25	4	5.4	2.6
1.25		4.3	2.6	4.5	4	5.3	2.8
1.5		4.4	2.5	4.75	4	5.4	2.1
1.75		4.4	3.1	5	4	5.5	1.8
2		4.2	2.9	5.25	4	5.5	1.2
2.25		4.6	3.1	5.5	4	6.5	2.3
2.5		4.8	2.8	5.75	4	6.6	2.4
2.75		5.4	2.2	6	4	6.4	3.1
3		4.9	1.9	6.25	4	6.5	2.9

**Observation Notes:**

**Observation**      8-level disturbance near to site

**Vegetation**      *Banksia integrifolia*, *Xanthorrhoea johnsonii*, *Acacia* spp, *Melaleuca quinquenervia*, *Baccharis halimifolia*.

**Horizon Notes:**

**Project:** CAB

**Site:** 167

**Location:** GDA 94      **ZONE** 56      517464mE 7005367mN      **Lat:** -27.0739      **Long:** 153.17613  
**Location:** AGD 84      **ZONE** 56      517358mE 7005179mN      **Lat:** -27.07559      **Long:** 153.17507  
**Location:** AGD 66      **ZONE** 56      517359mE 7005181mN      **Lat:** -27.07558      **Long:** 153.17508

**Described By:** S (Shane) Pointon (POIS)

**Date:** 21/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** beach ridge

**Depth to Water** 2.2

**Surface Condition:** Loose

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .2	Dark grey (2.5Y41) moist; sand; single grain structure; dry when sampled; gradual to
2A1	.2 to .5	Black (2.5Y2.5/1) moist; sand; single grain structure; weak structure; dry when sampled; clear to
2A2	.5 to 2	White (N80) moist; sand; single grain structure; dry when sampled; clear to
2A3	2 to 2.2	Greyish brown (2.5Y52) moist; sand; single grain structure; moist when sampled; clear to
2B1	2.2 to 2.7	Dark greyish brown (10YR42) moist; loamy sand; single grain structure; wet when sampled; clear to
2Bh1	2.7 to 5.7	Black (10YR21) moist; loamy sand; massive structure; wet when sampled; clear to
2Bh2	5.7 to 6	Dark brown (10YR33) moist; loamy sand; single grain structure; wet when sampled; clear to
3C	6 to 6.6	Very dark grey (N30) moist; few 2-10% coarse 15-30mm distinct brown mottles; coarse sandy light clay; common 10-20% subrounded quartz small pebbles 2-6 mm; massive structure; wet when sampled; clear to
4D	6.6 to 7.2	Light grey (5Y71) moist; few 2-10% coarse 15-30mm distinct orange mottles, few 2-10% coarse 15-30mm distinct red mottles; sandy light medium clay; massive structure; moist when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.8	1.5	3.75	1	4.1	1.8
.3		4.2	1.4	4	1	4.2	1.9
.6		4.2	1.7	4.25	1	4.2	2.0
.8		4.9	2.2	4.5	1	4.5	1.5
1		5.1	2.8	4.75	1	4.2	1.6
1.25		4.5	2.1	5	1	4.6	1.8
1.5		3.9	2.0	5.25	1	4.7	1.7
1.75	1	4.1	1.9	5.5	1	5.0	1.3
2		3.4	2.3	5.75	4	5.0	1.8
2.25		3.8	1.7	6	4	5.4	2.5
2.5		4.0	1.9	6.25	4	5.6	2.6
2.75		3.9	1.7	6.5	4	5.9	2.1
3		4.1	2.0	6.75	4	5.6	3.1
3.25	1	4.3	1.9	7	4	5.6	3.4
3.5	1	4.4	1.9				

**Observation Notes:**

**Vegetation** Banksia integrifolia, Corymbia intermedia, Acacia spp., Melaleuca bracteata, Pteridium esculentum.

**Horizon Notes:**

**Project:** CAB

**Site:** 168

**Location:** GDA 94      **ZONE** 56      517864mE 7005178mN      **Lat:** -27.0756      **Long:** 153.18017  
**Location:** AGD 84      **ZONE** 56      517758mE 7004990mN      **Lat:** -27.07729      **Long:** 153.17911  
**Location:** AGD 66      **ZONE** 56      517759mE 7004992mN      **Lat:** -27.07728      **Long:** 153.17911

**Described By:** S (Shane) Pointon (POIS)

**Date:** 24/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** swale  
**Depth to Water** 1.2      **Surface Condition:** Loose      **Disturbances:** Limited clearing

**Classifications:**

**ASC:** AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .3	Dark grey (2.5Y41) moist; sand; single grain structure; dry when sampled; gradual to
A12	.3 to .6	Grey (2.5Y51) moist; sand; single grain structure; dry when sampled; gradual to
A2	.6 to .8	Light grey (10YR71) moist; sand; single grain structure; moderately moist when sampled; clear to
A3	.8 to 1.2	Greyish brown (10YR52) moist; very few <2% coarse 15-30mm faint dark mottles; sand; single grain structure; moist when sampled; clear to
B21h	1.2 to 2	Dark grey (10YR41) moist; very few <2% medium 5-15mm faint dark mottles; loamy sand; massive structure; wet when sampled; gradual to
B22h	2 to 3.3	Dark greyish brown (10YR42) moist; few 2-10% coarse 15-30mm distinct dark mottles; loamy sand; massive structure; wet when sampled; gradual to
B23h	3.3 to 7.2	Black (10YR21) moist; loamy sand; weakly cemented continuous massive organic pan; wet when sampled; clear to
2C	7.2 to 8.4	Dark greyish brown (10YR42) moist; loamy sand; massive structure; wet when sampled; clear to
3C	8.4 to 8.6	Dark grey (10YR41) moist; few 2-10% coarse 15-30mm distinct gley mottles; loamy sand; few 2-10% rounded quartz medium pebbles 6-20 mm; massive structure; wet when sampled; sharp to
4D	8.6 to 8.7	White (5Y81) moist; few 2-10% coarse 15-30mm distinct gley mottles, few 2-10% coarse 15-30mm prominent red mottles; light medium clay; very few <2% subrounded quartz medium pebbles 6-20 mm; massive structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.1	1.3	4.25		4.4	2.0
.3	1	3.9	1.7	4.5		4.6	2.2
.6		4.4	2.4	4.75	1	4.8	2.1
.8		4.5	2.1	5		4.9	2.2
1		4.2	2.2	5.25	1	4.6	1.8
1.25		4.6	1.7	5.5	1	4.8	1.8
1.5		4.4	2.3	5.75	1	4.9	1.9
1.75		4.6	2.4	6	4	5.1	1.5
2		4.5	2.3	6.25	4	4.1	1.6
2.25		4.6	2.4	6.5	4	4.8	1.5
2.5		4.6	2.2	6.75	4	5.0	1.5
2.75		4.7	2.1	7	4	5.0	1.5
3		4.6	2.3	7.25	3	4.9	1.6
3.25		4.8	2.1	7.5	4	5.5	1.4
3.5		4.8	2.1	8	4	5.5	1.7
3.75		4.9	1.9	8.5	4	5.4	1.8
4	1	5.0	1.2	8.7	4	6.0	2.6

**Observation Notes:**

**Vegetation** Melaleuca quinquenervia, Banksia integrifolia, Xanthorrhoea johnsonii, Leptospermum spp.

**Project:** CAB

**Site:** 169

**Location:** GDA 94      **ZONE** 56      517393mE 7006039mN      **Lat:** -27.06783      **Long:** 153.17541  
**Location:** AGD 84      **ZONE** 56      517287mE 7005851mN      **Lat:** -27.06952      **Long:** 153.17435  
**Location:** AGD 66      **ZONE** 56      517288mE 7005853mN      **Lat:** -27.06951      **Long:** 153.17435

**Described By:** S (Shane) Pointon (POIS)

**Date:** 27/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain  
**Surface Condition:** Firm

**Element:** beach ridge  
**Disturbances:** Limited clearing

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Grey (2.5Y51) moist; loamy sand; single grain structure; dry when sampled; gradual to
A12	.2 to .5	Grey (10YR51) moist; loamy sand; single grain structure; dry when sampled; clear to
A2e	.5 to .75	Grey (10YR61) moist; sand; single grain structure; moderately moist when sampled; abrupt to
A3	.75 to .9	Dark greyish brown (10YR42) moist; sand; massive structure; moist when sampled; clear to
B1	.9 to 1.15	Very dark grey (2.5Y31) moist; loamy sand; massive structure; weakly cemented continuous massive organic pan; moist when sampled; gradual to
B21h	1.15 to 1.8	Black (10YR21) moist; loamy sand; massive structure; wet when sampled; gradual to
B22h	1.8 to 4.5	Black (10YR21) moist; loamy sand; massive structure; weakly cemented continuous massive organic pan; moist when sampled; abrupt to
B23h	4.5 to 4.7	Black (10YR21) moist; loamy coarse sand; common 10-20% rounded quartz small pebbles 2-6 mm; massive structure; moderately cemented continuous massive organic pan; moist when sampled; abrupt to
B24h	4.7 to 5.9	Very dark brown (7.5YR2.5/2) moist; loamy sand; massive structure; weakly cemented continuous massive organic pan; moist when sampled; gradual to
2C1	5.9 to 7.1	Dark yellowish brown (10YR34) moist; loamy sand; massive structure; moist when sampled; clear to
2C2	7.1 to 7.25	Olive brown (2.5Y46) moist; loamy sand; few 2-10% angular other large pebbles 20-60 mm; massive structure; moist when sampled; gradual to
2C3	7.25 to 8.4	Olive (5Y53) moist; loamy sand; massive structure; moist when sampled; abrupt to
2C4	8.4 to 9.3	Grey (5Y61) moist; loamy sand; massive structure; moist when sampled; abrupt to
2C5	9.3 to 9.6	Grey (2.5Y51) moist; loamy sand; massive structure; moist when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		3.7	2.3	3.75	1	4.6	1.9
.3		3.8	3.0	4	1	5.4	1.5
.6		4.1	4.4	4.25	2	4.8	1.5
.8		4.2	3.8	4.5	2	4.7	1.5
1		4.1	3.3	4.75	2	4.2	2.0
1.25		4.2	2.5	5	3	4.5	1.4
1.5		4.2	2.8	5.5	3	4.6	1.2
1.75		4.4	2.2	6	2	4.4	1.5
2		4.1	3.2	6.5	2	4.4	1.9
2.25		4.2	2.4	7	3	4.3	1.3
2.5		4.2	3.0	7.5	4	4.6	2.3
2.75		4.3	2.9	8	4	4.7	2.4
3		4.5	2.9	8.5	4	6.2	2.4
3.25		4.4	2.7	9	4	5.8	1.8
3.5		4.3	2.7	9.5	4	5.6	2.8

**Observation Notes:**

**Vegetation** Xanthorrhoea johnsonii, Banksia aemula, Hakea spp, Melaleuca spp, Acacia spp (juv.).

**Project:** CAB

**Site:** 170

**Location:** GDA 94      **ZONE** 56      516605mE 7003537mN      **Lat:** -27.09034      **Long:** 153.1675  
**Location:** AGD 84      **ZONE** 56      516500mE 7003350mN      **Lat:** -27.09203      **Long:** 153.16644  
**Location:** AGD 66      **ZONE** 56      516500mE 7003351mN      **Lat:** -27.09211      **Long:** 153.16644

**Described By:** S (Shane) Pointon (POIS)

**Date:** 28/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Surface Condition:** Loose

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .5	Very dark grey (N30) moist; loamy sand; single grain structure; dry when sampled
A12	.5 to .75	Grey (2.5Y61) moist; sand; single grain structure; dry when sampled
A21	.75 to 1.7	Light grey (10YR71) moist; sand; single grain structure; dry when sampled
A22	1.7 to 2.25	White (10YR81) moist; sand; single grain structure; dry when sampled
B21	2.25 to 2.5	Dark greyish brown (10YR42) moist; loamy sand; single grain structure; moderately moist when sampled
B22	2.5 to 3.6	Pale yellow (2.5Y74) moist; sand; single grain structure; moderately moist when sampled
B23	3.6 to 4.2	Light olive brown (2.5Y56) moist; sand; moist when sampled
2C	4.2 to 5	Light yellowish brown (2.5Y64) moist; sand; single grain structure; wet when sampled
3C	5 to 5.7	Light olive grey (5Y62) moist; sand; few 2-10% subrounded quartz small pebbles 2-6 mm; few 2-10% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled
4C	5.7 to 6	Grey (5Y61) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.2	3.9	3.25		5.6	6.0
.3		4.3	3.4	3.5		5.9	5.5
.6		4.4	3.3	3.75		6.0	5.4
.8		4.5	4.5	4		5.1	6.4
1		4.6	4.6	4.25	2	5.2	5.4
1.25		5.0	4.6	4.5	2	5.1	2.0
1.5		5.2	5.0	4.75	2	4.6	2.0
1.75		5.0	5.2	5	4	5.1	1.5
2		5.2	5.0	5.25	2	5.2	1.3
2.25		4.4	2.6	5.5	4	5.4	2.0
2.5		4.7	4.8	5.75	4	5.5	2.0
2.75		5.6	5.0	6	1	5.9	1.2
3		5.3	5.4				

**Observation Notes:**

**Location** Behind retirement village, cleared area.

**Vegetation** Euc. spp, Acacia spp. (young regrowth ~5yrs); pteridium esculentum, Corymbia intermedia, Lophostemon confertus, common grasses.

**Project:** CAB

**Site:** 171

**Location:** GDA 94      **ZONE** 56      516425mE 7003640mN      **Lat:** -27.0895      **Long:** 153.16568  
**Location:** AGD 84      **ZONE** 56      516319mE 7003452mN      **Lat:** -27.09119      **Long:** 153.16462  
**Location:** AGD 66      **ZONE** 56      516320mE 7003454mN      **Lat:** -27.09118      **Long:** 153.16462

**Described By:** S (Shane) Pointon (POIS)

**Date:** 28/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Surface Condition:** Loose

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** SULFIDIC, REDOXIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Very dark grey (2.5Y31) moist; loamy sand; weak structure; dry when sampled
A12	.2 to .4	Black (10YR21) moist; loamy sand; weak structure; dry when sampled
A2e	.4 to .5	White (10YR81) moist; sand; single grain structure; moderately moist when sampled
2B2	.5 to .6	Brown (10YR53) moist; few 2-10% medium 5-15mm faint yellow mottles; clayey sand; single grain structure; moderately moist when sampled
3C1	.6 to .95	Pale brown (10YR63) moist; sand; single grain structure; moist when sampled
3C2	.95 to 1.2	Light brownish grey (10YR62) moist; sand; single grain structure; wet when sampled
4C1	1.2 to 2.6	Grey (2.5Y51) moist; sand; single grain structure; wet when sampled
4C2	2.6 to 3.7	Greenish grey (10Y51) moist; sand; single grain structure; wet when sampled
5C	3.7 to 4.85	Grey (5Y51) moist; sand; few 2-10% angular shell medium pebbles 6-20 mm; single grain structure; wet when sampled
6C	4.85 to 5.8	Dark greenish grey (10Y41) moist; clayey sand; few 2-10% angular shell medium pebbles 6-20 mm; few 2-10% angular shell large pebbles 20-60 mm; single grain structure; wet when sampled
7C	5.8 to 6	Dark greenish grey (5GY41) moist; sandy loam; massive structure; wet when sampled
8C	6 to 6.4	Dark grey (N40) moist; clayey sand; very few <2% rounded other medium pebbles 6-20 mm; massive structure; wet when sampled
9C	6.4 to 7.2	Greenish grey (10Y51) moist; clayey sand; few 2-10% angular shell small pebbles 2-6 mm; massive structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		6.1	3.5	3.5	4	7.2	1.9
.3	1	5.6	2.9	3.75	4	7.3	1.8
.6	1	6.1	4.8	4	4	7.6	2.2
.8	3	6.7	4.8	4.25	4	7.9	2.4
1	3	6.5	1.3	4.5	4	7.9	2.4
1.25	3	6.6	1.7	4.75	4	7.0	1.2
1.5	4	6.8	1.6	5		7.3	4.7
1.75	3	6.5	1.6	5.25	2	7.4	2.9
2	3	6.5	1.7	5.5	2	7.3	2.8
2.25	3	6.3	1.6	6	2	8.3	5.8
2.5	3	6.4	1.4	6.5	2	8.5	5.8
2.75	4	6.5	1.5	7	1	8.0	5.8
3	4	6.3	1.5	7.15	1	7.6	5.9
3.25	4	6.6	1.9				

**Observation Notes:**

**Location** Swale drain near RSL, behind retirement village

**Vegetation** Paspalum, blue morning glory, some pasture grasses. dead melaleucas, Euc spp regrowth, Melaleuca quinquenervia, Lophostemon suaveolens, Eucalyptus tereticornis.

**Project:** CAB

**Site:** 172

**Location:** GDA 94      **ZONE** 56      516896mE 7003402mN      **Lat:** -27.09165      **Long:** 153.17043  
**Location:** AGD 84      **ZONE** 56      516790mE 7003214mN      **Lat:** -27.09334      **Long:** 153.16937  
**Location:** AGD 66      **ZONE** 56      516791mE 7003216mN      **Lat:** -27.09333      **Long:** 153.16937

**Described By:** S (Shane) Pointon (POIS)

**Date:** 28/NOV/06

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** beach ridge

**Surface Condition:** Loose

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .2	Very dark grey (7.5YR31) moist; sand; single grain structure; dry when sampled
A12	.2 to 1.1	Black (7.5YR21) moist; loamy sand; single grain structure; moderately moist when sampled
A13	1.1 to 2.3	Grey (10YR61) moist; sand; single grain structure; moderately moist when sampled
A3	2.3 to 2.5	Dark grey (10YR41) moist; sand; single grain structure; moderately moist when sampled
B1	2.5 to 2.7	Very dark greyish brown (10YR32) moist; sand; single grain structure; moderately moist when sampled
B21s	2.7 to 3.7	Dark brown (7.5YR33) moist; sand; single grain structure; wet when sampled
B22s	3.7 to 4.2	Dark yellowish brown (10YR34) moist; sand; single grain structure; wet when sampled
2C	4.2 to 5.3	Olive brown (2.5Y44) moist; sand; single grain structure; wet when sampled
3C	5.3 to 6.7	Olive (5Y43) moist; sand; few 2-10% rounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled
4C	6.7 to 7.2	Dark grey (5Y41) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.5	2.5	3.75		4.8	5.6
.3	1	4.3	2.6	4	1	5.1	2.3
.6		4.7	3.4	4.25	1	5.5	1.8
.8		4.9	3.4	4.5	1	5.5	1.9
1		4.8	3.4	4.75	1	5.3	1.4
1.25		4.7	3.1	5	4	5.4	1.5
1.5		5.1	4.2	5.25	4	3.6	1.4
1.75		5.3	4.6	5.5	4	4.5	1.8
2		5.3	4.4	5.75	4	4.9	1.7
2.25		4.2	3.5	6	4	4.9	2.3
2.5		4.3	2.7	6.25	4	4.9	2.3
2.75		4.2	3.6	6.5	4	4.9	2.1
3		4.5	3.7	6.75	2	4.6	2.1
3.25		4.9	5.0	7	4	4.9	2.0
3.5		4.9	5.7	7.2	4	5.8	1.9

**Observation Notes:**

**Vegetation**      Lophostemon confertus, Casuarina torulosa, Alphitonia excelsa, Acacia spp, Corymbia intermedia, Imperata cylindrica, Pteridium esculentum.



