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Coffs Harbour Highway Planning Coffs Harbour Section

Geotechnical Desk Study and Field Mapping Report Working Paper No 3

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1. Introduction

As part of the Coffs Harbour Highway Planning Strategy Connell Wagner have been requested by the Roads and Traffic Authority, Pacific Highway Office to undertake a desk top geotechnical study for the upgrading of the Pacific Highway at Coffs Harbour. The section of highway of concern for this study runs from Englands Road, Sawtell through Coffs Harbour to just south of Sapphire (see Figures 1 and 2). The aim of this report is to provide geotechnical input in to the current planning strategy study.

Connell Wagner have been requested to examine the following two route options:

- 1. Pacific Highway Upgrade Option this option follows the alignment of the existing highway.
- 2. **Inner Option** this option bypasses the main residential area of Coffs Harbour to the west and follows the lower slopes of the Great Dividing Range.

The boundaries of the two corridor options are clearly shown on Figure 1 at the end of this report.



2. Method of Investigation

This investigation has been undertaken in two phases. Firstly a desktop study was undertaken to identify the main geotechnical constraints associated with the study area. This was then complimented by a field mapping exercise which aimed to 'ground proof' the information collected during the desktop study and to produce a geotechnical terrain map of the study area.

2.1 Desk Top Study

A desk study of available geotechnical information was compiled from the following sources:

- Review of existing geological and topographic data including topographic, geological and metallogenic study and mine data sheets and air photos.
- Discussions with the NSW Department of Environment and Conservation (DEC) and Coffs Harbour City Council regarding registration of contaminated sites and potentially contaminating activities within the study area.
- Discussions with the NSW Department of Infrastructure, Planning and Natural Resources (DIPNR) regarding soil landscape and acid sulphate soil risk mapping of the area.
- Search of the NSW Department of Mineral Resources database for extractive resource licences/permits and availability of construction materials.
- Consultation with local geotechnical consultant Holmes and Holmes Pty Ltd to provide local knowledge of the area.
- Contact with Coffs Harbour City Council to provide information on Council operated construction material resources and potentially contaminated public utilities locations such as landfill sites.
- Land use mapping sourced from NSW Agriculture as well as information regarding potential contaminants associated with landuse types.

2.2 Field Geological and Terrain Mapping

Field geological and terrain mapping was undertaken by a senior geotechnical engineer over a three day period from 12 to 14 June 2002. The work involved inspection of the study area and mapping of significant features such as the cuttings along the existing highway, other road cuttings, quarry faces, and natural outcrops. A total of 18 exposures were mapped and photographed. A ground proofing exercise was also undertaken with regard to topography, drainage features, floodplains and back-swamps etc.



3. Results of Desk Study

In addition to the desk study information presented in sections 3.1 to 3.7 below, a Coffs Harbour based geotechnical engineering consultant was engaged by Connell Wagner to provide a separate desk study report based on their local knowledge of the study area. The report by Holmes and Holmes Pty Ltd is presented in Appendix F. Due to the limited amount of large scale geotechnical works undertaken in the area the majority of their experience comes from residential and small scale developments. They have also undertaken a significant number of contamination assessment investigations throughout the study area, the locations of the contamination tests presented in their report are marked on Figure 8.

3.1 Topography and Landuse

Figures 1 and 2 show the topography and relief of the study area. As an initial attempt to split the study area up into different terrain units it would appear from the desk study of the topographic maps and air photos that the area can roughly be divided into two topographic zones by the 50m contour as shown on Figure 1. For this study the area above the 50m contour has been referred to as the Hillside area and the area below the 50m contour is referred to as the Lowland area. It is noted that the geology (refer to Section 3.3 below), also divides the study area into two similar areas however the geology more closely follows the 10m contour.

Hillside areas

The topography of the hillside areas is characterised by steep slopes and ridges which rise up to approximately 150-250m AHD. Major ridge lines project from the Great Dividing Range such as the obvious ridge to the south of Coramba that ends as Roberts Hill. Numerous drainage channels, that typically flow east to the lowland area, incise the hillside area.

Lowland areas

The topography of the Lowland areas is characterised by low undulating residual hills with gentle gradients and alluvial floodplains including backswamps and dunes. Coffs Creek and Newports Creek are the main creeks that cross the area from the upland area in the west to the sea.

The attached Figure 4 shows the Current Best Land Usage (1979), this information has been sourced from NSW Agriculture, Wollongbar Agricultural Institute. The landuse classes indicated on the legend for Figure 4 refer to the following:

- B1 First class banana land
- B2 Second class banana land
- B3 Third class banana land
- B4 Fourth class banana land
- V1 First class vegetable & citrus land
- V2 Second class vegetable & citrus land
- V3 Third class vegetable & citrus land

The majority of the land available for agriculture is rated as second class vegetable and citrus land with isolated areas of second and third class banana cultivating land. The majority of the remainder of the study area to the west and north of the agricultural land is currently part of the Orara East State forest.

3.2 Regional Geology

The NSW Department of Mineral Resources, Undated, 1 : 100,000, Geological Series Sheet SH 56 – 11 of Coffs Harbour and the NSW Department of Mineral Resources, 1992, 1 : 250,000, Metallogenic Study and Mineral Deposit Data Sheets SH 56/-10 & SH/56 –11 of Dorrigo – Coffs Harbour indicates the Coffs Harbour –Dorrigo area is subdivided into three main metamorphic rock units of Late



Carboniferous age (the 1:100,000 geological sheet has been used to compile the Geology of the study area shown on Figure 3). From north to south this includes the Coramba Beds, Brooklana Formation, and the Moonbil Siltstone.

The regional metamorphic grade increases from north to south. The rock types vary from lower grade feldspathic wackes in the north to higher grade argillites and black siltstones in the south. The Coramba Beds overly the Brooklana Formation and both are strongly folded and faulted.

The study area is shown on the Coffs Harbour 1:100,000 geological sheet to lie within three geological units. The primary units are the Coramba and Brooklana Beds.

The Coramba Beds comprise metamorphosed sedimentary rocks including lithic and feldspathic sandstone, minor siltstone, siliceous siltstone, mudstone, metabasalt, chert, jasper, rare calcareous siltstone and felsic volcanic rocks. The Coramba Beds are further subdivided into the quartz poor to quartz intermediate volcanic feldsathic sandstone that is found dominantly from Sapphire to the Great Northern Railway line and a zone of quartz-poor to quartz intermediate volcanic feldsathic sandstone underlying much of Coffs Harbour Central Business District (CBD). To the south and west of the Coffs Harbour CBD the area is underlain by the Brooklana Beds, which are undifferentiated

The Brooklana Beds comprise thin bedded siliceous mudstone and siltstone with rare lithic sandstone, locally chert, jasper, magnetite bearing chert and metabasalt.

The third unit consists mostly of alluvial and estuarine deposits, termed Quaternary Alluvium, that have been further defined as 'outwash alluvium and stream alluvium' and 'sand swamps and sand plains'. The quaternary alluvial deposits extend up to 4km to the west of the coastline along the existing Coffs and Newport Creek drainage paths, but are most widespread to the east of the study area associated with swamps and back-barrier beach zones.

