

APPENDIX 14

PRELIMINARY PHASE ONE SITE INVESTIGATION



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140 Upper Orara Road
Karangi NSW

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1 Introduction

Coffs Harbour City Council (CHCC) is planning to construct a Water Treatment Plant (WTP) at 140 Upper Orara Road Karangi NSW (the 'Site'). The WTP will be designed to treat water from Karangi Dam for use within the Coffs Harbour region. State Environmental Planning Policy (Major Projects) classifies the WTP as a 'Major Project' requiring approval from the Department of Planning prior to construction and operation in accordance with Part 3A of the Environmental Planning and Assessment Act 1979 (EP&A Act). Part 3A of the EP&A Act requires the environmental impacts of the WTP to be assessed in the form of an Environmental Assessment (EA). This Preliminary Phase 1 Site Investigation has been prepared to investigate the contamination status of the Site in accordance with the Department of Planning Director generals Requirements.

1.1 Objectives

This Preliminary Phase 1 Site Investigation has the following objectives:

- Review available site history information;
- Undertake an inspection of the site;
- Assess the need for further investigations; and
- Produce a Preliminary Phase 1 Site Investigation report in general accordance with the principals published in the National Environmental Protection (Assessment of Site Contamination) Measure (NEPM) published by the National Environmental Protection Council in 1999 and any relevant Department of Environment and Conservation (DEC) guidance.

1.2 Scope of Works

To meet the above objectives the following works were included within the scope:

- Review of available site history information including available historical land titles, development applications and aerial photographs;
- Undertake an inspection of the Site;
- Collation of data;
- Provide recommendations on the management of potential contamination (if any); and
- Preparation of this report.

2 Limitations

The findings of this report are based on the Scope of Work outlined above. The investigation was undertaken with the normal level of expertise and care exercised by

members of the environmental assessment profession. No warranties, expressed or implied are made.

Although normal standards of professional practice have been applied, the absence of hazardous or toxic materials on the Site should not be interpreted as a guarantee that such materials do not exist on the Site.

3 Site Information and Identification

Relevant site information has been provided in *Table 1*.

Table 1: Site Information and Identification

Site Address	140 Upper Orara Road Karangi NSW
Lot and DP	Lot 2 DP 1083920
Site Location	Refer to <i>Annex A, Figure 1 Site Location Plan</i>
Site Plan	Refer to <i>Annex A, Figure 2 Site Plan</i>
Zoning	Rural 1A (Agricultural) with northern section (along the Orara River) being Environmental Protection 7A Habitat and Catchment under the <i>Coffs Harbour City Local Environmental Plan 2000</i> .
Property Owner	CHCC
Current Use	Unoccupied since CHCC purchase (2006). Prior to CHCC purchase the site had been used as a rural residential property.
Future Use	Part Site to be used to treat water from the nearby Karangi Dam for drinking water use. <i>Annex A, Figure 3</i> shows the proposed WTP layout.
Distance to Environmentally Sensitive Areas	Orara River adjacent to northwestern corner. Tertiary koala habitat adjacent to southwestern corner.
Distance to Nearest CBD	Approximately 8 km (Coffs Harbour)

4 Site History

4.1 General

The Site formed part of a larger 500 acre area, which was granted to Patrick O'Neil in 1889. The larger area was farmed (primarily grazing and dairy farming) by Patrick and his son Alf O'Neil until 1946, when Alf died and the family moved to Lismore. From 1946 to 1958 the property was share farmed by the Payne family before being sold in 1958 with on site milking continuing until the 1960's. (Jamison, 2006). The first available electronic land title information indicates the land was subdivided in 1986 to form the current block of land on which the site is situated (Department of Lands, 2007).

4.2 Historical Aerial Photographs

A review of aerial photographs was undertaken from the latest available photograph and one every decade previous to the earliest available photograph. Copies of the photographs are provided as *Figures 4 to 8* in *Annex A*. *Table 2* contains a summary of visible site features and any noticeable changes and alterations to the site and surrounds.