**Project:** CAB

**Site:** 173

<b>Location:</b> GDA 94	<b>ZONE</b> 56	517299mE 7006503mN	<b>Lat:</b> -27.06364	<b>Long:</b> 153.17445
<b>Location:</b> AGD 84	<b>ZONE</b> 56	517193mE 7006315mN	<b>Lat:</b> -27.06533	<b>Long:</b> 153.17339
<b>Location:</b> AGD 66	<b>ZONE</b> 56	517194mE 7006317mN	<b>Lat:</b> -27.06532	<b>Long:</b> 153.1734

**Described By:** S (Shane) Pointon (POIS)

**Date:** 04/DEC/06

### Landscape:

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Depth to Water** 2.8

### Classifications:

**ASC:** HUMIC, AQUIC, Podosol

### Profile Morphology:

Horizon	Depth (m)	Description
A11	0 to .3	Very dark grey (10YR31) moist; sand; single grain structure; dry when sampled; gradual to
A12	.3 to .5	Grey (10YR61) moist; sand; single grain structure; dry when sampled; gradual to
A21e	.5 to .8	Light grey (10YR71) moist; loamy sand; single grain structure; dry when sampled; gradual to
A22e	.8 to 1.1	Light brownish grey (10YR62) moist; loamy sand; single grain structure; moderately moist when sampled; abrupt to
B1	1.1 to 1.7	Dark greyish brown (10YR42) moist; few 2-10% medium 5-15mm distinct dark mottles; loamy sand; massive structure; moist when sampled; clear to
2A2	1.7 to 2.1	Light brownish grey (10YR62) moist; sandy loam; single grain structure; moist when sampled; abrupt to
2B1	2.1 to 2.6	Dark greyish brown (10YR42) moist; sandy loam; massive structure; moist when sampled; clear to
2B21h	2.6 to 2.8	Dark greyish brown (10YR42) moist; sandy loam; massive structure; moderately cemented continuous massive organic pan; moist when sampled; abrupt to
2B22h	2.8 to 3.1	Black (10YR21) moist; clayey sand; massive structure; wet when sampled; abrupt to
2B23h	3.1 to 4.4	Black (10YR21) moist; sandy loam; massive structure; wet when sampled; abrupt to
2B24h	4.4 to 4.5	Black (10YR21) moist; sandy loam; massive structure; moderately cemented continuous massive organic pan; wet when sampled; abrupt to
3B21s	4.5 to 4.75	Very dark brown (10YR22) moist; sandy loam; massive structure; wet when sampled; gradual to
3B22s	4.75 to 5	Dark brown (10YR33) moist; sandy loam; massive structure; wet when sampled; diffuse to
3B23s	5 to 7.3	Dark yellowish brown (10YR34) moist; loamy sand; very few <2% rounded detrital sedimentary rock (unidentified) small pebbles 2-6 mm; massive structure; very few <2% medium 2-6mm earthy soft segregations; wet when sampled; diffuse to
4C	7.3 to 8.25	Olive brown (2.5Y44) moist; loamy sand; massive structure; wet when sampled; gradual to
5C	8.25 to 9.5	Grey (2.5Y61) moist; few 2-10% medium 5-15mm distinct gley mottles; sand; common 10-20% rounded quartz medium pebbles 6-20 mm; massive structure; wet when sampled; clear to
6C	9.5 to 9.7	Light greenish grey (10Y71) moist; medium clay; massive structure; moist when sampled

Project: CAB

Site: 173

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.4	3.2	5	1	5.5	3.3
.3		4.4	3.2	5.25	1	5.3	2.2
.4		4.3	4.6	5.5	1	5.4	2.1
.6		4.8	4.4	5.75	1	5.3	2.0
.8		4.8	4.3	6	1	5.3	1.5
1		4.6	4.7	6.25	1	5.3	1.5
1.25		4.3	3.4	6.5	1	5.5	1.5
1.5		4.4	3.4	6.75	1	5.5	1.5
1.75		4.7	4.5	7	2	5.4	1.7
2		4.7	4.6	7.25	2	5.3	1.6
2.25		4.4	3.7	7.5	2	5.3	1.7
2.5		4.4	3.3	7.75	2	5.8	1.7
2.75		4.8	2.4	8	4	5.8	3.2
3		4.8	3.1	8.25	4	5.7	3.0
3.25		4.8	3.6	8.5	4	6.1	2.4
3.5		4.8	3.0	8.75	4	5.5	2.1
3.75		5.0	2.5	9	4	5.7	2.2
4		5.2	2.4	9.25	4	5.0	2.1
4.25		5.2	2.1	9.5	4	6.0	2.1
4.5	1	5.2	2.0	9.7	4	6.7	3.5
4.75	1	5.1	2.2				

**Observation Notes:**

Location National Park  
Observation Rained previous evening  
Vegetation MELSP2, XANJOHNS, PTEESCUL, BANAEMUL, CASSPP1,

**Horizon Notes:**

Horizon 5C Coarse Frags in horizon 16 constitute a thin layer directly above the next (clay) horizon.

**Project:** CAB

**Site:** 174

**Location:** GDA 94      **ZONE** 56      516570mE 7004766mN      **Lat:** -27.07934      **Long:** 153.16712  
**Location:** AGD 84      **ZONE** 56      516464mE 7004578mN      **Lat:** -27.08103      **Long:** 153.16606  
**Location:** AGD 66      **ZONE** 56      516465mE 7004580mN      **Lat:** -27.08101      **Long:** 153.16607

**Described By:** S (Shane) Pointon (POIS)

**Date:** 05/DEC/06

**Landscape:**

**Landform Pattern:** No record

**Element:** beach

**Surface Condition:** Loose

**Depth to Water** 1.5

**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; clear to
A21e	.3 to .6	Light yellowish brown (2.5Y64) moist; loamy sand; massive structure; dry when sampled; gradual to
2B2	.6 to .9	Yellowish brown (10YR54) moist; common 10-20% medium 5-15mm distinct orange mottles; clayey sand; massive structure; moderately moist when sampled; abrupt to
3A3	.9 to 1.2	Grey (10YR51) moist; loamy sand; massive structure; moist when sampled; abrupt to
3B21h	1.2 to 1.5	Black (10YR21) moist; sandy loam; moist when sampled; abrupt to
3B22h	1.5 to 1.7	Black (10YR21) moist; sandy loam; massive structure; wet when sampled; abrupt to
3B23h	1.7 to 2.5	Black (10YR21) moist; loamy sand; massive structure; wet when sampled; diffuse to
3B24h	2.5 to 3.9	Very dark brown (7.5YR2.5/3) moist; loamy sand; few 2-10% rounded quartz large pebbles 20-60 mm; massive structure; moderately cemented continuous massive organic pan; wet when sampled; abrupt to
4B2h	3.9 to 4.1	Very dark brown (7.5YR2.5/3) moist; coarse sand; massive structure; wet when sampled; abrupt to
5B	4.1 to 5	Dark brown (10YR33) moist; loamy sand; massive structure; wet when sampled; gradual to
6C	5 to 6.4	Olive brown (2.5Y44) moist; sandy loam; massive structure; wet when sampled; clear to
7C	6.4 to 6.5	Greyish brown (2.5Y52) moist; sandy loam; massive structure; wet when sampled; gradual to
8C	6.5 to 7.2	Olive brown (2.5Y44) moist; sandy loam; massive structure; wet when sampled; gradual to
9C	7.2 to 7.5	Dark grey (5Y41) moist; sandy loam; massive structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	5.4	3.9	4	6.8	2.9
.3	5.8	5.0	4.25	6.5	2.4
.6	4.9	4.2	4.5	6.9	2.2
.8	4.9	4.2	4.75	6.8	1.7
1	4.6	4.3	5	6.7	2.5
1.25	5.8	2.0	5.25	6.8	3.4
1.5	5.9	4.3	5.5	6.6	3.0
1.75	6.5	3.9	5.75	6.6	2.8
2	6.6	4.2	6	6.6	2.9
2.25	6.5	4.2	6.25	6.7	2.5
2.5	6.6	4.1	6.5	7.3	1.5
2.75	6.7	4.0	6.75	6.6	4.2
3	6.5	3.4	7	7.3	2.3
3.25	6.5	3.7	7.25	7.5	1.9
3.5	6.6	2.9	7.5	7.4	1.6
3.75	6.7	1.7			

**Observation Notes:**

**Location**      Opposite Aquatic centre - drysite paired with site 176 in wetter area nearby.  
**Vegetation**      Melaleuca quinquenervia, Eucalyptus spp.

Project: CAB

Site: 175

Location: GDA 94	ZONE 56	517979mE 7005781mN	Lat: -27.07015	Long: 153.18132
Location: AGD 84	ZONE 56	517873mE 7005593mN	Lat: -27.07184	Long: 153.18026
Location: AGD 66	ZONE 56	517874mE 7005595mN	Lat: -27.07183	Long: 153.18026

Described By: S (Shane) Pointon (POIS)

Date: 05/DEC/06

**Landscape:**

Landform Pattern: beach ridge plain Element: beach ridge

Depth to Water 1.9

Surface Condition: Loose

Disturbances: Extensive clearing

**Classifications:**

ASC: HUMIC, AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .45	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled; diffuse to
A2	.45 to 1.9	Greyish brown (10YR52) moist; loamy sand; single grain structure; moist when sampled; gradual to
A3	1.9 to 2.3	Very dark greyish brown (10YR32) moist; loamy sand; massive structure; wet when sampled; gradual to
B21h	2.3 to 3.5	Very dark brown (7.5YR2.5/3) moist; loamy sand; massive structure; wet when sampled; clear to
B22h	3.5 to 3.7	Black (N20) moist; clayey sand; massive structure; weakly cemented continuous massive organic pan; wet when sampled; clear to
B23h	3.7 to 7.5	Black (N20) moist; loamy sand; very few <2% rounded quartz medium pebbles 6-20 mm; massive structure; wet when sampled; diffuse to
2C1	7.5 to 8.25	Dark brown (10YR33) moist; loamy sand; few 2-10% angular other medium pebbles 6-20 mm; massive structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.2	3.4	4.25		4.7	2.6
.3		4.3	3.8	4.5		4.6	2.6
.6		4.4	4.5	4.75		4.6	2.5
.8		4.1	4.0	5		5.0	2.3
1		4.0	4.0	5.25		4.8	2.3
1.25		4.6	3.7	5.5		5.0	2.6
1.5		4.4	3.7	5.75		8.0	2.4
1.75		4.1	4.6	6		5.1	2.2
2		4.1	4.0	6.25	1	4.6	1.7
2.25		4.2	4.1	6.5	1	4.9	1.8
2.5		4.3	3.4	6.75	1	5.2	1.8
2.75		4.1	3.2	7	1	5.2	2.1
3		4.3	3.2	7.25	1	4.6	2.7
3.25		4.3	3.3	7.5	1	5.5	1.9
3.5		4.4	3.1	7.75	1	5.2	1.9
3.75		4.3	3.0	8	1	5.4	1.8
4		4.4	2.7	8.25	1	5.6	1.8

**Horizon Notes:**

Horizon B23h Coarse frags in H6 form a thin layer.

**Project:** CAB

**Site:** 176

**Location:** GDA 94      **ZONE** 56      516917mE 7004539mN      **Lat:** -27.08138

**Long:** 153.17063

**Described By:** S (Shane) Pointon (POIS)

**Date:** 06/DEC/06

**Landscape:**

**Landform Pattern:** swamp

**Element:** beach ridge

**Surface Condition:** Loose

**Disturbances:** Extensive clearing

**Classifications:**

**ASC:** HUMIC, AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .5	Very dark greyish brown (10YR32) moist; sandy loam; single grain structure; moist when sampled; clear to
A12	.5 to .9	Black (10YR21) moist; sandy clay loam; massive structure; wet when sampled; abrupt to
2B21h	.9 to 1.85	Black (10YR21) moist; light clay; massive structure; wet when sampled; clear to
3B22h	1.85 to 3	Black (10YR21) moist; sandy loam; massive structure; wet when sampled; clear to
3B23h	3 to 4.3	Dark brown (10YR33) moist; sandy loam; massive structure; wet when sampled; diffuse to
3B24h	4.3 to 5.5	Very dark brown (7.5YR2.5/3) moist; sandy loam; massive structure; wet when sampled; diffuse to
3B25	5.5 to 6.55	Dark yellowish brown (10YR34) moist; sandy loam; massive structure; wet when sampled; gradual to
4C1	6.55 to 7.6	Olive (5Y43) moist; sand; single grain structure; wet when sampled; abrupt to
5C1	7.6 to 7.9	Greyish brown (2.5Y53) moist; coarse sand; single grain structure; very few <2% medium 2-6mm argillaceous soft segregations; wet when sampled; clear to
5C2	7.9 to 8.7	Very dark grey (5Y31) moist; coarse sand; common 10-20% subrounded quartz medium pebbles 6-20 mm; few 2-10% coarse 6-20mm argillaceous soft segregations; wet when sampled; clear to
6C1	8.7 to 9	Dark grey (5Y41) moist; sand; single grain structure; wet when sampled; gradual to
6C2	9 to 9.95	Grey (5Y51) moist; sand; massive structure; wet when sampled; abrupt to
7D	9.95 to 10.2	Dark grey (5Y41) moist; medium clay; massive structure; moist when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		5.0	2.7	5.25	1	5.9	1.7
.3		4.8	2.9	5.5	1	6.0	1.7
.6		5.0	2.9	5.75	1	5.9	1.6
.8		5.4	2.6	6	1	6.0	1.5
1	2	5.4	1.6	6.25	3	6.1	2.9
1.2	4	5.4	1.8	6.5	1	6.1	1.6
1.5	4	5.4	2.0	6.75	1	6.4	1.4
1.75	4	5.3	2.0	7	1	6.6	1.4
2		5.2	1.8	7.25	1	6.6	1.3
2.25		5.5	2.1	7.5	4	6.5	2.5
2.5		5.6	3.0	7.75	2	6.6	1.5
2.75	1	5.8	1.3	8	4	6.6	1.8
3		5.7	3.0	8.25	4	6.8	1.8
3.25		5.4	2.7	8.5	4	6.6	1.8
3.5	2	5.3	1.5	8.75	4	6.7	1.7
3.75	2	5.2	1.6	9	4	6.9	1.4
4	4	5.5	2.4	9.25	4	7.0	1.9
4.25	4	6.0	3.4	9.5	4	7.1	1.9
4.5	4	5.9	3.6	9.75	4	7.1	1.9
4.75	4	6.0	3.4	10	4	7.7	7.3
5	1	5.9	3.5				

**Project:** CAB

**Site:** 177

<b>Location:</b> GDA 94	<b>ZONE</b> 56	520460mE 7005229mN	<b>Lat:</b> -27.0751	<b>Long:</b> 153.20635
<b>Location:</b> AGD 84	<b>ZONE</b> 56	520354mE 7005041mN	<b>Lat:</b> -27.07679	<b>Long:</b> 153.20529
<b>Location:</b> AGD 66	<b>ZONE</b> 56	520355mE 7005043mN	<b>Lat:</b> -27.07678	<b>Long:</b> 153.2053

**Described By:** S (Shane) Pointon (POIS)

**Date:** 19/DEC/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Classifications:**

**ASC:** REDOXIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .5	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; gradual to
B2	.5 to 1.2	Pale brown (10YR63) moist; very few <2% medium 5-15mm faint dark mottles, very few <2% medium 5-15mm faint orange mottles; sand; single grain structure; moderately moist when sampled; clear to
C1	1.2 to 2.1	Light yellowish brown (10YR64) moist; sand; single grain structure; moderately moist when sampled; clear to
C2	2.1 to 3.4	Very pale brown (10YR73) moist; sand; single grain structure; moderately moist when sampled; clear to
2B2	3.4 to 4	Greyish brown (10YR52) moist; very few <2% medium 5-15mm faint dark mottles; sand; single grain structure; moderately moist when sampled; clear to
3C	4 to 5.5	Pale brown (10YR63) moist; sand; single grain structure; wet when sampled; clear to
4C	5.5 to 7	Light brownish grey (2.5Y62) moist; sand; very few <2% rounded detrital sedimentary rock (unidentified) medium pebbles 6-20 mm; single grain structure; wet when sampled; clear to
5C	7 to 7.9	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled; clear to
6C	7.9 to 9	Grey (2.5Y61) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.5	2.8	4.75		5.3	4.8
.3		4.5	3.2	5		5.5	5.1
.6		4.6	4.1	5.25		6.4	5.1
.8		4.9	3.2	5.5		6.5	3.9
1		4.8	4.0	5.75		6.4	3.9
1.25		5.3	4.5	6		6.2	3.5
1.5		5.1	4.8	6.25		6.4	3.6
1.75		5.6	5.0	6.5		6.2	3.2
2		5.5	5.1	6.75		6.3	3.3
2.25		5.5	5.2	7		6.2	3.3
2.5		5.6	5.1	7.25		5.6	3.1
2.75		5.3	5.1	7.5		5.7	3.0
3		5.7	5.0	7.75		5.6	3.1
3.25		5.6	5.0	8		5.7	2.5
3.5		5.2	5.1	8.25		5.8	2.3
3.75		5.5	5.2	8.5		5.7	2.4
4		5.5	5.0	8.75		5.8	2.1
4.25		5.1	4.6	9	1	6.3	2.0
4.5		5.6	4.2				