The geology of the study area is shown on Figure 3. The lithology noted for the Brooklana Beds, Coramba beds and Quaternary deposits (Q) on the geological map are described below:

- Qad Frontal dunes
- Qas Sand, swamps and sand plains
- Qal Outwash alluvium and stream alluvium.
- Clhb Brooklana Beds (Undifferentiated)
- Chlc Coramba Beds (Undifferentiated)
- Clhca Quartz poor volcanic lithic sandstone
- Clhcb Quartz poor to quartz intermediate volcanic feldsathic sandstone
- Clhcc Hornblende bearing quartz poor to quartz intermediate volcanic sandstone

The Coffs Harbour block has also been intruded by several igneous plutons including the small Emerald Beach Ademellite located at Diggers Point and Look-At-Me-Now Headland. It is composed of medium-grained biotite monzogranite of Middle Triassic age, and features a contact aureole of biotite hornfels where it intersects the Coramba Beds.

3.3 Soil Landscapes

The Coffs Harbour 1:100,000 Soil Landscape Series Sheet 9537 has been used to obtain soil data information on the study area. A detailed summary of the soil profiles associated with each landscape grouping is incorporated in Appendix A. Table 3.3.1 presents a summary of the soil limitations for each soil material and Table 3.3.2 summarises the Landscape limitations for each soil landscape from within the study area. Both tables have been extracted directly from the Soils Landscape Report by Milford H



B (1999) which accompanies the Coffs Harbour 1:100,000 Soil Landscape Series Sheet 9537. The location and distribution of the soil profiles is shown in Figure 5.

Suicide (su)

Suicide is associated with steep hills from 33% to 56% and dissected valleys on late carboniferous metasediments. The soil is of a colluvial origin and is generally in excess of 1.0m thick. The main concern with this soil formation is stability of the steep colluvial slopes. Low wet strength, the steepness of the slopes and the potential for instability are of a concern for any proposed foundations (eg embankments) and cuttings. Suicide is typically only moderately erodible.

Megan (me)

Megan is probably as wide spread across the study area as the suicide formation. Megan is typically found on rolling hills to hills on late carboniferous metasediments. Slopes are typically 5-20% and occasionally up to 33%. The soils are typically of hillwash or residual origin comprising silty clays and major slope stability problems are rare except on locally steep slopes. The soils are generally in excess of 1.0m thick, posses low wet strengths and is high to very highly erodible.

Ulong (ul)

Ulong is similar in nature and is associated with similar land forms as Megan. If anything Ulong is found on slightly flatter relief than Megan ie undulating to rolling hills as opposed to rolling hills. As with Megan the soil is characterised by low wet strength silty clays generally greater than 1.0m thick, however Ulong is only moderately erodible.

Moonee (mo)

Moonee is not very widespread across the study area and is associated with footslopes and drainage plains. Slopes with Moonee soils are typically only 3% to 5% and below 20m elevation. The main concerns with this soil are permanently high water tables and seasonal waterlogging. Moonee is highly erodible and most likely compressible, it is likely to cause settlement problems for fill embankments and culvert structures founded on the soil.

Coffs Creek (cc) and Dairyville (da)

These soils are found along the creek alignments and are associated with the creek floodplains. Dairyville is only found on the upper reaches of the creek and is unlikely to influence the project. Coffs Creek is found on the mid to lower reaches of the Coffs and Newport Creeks and will influence fill embankments and culverts associated with creek crossings. Coffs Creek is typified by deep (greater than 1.5m deep) poorly drained, alluvial gravels, sands, silts and clays. The areas are often waterlogged and have permanently high water tables.

Newports Creek (np)

This soil landscape is concentrated on the low lying level floodplain areas adjacent to the existing Pacific Highway. The soil is characterised by up to 1.0m of clayey silty alluvium overlying grey estuarine clays. The Newport Creek soil is extremely erodible, highly compressible and possesses low subgrade CBR's. Fairly extensive subgrade treatment and quantities of unsuitable material should be expected along sections of the alignment underlain by this soil landscape.



	Phy	sical l	imita	tions		Erc	osion		Perm	eability			Toxicitie	es		Fei	rtility
	High plasticity	low wet strength	Shrink-swell	Organic matter	Stoniness	Sodicity/dispersiblity	Erodibility	Hardsetting surface	High permeability	Low permeability	Acid sulphate soil	Acidity	Alkalinity	Salinity	Aluminium toxicity	Low fertility	Low available water cap.
Coffs Creek cc1 cc2 cc3 cc4 cc5 cc6 cc7 cc8			* * * *		*					* * *		□ ◆ □		□ ◆ •	* * *		
Dairyville da1 da2 da3 da4 da5 da6		* * * *		◆□			* * *					* * *			* * *	*	
Megan me1 me2 me3 me4 me5	•	* * *		•			* * *	٥		*		* * *			* * *	* * *	
Moonee mo1 mo2 mo3		* *				•	*			* *		* *			*	* *	
np1 np2 np3 np4 np5		* * *		•		•	* * *	٥		* * *		* * *		•	* * *	* * *	
Suicide su1 su2 su3 su4		* * *		*					*	*		•				* *	
Ulona ul1 ul2 ul3 ul4 ul5 ul6		* * * *		•			•	•	•	•		* * * *		□ ◆ □		*	
Kev	♦	Wide	espre	ad O	ccurr	ence ce					<u> </u>	<u> </u>	I	<u> </u>	<u> </u>	<u> </u>	<u> </u>

Table 3.3.1: Soil Limitations for each Soil Material



	Slop	oe Stal	oility		D	rainag	je			rosio	n		Soil		
	Steep Slopes	Mass Movement Hazards	Rockfall Hazard	Flood Hazard	Waterlogging	Permanently high water tables	Seasonal Waterlogging	High run-on	Water erosion Hazard	Wind erosion Hazard	Wave erosion Hazard	Shallow Soils	Non-cohesive soils	Foundation Hazard	Rock outcrop
Coffs Creek						٠	٠								
Dairyville									•						
Megan									٥					٥	
Moonee							٠		٥					•	
Newports Creek				٠			٠							•	
Suicide	٠	٠						٠	•					•	
Ulong														•	
Кеу	•	Widespread Occurrence													
		Local	ised O	ccurre	nce										

Table 3.3.2: Landscape Limitations for Each Soil Landscape

3.4 Acid Sulphate Soils

DIPNR was contacted to obtain the latest editions of the relevant Acid Sulphate Soils Risk Maps for the study area. The Coffs Harbour (Ref 9537N3 rev 2) map was used to compile an acid sulphate soils map for the study area, which is presented in Figure 6.

The acid sulphate soil risk map indicates that low risk and minor areas of high risk can be found within the study area. The acid sulphate soils are typically associated with soils below 5m AHD and hence are restricted to the low lying coastal areas.

In the study area acid sulphate soils are concentrated along the existing Pacific Highway Option. In general the soils are classified as low risk acid sulphate soil potential with the exception of minor areas north of Korora and adjacent to the Great Northern Railway line which are noted as high risk.

3.5 Groundwater Bores

DIPNR was contacted with regard to their database of existing water bores located within the study area. This data was utilised to produce the location plan for the water bores, Figure 7 (note not all supplied bores were within the study area, some fall outside the plan area and are not marked). A full set of the groundwater bore information received from DIPNR is contained in Appendix B; a summary table of the data is contained at the beginning of Appendix B.