Table 2: Review of Historical Aerial Photographs

Photograph	Comments
2000 - Colour	Site entry from Upper Orara Road. Brown discolouration of grass around south eastern corner (location of cattle yards). Old dairy shed visible to the north west of the cattle yards along with another large shed to the north of the cattle yards (shed smaller than shed present at the same location at the time of this report and described as part of the site inspection). House with sheds to the north of the house and situated to the west of the centre of the site. House and sheds appear very similar to that observed during the site inspection with the exception of the absence of the swimming pool which is currently situated on the southern side of the house. Remainder of the site is cleared and grassed with scattered mature trees and some smaller garden type vegetation around the house. Areas around the Site include Upper Orara Road and an orchard to the south, rural residential properties adjacent to the east and west, the Orara River to the north west, paddocks to the north east and a large electricity sub station to the north east.
1994 - Colour	The site is as above (2000 photograph) with the following exceptions: • Cattle yard area is visibly greener. • Unidentifiable object to the north east of the large shed (possibly the remnants of a smaller shed). • No house. The area that did contain the house in the 2000 photograph is without the garden areas and house. A pile of building materials is visible and could be the result of demolishing the previous house (visible within the 1989 photo). Areas surrounding the Site are similar to the 2000 photograph with the following exceptions: • Trees within the orchard to the south appear to have been recently planted. • The residence to the south west has additional sheds and an access track providing access to the north section of the adjacent property.
1989 - Colour	The colour photograph is of poor quality. The site appears as above (1994 photograph) with the following exceptions: • House visible. • Does not appear to be any structure to the north east of the large shed. Areas surrounding the Site are similar to the 1994 photograph with the following exceptions:

Photograph	Comments
	• No development on the area previously described as being an orchard. • General reduction in the amount of residences within the area.
1973 – Black and White	The Site appears as above with the following exceptions: • Reduction in trees around the cattle yard, house and northern section of the Site. Areas surrounding the Site are similar to the 1989 photograph with the following exceptions: • No substation to the north east. • No residences adjacent to the Site on the eastern and western sides. • More vegetation visible on the orchard site to the south. • General reduction in the amount of residences of the area.
1964 – Black and White.	Photograph is of poor quality. The Site appears very similar to the 1973 photograph and apart from clearing, there appears to be very little development of surrounding areas.

The aerial photographs indicate the Site has been used for rural and residential land uses since 1964 (the year of the earliest available aerial photograph). Structures (sheds and houses) appear to have remained at the same general locations over the time period, however the structures themselves do appear to have been demolished and / or rebuilt during that time. The potential contaminants of concern from the Site appear to be limited to that typical of a rural site with an agricultural land use such as hydrocarbons (oil and grease etc from potential servicing of farm machinery), pesticides, nutrients and asbestos (old building products and so on).

The surrounding land uses appear to have been primarily rural and residential over the reviewed time period with the exception of the nearby electricity substation. Based on the information deferred from the aerial photographs and given the time period of the orchard (post 1989) and the location of the substation (being topographically below the Site) it is considered unlikely that the site would have historically been subjected to off site sources of contamination.

4.3 Coffs Harbour City Council Records

A search of the CHCC Property File for the Site was undertaken to obtain information on the historical development and building applications as well obtaining the current planning certificate under section 149(2) Environmental Planning and Assessment Act. The results of the search are summarized in *Table 3*.

Table 3: Summary of Available Coffs Harbour City Council Records

Year	Record	Comment
1994	Building Application	Application to relocate dwelling
2002	Development Application	Installation of farm shed
2004	Development Application	Install a wall in shed for toilet and shower
2006	s149 certificate	• A copy of the s149 Certificate has

Year	Record	Comment
		been included in <i>Annex B</i>. • Confirms zoning (<i>Table 1, Section 3</i>). • No matters relevant to the Contaminated Lands Management Act 1997.
2006	Coffs Harbour City Council Local Environmental Plan, 2000. Part 4, Clause 23.	Acid Sulphate Soil (ASS) Mapping indicates the site has no recognized issues with respect to potential ASS problems. Based on the maps, no further investigation into ASS is required.

4.4 Department of Primary Industries – Cattle Dip Records

The Department of Primary Industries (DPI) maintains a register of known historical Cattle Dip Sites in NSW. A search of the register identified four dip sites in the CHCC local government area, with the closest dip site being at Coramba approximately four kilometers to the north. Based on the available DPI information potential contamination from historical cattle dip sites is considered unlikely.

5 Chronological Summary

Table 4 provides a chronological summary of past Site uses based on the available Site history.

Table 4: Chronological Summary

Period	Owner / Occupier	Land Use	Comments
1889 - 1946	Patrick and Alf O'Neil	Dairy Cattle	Potential for inorganic chemicals from pesticides (insecticides, wood preservatives and so on).
1946 - 58	Payne family	Dairy Cattle	Potential for inorganic and organic chemicals from pesticides (insecticides, wood preservatives and so on) and hydrocarbon use.
1958 – mid 60's	Not known	Dairy Cattle	As above
Mid 1960's - 1986	Not known	Rural	Potential for asbestos, inorganic and organic chemicals from pesticides (insecticides, wood preservatives and so on) and hydrocarbon use.
1986	Not known	Rural Residential	Subdivision on title

Period	Owner / Occupier	Land Use	Comments
1986	Various	Rural Residential	Potential for asbestos from demolition of shed and house during time period.
1991	Not known	Rural Residential	Transfer of ownership on title
1994	Gwynneth Helen Harrison	Rural Residential	Transfer of ownership on title
2004	NA	Rural Residential	Easement adjustment on deposited plan.
2005	NA	Rural Residential	Acquisition noted on deposited plan.
2006	CHCC	NA	Transfer of ownership on title.