**Observation Notes:**

Location park behind beach, Woorim sth

**Project:** CAB

**Site:** 178

**Location:** GDA 94      **ZONE** 56      520253mE 7005678mN      **Lat:** -27.07105

**Long:** 153.20426

**Location:** AGD 84      **ZONE** 56      520147mE 7005490mN      **Lat:** -27.07274

**Long:** 153.2032

**Location:** AGD 66      **ZONE** 56      520148mE 7005492mN      **Lat:** -27.07273

**Long:** 153.2032

**Described By:** S (Shane) Pointon (POIS)

**Date:** 19/DEC/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swale

**Classifications:**

**ASC:** OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .6	Grey (10YR51) moist; loamy sand; single grain structure; dry when sampled; gradual to
A2	.6 to 1.5	Grey (10YR61) moist; sand; single grain structure; dry when sampled; clear to
2C	1.5 to 1.6	Dark greyish brown (10YR42) moist; sand; single grain structure; moderately moist when sampled; clear to
3A21	1.6 to 2.1	Very pale brown (10YR73) moist; sand; single grain structure; wet when sampled; gradual to
3A22	2.1 to 2.5	Light grey (10YR72) moist; sand; wet when sampled; gradual to
3B2	2.5 to 3.7	Brown (10YR53) moist; sand; single grain structure; wet when sampled; diffuse to
4C	3.7 to 5.3	Light brownish grey (2.5Y62) moist; sand; single grain structure; wet when sampled; gradual to
5C	5.3 to 6.8	Greyish brown (2.5Y52) moist; sand; very few <2% angular platy shell medium pebbles 6-20 mm; single grain structure; wet when sampled

**Field Tests:**

Depth	PH-2	PH-3	Depth	PH-2	PH-3
.1	3.5	2.4	3.5	5.8	5.5
.3	4.2	2.9	3.75	5.8	5.3
.6	4.7	3.5	4	5.6	4.0
.8	4.7	4.0	4.25	5.8	3.9
1	4.7	3.6	4.5	6.2	5.2
1.25	4.4	4.1	4.75	6.8	5.4
1.5	4.0	3.7	5	7.1	4.8
1.75	5.0	4.8	5.5	7.4	5.4
2	5.3	5.1	5.75	7.7	6.1
2.25	5.1	5.2	6	8.2	5.8
2.5	5.8	5.5	6.25	8.1	5.8
2.75	5.9	5.5	6.5	7.9	5.8
3	6.0	5.4	6.75	8.3	5.9
3.25	5.9	5.6			

**Observation Notes:**

**Location** Behind surf club

**Vegetation** Corymbia intermedia, Corymbia tessellaris, Lophostemon confertus, Banksia aemula, Acacia spp.

**Project:** CAB

**Site:** 179

<b>Location:</b> GDA 94	<b>ZONE</b> 56	518804mE 7005260mN	<b>Lat:</b> -27.07485	<b>Long:</b> 153.18965
<b>Location:</b> AGD 84	<b>ZONE</b> 56	518698mE 7005072mN	<b>Lat:</b> -27.07654	<b>Long:</b> 153.18859
<b>Location:</b> AGD 66	<b>ZONE</b> 56	518699mE 7005074mN	<b>Lat:</b> -27.07653	<b>Long:</b> 153.18859

**Described By:** S (Shane) Pointon (POIS)

**Date:** 21/DEC/06

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Classifications:**

**ASC:** HUMIC/SESQUIC, SEMIAQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .5	Dark grey (2.5Y41) moist; loamy sand; dry when sampled; gradual to
A2e	.5 to 2.4	Light grey (2.5Y71) moist; sand; single grain structure; dry when sampled; gradual to
A3	2.4 to 3.6	Grey (10YR51) moist; sand; single grain structure; moderately moist when sampled; gradual to
B21s	3.6 to 4.3	Dark brown (7.5YR32) moist; very few <2% medium 5-15mm faint dark mottles; loamy sand; single grain structure; moderately moist when sampled; gradual to
B22s	4.3 to 4.7	Dark greyish brown (10YR42) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
B23s	4.7 to 6.5	Very dark brown (7.5YR2.5/2) moist; loamy sand; moderately cemented continuous massive organic pan; wet when sampled; gradual to
2C	6.5 to 6.9	Yellowish brown (10YR54) moist; sand; single grain structure; wet when sampled; diffuse to
3C	6.9 to 8	Greyish brown (2.5Y53) moist; sand; single grain structure; wet when sampled; diffuse to
4B2h	8 to 9.75	Black (10YR21) moist; loamy sand; massive structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	4.75	4.6	3.3
.1		4.7	2.4			
.3		4.1	2.9	<b>Depth</b>	<b>H2O2-</b>	<b>PH-2</b>
.6		4.4	3.5	5	4.5	3.2
.8		4.6	3.5	5.25	4.6	3.1
1		4.7	4.1	5.5	4.6	3.1
1.25		4.9	4.5	5.75	4.3	3.0
1.5		4.8	4.7	6	4.6	2.8
1.75		4.9	4.8	6.25	4.6	4.2
2		5.0	4.6	6.5	5.1	3.1
2.25		4.9	4.0	6.75	4.8	2.4
2.5		4.8	3.4	7	5.2	2.4
2.75		4.8	3.6	7.25	4.2	2.5
3		4.6	3.8	7.5	4.1	2.4
3.25		4.8	3.7	7.75	4.2	2.1
3.5		4.7	3.9	8	4.3	1.8
3.75		4.7	3.9	8.25	1	4.7
4		4.7	3.7	8.5	1	5.0
4.25		4.8	3.2	9	1	5.3
4.5		4.7	2.9	9.5	1	5.7

**Observation Notes:**

**Location** Nth Side 1st Avenue, halfway between Woorm and cinema.  
**Vegetation** Casuarina littoralis, Callitris columellaris, Corymbia intermedia, Lophostemon confertus, Acacia spp.

**Horizon Notes:**

**Horizon** B21s Organic mottles in Horizon 4. Thin layers throughout.  
**Horizon** B23s Pan in Horizon 6 consists of a thin indurated layer at 5.7m.  
**Horizon** 3C Thin layer of darker grey (2.5Y51) within Horizon 8 at 7.95-8.0m.



**Project:** CAB

**Site:** 180

**Location:** GDA 94      **ZONE** 56      515747mE 7004816mN      **Lat:** -27.07889  
**Location:** AGD 84      **ZONE** 56      515641mE 7004628mN      **Lat:** -27.08058  
**Location:** AGD 66      **ZONE** 56      515642mE 7004630mN      **Lat:** -27.08057

**Long:** 153.15882  
**Long:** 153.15776  
**Long:** 153.15777

**Described By:** S (Shane) Pointon (POIS)

**Date:** 20/DEC/06

**Landscape:**

**Landform Pattern:** tidal flat

**Element:** intertidal flat

**Disturbances:** Limited clearing

**Classifications:**

**ASC:** SULFIDIC, OXYAQUIC, Hydrosol

**Profile Morphology:**

<b>Horizon</b>	<b>Depth (m)</b>	<b>Description</b>
A11	0 to .3	Dark grey (2.5Y41) moist; clay loam, sandy; massive structure; wet when sampled
A12	.3 to .85	Very dark grey (5Y31) moist; sandy clay loam; massive structure; wet when sampled
2B2	.85 to 1.2	Dark greenish grey (10Y31) moist; light medium clay; massive structure; wet when sampled

**Field Tests:**

<b>Depth</b>	<b>H2O2-</b>	<b>PH-2</b>	<b>PH-3</b>
.1	2	6.0	6.1
.3	4	6.2	1.9
.6	4	6.5	1.7
.8	4	6.4	1.6
1	2	6.5	2.0

**Observation Notes:**

**Observation**      Sample taken with gouge auger.  
**Vegetation**      Mangrove spp.

**Horizon Notes:**

**Horizon**      2B2      Horizon 3 over coffee sand at 1.2m

**Project:** CAB

**Site:** 181

**Location:** GDA 94      **ZONE** 56      515731mE 7004861mN      **Lat:** -27.07849      **Long:** 153.15866  
**Location:** AGD 84      **ZONE** 56      515625mE 7004673mN      **Lat:** -27.08018      **Long:** 153.1576  
**Location:** AGD 66      **ZONE** 56      515626mE 7004675mN      **Lat:** -27.08017      **Long:** 153.1576

**Described By:** S (Shane) Pointon (POIS)

**Date:** 20/DEC/06

**Landscape:**

**Landform Pattern:** tidal flat      **Element:** supratidal flat  
**Surface Condition:** Firm  
**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** HUMIC, AQUIC, Podsol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .25	Very dark grey (10YR31) moist; very few <2% medium 5-15mm faint red mottles; sandy loam; few 2-10% subrounded gravel medium pebbles 6-20 mm; weak structure; dry when sampled; clear to
A12	.25 to .45	Dark grey (10YR41) moist; sandy loam; weak structure; moderately moist when sampled; clear to
B2	.45 to .55	Very dark grey (10YR31) moist; common 10-20% medium 5-15mm prominent red mottles; clay loam, sandy; weak structure; moderately moist when sampled; clear to
2A1	.55 to .75	Very dark grey (10YR31) moist; loamy sand; weak structure; moderately moist when sampled; gradual to
2A2	.75 to .95	Greyish brown (10YR52) moist; sand; single grain structure; moist when sampled; abrupt to
2B21h	.95 to 2	Black (10YR21) moist; loamy sand; massive structure; wet when sampled; gradual to
2B22h	2 to 2.6	Very dark brown (10YR22) moist; loamy sand; massive structure; wet when sampled; clear to
3C	2.6 to 3	Dark grey (5Y41) moist; loamy sand; very few <2% angular other large pebbles 20-60 mm; massive structure; wet when sampled; sharp to
4D	3 to 3.9	Greenish grey (10Y61) moist; clay loam, coarse sandy; common 10-20% subrounded quartz medium pebbles 6-20 mm; massive structure; moist when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3
.1		4.8	4.2
.3		5.7	5.1
.6	2	6.2	3.7
.8		6.5	3.7
1		6.3	2.0
1.25		6.0	3.5
1.5		6.2	3.5
1.75		6.2	3.5
2		6.7	3.8
2.25		5.9	3.9
2.5	4	6.0	2.4
2.75	4	6.4	1.8
2.9	4	6.8	1.8
3.25	1	7.0	3.2
3.5	1	7.0	2.9
3.75	2	7.1	2.1

**Observation Notes:**

**Vegetation** Mangrove spp, Acacia spp, Corymbia tessellaris.

**Horizon Notes:**

**Horizon** 3C Coarse fragments in Horizon 8 composed of unknown metamorphic material.

**Project:** CAB

**Site:** 182

<b>Location:</b> GDA 94	<b>ZONE</b> 56	514967mE 7006000mN	<b>Lat:</b> -27.06821	<b>Long:</b> 153.15094
<b>Location:</b> AGD 84	<b>ZONE</b> 56	514861mE 7005812mN	<b>Lat:</b> -27.0699	<b>Long:</b> 153.14988
<b>Location:</b> AGD 66	<b>ZONE</b> 56	514862mE 7005814mN	<b>Lat:</b> -27.06989	<b>Long:</b> 153.14988

**Described By:** S (Shane) Pointon (POIS)

**Date:** 16/JAN/07

**Landscape:**

**Landform Pattern:** beach ridge plain **Element:** plain

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .15	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; clear to
A12	.15 to .3	Brown (10YR53) moist; loamy sand; many 20-50% rounded ironstone medium pebbles 6-20 mm; single grain structure; dry when sampled; clear to
A3	.3 to .55	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; gradual to
2A1	.55 to 1.35	Black (10YR21) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
2A21	1.35 to 1.7	Brown (10YR53) moist; sand; single grain structure; moist when sampled; clear to
2A22	1.7 to 1.95	Pale brown (10YR63) moist; sand; single grain structure; wet when sampled; gradual to
3C	1.95 to 2.65	Grey (2.5Y51) moist; sand; single grain structure; wet when sampled; clear to
4C1	2.65 to 3.25	Dark grey (N40) moist; sandy clay loam; massive structure; wet when sampled; gradual to
4C2	3.25 to 3.7	Grey (2.5Y51) moist; sandy clay loam; single grain structure; wet when sampled; abrupt to
5C	3.7 to 3.8	Dark grey (2.5Y41) moist; silty light clay; single grain structure; wet when sampled; abrupt to
6C1	3.8 to 4.25	Grey (2.5Y51) moist; sand; single grain structure; wet when sampled; gradual to
6C2	4.25 to 5.7	Grey (2.5Y61) moist; sand; single grain structure; wet when sampled; clear to
7C	5.7 to 5.8	Greyish brown (2.5Y52) moist; sand; single grain structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.6	4.3	3	4	6.1	1.8
.3	1	5.4	3.2	3.25	4	5.9	1.9
.6	1	5.5	2.3	3.5	4	5.8	1.7
.8	1	4.9	4.0	3.75	4	5.7	1.5
1	1	4.8	4.1	4	4	5.7	1.7
1.25	1	6.1	4.1	4.25	4	6.0	1.9
1.5	1	6.3	4.2	4.5	4	5.9	1.9
1.75	1	6.5	2.3	4.75	3	5.6	1.7
2	4	6.4	1.8	5	1	5.8	1.5
2.25	4	6.2	1.8	5.25		4.2	1.6
2.5	4	6.1	1.6	5.5		4.6	1.5
2.75	4	6.1	1.7	5.75		5.3	1.6

**Observation Notes:**

Vegetation Corymbia tessellaris, Callitris collumellaris, plus municipal park vegetation.

**Horizon Notes:**

Project: CAB

Site: 183

Location: GDA 94      ZONE 56      515532mE 7005364mN      Lat: -27.07395      Long: 153.15665  
Location: AGD 84      ZONE 56      515426mE 7005176mN      Lat: -27.07564      Long: 153.15559  
Location: AGD 66      ZONE 56      515427mE 7005178mN      Lat: -27.07563      Long: 153.15559

Described By: S (Shane) Pointon (POIS)

Date: 16/JAN/07

**Landscape:**

Landform Pattern: beach ridge plain      Element: plain  
Disturbances: Extensive clearing, Highly disturbed e.g. mining, urban

**Classifications:**

ASC: HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .45	Black (7.5YR2.5/1) moist; loamy sand; single grain structure; dry when sampled; sharp to
A12	.45 to .7	Dark grey (10YR41) moist; loamy sand; single grain structure; dry when sampled; clear to
A21	.7 to 1	Pale brown (10YR63) moist; sand; single grain structure; moderately moist when sampled; gradual to
A22	1 to 1.25	Greyish brown (10YR52) moist; sand; single grain structure; moist when sampled; gradual to
A23	1.25 to 1.4	Light brownish grey (2.5Y62) moist; sand; single grain structure; moist when sampled; sharp to
B21h	1.4 to 1.8	Black (10YR21) moist; sandy loam; massive structure; wet when sampled; diffuse to
B22h	1.8 to 2.3	Very dark brown (10YR22) moist; sandy loam; massive structure; few 2-10% medium 2-6mm earthy nodules; wet when sampled; diffuse to
B23h	2.3 to 2.8	Black (10YR21) moist; clayey sand; few 2-10% subangular quartz small pebbles 2-6 mm; massive structure; few 2-10% very coarse 20-60mm earthy nodules; wet when sampled; gradual to
B24h	2.8 to 3.75	Very dark brown (7.5YR2.5/2) moist; sandy loam; few 2-10% subangular quartz medium pebbles 6-20 mm; few 2-10% subangular quartz small pebbles 2-6 mm; massive structure; wet when sampled; gradual to
B25s	3.75 to 4.5	Dark brown (7.5YR33) moist; sandy loam; massive structure; wet when sampled; gradual to
2C	4.5 to 6	Olive brown (2.5Y44) moist; sandy loam; massive structure; wet when sampled; diffuse to
3C	6 to 7.2	Light brownish grey (2.5Y62) moist; sand; massive structure; weakly cemented continuous massive organic pan; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.4	1.3	3.5	1	6.7	1.7
.3	1	4.3	1.4	3.75	1	6.8	1.8
.6		4.4	2.4	4	1	6.8	1.6
.8		5.3	3.9	4.25	1	6.5	1.6
1		6.0	4.6	4.5	1	6.6	1.6
1.25		3.6	1.5	4.75	4	6.8	2.7
1.35		5.66		5	4	6.5	2.8
1.5	1	6.6	2.1	5.25	4	6.1	3.0
1.75	1	7.0	1.5	5.5	4	6.6	3.1
2	1	6.9	2.8	6	4	6.5	1.5
2.25	1	6.9	3.5	6.25	4	6.6	2.5
2.5	1	6.9	3.8	6.5	4	6.8	1.7
2.75		6.8	4.5	6.75	4	6.2	1.7
3	1	6.8	2.1	7	4	6.1	1.8
3.25	1	6.9	2.5	7.2	4	6.0	1.9

**Observation Notes:**

Location Vacant block off Banya St.

**Horizon Notes:**

Horizon 3C Pan in H12 comprises a thin layer at ~7.1m.