The DIPNR data base shows that groundwater yields from bores in the Coffs Harbour area are generally less than 1.0 litre per second (I/s) and the majority of the water bearing zones are within the fractured bedrock. The exception to this are the bores within the alluvial deposits to the east of the existing highway alignment where shallow bores in sands and gravels produce yields as high at 22.0I/s. It should be noted that the accuracy of the geological descriptions (provided by the water bore drillers) is questionable at times, particularly with reference to the records of Basalt that are more likely to be siliceous argillite. However the depth of the soil rock interface is more likely to have been recorded accurately and hence this is considered to give a reasonable indication of the expected soil cover within the study area.



DIPNR also supplied a copy of the Coffs Harbour Local Government Area (CHLGA) Groundwater Status Report and Map Notes which is included in Appendix C. Deep cuttings along the Inner Option alignment may affect the local groundwater regime by causing a local draw down affect. The Groundwater Status Report makes the following important comments that should be considered at cutting locations due to the potential risk of adversely affecting existing bores due to draw down of the water table caused by excavating the cutting close to existing groundwater bores:

'In the CHLGA, groundwater occurs in all the rock formations to varying degrees with the greatest supplies being encountered in the more highly fractured and structurally deformed Carboniferous rocks. Generally the deeper a bore is drilled the more water bearing zones are intersected, thus slight increase in yields are likely to be obtained by deeper bores. At present, most groundwater pumpage in the fractured rocks and alluvium is from shallow aquifer zones less than 30m from the surface.'

'The metamorphic rocks of Coffs Harbour Block are typically thought to have a low porosity as they are principally composed of fine grained sedimentary material that have undergone low grade metamorphism forming interlocking crystals. The tectonic stresses exerted on the CHLGA during structural deformation have caused folding and faulting increasing the porosity of the rocks. Physical and chemical weathering can also increase the rock porosity and the weathering is often more intense along the fracture surface where a plane of weakness exists. It can therefore be difficult to definitively class the groundwater potential of these rocks as the recorded bore yields can change considerably over short distances.'

3.6 Mineral Resources and Construction Materials

The NSW Department of Mineral Resources were contacted with regard to performing a search of their databases for existing mineral exploration licenses, mining leases, quarries and borehole information that may be located within the study area.

The results of the search revealed two current mining titles in the area surrounding the main study area. The location of the mining claims are shown on Figure 7. The two mining claims are adjoining mining claims, with the current title identifications MC-242-1992 and MC-243-1992. They are located close to the existing highway alignment just north of Korora. The titles cover the exploration and mining of the minerals: antimony, arsenic, barytes, bismuth, cadmium, chromite and cobalt, over approximately 6.25 hectares. The NSW Department of Mineral Resources did not indicate any proposed or pending leases within either route corridor.

The results of the search for locally operating pits and quarries in and around the study area are detailed in Table 3.6.1. The locations of the pits and quarries with respect to the study area are presented in Figure 7. No laboratory test information could be sourced for materials from the currently operating quarries in the Coffs Harbour area, however laboratory test results have been sourced for materials produced by Woolgoolga Quarry. The lab results show that the argiillite material generally conforms to the RTA specification for DGB 40 and discussions with the testing lab indicate that DGB 20 can also be produced from the quarry. However in both cases the C ratio tends to be a little high and it is necessary to blend sand with the product to ensure conformance with the RTA specifications. The lab results also indicate that the material is suitable as an aggregate for concrete according to AS 2758.1 1998. It is expected that the material produced from the quarries indicating argillite rock will be similar to those quarried at Woolgoolga.

Materials won from cuttings are expected to be suitable for re-use as general fill material but may require stabilisation in order to achieve the select material requirements. It is possible that material won from deeper cuttings in argillite will be suitable as pavement materials.



Table 3.6.1: Pits and Quarries within Study area

Figure 7	Name	Host rock type	Main commodity	Development	Operating	S117	Company
Reference							
1	Bradley park Site	Sand?	Unprocessed construction materials	Prospect	No	No	
2	Coffs Creek	Alluvium	Sand – construction	Naturally Rehabilitated?	NK	No	
3	Boambee Creek Sand Pit	Alluvium	Sand – construction	Naturally Rehabilitated	NK	No	
4	Boambee, Coffs Harbour	Alluvium	Sand – construction	Intermittent harvesting	Yes	Yes	WJ & K R Golden
5	Macauleys Beach Sand and	Alluvium	Sand/gravel – undifferentiated	Naturally Rehabilitated	NK	No	
	Gravel Deposit						
6	End Peak Quarry	Argillite	Coarse aggregate – armour stone	Quarry	Intermittent	Yes	SRA of NSW
7	South Coffs Island Quarry	Argillite	Coarse aggregate – armour stone	Abandoned quarry	No	No	
8	North Boambee Quarry	Argillite	Coarse aggregate – hard rock	Quarry	Yes	Yes	CSR Limited
							(Sawtell)
9	Bonville Quarry	Argillite	Coarse aggregate – hard rock	Quarry	No	Yes	RTA (Port
							Macquarie)
10	Landrigans Quarry	Argillite	Coarse aggregate – shale	Small pit?	Yes	Yes	Kerita Holdings
							Pty Limited ?
11	Lucas Quarry, Coffs Harbour	Argillite	Coarse aggregate – shale	Small pit?	Yes	Yes	Boral
12	Ryans Pit	Argillite	Unprocessed construction materials	Naturally Rehabilitated	NK	No	
13	Wills Pit	Argillite	Unprocessed construction materials	Naturally Rehabilitated	No	Yes	
14	Park Beach North	Beach sand	Sand – construction	Naturally Rehabilitated	NK	No	
15	Park Beach Central	Beach sand	Sand – construction	Naturally Rehabilitated	NK	No	
16	Boambee Beach	Beach sand	Sand – construction	Prospect?	NK	Yes	



Figure 7	Name	Host rock type	Main commodity	Development	Operating	S117	Company
Reference							
17	Pine Brush	Gravel and sand	Decorative aggregate – gravel	Old pit?	No	No	
18		Metasediments	Coarse aggregate – armour stone	Old pit?	NK	No	
19		Metasediments – argillite	Unprocessed construction materials	Quarry	NK	No	
20		Metasediments – argillite	Unprocessed construction materials	Old pit?	NK	No	
21	Red Hill Hard Rock Quarry	Metasediments – argillite	Unprocessed construction materials	Quarry	Yes	No	Boral
22		Metasediments – argillite	Unprocessed construction materials	Old pit?	NK	No	
23	Highway Gravel	Shale	Unprocessed construction materials	Old pit?	NK	No	
24	Grants Quarry	Shale	Unprocessed construction materials	Old pit?	NK	No	
25	Rubbish Tip Quarry	Shale	Unprocessed construction materials	Old pit?	NK	No	

S117- Section 117, indicates whether or not the resource is protected from development encroaching on the area (ie restriction on the proximity of housing etc). NK- Not Known

? - Data possibly unreliable



3.7 Soil Contamination

The DEC in Grafton and Coffs Harbour City Council were contacted regarding 'known' groundwater and soil contamination in and around the study area. Both the DEC and Coffs Harbour City Council indicated that no contaminated soils or groundwater were either identified, or recorded, in their databases.

NSW Agriculture was also contacted with regard to known areas of soil contamination associated with cattle tick dip sites and/or banana plantations. The results indicated that no known occurrences of soil contamination had been identified as a result of the banana plantations located within the study area. The search of cattle tick dip sites revealed one cattle tick dip site located off Albany Street in Coffs Harbour. However, this site is not within the currently considered route corridors. All the other cattle tick dip site where located at least 10kms from both route options and have been ignored for the purposes of this study. The location of the cattle tick dip site in marked on Figure 8.