6 Local Geology and Hydrogeology

The Site is underlain by the Coramba Beds, which comprise greywacke, slate and siliceous argillite (GHD, 2006). The soil characteristics of the southern (elevated) section of the Site ('Megan' soil landscape group) and the northern (low lying) portion ('Dairyville' soil landscape group) are described as follows (Milford, 1999 and GHD, 2006):

'Megan' soil landscape group:

- Brownish black earthy loam topsoil, 0.25 – 0.45 metres below ground level (mbgl).
- Reddish brown to orange silty clay to silty light clay, depth range from 5.3 – 12.35 metres below topsoil.
- Weathered rock (mudstone and siltstone) to base of investigation bore holes.

'Dairyville' soil landscape group (geotechnical investigation did not extend to the low lying portions as WTP construction is proposed for the elevated section of the Site) in general consist of dark brown to brown pedal silty clay loams.

Groundwater was encountered in one of 15 test pits and bore holes during the GHD geotechnical investigation at 7.4 mbgl.

7 Site Inspection

A site inspection was undertaken on 21st December 2006. At the time of the inspection the Site was described as a rural property fronting Upper Orara Road and backing onto the Orara River. The property consisted of:

- A cattle stockyard area;
- A large shed with a separate garage on the eastern side
- Footprint of a previous smaller shed noticeable on the eastern side of the large shed and garage;
- An old dairy shed;
- The main residence;

- Small sheds to the rear of the main residence;
- A small enclosed pump station adjacent to the Orara River; and
- Various fenced yard areas (likely to have been grazing paddocks).

Observations made during the site inspection are outlined in *Table 5*.

Table 5: Site Inspection

Area	Comment
Site Photographs	A selection of Site photographs has been provided in <i>Annex C, Site Photographs</i> .
General Site	The Site is well grassed and with the exception of areas recently sprayed with 'round-up' herbicide by CHCC and the foot print of a building adjacent to the large shed and garage there was no visible signs of plant stress. Two stockpiles of mulch material (one near the Site entrance and another to the west of the residence) and a pile of scrap wood (to the north of the large shed) were noted during the inspection. Three water tanks were noted to the north of the large shed area, two water tanks noted to the north of the residence and one septic tank noted on the eastern side of the small shed to the rear of the residence.
Stockyard	Consists of a system of old timber fences within the paddock at the southern section of the site fronting Upper Orara Road.
Large shed and garage	The shed was clad in colourbond type material with colourbond / corrugated iron roofing and concrete slab floor. The shed was separated into three compartments. The interior of the western two compartments of the shed being in good condition with the most recent use likely to have been a 'Granny Flat' with a separate bathroom and toilet area, curtains, makeshift kitchen and bedroom visible. The eastern section is separated from the main shed and likely to have been constructed at an earlier time. Constructed of similar material with colourbond cladding on three sides and the roof, corrugated iron cladding on the western side and concrete slab floor. The shed is likely to have been a car garage at some stage and had more recently been used for storage. At the time of the inspection the shed was in good condition with no major cracking on the concrete slab and only minor staining visible. Small pieces of cement fibre material (potentially containing asbestos) were visible on the bench during the inspection. The foot print of an old structure was visible on the ground adjacent to the eastern side of the shed. At the time of the inspection the grass had not completely covered the foot print (refer to <i>Annex C, Site Photographs</i>)
Old dairy shed	The old dairy shed is a timber framed and timber clad structure with a galvanized iron roof and concrete slab floor. The shed appeared to have more recently been used for storage.

Area	Comment
Main residence	The main residence is clad in cement fibre material (potentially containing asbestos) with a colourbond / corrugated iron roof. The residence contained two bedrooms, bathroom, laundry, kitchen and living areas. The wet areas (kitchen, bathroom and laundry) appeared to have contained cement fibre walls with the remainder of the residence appearing to have a masonite type wall. There are three small sheds to the rear of the main house, with the two smaller sheds previously being used to house chickens and store wood. The larger shed was used to store garden equipment and chemicals (5L oil, 20 L roundup, 25 L floor cleaner and paint visible during the inspection) and potentially vehicle storage and maintenance (an old motor bike being present and some oil staining being visible during the inspection).
Pump station	A small pump station containing a small petrol powered pump was located at the northern edge of the site adjacent to the Orara River. The pump inlet was positioned in the river with the outlet directed via buried pipes to the south (in the general direction of the house)

The Site inspection indicated the Site has potential for some minor isolated contamination from sources typical of a rural / agricultural / residential land use such as asbestos, household chemicals and hydrocarbons.