**Project:** CAB

**Site:** 184

**Location:** GDA 94      **ZONE** 56      546559mE 7005608mN      **Lat:** -27.07105

**Long:** 153.46956

**Location:** AGD 84      **ZONE** 56      546453mE 7005420mN      **Lat:** -27.07274

**Long:** 153.46851

**Location:** AGD 66      **ZONE** 56      546454mE 7005421mN      **Lat:** -27.07273

**Long:** 153.46851

**Described By:** S (Shane) Pointon (POIS)

**Date:** 18/JAN/07

### Landscape:

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Disturbances:** Highly disturbed e.g. mining, urban

### Classifications:

**ASC:** HUMIC/SESQUIC, SEMIAQUIC, Podosol

### Profile Morphology:

Horizon	Depth (m)	Description
A11	0 to .7	Very dark grey (10YR31) moist; sandy clay loam; subangular blocky weak 5-10mm structure; dry when sampled; gradual to
A12	.7 to 1.1	Dark greyish brown (10YR42) moist; few 2-10% fine <5mm distinct dark mottles; clay loam, sandy; weak structure; massive structure; dry when sampled; sharp to
2A1	1.1 to 1.5	Black (2.5Y2.5/1) moist; loamy sand; single grain structure; moderately moist when sampled; clear to
2A2	1.5 to 2.4	Greyish brown (10YR52) moist; sand; single grain structure; moderately moist when sampled; clear to
2A3	2.4 to 2.9	Very dark grey (7.5YR31) moist; loamy sand; single grain structure; moderately moist when sampled; gradual to
2B21h	2.9 to 4.2	Black (10YR21) moist; loamy sand; single grain structure; weakly cemented continuous massive organic pan; moist when sampled; gradual to
2B22h	4.2 to 4.85	Very dark brown (10YR22) moist; loamy sand; common 10-20% rounded quartz small pebbles 2-6 mm; massive structure; wet when sampled; gradual to
2B23s	4.85 to 5.4	Dark brown (10YR33) moist; sandy loam; massive structure; wet when sampled; gradual to
3C	5.4 to 6.95	Brown (10YR43) moist; loamy sand; massive structure; wet when sampled; clear to
4C	6.95 to 7.05	Very dark grey (N30) moist; loamy sand; massive structure; wet when sampled; clear to
5D	7.05 to 7.3	Pale yellow (2.5Y73) moist; very dark brown (10YR23) moist; sandy light clay; massive structure; wet when sampled; clear to
6D	7.3 to 7.4	Light grey (2.5Y72) moist; sandy light clay; massive structure; wet when sampled

Project: CAB

Site: 184

**Field Tests:**

Depth	H2O2-	PH-2	PH-3
.1		5.3	2.8
.3		5.5	2.6
.6		5.4	2.6
.8		5.3	2.9
1		5.3	3.7
1.25		4.7	2.7
1.5		4.5	2.8
1.75		4.4	4.1
2		4.9	4.0
2.25		4.6	4.0
2.5		3.9	2.5
2.75		4.5	2.9
3		5.2	1.7
3.25	1	5.1	1.9
3.5	1	5.5	1.6
3.75	1	5.8	2.8
4	1	5.9	2.1
4.25	1	6.2	1.3
4.5	1	6.1	1.6
4.75	1	6.3	1.7
5	1	6.1	1.5
5.25	2	6.4	1.4
5.5	4	6.5	2.2
5.75	4	6.9	2.5
6	4	7.3	2.3
6.25	2	7.2	1.5
6.5	2	7.5	1.4
6.75	4	7.2	2.3
7	4	7.9	1.4
7.25	4	7.5	2.7
7.4	4	7.5	3.0

**Site Notes:**

**Observation Notes:**

Location Ernest Sendell Memorial Park  
Vegetation *Corymbia intermedia*, *Lophostemon confertus*, *Callitris collumularis*, dandelions, couch grass

**Horizon Notes:**

Horizon 2B21h Thin pans in H6 at 3.1m and 3.9-4.0m.  
Horizon 5D second colour in H11 denotes a narrow band of dark brown at 7.3m.

**Project:** CAB

**Site:** 185

**Location:** GDA 94      **ZONE** 56      516405mE 7006083mN      **Lat:** -27.06745      **Long:** 153.16544  
**Location:** AGD 84      **ZONE** 56      516299mE 7005895mN      **Lat:** -27.06914      **Long:** 153.16438  
**Location:** AGD 66      **ZONE** 56      516300mE 7005897mN      **Lat:** -27.06913      **Long:** 153.16439

**Described By:** S (Shane) Pointon (POIS)

**Date:** 18/JAN/07

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** beach ridge

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .3	Black (10YR21) moist; sandy loam; weak structure; dry when sampled; clear to
A21	.3 to .9	Greyish brown (10YR52) moist; sandy loam; single grain structure; moderately moist when sampled; gradual to
A22	.9 to 1.4	Very dark greyish brown (10YR32) moist; loamy sand; single grain structure; moist when sampled; clear to
B21h	1.4 to 3	Black (10YR21) moist; sandy loam; few 2-10% rounded quartz small pebbles 2-6 mm; massive structure; wet when sampled; clear to
B22h	3 to 3.4	Dark brown (7.5YR33) moist; sandy loam; very few <2% rounded quartz medium pebbles 6-20 mm; few 2-10% rounded quartz small pebbles 2-6 mm; single grain structure; wet when sampled; gradual to
2C1	3.4 to 5.05	Dark olive brown (2.5Y33) moist; sandy loam; single grain structure; wet when sampled; gradual to
2C2	5.05 to 5.35	Dark grey (N40) moist; sand; single grain structure; wet when sampled
3D	5.35 to 5.65	Black (2.5Y2.5/1) moist; silty light clay; massive structure; wet when sampled
4D	5.65 to 6	Grey (N50) moist; light medium clay; massive structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1		4.5	3.3	3.25		4.6	1.1
.3		4.9	2.8	3.5	4	4.6	3.0
.6		4.7	3.6	3.75	4	4.6	2.7
.8		4.3	3.8	4	4	4.4	3.3
1		4.1	2.8	4.25	4	4.8	3.3
1.25		3.9	1.9	4.5	4	4.9	3.0
1.5		4.2	1.7	4.75	4	5.0	2.6
1.75		3.8	2.0	5	4	5.0	2.6
2		4.0	2.3	5.25	4	4.9	1.6
2.25		4.3	2.5	5.5	4	5.3	1.7
2.5		4.6	2.7	5.75	4	5.2	1.9
2.75		4.6	2.7	6	4	4.6	2.4
3		4.8	2.8				

**Observation Notes:**

**Location**      Other park in canal estate  
**Vegetation**      Melaleuca bractiata, Casuarina littoralis, lophostemon confertus, var. bloodwoods, couch grass.

**Project:** CAB

**Site:** 186

**Location:** GDA 94      **ZONE** 56      516528mE 7006306mN      **Lat:** -27.06543      **Long:** 153.16668  
**Location:** AGD 84      **ZONE** 56      516422mE 7006118mN      **Lat:** -27.06712      **Long:** 153.16562  
**Location:** AGD 66      **ZONE** 56      516423mE 7006120mN      **Lat:** -27.06711      **Long:** 153.16562

**Described By:** S (Shane) Pointon (POIS)

**Date:** 18/JAN/07

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** beach ridge

**Classifications:**

**ASC:** SULFIDIC, OXYAQUIC, Hydrosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A11	0 to .4	Dark grey (5Y41) moist; sandy clay loam; weak structure; moderately moist when sampled; clear to
A12	.4 to .85	Black (N2.5/0) moist; sandy clay loam; massive structure; moderately moist when sampled; clear to
2B2	.85 to 2.05	Dark greyish brown (2.5Y43) moist; loamy sand; massive structure; moist when sampled; abrupt to
3C	2.05 to 2.15	Dark greyish brown (2.5Y43) moist; coarse sand; single grain structure; wet when sampled; abrupt to
4C1	2.15 to 3	Dark greyish brown (2.5Y42) moist; loamy sand; massive structure; weakly cemented continuous massive organic pan; wet when sampled
4C2	3 to 4.1	Light olive brown (2.5Y54) moist; loamy sand; massive structure; wet when sampled
4C3	4.1 to 5.7	Loamy Sand; massive structure; wet when sampled
5D	5.7 to 6.8	Light Medium Clay; massive structure; wet when sampled
6D	6.8 to 7.5	Light Clay; massive structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.9	2.3	3.75	4	5.6	1.8
.3	1	4.7	2.1	4	4	5.8	2.0
.6	4	6.2	3.0	4.25	4	5.7	1.7
.8	1	6.3	2.6	4.5	4	6.1	1.6
1		5.9	3.2	4.75	4	5.9	1.8
1.25		5.9	3.2	5	4	5.8	1.9
1.5		5.9	3.1	5.25	4	5.8	1.8
1.75		6.0	3.5	5.5	4	5.7	1.8
2	4	5.9	2.4	6	4	6.1	1.9
2.25	4	6.1	1.9	6.25	4	6.0	3.8
2.5	4	6.0	2.0	6.5	4	6.1	4.4
2.75	4	5.8	1.8	6.75	4	5.8	4
3	4	5.8	2.1	7	4	5.5	2.8
3.25	4	5.7	1.9	7.25	4	5.9	3.9
3.5	4	5.8	2.0	7.5	4	5.8	4.8

**Observation Notes:**

**Location**      vacant land, canal estate  
**Vegetation**      cleared pre to residential development - grass, juvenile native trees (acacia mostly)

**Horizon Notes:**

**Horizon**      4C1      pan in h5 forms a thin layer at 2.2m.



**Project:** CAB

**Site:** 187

**Location:** GDA 94      **ZONE** 56      517101mE 7005797mN      **Lat:** -27.07002      **Long:** 153.17246  
**Location:** AGD 84      **ZONE** 56      516995mE 7005609mN      **Lat:** -27.07171      **Long:** 153.1714  
**Location:** AGD 66      **ZONE** 56      516996mE 7005611mN      **Lat:** -27.0717      **Long:** 153.17141

**Described By:** S (Shane) Pointon (POIS)

**Date:** 19/JAN/07

**Landscape:**

**Landform Pattern:** beach ridge plain

**Element:** swamp

**Surface Condition:** Firm

**Disturbances:** Highly disturbed e.g. mining, urban, No effective disturbance except grazing by hoofed animals

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .6	Very dark grey (N30) moist; loamy sand; single grain structure; weak structure; moist when sampled
A2	.6 to 1.1	Light brownish grey (10YR62) moist; sand; single grain structure; moist when sampled
B1	1.1 to 1.9	Dark grey (10YR41) moist; loamy sand; single grain structure; wet when sampled
B21h	1.9 to 2.8	Very dark grey (7.5YR31) moist; loamy sand; massive structure; moderately cemented continuous massive organic pan; wet when sampled
B22h	2.8 to 3.8	Very dark grey (2.5Y31) moist; loamy sand; massive structure; weakly cemented continuous massive organic pan; wet when sampled
2C	3.8 to 4.1	Dark grey (N40) moist; loamy sand; few 2-10% rounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled
3D	4.1 to 4.5	White (10YR81) moist; few 2-10% coarse 15-30mm distinct red mottles; light medium clay; massive structure; wet when sampled

**Field Tests:**

Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	4.0	2.1	2.5	4	4.6	1.0
.3	1	3.8	1.0	2.75	4	5.4	1.5
.6		3.9	2.7	3	4	5.6	1.5
.8		4.0	3.8	3.25	4	5.9	1.7
1		4.1	3.1	3.5	4	5.9	1.6
1.25		3.9	2.3	3.75	4	6.1	1.4
1.5		4.1	1.8	4	4	6.1	1.2
1.75	1	4.1	1.7	4.25	4	6.7	3.1
2	4	4.5	0.9	4.5	4	7.0	3.3
2.25	4	4.6	0.9				

**Observation Notes:**

**Location** behind houses in swamp/drain area.

**Vegetation** Melalaeuca quinquinervia, Lophostemon confertus, Lomandra spp, Banksia robur.

**Project:** CAB

**Site:** 188

**Location:** GDA 94      **ZONE** 56      516082mE 7005551mN      **Lat:** -27.07225      **Long:** 153.16219  
**Location:** AGD 84      **ZONE** 56      515976mE 7005363mN      **Lat:** -27.07394      **Long:** 153.16113  
**Location:** AGD 66      **ZONE** 56      515977mE 7005365mN      **Lat:** -27.07393      **Long:** 153.16114

**Described By:** S (Shane) Pointon (POIS)

**Date:** 24/JAN/07

**Landscape:**

**Landform Pattern:** beach ridge plain      **Element:** plain

**Surface Condition:** Loose

**Disturbances:** Highly disturbed e.g. mining, urban

**Classifications:**

**ASC:** HUMIC, AQUIC, Podosol

**Profile Morphology:**

Horizon	Depth (m)	Description
A1	0 to .4	Very dark grey (10YR31) moist; loamy sand; single grain structure; dry when sampled; gradual to
A2e	.4 to 1.6	Grey (10YR61) moist; sand; single grain structure; dry when sampled; clear to
B21h	1.6 to 4.3	Black (10YR21) moist; loamy sand; massive structure; moderately moist when sampled; gradual to
B22s	4.3 to 4.8	Very dark grey (2.5Y31) moist; loamy sand; massive structure; moderately moist when sampled; clear to
B3	4.8 to 5.7	Yellowish brown (10YR54) moist; sand; few 2-10% subrounded quartz medium pebbles 6-20 mm; single grain structure; moist when sampled; clear to
2C	5.7 to 6.2	Greyish brown (10YR52) moist; sand; few 2-10% subrounded quartz medium pebbles 6-20 mm; single grain structure; wet when sampled; abrupt to
3D1	6.2 to 6.6	Greenish grey (10Y61) moist; fine sandy light clay; massive structure; moderately moist when sampled; gradual to
3D2	6.6 to 6.8	Greenish grey (10GY51) moist; clay loam, sandy; massive structure; moderately moist when sampled

**Field Tests:**

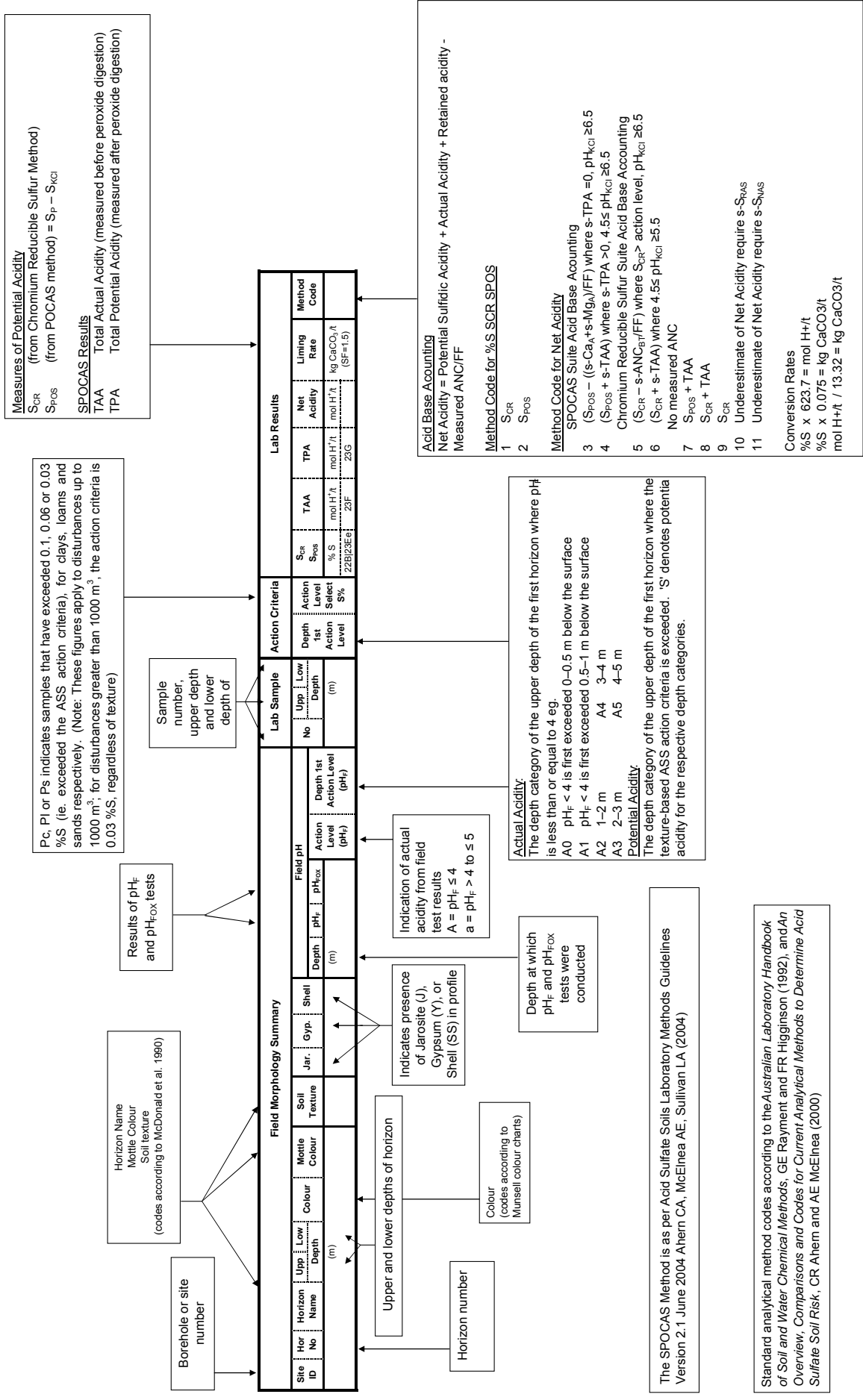
Depth	H2O2-	PH-2	PH-3	Depth	H2O2-	PH-2	PH-3
.1	1	5.8	3.4	3.5		5.5	3.5
.3	1	4.9	3.1	3.75		5.4	3.2
.6		4.6	4.2	4		5.5	3.1
.8		4.3	4.4	4.25	1	5.5	1.9
1		5.2	4.6	4.5	4	5.6	1.8
1.25		5.1	4.7	4.75	4	5.6	2.0
1.5		4.8	3.8	5	4	5.8	1.6
1.75		5.3	2.4	5.25	4	5.6	2.2
2		5.4	3.1	5.5	4	5.7	2.5
2.25		5.5	3.4	5.75	1	5.8	1.9
2.5		5.4	3.5	6	1	5.8	1.7
2.75		5.8	3.3	6.25	1	5.9	1.6
3		5.6	1.6	6.5	1	6.5	3.0
3.25		5.3	3.3	6.75	1	7.0	3.0