As part of the desktop study Holmes and Holmes Pty Ltd, a local consultant was engaged to provide input based on their local knowledge. Holmes and Holmes have undertaken numerous contamination assessments in the area. The results of their investigations are provided below and the locations of the tests are shown on Figure 8. The assessment criteria adopted are the health based investigation levels 'NEHF D and NEHF E' as defined by the National Environmental Health Forum (NSW EPA 1998).

Figure 8 Location Number	Arsenic (mg/kg)	Lead (mg/kg)	Organo- chlorides (mg/kg)	Remarks
1	17	11	0.01	4 pt composites
2	9.9	12	0.01	4 pt composites
8	5.5	19	<0.02	5 pt composites
9	26	24	<0.02	5 pt composites
10	7.5	29	<0.02	5 pt composites
16	12	20	0.14	4 pt composites
17	39	30	0.96	4 pt composites
18	29	35	0.12	4 pt composites
26	6	16	<0.02	5 pt composites
32	78	21	0.06	individual
35	175	66	0.11	individual
37	42	33	0.26	4 pt composites
41	nt	nt	0.08	5 pt composites
49	92	41	0.26	4 pt composites and individuals
51	13	14	<0.02	4 pt composites
54	170	34	0.35	4 pt composites
55	54	25	0.11	individual

Table 3.7.1: Results of Contamination testing Undertaken by Holmes and Holmes Pty Ltd

	Assessment Criteria (mg/kg)						
	Arsenic	Lead	OC's				
NEHF D	400	1200	40				
NEHF E	200	600	20				

Note number are not consecutive as test locations outside the study area have been ignored NEHF D Residential with minimal access to soil



NEHF E	Parks and recreational open space, playing fields
ESV	Ecological Screening Value
nt	Not tested

These results indicate that all the samples tested are below the lowest acceptance criteria and it is therefore expected that there will be a low probability of large scale contamination within the study area.



4. Results of Field Geological and Terrain Mapping

Interpretation of the topography at desk study stage indicated two distinct terrain units namely the Hillside area and the Lowlands area. However, the geological and terrain mapping fieldwork exercise identified an additional terrain unit of alluvial material within the Lowlands area. The field mapping was also able to ground proof and adjust terrain boundaries as appropriate. The terrain names were then adjusted to better represent the findings of the field mapping exercise. The field mapping identified three terrain units namely:

- Steep slopes, ridges and upland areas Residual
- Undulating footslopes Residual
- Alluvial floodplains and backswamps Alluvial

The extents of each terrain unit are presented in Figure 9 and are described in more detail in Section 5.1. Reference should also be made to the photo-interpretations of the 17 cutting/exposures, in Appendix G, that were inspected as part of the field mapping exercise. The locations of the mapped exposures can be referenced in Figure 8.

The steep slopes, ridges and uplands areas are part of the Great Dividing Range, which along this section of the coastline, extends east virtually to the coast and in places extends finger like steep ridgelines right down to the coast line often ending in rocky headlands. These ridges typically comprise highly silicified very hard argillite bedrock and are less deeply weathered than the footslope areas. Cutting 9, Red Hill Quarry is typical of the material comprising the ridges.

At the base of the main escarpment face and at the base of the finger like ridge lines are the undulating footslopes, which are typically gently undulating slopes. The undulating footslopes are more deeply weathered to silty clays and low strength completely leached argillite. Many of the cuttings along the existing highway have been made through this material. The cuttings are typically at 45 degrees and show numerous signs of erosion and fretting of the face, major slump type failures as well as wedge, planar and toppling type failures of the slightly more competent material. Cutting 1 on the Pacific Highway is a classic example of the slump type failures found in many of the cuttings in the footslope type material. No evidence of recent large scale slope instability was noted during the field mapping exercise however it is known that numerous slope failures have occurred within the colluvial slopes above Bruxner Park Road, associated with road cuttings in to the colluvium.

The alluvial floodplains are generally confined to within 1.0km of the coastline but extend inland along the more major creeks towards the escarpment face. After rain some of the low lying floodplains and backswamps have areas of surface water and are boggy underfoot.



5. Discussion

The first part of the discussion aims to assign general geotechnical characteristics to the identified terrain units. The second part of the discussion identifies a number of key geotechnical issues that may arise in the development of each of the two route corridors.

Both sections of the discussion must be viewed as preliminary and only sufficient as a general planning aid. No subsurface investigation has been undertaken on either route corridor, the only fieldwork carried out during this stage was the field mapping exercise that comprised of surface observations only. The information collected is not sufficient to provide concept design input. Hence comments on such issues as cut batters slopes and expected subgrade conditions are meant to be generalised comments. Extensive additional investigation during subsequent stages of the project development and design will be required in order to confirm and develop these general geotechnical comments/issues into the concept and detailed designs.

5.1 Terrain Unit Characteristics

The geological and terrain mapping exercise described in Section 4 identified three main terrain units, namely:

- Steep slopes ridges and upland areas Residual
- Undulating footslopes Residual
- Alluvial floodplains and backswamps Alluvial

The extent of each unit is shown on Figure 8. The expected general characteristics of each of the units are summarised in the following section.

5.1.1 Alluvial Floodplains and Backswamps

Topography

The majority of the alluvial landscape lies between RL 5 and RL10 mAHD, along and to the east of the existing highway. This area consists of flat backswamps behind the beach dunes and mainly affects the Existing Highway Corridor. The alluvial floodplains are associated with the lower reaches of Newports and Coffs Creeks that traverse the study area. The floodplains quickly recede as the topography rises steeply to the west and the alluvium becomes restricted to the creek beds.

Vegetation and Landuse

The majority of the alluvial floodplains have been developed as the CBD urban and peri-urban areas of Coffs Harbour. Other major developments on this terrain unit are the racecourse, airport and golf course.

Anticipated Subsurface Conditions

This terrain unit is expected to be characterised by a deeper soil profile with a shallow water table. During periods of high rainfall the backswamp areas that have not been developed or drained may become waterlogged and boggy and could be slow to drain.

<u>Soils</u>

The alluvial soils are expected to comprise silty clays with interbedded sand and gravel layers, overlying weathered argillite bedrock at depth. The quaternary sediments are fairly restricted in extent within the study area and are typically found in low lying areas below the 10m AHD contour along the major drainage channels of Coffs and Newport Creek. These sediments are likely to (i) comprise deep clayey soils with minor sand and (ii) be potentially compressible.



The weathering products of the Brooklana and Coramba beds are typically sandy or silty clays and high plasticity clays. Areas of low CBR strength clays can be expected as well as reactive clay mineralogy (halloysite).

Acid sulphate soils are indicated on the DIPNR risk maps in the vicinity of both Newports Creek and Coffs Creek. Typically the maps indicate a low risk of acid sulphate soils below 1.0m depth, however there are minor areas of high risk and minor areas of low risk at or close to the surface. Detailed investigation and testing of the soils will be required to verify the mapping.

Subgrade CBR values are expected to be low where clayey soils are encountered, the higher the sand content in the alluvium the higher the subgrade CBR is likely to be. The Coffs Creek soil landscape is noted as being moderately erodible, however the Newports Creek soil landscape is noted as being extremely erodible. Both soil landscapes are noted as having low wet bearing strengths.

Rock

From previous investigations around Woolgoolga we have found that the rock level is often in excess of 20m deep. The rock can be expected to be more deeply weathered than in the other terrain units.