8 Potential Areas and Contaminants of Concern

The potential contaminants of concern included the following:

- Potential asbestos waste from the demolition of sheds and house;
- Potential inorganic and organic pesticide use such as arsenic based compounds and organochlorine pesticides respectively. Organochlorine pesticides (OCPs such as dieldrin, DDT and so on) were introduced into Australia in the 1940's and used up until around 1987 whereas inorganic pesticides (primarily arsenic based compounds) tended to be used up until the introduction of OCPs.
- Potential hydrocarbon contamination from the servicing, maintenance and use of farm machinery. Considering that there is no evidence of the mass storage of fuels and / or oils on site it would be unlikely that hydrocarbons would be effecting large areas or present at any significant level.

Areas potentially affected by the above contaminants of concern include:

- Areas that have contained timber structures that may have historically been treated to prevent insect damage (termites etc) such as the old dairy shed, location of the previous house, timber fencing and so on.
- Areas where farm machinery has historically been serviced such as garages, car ports, sheds and so on.
- Areas where structures potentially containing asbestos have been demolished.

- Areas where waste (demolition waste, general agricultural waste and so on) may have been disposed of within the Site.

9 Conclusions and Recommendations

This Preliminary Phase 1 Site Investigation has been prepared to investigate the potential for 140 Upper Orara Road to be impacted by contamination and provide recommendations on how any potential for Site contamination should be managed during the construction and operation of the WTP.

The Site had been used from 1889 to 1986 for rural agricultural uses with the primarily use being dairy industry. As there is no evidence to suggest otherwise, the land use during this time period triggers the potential for the Site to be impacted from chemicals including pesticides and hydrocarbons. In 1986 the Site was subdivided and it has been assumed that at this stage the agricultural use changed to a more rural residential type use that continued from 1986 to 2006 when the Site was taken over by CHCC. During the latter period the historical review indicates that certain Site structures have been demolished and a house transported to the Site. These activities are considered to have the potential for onsite asbestos impact with observations made during the Site inspection indicating that cement fibre sheeting (potentially containing asbestos) was present on the Site.

Although no intrusive investigations and sampling was undertaken to confirm or deny any impact, the potential for impact is consistent with a typical agricultural land use and is not considered to be a constraint to the construction and operation of the WTP.

It is recommended that removal works involving material potentially containing asbestos be carried out in accordance with the Occupational Health and Safety Regulations (2001) and the Code of Practice for the Safe Removal of Asbestos (NOHSC, 2002(2005)). To validate the removal process, surface soil samples should be collected from around the locations of the former sheds and houses for asbestos analysis and additionally hydrocarbon analysis (where appropriate).

10 References

- Department of Lands, January 2007. *Land and Property Information New South Wales – Historical Search*.
- GHD Pty Ltd, December 2006. *‘Coffs Harbour Water Treatment Plant Report on Geotechnical Investigation’*.
- Jamison Architects Pty Ltd, October 2006. *‘Statement of Heritage Significance for Dairy Bails at ‘Avondale’ 140 Upper Orara Road, Karangi NSW 2450’*.
- Milford, H.B, 1999. *‘The Soil Landscapes of the Coffs Harbour 1:100000 Sheet’*. Department of Land and Water Conservation.
- National Environmental Protection Council, 1999. *National Environmental Protection (Assessment of Site Contamination) Measure*.

Annex A

Figures

Annex B

Section 149 Certificate

Annex C

Site Photographs



Photograph 1: Cattle Stockyard – looking north east.



Photograph 2: Interior of large shed – looking north towards kitchen and bathroom.



Photograph 3: Interior of garage / shed adjacent to large shed – looking south.



Photograph 4: Small piece of cement fibre sheeting potentially containing asbestos within garage / shed adjacent to large shed.



Photograph 5: Earth adjacent to garage / shed that appears to be old foot print of previous shed structure.



Photograph 6: Northern exterior of house with cement fibre cladding on exterior walls and eaves.



Photograph 7: Interior of house, 'wet area' walls consisting of cement fibre sheeting.



Photograph 8: Interior shed at the rear (north) of the house. Note presence of household type and quantity chemicals.



Photograph 9: Interior of small pump station adjacent to Orara River.



Photograph 10: Pile of scrap wood to the north of the large shed.



Photograph 11: Site looking south from large shed with cattle stockyard in background.



Photograph 12: Site paddock looking north from the large shed.