**Observation Notes:**

**Vegetation**      *Corymbia intermedia*, *Melaleuca quinquinervia*, *Acacia* spp, *Casuarina torulosa*

**Appendix 2**  
**Summarised Analytical Results**

# Tabulated laboratory data header explanation



Field Morphology Summary										Lab Sample			Action Criteria		Lab Results									
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub> S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code	
									Depth (m)	pH <sub>a</sub>	pH <sub>ox</sub>													% S
107	1	A1	0.00	0.40	2.5Y51	LS			0.10	4.3	3.0	2	0.20	0.30									1, 8, 11	
									0.30	4.2	3.4													
	2	A2	0.40	2.20	2.5Y81	S			0.60	4.4	4.3	4	0.80	1.00										
									0.80	4.9	4.0													
									1.00	4.8	4.5													
									1.25	4.6	4.2													
									1.50	4.6	4.6													
									1.75	4.8	4.5													
	3	Bh1	2.20	2.70	7.5YR42	LS			2.00	4.8	4.3	6	1.80	2.00										
									2.25	4.4	3.9													
	4	Bh2	2.70	4.10	7.5YR33	LS			2.50	4.3	4.0	8	2.80	3.00										2, 7
									2.75	4.3	4.2													
	5	2C	4.10	4.50	10YR54	S			3.00	4.5	4.4	10	3.80	4.00										
									3.25	4.3	4.6													
	6	3C	4.50	5.20	10YR43	S			3.50	4.1	4.1	12	4.80	5.00										
									3.75	4.5	4.5													
7	4C	5.20	7.20	10YR54	S			4.00	4.7	4.5	14	5.80	6.00											
								4.25	4.7	4.7														
								4.50	4.8	4.7														
								4.75	4.8	3.0														
								5.00	4.9	2.2														
								5.25	5.1	2.6														
								5.50	5.0	4.4														
								5.75	5.3	3.8														
8	3C	4.50	5.20	10YR43	S			6.00	5.3	4.0	16	6.80	7.00											
								6.25	5.3	4.2														
108	1	A1	0.00	0.15	10YR51	S			6.50	5.1	4.4	2	0.20	0.30										
									6.75	5.0	4.1													
	2	2A11	0.15	0.30	10YR21	LS			7.20	6.0	3.9	3	0.50	0.60										
									0.30	5.0	4.2													
	3	2A12	0.30	0.60	10YR31	LS			0.60	5.2	4.8	5	0.80	1.00										
									0.60	0.75	10YR71													
	4	2A21	0.60	0.75	10YR71	S			0.80	5.5	4.7	7	1.60	1.80										
									1.00	5.8	5.0													
	5	2A22	0.75	1.05	10YR81	S			1.25	5.1	4.4	10	3.30	3.50										
									1.50	5.0	4.7													
	6	2Bh1	1.05	1.40	10YR53	S			1.75	5.2	4.3	11	3.80	4.00										
									2.00	4.9	4.7													
	7	2Bh2	1.40	1.80	7.5YR44	S			2.25	5.1	4.6	13	4.80	5.00										
									2.50	4.1	4.8													
	8	3C1	1.80	2.30	10YR54	S			2.75	5.5	4.3	15	5.80	6.00										
									3.00	5.9	3.0													
9	3C2	2.30	2.90	10YR53	S			3.25	5.3	3.3	15	5.80	6.00											
								3.50	5.4	2.6														
10	3C3	2.90	3.80	10YR43	S			3.75	5.2	2.5														
								4.00	5.7	2.8														
11	3C4	3.80	5.00	2.5Y53	S			4.25	5.4	3.0														
								4.50	5.7	3.1														
12	3C5	5.00	6.70	10YR54	S			4.75	5.7	3.2														
								5.00	5.7	3.6														
13	3C5	5.00	6.70	10YR54	S			5.25	5.8	3.8														
								5.50	5.8	4.5														
14	3C5	5.00	6.70	10YR54	S			5.75	6.0	4.4														
								6.00	5.5	4.6														
15	3C5	5.00	6.70	10YR54	S			6.25	3.1	4.7														
								6.50	5.2	4.7														
109	1	A1	0.00	0.10	10YR41	LS			0.10	5.2	4.5	4	0.50	0.60										
									0.30	5.1	4.8													
	2	2A11	0.10	0.15	10YR31	LS			0.60	5.0	4.9	5	0.90	1.10										
									0.80	5.2	4.9													
	3	2A12	0.15	0.30	10YR42	LS			1.00	5.3	5.6	7	1.80	2.00										
									1.25	5.4	4.9													
	4	2A2	0.30	0.90	10YR42	LS			1.50	5.9	4.6	9	2.80	3.00										
									1.75	5.2	5.0													
	5	2B	0.90	2.30	10YR53	S			2.00	5.1	5.0	11	3.80	4.00										
									2.25	5.3	3.9													
	6	2C1	2.30	3.80	2.5Y53	S			2.50	5.3	3.7													
									2.75	5.4	3.8													
	7	2C2	3.80	6.00	2.5Y62	S			3.00	5.6	3.7													
									3.25	5.4	2.1													
	8	2C2	3.80	6.00	2.5Y62	S			3.50	5.5	2.6													
									3.75	5.7	3.6													
9	2C2	3.80	6.00	2.5Y62	S			4.00	5.4	3.5														
								4.25	5.9	3.7														
10	2C2	3.80	6.00	2.5Y62	S			4.50	5.5	3.4														
								4.75	5.4	3.2														
11	2C2	3.80	6.00	2.5Y62	S			5.00	5.4	3.1														
								5.25	5.5	3.8														
12	2C2	3.80	6.00	2.5Y62	S			5.50	5.6	4.7														
								5.75	5.3	5.1														
13	2C2	3.80	6.00	2.5Y62	S			6.00	5.4	3.0														
								6.25	5.3	4.2														











Field Morphology Summary										Lab Sample			Action Criteria		Lab Results													
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub> S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code					
									Depth (m)	pH <sub>f</sub>	pH <sub>rox</sub>													% S	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	kg CaCO <sub>3</sub> /t (SF=1.5)
122	1	A11	0.00	0.30	10YR42	S			0.10	4.5	2.0	2	0.20	0.30														
	2	A12	0.30	0.80	10YR51	S			0.30	4.8	2.1													0.60	4.5	2.8	< 0.02	
	3	2A11	0.80	0.90	10YR41	S			0.60	4.5	2.8	4	0.80	0.90														
	4	2A12	0.90	2.10	10YR51	S			0.80	4.6	2.4													< 0.02				
	5	3C	2.10	2.50	10YR53	S			1.00	4.2	2.3	6	1.80	2.00														
									1.25	4.4	2.1														2.00	4.6	2.1	< 0.02
									1.50	4.1	2.6														2.25	4.6	2.4	
	6	4A2	2.50	3.60	10YR61	S			1.75	4.2	3.4	8	2.80	3.00														
									2.00	4.6	2.1														2.50	4.3	3.1	< 0.02
									2.25	4.6	2.4														2.75	4.4	3.5	
	7	5A1	3.60	4.80	10YR31	S			3.00	4.4	3.0	10	3.80	4.00														
3.25									4.2	2.6	3.50														3.9	2.8	< 0.02	
3.50									3.9	2.8	3.75														3.9	3.1		
8	6Bh1	4.80	5.20	10YR21	LS			4.00	4.1	2.9	12	4.80	5.00															
	9	6Bh2	5.20	6.70	7.5YR33	LS			4.25	4.6													2.6	< 0.02				
10	7C	6.70	7.70	2.5Y53	S			4.50	4.4	3.1	14	5.80	6.00															
								4.75	4.5	4.2														6.00	5.1	4.1	< 0.02	
								5.00	4.6	4.2														6.25	5.4	2.5		
11	8C	7.70	8.00	2.5Y51	S			6.50	5.3	2.6	16	6.80	7.00															
								6.75	5.4	2.9														6.75	5.5	2.8	< 0.02	
								7.00	5.4	3.6														7.25	5.6	3.6		
123	1	A11	0.00	0.30	10YR21	CLS			7.50	5.8	3.4	2	0.20	0.30														
	2	A12	0.30	0.50	10YR31	LS			7.75	5.5	2.8													0.30	5.3	3.6	< 0.02	
	3	A2	0.50	1.10	2.5Y63	S			8.00	5.6	2.8	4	0.80	1.00														
	4	C	1.10	1.70	5Y52	LS			0.60	5.7	4.7												1.25	5.4	2.4	< 0.02		
	5	2C	1.70	2.50	5Y62	S			1.50	5.3	2.3	5	1.30	1.50		S2	Ps	0.125			78	5.85	1, 9					
									1.75	6.0	1.9														1.75	6.0	1.6	< 0.02
									2.00	6.0	1.6														2.25	6.2	1.6	
	6	3C	2.50	3.80	5Y61	S			2.25	6.2	1.6	7	2.30	2.50			Ps	0.043			27	2.01	1, 9					
									2.50	5.9	1.8														2.75	6.2	1.6	< 0.02
									2.75	6.2	1.6														3.00	5.9	1.7	
	7	4C	3.80	4.70	5Y51	SL			3.25	6.0	1.9	9	3.30	3.50			Ps	0.058			36	2.71	1, 9					
3.50									6.6	1.4	3.50														6.6	1.4	< 0.02	
3.75									6.5	1.9	4.00														6.4	1.8		
8	5Bh	4.70	6.00	7.5YR2.5/2	LS			4.25	6.7	1.8	11	4.30	4.50			Pl	0.216			135	10.10	1, 9						
								4.50	6.7	1.9														4.50	6.7	1.9	< 0.02	
								4.75	6.8	1.8														5.00	6.7	1.6		
13	5.30	5.50						5.25	6.5	4.1	13	5.30	5.50			Ps	0.052			32	2.43	1, 9						
								5.50	6.6	4.4														5.50	6.6	4.4	< 0.02	
								5.75	6.6	4.6														6.00	6.7	4.2		

Field Morphology Summary										Lab Sample			Action Criteria		Lab Results								
Site ID	Hor No	Horizon Name	Upp Depth	Low Depth	Colour	Soil Texture	Jar	Shell	Field pH			No	Upp Depth	Low Depth	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code
									Depth	pH <sub>a</sub>	pH <sub>rox</sub>							22B/23Ee	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	kg CaCO <sub>3</sub> /t (SF=1.5)	
									(m)			(m)											
124	1	A1	0.00	0.50	10YR41	LS			0.10	4.2	2.8												
									0.30	4.4	2.7	2	0.20	0.30			< 0.02						
		2	A21e	0.50	1.30	10YR62	S			0.60	4.6	4.3											
									0.80	5.2	4.0	4	0.80	1.00			< 0.02						
									1.00	4.8	4.4												
									1.25	5.0	3.4												
		3	A22e	1.30	1.50	10YR72	S			1.50	5.2	3.8											
		4	A31	1.50	1.70	10YR62	S			1.75	5.5	4.2											
		5	A32	1.70	2.00	10YR63	S			2.00	5.4	4.3	7	1.80	2.00			< 0.02					
		6	B21	2.00	2.30	10YR54	S			2.25	5.4	4.1											
	7	B22	2.30	2.70	2.5Y53	S			2.50	5.5	1.7	9	2.40	2.60			0.017		11	0.80	1.9		
	8	2C	2.70	4.00	10YR62	S			2.75	5.5	1.6												
								3.00	6.4	1.9	10	2.80	3.00			< 0.02							
								3.25	6.7	2.1													
								3.50	6.1	2.1													
								3.75	5.4	1.8													
	9	3C	4.00	5.50	10YR61	S			4.00	5.4	1.9	12	3.80	4.00			< 0.02						
								4.25	5.4	2.2													
								4.50	5.3	2.3													
								4.75	5.7	2.1													
								5.00	5.6	2.4	14	4.80	5.00			< 0.02							
								5.25	5.3	2.4													
								5.50	5.4	2.6													
	10	4C	5.50	8.00	2.5Y52	S			5.75	5.5	2.1												
								6.00	5.5	2.2	16	5.80	6.00			< 0.02							
								6.25	5.8	2.4													
								6.50	5.5	2.3													
								6.75	5.6	3.4													
								7.00	6.2	1.8	18	6.80	7.00			< 0.02							
								7.25	5.6	1.8													
								7.50	5.5	1.8													
								7.75	5.4	1.8													
								8.00	5.8	1.9	20	7.80	8.00			< 0.02							
125	1	A1	0.00	0.10	10YR42	S			0.10	4.3	3.4												
		2	A21e	0.10	1.20	10YR64	S			0.30	5.0	4.6	2	0.20	0.30			< 0.02					
									0.60	5.0	4.4												
									0.80	4.9	4.3	4	0.80	1.00			< 0.02						
									1.00	5.3	4.5												
		3	A22e	1.20	1.80	10YR73	S			1.25	5.4	4.7											
									1.50	5.7	4.8												
									1.75	6.0	5.4												
		4	A23	1.80	2.10	10YR74	S			2.00	7.1	5.0	6	1.80	2.00			< 0.02					
		5	2C	2.10	2.20	10YR62	S			2.15	6.0	3.0											
	6	3C	2.20	2.40	10YR64	S			2.25	5.8	3.9	8	2.20	2.40			< 0.02						
	7	4C1	2.40	2.70	10YR51	KS	SS		2.50	7.7	6.0												
	8	4C2	2.70	3.60	10YR62	KS	SS		2.75	8.0	6.2												
								3.00	8.2	6.2	10	2.80	3.00			< 0.02							
								3.25	8.3	6.0													
								3.50	8.3	5.6													
	9	5C1	3.60	5.00	10YR71	S			3.75	7.2	4.8												
								4.00	6.6	4.4	12	3.80	4.00			< 0.02							
								4.25	7.0	4.6													
								4.50	7.2	5.0													
								4.75	7.5	5.7													
								5.00	6.6	4.8	14	4.80	5.00			< 0.02							
	10	5C2	5.00	6.75	10YR82	S			5.25	6.4	4.8												
								5.50	6.3	4.8													
								5.75	6.5	4.7													
								6.00	6.7	5.0	16	5.80	6.00			< 0.02							
								6.25	6.8	5.0													
								6.50	6.0	5.0													
								6.75	6.1	4.9	18	6.60	6.75			< 0.02							

Field Morphology Summary								Lab Sample			Action Criteria		Lab Results										
Site ID	Hor No	Horizon Name	Upp	Low	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp	Low	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code
			Depth	Depth					Depth	Depth	Depth		S <sub>POS</sub>	mol H <sup>+</sup> /l				mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	kg CaCO <sub>3</sub> /t			
			(m)	(m)					(m)	(m)	(m)		22B/23Ee	23F				23G	(SF=1.5)				
126	1	A1	0.00	0.40	10YR31	LS			0.10	3.8	2.5	2	0.20	0.30			0.000	23	0	0	1.73	2, 7, 10	
									0.30	3.8	2.7						0.000	<10	0	<10	<0.75	2, 7, 10	
									0.60	3.9	3.1						4	0.80	1.00	< 0.02			
	0.80	4.1	3.4																				
	1.00	4.4	3.4																				
	1.25	4.5	3.4																				
	1.50	4.4	3.0																				
	3	B1	1.50	2.20	10YR42	LS			1.75	4.1	2.1	6	1.80	2.00			< 0.02						
									2.00	4.2	2.9												
	4	Bh1	2.20	2.50	7.5YR42	LS			2.25	4.3	2.8	7	2.30	2.50			< 0.02						
									2.50	4.5	3.1												
	5	Bh2	2.50	2.70	7.5YR2.5/2	LS			2.75	5.5	2.2	9	2.80	3.00			< 0.02						
3.00									5.4	2.1													
6	Bh3	2.70	3.20	7.5YR32	LS			3.25	5.1	2.4	10	3.30	3.50			< 0.02							
								3.50	5.0	2.4													
7	B4h	3.20	3.80	7.5YR42	LS			3.75	5.4	2.0	11	3.80	4.00			< 0.02							
								4.00	5.6	2.7													
8	2C	3.80	4.20	10YR52	S			4.25	5.8	3.7	13	4.80	5.00			< 0.02							
								4.50	5.6	4.0													
9	3C	4.20	5.30	10YR62	S			4.75	5.5	4.3	15	5.80	6.00			< 0.02							
								5.00	5.0	4.0													
10	4C	5.30	6.20	10YR54	S			5.25	4.9	3.9	17	6.60	6.75			< 0.02							
								5.50	5.0	3.8													
11	5C	6.20	6.40	10YR53	KS			5.75	4.8	3.8						< 0.02							
								6.00	4.7	3.9													
12	6C	6.40	6.75	2.5Y53	S			6.25	4.8	3.8						< 0.02							
								6.50	4.7	2.5													
								6.75	5.1	2.5						< 0.02							
127	1	A1	0.00	1.30	10YR31	LS			0.10	3.7	2.1	2	0.20	0.30			0.000	11	0	11	0.83	2, 7, 10	
									0.30	3.7	2.4						0.000	14	0	0	1.05	2, 7, 10	
									0.60	3.8	2.3						4	0.80	1.00	< 0.02			
	0.80	3.8	2.3																				
	1.00	3.6	2.3																				
	1.25	3.8	2.1																				
	1.50	5.7	2.4																				
	2	A2e	1.30	2.10	10YR61	S			1.75	5.9	2.6	5	1.30	1.50			< 0.02						
									2.00	6.1	3.1												
	3	Bh1	2.10	2.50	7.5YR31	LS			2.25	6.0	2.1	7	2.30	2.50			< 0.02						
									2.50	5.5	3.6												
	4	Bh2	2.50	3.00	10YR42	LS			2.75	6.4	4.3	9	3.30	3.50			< 0.02						
3.00									6.5	4.4													
5	2A2	3.00	4.10	10YR71	S			3.25	6.7	5.4	11	4.30	4.50			< 0.02							
								3.50	6.9	4.9													
6	3C	4.10	5.10	2.5Y53	S			3.75	6.7	5.0						< 0.02							
								4.00	6.5	5.1													
7	4C	5.10	5.30	2.5Y53	KS			4.25	6.6	5.0	14	5.40	5.60			< 0.02							
								4.50	6.6	5.0													
8	5C	5.30	5.60	2.5Y52	S			4.75	6.6	5.0						< 0.02							
								5.00	6.5	4.9													
								5.25	6.6	4.6						< 0.02							
								5.50	6.6	2.8													
128	1	A1	0.00	0.50	10YR31	LS			0.10	4.5	3.3	2	0.20	0.30			0.000	12	0	12	0.90	2, 7, 10	
									0.30	4.0	3.2						0.000	<10	0	<10	<0.75	2, 7, 10	
									0.60	4.1	3.6						4	0.80	1.00	< 0.02			
	0.80	4.3	3.6																				
	1.00	4.5	3.5																				
	1.25	4.5	3.2																				
	1.50	4.8	3.3																				
	3	B1	1.20	1.80	7.5YR41	LS			1.75	5.2	4.7	5	1.30	1.50			< 0.02						
									2.00	6.5	4.6												
	4	Bh1	1.80	2.10	7.5YR31	LS			2.25	6.2	4.5	6	1.80	2.00			< 0.02						
									2.50	6.1	4.4												
	5	Bh2	2.10	2.50	7.5YR42	LS			2.75	6.2	4.5	7	2.30	2.50			< 0.02						
3.00									6.3	4.7													
6	2C	2.50	3.00	10YR53	S			3.25	6.8	5.5	8	2.80	3.00			< 0.02							
								3.50	7.2	5.6													
7	3A2e	3.00	3.90	10YR81	S			3.75	7.0	5.8	9	3.30	3.50			< 0.02							
								4.00	7.4	5.7													
8	4C	3.90	5.80	10YR54	S			4.25	7.3	5.8	11	4.30	4.50			< 0.02							
								4.50	7.5	5.4													
								4.75	7.5	5.6						< 0.02							
								5.00	7.5	5.7													
								5.25	7.5	5.8						< 0.02							
								5.50	7.6	5.8													
								5.75	7.5	5.5						< 0.02							
								6.00	7.5	5.5													
								6.25	7.7	5.7						< 0.02							
								6.50	7.8	5.9													
								6.75	7.8	5.6						< 0.02							
								7.00	7.7	5.6													