5.1.2 Undulating Footslopes - Residual

Topography

This unit comprises the mid to lower slopes between the alluvial areas and the steep slopes associated with the Great Dividing Range scarp face and the steep ridges that protrude from the range towards the coastline. The slope grades are generally between 10 - 30%.

Vegetation and Landuse

A variety of vegetation and landuse types occur on this terrain. On the upper reaches of this unit is the start of the banana cultivation. The majority of the remainder is used either for fruit and vegetable cultivation or grazing land. Part of the urban area of Coffs Harbour also falls on this terrain unit.

Subsurface Conditions

This terrain unit is expected to comprise more deeply weathered residual soils than the other residual soil unit associated with the steep slopes and uplands. The water table can be expected to be shallow on the lower slopes towards the creeks. Within the higher reaches, the water table is likely to be deeper and probably within the bedrock profile.

<u>Soils</u>

The weathering products of the Brooklana and Coramba beds are typically sandy or silty clays and high plasticity clays, areas of low CBR strength clays can be expected as well as reactive clay mineralogy (halloysite). The soils are expected to comprise stiff to hard medium to high plasticity, silty clays overlying siliceous argillite bedrock. The DIPNR groundwater bore number 57 (Figure 7) is located on this terrain unit and indicates 13m of clay over shale (argillite) bedrock.

The subgrade CBR of this clay material is expected to be low. Moonee and Megan soil landscapes cover most of this terrain unit. The soil landscape mapping indicates that these soils are typically moderately to very highly erodible. Both are also noted as having low wet bearing strength and slopes comprising Megan soils are occasionally prone to slope instability.



Rock

The underlying bedrock is generally expected to be argillite. The upper layers of the argillite are expected to be leached and breakdown to silt in the hand or under hammer blows as revealed in many of the cuttings that were mapped. However areas of hard, dark blue grey siliceous argillite may also be encountered. The depth of weathering can be expected to be variable. Defect spacing and orientation can also be expected to be variable due to the regional folding and faulting.

5.1.3 Steep Slopes, Ridges and Uplands – Residual

Topography

The slopes and ridges of this terrain unit rise steeply from the coastal area with gradients ranging from 30% to 60%. The upland areas rise to over 250m AHD and are often deeply incised by drainage lines that flow down the scarp face of the Great Dividing Range. Major ridge lines also project from the scarp face such as the obvious ridge to the south of Coramba that ends as Roberts Hill. Deeper cuts and higher fills will be required for any sections of the road alignment within this unit, however this may have the advantage of producing more suitable construction materials and hence reduce the requirement for expensive imported materials.

Vegetation and Landuse

The majority of the steep slopes and ridges are either forested or used for banana cultivation. The bananas favour the north facing slopes that are more sheltered from the often strong southerly winds. The cultivation of bananas was anticipated to be a source of contamination within this terrain unit. However contamination testing by Holmes and Holmes within the banana plantations, did not reveal significantly elevated contamination levels at the sites tested. The upland area to the west of the Great Dividing Range scarp face is predominantly State Forest land consisting of Wedding Bells State Forest and Orara East State Forest. The forests consist of large tracts of eucalypt forests and areas of remnant rainforest.

Subsurface Conditions

The water table is only expected to be encountered at depth within the rock mass of the steep ridges, which may impact deep cuttings in this terrain unit.

<u>Soils</u>

The soils are expected to comprise stiff to hard medium to high plasticity, silty clays overlying siliceous argillite and or greywacke. The soil cover is expected to be shallow as can be seen in many of the cuttings that were mapped in this terrain unit.

The soil landscape mapping indicates that the residual soils (Megan) can be expected to be highly to very highly erodible whereas the colluvial soils (Suicide) are moderately erodible. CBR values for the residual soil can be expected to be similar to that encountered in the footslopes terrain. Localised and widespread occurrence of major slope instability can be expected in the Megan and Suicide soil landscapes respectively.

<u>Rock</u>

The siltstones mudstones and shales of the Brooklana and Coramba beds are variably weathered and often contain layers of marginally rippable siliceous argillite materials. This can present excavatability problems as well as variable founding conditions for structures. Variable weathering also creates problems with batter slopes, as typically batters have to be laid back to suit the most highly weathered materials. Currently batters along the existing Pacific Highway



show signs of instability in numerous places. The instability is generally associated with residual soil to highly weathered rock materials exposed in cuttings. The fine grained nature of the rocks means that they are generally more susceptible to slaking and durability problems. Controlling surface water run-on and cut face treatment are likely fairly extensive.

The steeply dipping, folded and faulted nature of the beds means that planar, wedge and toppling failures are likely.

The rock is the primary medium affecting road alignments through this unit. The rock is expected to be predominantly siliceous argillite. The rock is expected to be typically weathered and leached for some depth before becoming more silicified and marginally rippable. The protruding ridgelines that the Inner option cuts through can be expected to be hard rock excavation of silicifed argillite.

All the levels of the rock mass are expected to be highly fractured and often fragmented. However the depth of weathering and vertical extent of each of the zones may vary wide and randomly across the study area. This can be seen by noting the large range of depths of weathering seen in the field mapping photo-interpretations.

5.2 Geotechnical Issues Affecting the Proposed Routes

This section discusses the main geotechnical issues, which are anticipated to affect each of the route corridors. A preliminary assessment of the likely impact these issues may have on the planning of a road through each of the corridors is also provided.

5.2.1 Existing Highway Corridor

Route Description

This corridor follows the alignment of the existing Pacific Highway from approximately 100m south of the Englands Road roundabout to the junction with Campbells Close just south of Sapphire. The existing Highway alignment commences in the south by traversing the alluvial area associated with Newports Creek. The Highway then traverses a ridgeline through two tight bends before descending on to the alluvial floodplain associated with Coffs Creek. The alignment then crosses a second ridge on the out skirts of the CBD again through several tight bends. The rest of the alignment to Sapphire traverses uplands terrain associated with the lower slopes of the Great Dividing range that come down very close to the coast along this section of the Highway.

Bridge/Interchange Structures

The following generalised foundation types and conditions can be expected for possible bridges and interchange structures:

- Alluvial Terrain Unit: Piled foundations bored or driven are expected to be the most appropriate foundation type for structures within this terrain unit. Piles will probably need to be taken down to the underlying weathered argillite. The possible presence of dense gravel layers and high groundwater may cause collapsing of bored pier excavations (requiring pier liners) or premature refusal of driven piers.
- Undulating Footslopes: Piled foundations, bored or driven, or shallow pad footings are expected to be suitable foundation types. The foundations should be taken down on to the weathered argillite.
- Steep slopes, ridges and uplands: Piled foundations, bored or driven, or shallow pad footings are expected to be suitable foundation types. The foundations should be taken down on to the weathered argillite.



Fill Embankments

Widening of fill embankments and new fill embankments to accommodate new interchange structures may be required. The majority of the embankments along this section are expected to be reasonably low. If they are constructed from material won from widening of shallow cuttings then the material can be expected to be weak and will break down to a silty clay when compacted in to the embankment. More competent rock won from any proposed tunnelling operations have a greater potential to be more suitable as a select fill material.