Field Morphology Summary										Lab Sample			Action Criteria		Lab Results															
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub> S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code							
									Depth (m)	pH <sub>a</sub>	pH <sub>ox</sub>													23Af	23Bf	% S	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	kg CaCO <sub>3</sub> /t (SF=1.5)
129	1	A1	0.00	0.10	10YR31	SL			0.10	5.5	3.4																			
	2	B1	0.10	0.30	10YR42	S			0.30	6.3	4.2	2	0.20	0.30																
	3	B2s	0.30	0.90	10YR54	S			0.60	7.0	4.2	3	0.50	0.60																
	4	B3	0.90	1.50	10YR62	S			0.80	7.1	4.8																			
									1.00	7.5	4.9																			
									1.25	7.6	4.8	4	1.20	1.40																
									1.50	7.5	1.5																			
									1.75	7.1	1.4																			
									2.00	7.5	1.8	5	1.80	2.00							0.029	18	1.36	1, 9						
									2.25	7.6	1.7																			
									2.50	7.4	1.0																			
									2.75	7.5	1.2																			
									3.00	7.6	1.3	7	2.80	3.00							0.021	13	0.98	1, 9						
								3.25	7.7	1.2																				
								3.50	7.4	1.6																				
								3.75	7.5	1.3																				
								4.00	8.1	1.2	9	3.80	4.00	S2	Ps					0.036	22	1.68	1, 9							
6	2C2	4.20	6.30	2.5Y41	S		SS	4.25	7.9	5.3																				
								4.50	8.4	5.5																				
								4.75	8.3	5.6																				
								5.00	8.3	5.7	11	4.80	5.00		Ps						0.030	19	1.40	1, 9						
								5.25	8.5	5.5																				
								5.50	7.9	5.5																				
								5.75	8.4	5.5																				
								6.00	8.3	5.4	13	5.80	6.00									0.017	11	0.80	1, 9					
								6.25	8.5	5.5																				
130	1	A11	0.00	0.15	10YR31	S			0.10	4.0	2.7																			
	2	A12	0.15	0.70	10YR72	S			0.30	4.0	3.1	2	0.40	0.50							0.000	<10	0	<10	<0.75	2, 7, 10				
									0.60	4.3	2.7																			
									0.80	4.5	3.1																			
	3	A2e	0.70	2.00	10YR72	S			1.00	4.2	3.4	3	0.80	1.00																
									1.25	4.6	3.7																			
									1.50	5.2	4.3																			
									1.75	5.3	4.0																			
									2.00	4.9	4.3	5	1.80	2.00																
									2.25	5.3	4.3																			
4	B1	2.00	2.40	10YR43	S			2.50	5.5	4.0																				
5	B2s	2.40	2.70	10YR44	S																									
6	C1	2.70	3.90	10YR54	S			2.75	5.6	4.1																				
								3.00	5.5	3.7																				
								3.25	5.4	3.7																				
								3.50	5.3	3.3																				
								3.75	5.3	3.3	9	3.50	3.70																	
								4.00	5.1	3.3																				
								4.25	5.1	2.7																				
								4.50	5.2	2.8																				
								4.75	5.2	2.9																				
								5.00	4.9	3.2	11	4.80	5.00																	
								5.25	5.3	3.3																				
								5.50	5.2	2.8																				
								5.75	4.9	3.2																				
								6.00	5.7	2.7	13	6.00	6.20																	
								6.25	5.8	2.8																				
								6.50	5.8	2.5																				
								6.75	5.6	2.6																				
								7.00	5.6	2.6																				
								7.25	5.6	2.6																				
								7.50	5.4	2.4																				
								7.75	5.6	1.4																				
								8.00	5.5	1.5																				
								8.25	5.8	1.6	16	8.20	8.40	S8	Ps						0.048	30	2.25	1, 9						
								8.50	5.8	1.4																				
								8.75	6.1	1.5																				
								8.90	6.5	1.7	17	8.70	8.90		Ps						0.148	92	6.92	1, 9						

Field Morphology Summary										Lab Sample			Action Criteria		Lab Results										
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	S <sub>CR</sub>	S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code		
									Depth (m)	pH <sub>2</sub>	pH <sub>ox</sub>													% S	mol H <sup>+</sup> /l
131	1	A1	0.00	0.40	10YR51	S			0.10	4.7	3.7	1	0.00	0.10											
									0.30	4.2	3.0														
									0.60	4.4	3.4														
	2	A2e	0.40	1.60	10YR72	S			0.80	4.9	3.7	2	0.50	0.60											
									1.00	5.2	4.1														
									1.25	5.2	4.3														
	3	B2s	1.60	2.70	10YR64	S			1.50	5.1	4.3	3	0.80	1.00											
									1.75	4.8	3.9														
									2.00	4.9	4.3														
	4	2C1	2.70	3.50	2.5Y53	S			2.25	5.2	4.5	5	1.80	2.00											
									2.50	5.1	4.5														
									2.75	5.3	2.5														
	5	2C2	3.50	6.60	2.5Y51	S			3.00	5.5	1.6	7	2.80	3.00	S3	Ps	0.044	0.017			27	2.06	1, 9		
									3.25	5.4	1.7														
									3.50	5.7	1.8														
132	1	A1	0.00	0.30	10YR52	S			3.75	5.9	1.8	1	0.00	0.10											
									4.00	6.3	4.0														
									4.25	6.0	1.9														
	2	A21	0.30	1.10	10YR63	S			4.50	5.7	1.4	2	0.50	0.60											
									4.75	5.6	1.5														
									5.00	5.6	1.6														
	3	A22	1.10	1.80	10YR53	S			5.25	5.9	1.6	4	1.30	1.50											
									5.50	6.0	1.5														
									5.75	5.9	1.5														
	4	A23	1.80	2.00	10YR51	S			6.00	6.2	1.7	5	1.80	2.00											
									6.25	6.4	1.6														
									6.50	6.2	1.6														
	5	A24	2.00	3.00	10YR63	S			6.60	6.1	1.6	6	2.30	2.50											
									6.60	6.1	1.6														
									6.60	6.1	1.6														
6	A25	3.00	4.00	10YR73	S			6.60	6.1	1.6	8	3.30	3.50												
								6.60	6.1	1.6															
								6.60	6.1	1.6															
7	B21s	4.00	4.25	10YR42	S			6.60	6.1	1.6	10	4.00	4.20												
								6.60	6.1	1.6															
								6.60	6.1	1.6															
8	B22s	4.25	4.75	10YR44	S			6.60	6.1	1.6	11	4.40	4.60								10	0.75	1, 9		
								6.60	6.1	1.6															
								6.60	6.1	1.6															
9	2C1	4.75	5.50	2.5Y43	S			6.60	6.1	1.6	12	4.80	5.00	S5	Ps	0.036					22	1.68	1, 9		
								6.60	6.1	1.6															
								6.60	6.1	1.6															
133	10	2C2	5.50	9.50	2.5Y53	S			6.60	6.1	1.6	14	5.80	6.00								20	1.50	1, 9	
									6.60	6.1	1.6														
									6.60	6.1	1.6														
	11	3C3	9.50	10.50	5Y52	S			6.60	6.1	1.6	16	6.80	7.00								32	2.39	1, 9	
									6.60	6.1	1.6														
									6.60	6.1	1.6														
	12	3C3	9.50	10.50	5Y52	S			6.60	6.1	1.6	18	7.80	8.00								15	1.12	1, 9	
									6.60	6.1	1.6														
									6.60	6.1	1.6														
	13	3C3	9.50	10.50	5Y52	S			6.60	6.1	1.6	20	8.80	9.00								43	3.23	1, 9	
									6.60	6.1	1.6														
									6.60	6.1	1.6														
	14	3C3	9.50	10.50	5Y52	S			6.60	6.1	1.6	22	9.80	10.00								29	2.15	1, 9	
									6.60	6.1	1.6														
									6.60	6.1	1.6														

Field Morphology Summary										Lab Sample			Action Criteria		Lab Results								
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub> S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code
									Depth (m)	pH <sub>f</sub>	pH <sub>rox</sub>												
133	1	A11	0.00	0.05	10YR51	S																	
	2	A12	0.05	0.70	10YR41	S			0.10	3.6	3.1	2	0.20	0.30			0.004	17	0	17	1.28	2, 7, 10	
	3	A21e	0.70	1.50	10YR71	S			0.60	3.6	4.3			0.80									
	4	A22e	1.50	2.50	10YR72	S			1.00	4.3	5.0	4	0.80	1.25			< 0.02						
	5	B2s	2.50	4.50	10YR34	S			1.25	4.4	5.0			1.50									
	6	B3	4.50	5.80	2.5Y53	S			1.75	5.1	5.1	6	1.80	2.00			< 0.02						
	7	C1	5.80	6.45	5Y52	S	SS		2.25	4.6	5.2			2.50									
	8	2C2	6.45	6.55	5Y51	SL	SS		2.75	4.8	5.2	8	2.80	3.00			< 0.02						
	9	2C3	6.55	7.00	5Y62	S	SS		3.25	5.0	2.9			3.50									
	10	3C3	7.00	7.00	5Y62	S	SS		3.50	4.9	2.6	10	3.80	4.00			< 0.02						
	11	3C4	7.00	7.00	5Y62	S	SS		4.00	4.9	2.3			4.25									
	12	4C3	7.00	7.00	5Y62	S	SS		4.50	5.0	1.8	12	4.80	5.00			0.016		10	0.75		1, 9	
	13	5C3	7.00	7.00	5Y62	S	SS		4.75	4.8	1.7			5.00									
	14	6C3	7.00	7.00	5Y62	S	SS		5.00	5.0	1.9	14	6.00	6.20	S6	Ps	0.036			22	1.68	1, 9	
	15	7C3	7.00	7.00	5Y62	S	SS		5.25	4.9	2.0			5.50									
	16	8C3	7.00	7.00	5Y62	S	SS		5.50	4.8	3.1	16	6.80	7.00			< 0.02						
	17	9C3	7.00	7.00	5Y62	S	SS		5.75	5.1	1.8			6.00									
	18	10C3	7.00	7.00	5Y62	S	SS		6.25	6.9	2.2			6.50									
	19	11C3	7.00	7.00	5Y62	S	SS		6.50	7.3	5.7			6.75									
	20	12C3	7.00	7.00	5Y62	S	SS		6.75	7.7	6.1			7.00									
	21	13C3	7.00	7.00	5Y62	S	SS		7.00	7.7	6.3	16	6.80	7.00			< 0.02						
134	1	A11	0.00	0.15	10YR51	S			0.10	4.5	3.6												
	2	A12	0.15	0.60	10YR51	S			0.30	4.3	3.7	2	0.20	0.30			0.000	<10	10	<10	<0.75	2, 7, 10	
	3	A3	0.60	1.60	10YR63	S			0.60	4.5	4.1			0.80									
	4	B21s	1.60	1.95	10YR33	S			1.00	4.6	4.2	4	0.80	1.00			< 0.02						
	5	B22	1.95	2.20	10YR34	S			1.25	5.0	4.5			1.50									
	6	B23	2.20	2.90	2.5Y44	S			1.50	4.1	3.9	6	1.70	1.90			< 0.02						
	7	C1	2.90	3.45	5Y43	S			1.75	3.7	3.7			2.00									
	8	C2	3.45	5.75	5Y62	S			2.25	4.5	1.3	8	2.30	2.50			0.024			15	1.12	1, 9	
	9	2C3	5.75	6.85	5Y52	S	SS		2.50	4.6	1.0			2.75									
	10	3C4	6.85	7.00	5Y31	LS	SS		2.75	4.8	1.3	10	3.10	3.30	S3	Ps	0.032			20	1.50	1, 9	
	11	4C3	7.00	7.00	5Y62	S	SS		3.00	4.7	1.5			3.25									
	12	5C3	7.00	7.00	5Y62	S	SS		3.25	4.3	1.4			3.50									
	13	6C3	7.00	7.00	5Y62	S	SS		3.75	4.3	1.8			4.00									
	14	7C3	7.00	7.00	5Y62	S	SS		4.00	4.4	1.7			4.25									
	15	8C3	7.00	7.00	5Y62	S	SS		4.25	4.5	1.9			4.50									
	16	9C3	7.00	7.00	5Y62	S	SS		4.50	4.8	2.5	12	4.30	4.50			< 0.02						
	17	10C3	7.00	7.00	5Y62	S	SS		4.75	4.8	2.2			5.00									
	18	11C3	7.00	7.00	5Y62	S	SS		5.00	4.9	1.8			5.25									
	19	12C3	7.00	7.00	5Y62	S	SS		5.25	5.2	2.2			5.50									
	20	13C3	7.00	7.00	5Y62	S	SS		5.50	5.1	1.8	14	5.30	5.50			< 0.02						
	21	14C3	7.00	7.00	5Y62	S	SS		5.75	5.7	1.8			6.00									
	22	15C3	7.00	7.00	5Y62	S	SS		6.00	6.3	1.5			6.25									
	23	16C3	7.00	7.00	5Y62	S	SS		6.25	6.2	1.9			6.50									
	24	17C3	7.00	7.00	5Y62	S	SS		6.50	6.7	3.6	16	6.50	6.70			< 0.02						
	25	18C3	7.00	7.00	5Y62	S	SS		6.75	7.5	5.5			7.00									
	26	19C3	7.00	7.00	5Y62	S	SS		7.00	7.4	6.2	17	6.85	7.00			0.122			76	5.71	1, 9	





Field Morphology Summary										Lab Sample			Action Criteria		Lab Results										
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub> S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code		
									Depth (m)	pH <sub>p</sub>	pH <sub>ox</sub>													% S	mol H <sup>+</sup> /l
137	1	A1	0.00	0.40	10YR51	S			0.10	4.9	4.8														
									0.30	4.5	4.2	1	0.10	0.30											
	2	A2e		0.40	1.30	10YR81	S			0.60	5.0	5.0	3	0.80	1.00										
										0.80	4.9	5.2													
										1.00	5.0	5.2													
	3	A3		1.30	2.10	10YR44	S			1.25	5.3	4.8	5	1.80	2.00										
										1.50	4.4	4.9													
										1.75	4.5	4.8													
	4	B21s		2.10	3.00	7.5YR33	S			2.00	5.1	5.1	7	2.80	3.00										
										2.25	6.0	4.5													
										2.50	6.6	5.2													
	5	B22		3.00	3.35	10YR43	S			2.75	7.2	5.4	10	3.80	4.00										
										3.00	7.3	5.1													
	138	1	A1	0.00	0.50	10YR31	S			3.25	7.4	5.2	12	4.80	5.00										
										3.50	7.5	1.1													
		2	A2e		0.50	1.10	10YR61	S			3.75	7.4	2.5	14	5.80	6.00									
											4.00	7.3	3.1												
											4.25	7.5	2.7												
		3	B1		1.10	2.00	10YR63	S			4.50	7.4	2.8	16	6.80	7.00									
											4.75	7.4	3.5												
5.00											7.3	3.7													
4		B2		2.00	2.70		KS			5.25	7.5	2.2	18	7.80	8.00										
										5.50	7.5	1.6													
										5.75	7.7	2.6													
5		2B31		2.70	3.00	2.5Y53	KS			6.00	7.3	2.3	20	8.80	9.00										
										6.25	7.3	3.7													
										6.50	7.5	1.5													
6		2B32		3.00	3.40	2.5Y52	S			6.75	7.1	2.6	2	0.30	0.40										
										7.00	6.9	4.4													
										7.25	6.9	2.6													
7		2C1		3.40	7.10	10YR61	S			7.50	7.0	3.6	3	0.80	1.00										
										7.75	6.7	3.9													
										8.00	6.5	2.7													
8	2C2		7.10	8.40	5Y51	S			8.25	6.8	1.8	5	1.80	2.00											
									8.50	6.9	3.0														
									8.75	6.7	2.9														
9	3C3		8.40	9.50	2.5Y51	S			9.00	6.7	3.8	7	2.80	3.00											
									9.25	5.6	1.4														
									9.50	5.8	1.3														
9									7.25	6.1	1.4	9	3.80	4.00											
									7.50	6.2	1.3														
									7.75	6.0	1.3														
9									8.00	6.2	1.3	11	4.80	5.00											
									8.25	6.0	1.1														
									8.50	6.1	1.2														
9									8.75	6.3	1.2	13	5.80	6.00											
									9.00	5.9	1.3														
									9.25	5.6	1.4														
9									9.50	5.8	1.3	15	6.80	7.00											
									8.75	6.3	1.2														
									9.00	5.9	1.3														
9									9.25	5.6	1.4	17	7.80	8.00	S8	Ps	0.031				19	1.45	1, 9		
									9.50	5.8	1.3														
									8.75	6.3	1.2														
9									9.00	5.9	1.3	19	8.70	8.90								111	8.33	1, 9	
									9.25	5.6	1.4														
									9.50	5.8	1.3														