Embankment subgrades within the residual terrain units are expected to be reasonably competent due to the expected limited thickness of soil cover over the bedrock. Fill embankment subgrades are not expected to require major treatment to support the anticipated low fill (<10.0m) embankments. Embankment subgrades within the alluvial terrain unit may require foundation treatment depending on the thicknesses of compressible material encountered below the foundation level. Foundation treatments may include embankment preloading, installation of wick drains, toe berms or construction staging.

Tunnels

It is expected that the rock encountered in tunnels through the ridges may be highly silcified argillite. If this is the case then hard rock tunnelling methods would have to be employed using road headers and/or drill and blast methods. The high quartz content and high unconfined compressive strength of the material would result in significant wear on machinery. The highly fractured nature of the rock as well as the regional folding and faulting will mean that a complex and variable geological structure can be expected. Extensive detailed geotechnical investigations will be required to ensure effective tunnel support can be designed.

Hard rock won from tunnels is expected to be suitable for reuse in fill embankments and may be suitable as select fill or pavement layer works materials.

Cuttings

It is expected that upgrading along the Existing Highway Option, will not involve major changes to the existing highway grade (except at tunnel locations), therefore the cutting heights are expected to remain similar to the height of the current cuttings. The current cuttings are typically laid back at 1V:1H for their full height. Many of the existing cuttings show signs of serious erosion of both soils and weak rock material as well as slumping, toppling, planar sliding and wedge type failures of the rock mass. The fine grained nature of the weathered and leached argillite as well as the very closely spaced defects has lead to the poor performance of the existing Pacific Highway batters.

As part of any upgrading works all the batter slopes from ground surface to at least 7.5m should be flattened to 1V:2H, if this is not possible due to width restrictions then additional support and face treatment would have to be considered. In addition the batter slopes should be topsoiled and grassed to minimise erosion of the fine grained soils and weathered rock mass. The majority of the cuttings are not expected to exceed 7.5m depth, if deeper cuttings are required then sections of the cutting deeper than 7.5m could possibly be steepened. However at this stage it may be prudent to calculate corridor widths assuming a maximum batter slope of 1V:1.5H.

The majority of the rock in the cuttings is expected to be rippable, with the exception of dark grey very strong rock such as that encountered in cutting number CC2 which may require the use of rock breaking equipment or blasting. The material excavated from existing cuttings is



expected to generally breakdown to a gravelly silt if reused in fill batters. The material is therefore only expected to be suitable for reuse as general fill material.

Slope Stability

In general large-scale instability of natural, undisturbed slopes along the existing Highway is not expected to be problematic. Slope stability is however a localised issue with the current batter slopes along the existing highway because they are at a slope of 1V:1H. It is suggested that any upgrade should include flattening the batter slopes to 1V:2H to minimise the risk of sudden localised instability in the cut batters. Numerous slope failures have also been reported on the cut slopes above the Bruxner Park Road. The Bruxner Park Road climbs the scarp face of the ranges traversing the suicide soil landscape that is well known to exhibit widespread mass movement problems (see section 5.1.3). Careful consideration must be given to the slope stability of any cuttings through this soil landscape.

Subgrades

The subgrade for the majority of this alignment is expected to comprise silty clay of either alluvial or residual origin. The CBR of this material is expected to generally be low. Subgrades over the alluvial backswamp areas that have not been artificially drained may be expected to be saturated and contain areas of ponded surface water after rain. These areas are poorly drained and moisture softening of subgrades and the lower levels of fill embankments can be expected if adequate drainage is not provided. Over-excavation of the subgrade and replacing with suitable material or the use of geogrids may be required in some of the alluvial backswamp areas to improve the subgrade prior to embankment construction. Subgrades consisting of fill material of a residual or alluvial origin can also be expected to generally exhibit low CBR values.

Acid Sulphate Soils

As shown on Figure 6, the Existing Highway Option traverses the largest amount of PASS and ASS soils of the two routes. Areas of low probability of acid sulphate soils greater than 1.0m depth are shown on the DIPNR risk mapping for the majority of the alluvial terrain unit areas. Areas of high risk may be encountered adjacent to the Great North railway line where it crosses the highway. It is not expected that PASS or ASS will significantly impact any proposed upgrade due to the fact that the PASS and ASS are expected below 1.0m depth and hence earthworks for the expected low fill embankments are unlikely to affect this material. If major subgrade replacement works are required due to weak subgrades then ASS and PASS material may well be encountered. However the exact nature and extent of PASS and ASS will have to be identified by field investigations to be able to effectively quantify this issue.

Erosion Hazard

The fine grained nature of all the soils means they are particularly susceptible to sheet and gully erosion. The Newport Creek soil landscape is reported to be extremely susceptible to this type of erosion and the Megan soil landscape is highly to very highly susceptible. However, the flatter topography associated with this route option means that water run-off will be more easily controlled therefore limiting the possibility of sheet or gully type erosion. Adequate protection of both cut batters and fill embankments should be provided. Measures should include grassing, the provision of cut-off drains to divert water from running down the face and landscaping. Fill batter slopes should be broken by benchs/berms. Laboratory testing should be undertaken to assess the erodibility/dispersion potential of the local materials.



Contaminated Soils

None of the contamination samples analysed by Holmes and Holmes in this area indicated any contamination associated with Organochlorine Pesticides (OC's), Arsenic or Lead. Never the less more detailed project specific contamination investigation is recommended to confirm these results.

Some of the other sites of possible contamination, as noted on Figure 8, should be targeted for future contamination assessment if they are likely to impact the proposed upgrading. These sites would include, all services stations, sites of old saw mills, the waste disposal site and possibly the Showgrounds.

5.2.2 Inner Option

Route Description

The Inner Option leaves the existing highway, at the southern end, just before the roundabout at Englands Road and heads almost due north to the saddle in the ridgeline directly to the west of Roberts Hill. The alignment then turns slightly west as it descends in to the Coffs Creek valley. The alignment then turns east, crosses the Great North Railway line and follows the base of the main Great Dividing Range scarp face. The alignment crosses two more major ridges along this section, before crossing Bruxner Park road and rejoining the existing highway at Korora.

The majority of the northern two thirds of this route traverses the steep slopes, ridges and upland terrain unit with a small section expected to traverse footslopes and alluvial terrain at the head of Coffs Creek. The most southern section of the route traverses alluvial terrain and footslopes associated with the Newports Creek backswamp and alluvial floodplain.

Bridge/Interchange Structures

The following generalised foundation types and conditions can be expected for possible bridges and interchange structures:

- Alluvial Terrain Unit: Piled foundations bored or driven are expected to be the most appropriate foundation type for structures within this terrain unit. Piles will probably need to be taken down to the weathered argillite. The possible presence of dense gravel layers and high groundwater may cause collapsing of bored pier excavations (requiring pier liners) or premature refusal of driven piers.
- Undulating Footslopes: Piled foundations, bored or driven, or shallow pad footings are expected to be suitable foundation types. The foundations should be taken down on to the weathered argillite.
- Steep slopes, ridges and uplands: Piled foundations, bored or driven, or shallow pad footings are expected to be suitable foundation types. The foundations should be taken down on to the weathered argillite.

Fill Embankments

Fill embankments are expected to be high at the approaches to the major cuttings and may need to be as high as 30m. Fill embankments will also be required at the approaches to bridge structures and possibly over the lower lying areas around Newports Creek to prevent flooding of the road.

Typically the embankments within the residual terrain units are expected to be founded on clays of limited thickness. Major foundation treatment is not expected to be required beneath these



embankments. However fill embankments over the southern end of the alignment near Newports Creek and in the vicinity of Coffs Creek may need some treatment depending on the amount of compressible material found beneath the foundations. Such treatment may include embankment preloading, installation of wick drains, toe berms or construction staging.

The fill material won from cuttings through the large ridges is expected to be suitable as general fill material for embankment construction and may also suitable as select fill material. Future investigations of the proposed cuttings will have to confirm the quality of the expected cut material.

Cuttings

At least three major cuttings possibly up to 60m deep will be required for routes along this option due to the presence of the large ridges. In addition major cut to fill will be required along the northern one third of the alignment as it traverses the south facing slope of the ranges. Numerous other minor cuts are also expected to be required.

The field mapping of cuttings in the area indicates that shallow cuts (<10.0m) can expect to encounter generally rippable material. However as evidenced by the numerous failures in this material batter slopes would have to be laid back at 1V:2H or flatter. Deeper excavations such as the Red Hill Quarry indicate the presence of much harder silicified argillite, which is not expected to be rippable and will most probably require pneumatic tools or blasting to excavate. However this material will most probably be able to be cut at steeper batter angles and maybe suitable in pavement layerworks or as concrete aggregate. Detailed investigation of cutting locations will have to be undertaken to assess the subsurface conditions for batter slope designs. It should also be noted that the depth of weathering and amount of fracturing recorded during the field mapping varied widely and can be expected to vary within short distances. Therefore regardless of the final batter designs additional slope stability measures maybe required to cater for the potential variability. Such measures may include additional face support in the form of spot bolts, shotcrete or wire mesh as well as rock catch fences and rock fall areas.

It is reported in the DIPNR Groundwater Status Report that the majority of the groundwater in the area is pumped from depths of 30m or less. Deep cuttings in the vicinity of groundwater bores are therefore likely to affect the bore yields due to draw down in the vicinity of the cuttings. The relationship between the proximity of bores, depth of cuttings, groundwater levels and draw down effects must therefore be examined at each major cutting location.

Tunnels

An alternative to the deep cuttings would be to tunnel through the ridges. If tunnelling is considered then it is expected that the rock encountered in tunnels may be highly silcified argillite. If this is the case then hard rock tunnelling methods would have to be employed using road headers and/or drill and blast methods. The high quartz content and high unconfined compressive strength of the material would result in significant wear on machinery. The highly fractured nature of the rock as well as the regional folding and faulting will mean that a complex and variable geological structure can be expected. Extensive detailed geotechnical investigations will be required to ensure effective tunnel support can be designed.

Hard rock won from tunnels is expected to be suitable for reuse in fill embankments and may be suitable as select fill or pavement layer works materials



Slope Stability

Although the natural slopes are steep, no clear evidence of previous instability was noted during the field mapping and discussions with a local geotechnical consultant confirmed that the natural slopes are not prone to instability. However the stability of cut batters will need careful consideration as well as the influence of the cut on the slopes above. Numerous slope failures have been reported on the cut slopes above the Bruxner Park Road. The Bruxner Park Road climbs the scarp face of the ranges traversing the suicide soil landscape that is well known to exhibit widespread mass movement problems (see section 5.1.3) careful consideration must be given to the slope stability of any cuttings through this soil landscape. The inferred fault noted on Figure 3 Geology Map, if encountered, is a potential failure plane and may cause larger rockslides where the fault intersects proposed cuttings.

Subgrades

The majority of this alignment is expected to be constructed either in fill or cut with the exception of the area around Newports Creek which is expected to be close to grade. The subgrade beneath fill embankments and along the Newports Creek section is expected to comprise of either silty clay of residual or alluvial origin. The CBR of this material is expected to be generally low. These areas are poorly drained and moisture softening of subgrades and the lower levels of fill embankments can be expected if adequate drainage is not provided. Over-excavation of the subgrade and replacing with suitable material or the use of geogrids may be required in some of the alluvial backswamp areas to improve the subgrade prior to embankment construction. Subgrades consisting of fill material of a residual or alluvial origin can also be expected to generally exhibit low CBR values.

Subgrades in cuttings may be variable due to the variable nature of the weathering of the rock in the region and will also depend on the depth of the cutting. Some cut subgrades may require over excavating and recompacting to ensure an even subgrade bearing.

Acid Sulphate Soils

Figure 6 indicates that the Inner Option traverses an area of low probability of ASS at depths greater than 1.0m at the southern end of the alignment around Newports Creek. It is not expected that PASS or ASS will significantly impact any proposed inner option due to the fact that the PASS and ASS are expected below 1.0m depth and hence earthworks for the low fill embankments are unlikely to affect this material. However the exact nature and extent of PASS and ASS will have to be identified by field investigations to be able to effectively quantify this issue.

Erosion Hazard

The fine grained nature of all the soils means they are particularly susceptible to sheet and gully erosion. The Newport Creek soil landscape is reported to be extremely susceptible to this type of erosion and the Megan soil landscape is highly to very highly susceptible. Adequate protection of both cut batters and fill embankments should be provided, measures should include grassing, the provision of cut-off drains to divert water from running down the face and landscaping. Fill batter slopes should be broken by benchs/berms. Laboratory testing should be undertaken to assess the erodibility/dispersion potential of the local materials.

Contaminated Soils

None of the contamination samples analysed by Holmes and Holmes in this area indicated any contamination associated with Organochlorine Pesticides (OC's), Arsenic or Lead. Never the



less more detailed project specific contamination investigation is recommended to confirm these results.

Some of the other sites of possible contamination, as noted on Figure 8, should be noted for future contamination assessment if they are likely to impact the proposed upgrading. These sites would include, all services stations, sites of old quarries, the waste disposal site and packing and storage sheds associated with the banana plantations.



6. Further Investigation

For feasibility studies and cost estimating purposes, the areas of main concern on the Existing Upgrade Option would be the tunnel locations. On the Inner Bypass Option, the stability and batter design for the three anticipated very deep cuttings (or alternative tunnel options) and the depth of compressible material associated with Coffs and Newports Creek would be the main areas of concern. Specific targeted subsurface investigations consisting of drilling boreholes in cuttings and undertaking Cone Penetrometer tests in alluvial areas should be designed to provide input to feasibility studies, enable preliminary construction cost estimates to be compiled and to provide comparative information for route selection purposes.

Further, more detailed studies would be required on the selected route to advance the project to concept design stage and finally detailed design stage.