Field Morphology Summary										Lab Sample			Action Criteria		Lab Results									
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub> S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code	
									Depth (m)	pH <sub>a</sub>	pH <sub>ox</sub>													% S
145	1	A11	0.00	0.20	10YR31	LS			0.10	4.7	3.7													
	2	A12	0.20	0.60	10YR41	LS			0.30	4.3	3.0	2	0.20	0.30										
	3	A2e	0.60	1.60	10YR61	S			0.60	4.7	3.8													
									0.80	5.0	4.2	4	0.80	1.00										
									1.00	5.0	4.2													
									1.25	5.3	4.4													
									1.50	5.2	4.5													
	4	B21	1.60	3.00	10YR64	LS			1.75	4.9	3.5	6	1.80	2.00										
									2.00	4.9	3.3													
									2.25	5.1	3.9													
									2.50	5.2	3.8													
								2.75	5.2	3.9														
								3.00	4.9	2.7	8	2.80	3.00											
5	B22	3.00	3.50	10YR32	LS			3.25	5.1	4.1														
								3.50	5.0	3.9														
6	B23	3.50	4.20	10YR42	LS			3.75	5.3	4.1														
								4.00	5.3	4.0	10	3.80	4.00											
7	2A2	4.20	5.20	10YR62	S			4.25	5.6	4.3														
								4.50	5.4	3.9														
								4.75	4.9	4.3														
								5.00	5.0	4.1	12	4.80	5.00											
8	2B21	5.20	6.90	10YR33	S			5.25	4.5	3.9														
								5.50	4.8	4.1														
								5.75	4.9	3.8														
								6.00	5.1	3.1	14	5.80	6.00											
								6.25	4.9	3.7														
								6.50	5.0	4.1														
								6.75	4.9	4.1														
9	3C	6.90	7.80	2.5Y42	S			7.00	5.1	1.4														
								7.25	5.3	1.6														
								7.50	5.3	1.9	17	7.30	7.50		S7	Ps	0.046			29	2.15		1, 9	
								7.75	5.1	1.8														
10	4C	7.80	8.50	2.5Y53	S			8.00	5.2	1.4														
								8.25	5.2	1.3														
								8.50	5.2	1.2	19	8.30	8.50			Ps	0.038			24	1.78		1, 9	
								8.75	4.9	0.9														
								9.00	5.4	0.9														
								9.25	5.5	0.4														
								9.50	5.5	1.0	21	9.30	9.50			Ps	0.050			31	2.34		1, 9	
146	1	A11	0.00	0.20	10YR41	S			0.10	5.7	4.4													
	2	A12	0.20	0.40	10YR61	S			0.30	4.4	3.9	2	0.20	0.30										
	3	A21	0.40	0.70	10YR61	S			0.60	4.9	3.9													
	4	A22e	0.70	2.00	10YR81	S			0.80	6.0	4.8													
									1.00	6.1	4.8	4	0.80	1.00										
									1.25	6.3	4.8													
									1.50	5.9	4.9													
									1.75	6.5	4.9													
									2.00	6.2	4.8	6	1.80	2.00										
									2.25	6.0	4.5													
									2.50	5.9	4.7													
									2.75	5.8	4.3													
								3.00	6.4	4.4	8	2.80	3.00											
								3.25	5.7	4.7														
								3.50	5.1	4.2														
6	B21hs	3.60	4.20	7.5YR33	LS			3.75	4.5	3.8														
								4.00	4.6	3.8	10	3.80	4.00											
7	B22s	4.20	4.80	10YR44	S			4.25	5.3	4.2														
								4.50	5.6	4.5														
								4.75	4.8	3.1														
8	2B21	4.80	5.40	10YR44	S			5.00	5.1	1.4	12	4.80	5.00		S5	Ps	0.040			25	1.87		1, 9	
								5.25	5.1	2.3														
9	2B22	5.40	5.90	10YR44	S			5.50	5.4	2.3														
								5.75	5.7	2.9	14	5.70	5.90							9	0.70		1, 9	
10	3B2	5.90	6.70	10YR33	S			6.00	6.1	2.4														
								6.25	6.9	2.8														
								6.50	7.1	1.7														
								6.75	8.4	4.7	15	6.30	6.50			Ps	0.061			38	2.85		1, 9	
								7.00	9.0	4.7	16	6.80	7.00			Ps	0.053			33	2.48		1, 9	
12	5C2u	7.10	7.30	5Y41	S		SS	7.25	9.3	5.6	17	7.10	7.30			Ps	0.094			59	4.40		1, 9	





Field Morphology Summary										Lab Sample			Action Criteria		Lab Results								
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code
									Depth (m)	pH <sub>a</sub>	pH <sub>ox</sub>							22B(23Ee)	mol H <sup>+</sup> /l	23F	mol H <sup>+</sup> /l	23G	
151	1	A11	0.00	0.20	10YR41	LS			0.10	4.8	3.0												
	2	A12	0.20	0.50	10YR31	LS			0.30	3.9	2.4	2	0.20	0.30			< 0.02	16		16	1.20		1, 8, 11
	3	A2e	0.50	2.20	10YR71	S			0.60	5.0	2.8												
									0.80	5.4	3.2	4	0.80	1.00			< 0.02						
									1.00	6.1	3.4												
									1.25	5.9	3.5												
									1.50	6.4	3.6												
									1.75	6.0	3.7												
									2.00	6.3	3.7												
	4	A3	2.20	2.55	10YR51	S			2.25	5.9	3.1	6	1.80	2.00			< 0.02						
									2.50	4.4	2.2												
	5	B1	2.55	3.00	7.5YR42	S			2.75	4.2	2.6												
									3.00	4.2	2.7	8	2.80	3.00			< 0.02						
	6	B21s	3.00	3.50	7.5YR32	LS			3.25	4.1	2.9												
									3.50	4.5	3.1												
	7	B22s	3.50	4.40	7.5YR43	S			3.75	4.7	3.4												
									4.00	4.6	2.8	10	3.80	4.00			< 0.02						
									4.25	4.6	2.8												
	8	B23s	4.40	5.30	10YR54	S			4.50	5.4	3.6												
									4.75	5.1	3.8	12	4.80	5.00			< 0.02						
									5.00	5.4	3.5												
									5.25	4.9	3.5												
	9	2C	5.30	7.00	2.5Y53	S			5.50	5.3	2.0												
									5.75	5.0	2.2	14	5.80	6.00			< 0.02						
									6.00	5.1	1.9												
									6.25	5.5	2.0												
									6.50	5.4	1.8												
									6.75	5.7	1.5												
	10	3C	7.00	7.50	2.5Y52	S			7.00	4.7	2.0												
									7.25	4.9	4.4	17	7.30	7.50			0.021			13	0.98		1, 9
									7.50	5.4	1.8												
	11	4C	7.50	8.80	5Y51	S			7.75	6.1	1.7												
									8.00	5.8	1.7												
									8.25	5.7	1.5												
									8.50	6.0	1.5	19	8.30	8.50			0.016			10	0.75		1, 9
									8.75	6.0	1.3												
152	1	A1	0.00	0.30	10YR61	S			0.10	4.9	3.7												
	2	B2	0.30	0.70	10YR54	S			0.30	5.6	4.2	2	0.20	0.30			< 0.02						
	3	2A2	0.70	1.50	10YR63	S			0.60	5.8	3.8												
									0.80	6.0	3.8	4	0.80	1.00			< 0.02						
									1.00	5.7	3.9												
									1.25	6.0	4.0												
									1.50	5.9	4.0												
	4	2B2	1.50	2.80	10YR53	S			1.75	5.9	4.1	6	1.80	2.00			< 0.02						
									2.00	5.7	3.6												
									2.25	5.0	3.9												
									2.50	4.8	4.0												
									2.75	4.9	4.0												
	5	3C	2.80	7.80	10YR63	S			3.00	4.4	2.9	8	2.80	3.00			< 0.02						
									3.25	6.1	4.3												
									3.50	6.4	4.1												
									3.75	6.3	4.0												
									4.00	6.1	4.1												
									4.25	6.5	4.0												
									4.50	5.7	3.4	11	4.30	4.50			< 0.02						
									4.75	6.5	3.3												
									5.00	6.7	4.2												
									5.25	6.0	3.4												
									5.50	5.9	3.7	13	5.30	5.50			< 0.02						
									5.75	5.6	4.0												
									6.00	5.3	4.1												
									6.25	5.0	4.2												
									6.50	5.8	4.4	15	6.30	6.50			< 0.02						
									6.75	6.2	4.6												
									7.00	5.7	4.2												
									7.25	5.8	4.3												
									7.50	5.6	4.3												
									7.75	5.3	2.8												
	6	4C	7.80	8.00	2.5Y53	LS			8.00	5.3	2.2	18	7.80	8.00	S8	Ps	0.034			21	1.59		1, 9







Field Morphology Summary										Lab Sample			Action Criteria		Lab Results								
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code
									Depth (m)	pH <sub>a</sub>	pH <sub>ox</sub>							S <sub>POS</sub>	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	kg CaCO <sub>3</sub> /t (SF=1.5)	
									23Af	23Bf	23Bf							22B	23Ee	23F	23G		
157	1	A11	0.00	0.35	10YR51	S			0.10	4.7	2.2												
	2	A12	0.35	0.70	10YR61	S			0.30	4.0	2.2	2	0.20	0.30			< 0.02	<10		<10	<0.75	1, 8, 11	
	3	A2e	0.70	1.30	10YR72	S			0.60	4.4	2.8												
	4	B1	1.30	2.00	10YR41	LS			0.80	4.6	3.0	4	0.80	1.00									
	5	B21	2.00	2.60	10YR52	LS			1.00	4.8	3.3												
	6	B22	2.60	2.80	7.5YR32	LS			1.25	4.6	2.9												
	7	B23	2.80	3.00	10YR44	S			1.50	4.3	2.7												
	8	2B21	3.00	3.65	10YR64	S			1.75	4.5	3.1												
	9	2B22	3.65	4.00	10YR63	S			2.00	4.9	3.1												
	10	2B23	4.00	5.10	10YR53	S			2.25	4.3	3.3												
	11	2B24	5.10	5.60	2.5Y63	S			2.50	4.6	3.1												
	12	3C	5.60	6.60	2.5Y53	S			2.75	4.4	3.6												
	13	4C	6.60	8.00	2.5Y52	S			3.00	4.9	3.9												
	14	5C	8.00	8.10	2.5Y52	KS			3.25	4.9	3.9												
	15	6C	8.10	8.20	2.5Y53	S			3.50	4.7	3.6												
158	1	A11	0.00	0.90	10YR73	S			3.75	4.8	3.8												
	2	A12	0.90	2.10	10YR71	S			4.00	5.0	4.0												
	3	2C	2.10	2.50	10YR61	S			4.25	5.1	3.9												
	4	3C	2.50	5.00	10YR71	S			4.50	4.9	3.9												
	5	4C	5.00	5.70	N50	S	SS		4.75	4.7	3.9												
	6	5C	5.70	6.30	N40	S	SS		5.00	4.7	3.6												
									5.25	4.6	3.4												
									5.50	4.6	2.7												
									5.75	5.1	2.2												
									6.00	4.3	2.1	15	5.80	6.00						9	0.70	1, 9	
									6.25	4.2	2.4												
									6.50	4.1	2.5												
									6.75	4.1	2.5												
									7.00	4.6	2.5												
									7.25	4.5	2.9												
									7.50	4.4	2.8												
									7.75	4.4	2.9												
									8.00	4.4	0.7												
									8.20	4.3	2.7	21	8.10	8.20									
									0.10	5.4	3.7												
									0.30	5.6	4.3												
									0.60	5.6	4.5												
									0.80	5.4	4.4												
									1.00	5.7	4.3												
									1.25	6.0	4.0												
									1.50	6.0	3.7												
									1.75	6.2	3.8												
									2.00	6.6	4.7												
									2.25	7.1	6.0												
									2.50	7.3	4.7												
									2.75	7.5	5.6												
									3.00	7.8	6.0												
									3.25	7.6	5.4												
									3.50	7.9	5.4												
									3.75	8.2	5.4												
									4.00	7.5	5.8												
									4.25	7.7	5.6												
									4.50	7.5	5.9												
									4.75	7.8	6.0												
									5.00	7.4	5.4												
									5.25	7.6	5.2												
									5.50	7.6	5.0												
									5.75	7.6	5.4												
									6.00	7.8	5.6												
									6.20	8.1	2.6	15	6.10	6.30	S6	Ps	0.070			44	3.27	1, 9	

Field Morphology Summary										Lab Sample			Action Criteria		Lab Results										
Site ID	Hor No	Horizon Name	Upp Depth	Low Depth	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth	Low Depth	Depth 1st	Action Level	Action Select	S <sub>CR</sub> S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code		
									Depth	pH <sub>p</sub>	pH <sub>rox</sub>													% S	mol H <sup>+</sup> /l
(m)									(m)			(m)													
159	1	A1	0.00	0.30	10YR51	LS			0.10	4.1	2.6														
	2	B2	0.30	0.80	10YR63	S			0.30	4.3	2.0	2	0.20	0.30						< 0.02	<10	<10	<0.75	1, 8, 11	
	3	2A1	0.80	1.10	10YR41	LS			0.60	4.3	2.2														
	4	2A2	1.10	1.50	10YR62	S			0.80	4.3	2.3	4	0.80	1.00						< 0.02					
	5	2B21	1.50	2.10	10YR43	S			1.00	4.3	2.0														
	6	2B22	2.10	2.80	10YR54	S			1.25	4.4	2.4	6	1.80	2.00						< 0.02					
	7	3C	2.80	4.40	10YR81	S			1.50	4.8	2.5														
	8	4C	4.40	5.60	10YR63	S			1.75	4.2	2.9	9	3.30	3.50						< 0.02					
	9	5C	5.60	6.30	2.5Y62	S			2.00	4.4	2.3														
	10	6C	6.30	8.60	2.5Y61	S			2.25	5.2	3.7	12	4.80	5.00						< 0.02					
									2.50	4.9	4.2														
									2.75	5.5	4.5														
									3.00	5.7	4.5														
									3.25	6.1	4.6														
									3.50	6.0	4.8														
									3.75	5.8	5.7														
									4.00	5.6	4.6														
									4.25	4.7	4.4														
									4.50	3.9	2.8														
									4.75	4.9	3.8														
									5.00	5.2	3.8														
									5.25	4.7	3.9														
									5.50	5.1	4.1														
									5.75	4.9	2.4														
									6.00	5.4	2.3														
									6.25	4.7	1.8														
									6.50	4.7	1.8														
									6.75	4.9	1.9														
									7.00	4.8	2.1														
									7.25	5.0	2.1														
									7.50	5.2	2.4														
									7.75	5.3	2.1														
									8.00	5.3	2.1														
									8.25	5.4	2.5														
									8.50	5.6	2.4														
160	1	A1	0.00	0.50	N40	LS			0.10	4.6	2.0														
	2	A2e	0.50	1.50	10YR82	S			0.30	3.9	2.2	2	0.20	0.30						< 0.02	11	11	0.83	1, 8, 11	
									0.60	3.9	2.3														
									0.80	4.4	2.6	4	0.80	1.00							< 0.02				
									1.00	4.4	2.8														
									1.25	4.5	2.9														
									1.50	4.4	2.7														
									1.75	4.5	2.7														
									2.00	4.5	2.5	6	1.80	2.00							< 0.02				
									2.25	4.6	2.6														
									2.50	4.8	3.1														
									2.75	4.4	3.3														
									3.00	4.1	4.0	8	2.80	3.00							< 0.02				
									3.25	4.0	4.0														
									3.50	4.1	4.3														
									3.75	4.5	4.3														
									4.00	4.3	3.9														
									4.25	4.6	2.5														
									4.50	5.3	2.2														
									4.75	4.8	1.8														
									5.00	4.5	1.5														
									5.25	4.6	2.4														
									5.50	4.7	2.3														
									5.75	5.1	2.1														
									6.00	5.4	2.3														
									6.25	4.8	2.8														
									6.50	5.0	2.3														
									6.75	5.1	2.5														
									7.00	5.8	2.6														
									7.25	5.5	3.1														
									7.50	5.6	2.7														
									7.75	5.6	2.9														
									8.00	5.3	2.8														
												12	4.80	5.00							0.018		11	0.84	1, 9
												16	6.80	7.00							< 0.02				

Field Morphology Summary											Lab Sample			Action Criteria		Lab Results								
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub> S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code	
									Depth (m)	pH <sub>p</sub>	pH <sub>rox</sub>													% S
161	1	A11	0.00	0.40	10YR31	LS			0.10	4.5	3.3	2	0.20	0.30										
									0.30	4.3	3.0													
		2	A12	0.40	1.00	10YR41	LS			0.60	4.1	2.7	4	0.80	1.00									
									0.80	4.2	3.2													
		3	A2e	1.00	1.45	10YR52	S			1.25	6.1	3.9	6	1.60	1.80									
		4	B1	1.45	1.90	7.5YR42	LS			1.50	5.7	4.0												
		5	B21	1.90	2.50	7.5YR33	LS			1.75	6.3	4.2	8	2.80	3.00									
									2.00	5.9	4.2													
		6	2C	2.50	3.00	10YR64	S			2.25	6.4	4.3	12	4.30	4.50									
									2.50	6.7	4.4													
	7	3C	3.00	3.40	10YR54	S			2.75	7.2	4.4	14	5.30	5.50	S4	Ps				19	1.45	1, 9		
	8	4C	3.40	3.60	10YR44	LS			3.00	7.3	4.5													
	9	5C	3.60	3.80	2.5Y44	LS			3.25	6.9	4.2	16	6.30	6.50										
	10	6C1	3.90	5.60	2.5Y53	LS			3.50	6.6	4.3													
									3.75	6.5	3.9	18	7.30	7.50										
								4.00	6.4	3.4														
									4.25	6.7	3.4													
								4.50	6.2	3.1														
									4.75	6.1	3.4													
								5.00	6.7	2.2														
									5.25	6.1	2.3													
								5.50	6.2	2.1														
	11	6C2	5.60	7.00	2.5Y52	S			5.75	6.1	2.0													
								6.00	6.0	3.5														
									6.25	6.7	3.6													
								6.50	6.8	2.8														
									6.75	6.9	3.2													
								7.00	7.0	2.3														
	12	6C3	7.00	8.20	2.5Y51	S			7.25	6.3	4.1													
								7.50	6.4	2.7														
									7.75	6.6	3.3													
								8.00	6.5	2.5														
									8.20	6.9	2.3													
								0.10	7.1	5.2														
162	1	A11	0.00	0.40	10YR51	LS			0.30	6.6	4.8	2	0.20	0.30										
									0.60	7.2	4.7													
		2	A12	0.40	1.10	10YR52	S			0.80	7.2	4.5	4	0.80	1.00									
									1.00	7.2	4.5													
		3	A2e	1.10	2.00	10YR53	S			1.25	7.1	4.6	6	1.80	2.00									
									1.50	7.1	4.5													
										1.75	7.2	4.6												
									2.00	7.1	4.6													
		4	B2	2.00	3.50	10YR54	LS			2.25	6.8	4.6	8	3.00	3.20									
									2.50	6.8	4.4													
										2.75	6.9	4.3												
									3.00	6.8	3.2													
										3.25	6.4	4.0												
									3.50	6.5	4.2													
	5	2C	3.50	4.20	2.5Y53	S			3.75	6.6	2.6	10	3.80	4.00										
								4.00	6.6	1.9														
	6	3C	4.20	4.50	2.5Y53	S			4.25	6.0	1.9													
								4.50	5.4	2.1														
									4.75	6.5	2.3													
								5.00	6.4	2.2														
									5.25	6.6	2.0													
								5.50	6.6	2.0														
									5.75	6.2	2.0													
								6.00	6.4	2.4														
									6.25	6.4	2.9													
								6.50	6.3	2.8														
									6.75	5.9	2.5													
								6.75	5.9	2.5														



Field Morphology Summary										Lab Sample			Action Criteria		Lab Results								
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st Level	Action Level	Action Select %S	S <sub>CR</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code
									Depth	pH <sub>s</sub>	pH <sub>ox</sub>							S <sub>POS</sub>	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	kg CaCO <sub>3</sub> /t (SF=1.5)	
									23Af	23Bf								22B/23Ee	23F	23G			
166	1	A1	0.00	0.40	N30	LS			0.10	3.7	1.9												
	2	A2e	0.40	0.80	2.5Y5/1	S			0.30	4.0	2.2	2	0.20	0.30			< 0.02	10		10	0.75	1, 8, 11	
	3	B1	0.80	1.10	10YR5/2	S			0.60	4.5	2.5												
	4	Bh1	1.10	1.70	10YR2/1	LS			0.80	4.6	2.6	4	0.80	1.00			< 0.02						
	5	Bh2	1.70	3.50	7.5YR2.5/2	LS			1.00	4.1	2.3												
									1.25	4.3	2.6												
									1.50	4.4	2.5	6	1.80	2.00			< 0.02						
									1.75	4.4	3.1												
									2.00	4.2	2.9												
									2.25	4.6	3.1												
									2.50	4.8	2.8												
									2.75	5.4	2.2												
									3.00	4.9	1.9	8	2.80	3.00	S2	Ps	0.047			29	2.20	1, 9	
									3.25	5.0	1.7												
									3.50	5.0	2.1												
	6	Bh3	3.50	4.90	2.5Y3/2	LS			3.75	4.8	2.3												
									4.00	5.0	2.5												
									4.25	5.4	2.6												
									4.50	5.3	2.8												
									4.75	5.4	2.1												
	7	2C	4.90	5.40	N40	S			5.00	5.5	1.8												
									5.25	5.5	1.2												
	8	3D1	5.40	5.70	2.5Y7/2	LMC			5.50	6.5	2.3	13	5.20	5.40		Ps	1.925			1201	90.05	1, 9	
									5.75	6.6	2.4												
	9	3D2	5.70	6.00	N80	SLMC			6.00	6.4	3.1												
									6.25	6.5	2.9												
	10	3D3	6.00	6.30	5G8/1	KSLMC			6.25	6.5	2.9	15	5.80	6.00							41	3.04	1, 9
167	1	A1	0.00	0.20	2.5Y4/1	S			0.10	4.8	1.5												
	2	2A1	0.20	0.50	2.5Y2.5/1	S			0.30	4.2	1.4	2	0.20	0.30			< 0.02						
	3	2A2	0.50	2.00	N80	S			0.60	4.2	1.7	3	0.50	0.60			< 0.02	<10		<10	<0.75	1, 6	
									0.80	4.9	2.2												
									1.00	5.1	2.8												
									1.25	4.5	2.1												
									1.50	3.9	2.0	5	1.30	1.50			< 0.02	<10		<10	<0.75	1, 6	
									1.75	4.1	1.9												
									2.00	3.4	2.3												
	4	2A3	2.00	2.20	2.5Y5/2	S			2.25	3.8	1.7												
	5	2B1	2.20	2.70	10YR4/2	LS			2.50	3.8	1.9	8	2.30	2.50			< 0.02	<10		<10	<0.75	1, 8, 11	
	6	2Bh1	2.70	5.70	10YR2/1	LS			2.75	3.9	1.7												
									3.00	4.1	2.0												
									3.25	4.3	1.9												
									3.50	4.4	1.9												
									3.75	4.1	1.8												
									4.00	4.2	1.9												
									4.25	4.2	2.0												
									4.50	4.5	1.5												
									4.75	4.2	1.6												
									5.00	4.6	1.8												
									5.25	4.7	1.7												
									5.50	5.0	1.3												
	7	2Bh2	5.70	6.00	10YR3/3	LS			5.75	5.0	1.8												
									6.00	5.4	2.5												
	8	3C	6.00	6.60	N30	KSLC			6.25	5.6	2.6												
									6.50	5.9	2.1												
	9	4D	6.60	7.20	5Y7/1	SLMC			6.75	5.6	3.1	16	6.30	6.50	S6	Pc	0.778			485	36.39	1, 9	
									7.00	5.6	3.4												
									7.00	5.6	3.4	17	6.80	7.00		Pc	0.166			104	7.77	1, 9	





Field Morphology Summary											Lab Sample			Action Criteria		Lab Results												
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub> S <sub>POS</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code					
									Depth (m)	pH <sub>2</sub>	pH <sub>rox</sub>													% S	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	kg CaCO <sub>3</sub> /t (SF=1.5)
170	1	A11	0.00	0.50	N30	LS			0.10	4.2	3.9	2	0.20	0.30							22	22	1.65	1, 8, 11				
	2	A12	0.50	0.75	2.5Y6/1	S			0.30	4.3	3.4														0.60	4.4	3.3	
	3	A21	0.75	1.70	10YR7/1	S			0.60	4.4	3.3	4	0.80	1.00										1, 6				
									0.80	4.5	4.5														1.00	4.6	4.6	
									1.25	5.0	4.6														1.50	5.2	5.0	
									1.75	5.0	5.2														2.00	5.2	5.0	
	4	A22	1.70	2.25	10YR8/1	S			2.25	4.4	2.6	6	1.80	2.00											1, 6			
									2.25	4.4	2.6															2.50	4.7	4.8
	5	B21	2.25	2.50	10YR4/2	LS			2.75	5.6	5.0	8	2.80	3.00														
	6	B22	2.50	3.60	2.5Y7/4	S			3.00	5.3	5.4															3.25	5.6	6.0
								3.50	5.9	5.5	3.75															6.0	5.4	
								4.00	5.1	6.4	4.25															5.2	5.4	
7	B23	3.60	4.20	2.5Y5/6	S			4.50	5.1	2.0	10	3.80	4.00															
8	2C	4.20	5.00	2.5Y6/4	S			4.75	4.6	2.0															5.00	5.1	1.5	
								5.00	5.1	1.5															5.25	5.2	1.3	
								5.50	5.4	2.0															5.75	5.5	2.0	
9	3C	5.00	5.70	5Y6/2	S			6.00	5.9	1.2	12	4.80	5.00	S5	Ps	0.032					20	1.50	1, 9					
10	4C	5.70	6.00	5Y6/1	S			5.75	5.5	2.0														6.00	5.9	1.2		
								6.00	5.9	1.2	14	5.80	6.00									27	2.06	1, 9				
								6.00	5.9	1.2															6.00	5.9	1.2	
171	1	A11	0.00	0.20	2.5Y3/1	LS			0.10	6.1	3.5	2	0.20	0.30														
	2	A12	0.20	0.40	10YR2/1	LS			0.30	5.6	2.9														0.30	5.6	2.9	
	3	A2e	0.40	0.50	10YR8/1	S			0.60	6.1	4.8	4	0.50	0.60	S0	Ps	0.121					75	5.66	1, 9				
	4	2B2	0.50	0.60	10YR5/3	CS			0.60	6.1	4.8														0.80	6.7	4.8	
	5	3C1	0.60	0.95	10YR6/3	S			0.80	6.7	4.8	7	1.30	1.50														
	6	3C2	0.95	1.20	10YR6/2	S			1.00	6.5	1.3															1.25	6.6	1.7
									1.50	6.8	1.6															1.75	6.5	1.6
									2.00	6.5	1.7															2.25	6.3	1.6
	8	4C2	2.60	3.70	10Y5/1	S			2.50	6.4	1.4	9	2.30	2.50									58	4.35	1, 9			
									2.75	6.5	1.5															3.00	6.3	1.5
									3.25	6.6	1.9	11	3.30	3.50										58	4.35	1, 9		
									3.50	7.2	1.9																3.75	7.3
	9	5C	3.70	4.85	5Y5/1	S		SS	4.00	7.6	2.2	13	4.30	4.50														
								4.25	7.9	2.4	4.50																7.9	2.4
								4.75	7.0	1.2	5.00																7.3	4.7
								5.25	7.4	2.9	5.50																7.3	2.8
10	6C	4.85	5.80	10Y4/1	CS		SS	5.75	7.7	3.5	15	5.30	5.50									101	7.58	1, 9				
								6.00	8.3	5.8															6.25	8.3	5.9	
								6.50	8.5	5.8	18	6.80	7.00															
								6.75	8.3	5.7																7.00	8.0	5.8
								7.00	8.0	5.8																7.15	7.6	5.9
								7.15	7.6	5.9																7.15	7.6	5.9
172	1	A11	0.00	0.20	7.5YR3/1	S			0.10	4.5	2.5	2	0.20	0.30														
	2	A12	0.20	1.10	7.5YR2/1	LS			0.30	4.3	2.6														0.60	4.7	3.4	
									0.80	4.9	3.4	4	0.80	1.00														
									1.00	4.8	3.4														1.25	4.7	3.1	
									1.50	5.1	4.2														1.75	5.3	4.6	
									2.00	5.3	4.4														2.25	4.2	3.5	
	4	A3	2.30	2.50	10YR4/1	S			2.50	4.3	2.7	6	1.80	2.00														
	5	B1	2.50	2.70	10YR3/2	S			2.75	4.2	3.6															3.00	4.5	3.7
	6	B21s	2.70	3.70	7.5YR3/3	S			3.25	4.9	5.0	9	2.80	3.00														
									3.50	4.9	5.7															3.75	4.8	5.6
								4.00	5.1	2.3	4.25															5.5	1.8	
								4.50	5.5	1.9	4.75															5.3	1.4	
7	B22s	3.70	4.20	10YR3/4	S			5.00	5.4	1.5	11	3.80	4.00															
8	2C	4.20	5.30	2.5Y4/4	S			5.25	3.6	1.4															5.50	4.5	1.8	
								5.75	4.9	1.7															6.00	4.9	2.3	
								6.25	4.9	2.3															6.25	4.9	2.3	
9	3C	5.30	6.70	5Y4/3	S			6.50	4.9	2.1	15	5.80	6.00															
								6.75	4.6	2.1																7.00	4.9	2.0
								7.00	4.9	2.0																7.20	5.8	1.9
								7.20	5.8	1.9																7.20	5.8	1.9

Field Morphology Summary											Lab Sample			Action Criteria		Lab Results							
Site ID	Hor No	Horizon Name	Upp Depth (m)	Low Depth (m)	Colour	Soil Texture	Jar.	Shell	Field pH			No	Upp Depth (m)	Low Depth (m)	Depth 1st	Action Level	Action Select %S	S <sub>CR</sub>	TAA	TPA	Net Acidity	Liming Rate	Method Code
									Depth (m)	pH <sub>25</sub>	pH <sub>sox</sub>							% S	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	mol H <sup>+</sup> /l	kg CaCO <sub>3</sub> /t (SF=1.5)	
173	1	A11	0.00	0.30	10YR31	S			0.10	4.4	3.2												
	2	A12	0.30	0.50	10YR61	S			0.30	4.4	3.2	2	0.20	0.30						< 0.02			
	3	A21e	0.50	0.80	10YR71	LS			0.40	4.3	4.6												
	4	A22e	0.80	1.10	10YR62	LS			0.60	4.8	4.4												
	5	B1	1.10	1.70	10YR42	LS			0.80	4.8	4.3	5	0.90	1.10						< 0.02			
	6	2A2	1.70	2.10	10YR62	SL			1.00	4.6	4.7												
	7	2B1	2.10	2.60	10YR42	SL			1.25	4.3	3.4	7	1.80	2.00						< 0.02			
	8	2B21h	2.60	2.80	10YR42	SL			1.50	4.4	3.4												
	9	2B22h	2.80	3.10	10YR21	CS			1.75	4.7	4.5	9	2.60	2.80						< 0.02			
	10	2B23h	3.10	4.40	10YR21	SL			2.00	4.7	4.6												
									2.25	4.4	3.7												
									2.50	4.4	3.3	12	3.80	4.00						0.020	12	0.94	1, 9
									2.75	4.8	2.4												
									3.00	4.8	3.1												
									3.25	4.8	3.6												
									3.50	4.8	3.0												
									3.75	5.0	2.5												
									4.00	5.2	2.4												
									4.25	5.2	2.1												
	11	2B24h	4.40	4.50	10YR21	SL			4.50	5.2	2.0												
	12	3B21s	4.50	4.75	10YR22	SL			4.75	5.1	2.2												
	13	3B22s	4.75	5.00	10YR33	SL			5.00	5.5	3.3	15	4.80	5.00						0.023	14	1.08	1, 9
	14	3B23s	5.00	7.30	10YR34	LS			5.25	5.3	2.2												
									5.50	5.4	2.1												
									5.75	5.3	2.0												
									6.00	5.3	1.5	17	5.80	6.00						0.023	14	1.08	1, 9
									6.25	5.3	1.5												
									6.50	5.5	1.5												
									6.75	5.5	1.5												
									7.00	5.4	1.7	19	6.80	7.00	S5	Ps				0.048	30	2.25	1, 9
									7.25	5.3	1.6												
	15	4C	7.30	8.25	2.5Y44	LS			7.50	5.3	1.7												
									7.75	5.8	1.7												
									8.00	5.8	3.2	21	7.80	8.00						0.092	57	4.30	1, 9
									8.25	5.7	3.0												
	16	5C	8.25	9.50	2.5Y61	S			8.50	6.1	2.4												
									8.75	5.5	2.1												
									9.00	5.7	2.2	23	8.80	9.00						0.079	49	3.70	1, 9
									9.25	5.0	2.1												
									9.50	6.0	2.1												
	17	6C	9.50	9.70	10Y71	MC			9.70	6.7	3.5	25	9.50	9.70						0.025	16	1.17	1, 9
174	1	A1	0.00	0.30	10YR41	LS			0.10	5.4	3.9												
	2	A21e	0.30	0.60	2.5Y64	LS			0.30	5.8	5.0	2	0.20	0.30						< 0.02			
	3	2B2	0.60	0.90	10YR54	CS			0.60	4.9	4.2												
	4	3A3	0.90	1.20	10YR51	LS			0.80	4.9	4.2	4	0.70	0.90						< 0.02			
	5	3B21h	1.20	1.50	10YR21	SL			1.00	4.6	4.3												
	6	3B22h	1.50	1.70	10YR21	SL			1.25	5.8	2.0												
	7	3B23h	1.70	2.50	10YR21	LS			1.50	5.9	4.3	6	1.30	1.50	S2	PI			0.113	70	5.29	1, 9	
									1.75	6.5	3.9												
									2.00	6.6	4.2												
									2.25	6.5	4.2												
									2.50	6.6	4.1	9	2.30	2.50						0.027	17	1.26	1, 9
	8	3B24h	2.50	3.90	7.5YR2.5/3	LS			2.75	6.7	4.0												
									3.00	6.5	3.4												
									3.25	6.5	3.7												
									3.50	6.6	2.9	11	3.30	3.50						0.057	36	2.67	1, 9
									3.75	6.7	1.7												
	9	4B2h	3.90	4.10	7.5YR2.5/3	KS			4.00	6.8	2.9	12	3.90	4.10						0.152	95	7.11	1, 9
	10	5B	4.10	5.00	10YR33	LS			4.25	6.5	2.4												
									4.50	6.9	2.2	13	4.30	4.50						0.047	29	2.20	1, 9
									4.75	6.8	1.7												
									5.00	6.7	2.5												
	11	6C	5.00	6.40	2.5Y44	SL			5.25	6.8	3.4												
									5.50	6.6	3.0												
									5.75	6.6	2.8												
									6.00	6.6	2.9												
									6.25	6.7	2.5												
	12	7C	6.40	6.50	2.5Y52	SL			6.50	7.3	1.5	17	6.40	6.50						0.043	27	2.01	1, 9
	13	8C	6.50	7.20	2.5Y44	SL			6.75	6.6	4.2												
									7.00	7.3	2.3												
									7.25	7.5	1.9												
	14	9C	7.20	7.50	5Y41	SL			7.50	7.4	1.6	19	7.30	7.50						0.130	81	6.08	1, 9