7. References

Connell Wagner Report, Coffs Harbour Highway Planning Sapphire to Woolgoolga, Working Paper No 3, Geotechnical Investigations, Reference 1093/34/CH, Revision 1, November 2002

Acid Sulfate Soil Manual, Acid Sulphate Soil Management Advisory Committee, August 1998 (ASSMAC Manual)

DLWC, Coffs Harbour Local Government Area Groundwater Status Report and Map Notes, Technical Report No. NC3/98, September 1997

Soil and Conservation Service of NSW, Coffs Harbour District Technical Manual, December 1989

NSW Department of Mineral Resources, January 1969, 1: 250,000 Geological Series Sheet SH 56 – 10&11, Dorrigo – Coffs Harbour

NSW Department of Mineral Resources, Undated, 1 : 100,000, Geological Series Sheet SH 56 – 11, Coffs Harbour

NSW Department of Mineral Resources, 1992, 1 : 250,000, Metallogenic Study and Mineral Deposit Data Sheets SH 56/-10 & SH/56 –11, Dorrigo – Coffs Harbour

Department of Land and Water Conservation (DLWC), 1 : 25,000, Acid Sulfate Soil Risk Map, Coffs Harbour, Edition 2, December 1997



Figures

Figure 1 Study Area with Orthophoto Figure 2 Study Area Terrain Figure 3 Geology Map Figure 4 Current Best landuse Figure 5 Soil Landscape Map Figure 6 Acid Sulfate Soils Risk Map Figure 7 Quarries Bores and Mining Claims Map Figure 8 Field mapping and Contamination Sampling Locations Figure 9 Geotechnical Terrain Map



COFFS HARBOUR HIGHWAY PLANNING STRATEGY COFFS HARBOUR SECTION



FIGURE 1 STUDY AREA WITH ORTHOPHOTO
















Appendix A

Groundwater Bore Search Data

Sumary of Groundwater Bore Search Data

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburden n	naterial	material	S.W.L (m)	Water bea	ring zones	Yield(L/s)
							Geological					. ,
					From	То	description			From	То	
1	GW014246	6647197	505820						2.7	5.2	6.1	2.53
2	GW017890	6653630	512295						2.1			1.01
3	GW033417	6653853	513657		0	1.83	Soil Clay		0.9			
					1.83	7.62	Clay light shale			3	3.2	
					7.62	10.06	Shale	Shale		10.1	10.7	
					10.06	10.07	Rock					
4	GW033418	6653850	513793		0	4.57	Sand Gravel		2.7	3.7	4.9	22.73
					4.57	7.92	Clay					
5	GW047708	6650300	505897	0	0	18	Shale Clay	Shale	~			
					18	22	Shale			18	19	1.3
6	GW047988	6653035	512035	3.8	0	1.8	Clay		1			
					1.8	3.4	Gravel					
					3.4	3.8	Gravel clay					
					3.8	9	Shale	Shale		6.6	7.4	0.82
					9	10.7	Quartz	~				
					10.7	13.8	Shale	Shale				
					13.8	21	Shale	Shale				
					21	22.3	Basalt	Basalt		21	27.5	6.31
					22.3	25	Shale	Shale				
					25	26	Quartz	~				
					26	27.5	Shale	Shale				
7	GW048616	6653725	512075									
8	GW049234	6646887	507597	11.6	0	5.45	Clay		10.5	11.6	11.6	
					5.45	11.6	Clay shale			15	15	
					11.6	22.5	Basalt	Basalt		19.2	19.2	0.5
9	GW050939	6646400	507762	9	0	9	Clay	Shale	~			
					9	27	Shale			20	23	0.65
10	GW051021	6650172	505875	15	0	15	Clay shale	Shale	~	10	15	0.01
					15	21	Shale			18	20	0.07
11	GW051415	6653313	512338	14.9	0	1.2	Soil					
					1.2	14.9	Clay	Clay	~			

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburden i	material	material	S.W.L (m)	Water bea	rina zones	Yield(L/s)
			_				Geological					(=0)
					From	То	description			From	То	
					14.9	35.7	Basalt	Basalt		21	21.3	0.19
12	GW051708	6646295	506670	9	0	9	Clay	Shale	12.2	10	12	0.39
					9	18	Shale			16	18	0.26
13	GW052382	6646765	507525	13.7	0	1.2	Soil		~			
					1.2	12.2	Clay			12	12.2	0.75
					12.2	13.7	Gravel					
					13.7	19.5	shale	Shale				
14	GW053093	6649300	507450	~	0	1.5	Soil	~	~			
					1.5	4.9	Clay			4.5	6.7	0.65
					4.9	6.7	Gravel					
15	GW053268	6652145	511250	6	0	6	soil	Granite	2.1	2	2.1	0.26
					6	28.3	granite			7	7.6	0.39
16	GW054211	6653275	512325	12.1	0	3	Soil	Shale	~			
					3	12.1	Clay	Basalt				
					12.1	15.2	Shale			35	35	0.1
					15.2	46.6	Basalt			42	42.7	0.19
17	GW054334	6646100	507180	~	~	~	~	~	6			0.83
18	GW054719	6646040	505125	~	0	2	soil	~	~			
					2	9	soil					
					9	11	soil					
					11	15	soil					
					15	21	Gravel			16	18	1.3
19	GW055122	6647000	507510	16.8	0	3	Soil	Shale	~			
					3	16.8	clay			10.7	12.2	0.52
					16.8	19.8	Shale					
20	GW055297	6653787	511662	~	0	0.91	Soil	~	~	13.7	15.2	0.65
	014/0555				0.91	27.4	Unknown			21.3	22.9	0.39
21	GW055517	6646250	506290	4.3	0	4.3	Clay	Basalt		11	11	0.19
	014055540	0040050		_	4.3	29	Basalt	_				
22	GW055518	6646250	506245	2	0	1	Soil	Shale				
					1	2	Clay	Basalt				
					2	10	Shale			10	13	0.26
	000000110	0050005	504040	<u> </u>	10	23	Basalt			19	21	0.31
23	GW056113	6650365	504240	3	0	3	Clay					

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburden i	material	material	S.W.L (m)	Water bea	ring zones	Yield(L/s)
							Geological					
					From	То	description			From	То	
					3	23	Shale	Shale	6	17	20	0.65
24	GW056456	6645940	505565	17	0	4	Clay					
					4	17	Gravel clay			9	12	0.26
					17	22	Shale	Shale		18	20	0.39
25	GW057225	6646890	507435	3	0	3	Soil					
					3	14	Shale					
					14	24	Shale	Shale				
					24	35	Basalt	Basalt		29	31	0.39
26	GW058648	6651135	512310	~	~	~	~	~	~	~	~	0.13
27	GW059004	6647675	506325	7	0	2	Soil					
					2	7	Clay					
					7	17	Shale	Shale	~	7	8	0.26
					17	23.5	Blue Metal	Blue Metal?	~	17	19	0.52
28	GW059050	6652220	511115	2	0	2	Soil					
					2	36	Basalt	Basalt	2			
					36	45	Shale	Shale		36	45	0.39
					45	50	Basalt	Basalt				
29	GW059711	6653300	512830	15	0	2	Soil					
					2	15	Clay			12	14	0.13
					15	24	Shale	Shale		15	18	0.52
30	GW060108	6648700	508435		0	1	Topsoil					
					1	4	Clay					
					4	7	Shale	Shale				
					7	13	Basalt	Basalt				
					13	16	Rock Broken			13	16	0.65
					16	29	Hard Basalt					
					29	31	Rock Broken			21	31	1.3
					31	36	Basalt					
31	GW061184	6647515	507565	7	0	3	Topsoil					
					3	7	Clay					
					7	21	Basalt	Basalt				
					21	23	uartz fractured ba	salt		21	23	1.3
					23	25	Basalt					
32	GW061618	6653767	512075	4	0	4	Clay					

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburder	material	material	S.W.L (m)	Water bea	aring zones	Yield(L/s)
			_				Geological		. ,]	
					From	То	description			From	То	
					4	29	Shale	Shale		18	20	0.39
					29	31	Shale			23	25	0.39
					31	32	Shale			27	30	0.78
33	GW061642	6646825	508387	0	0	3	Shale	Shale				
					3	16	Basalt	Basalt				
					16	18	Rock Broken Shale			16	28	0.39
					18	40	Basalt/ quartz shale					
					40	45	Hard Basalt					
					45	50	Rock Broken			45	50	1.56
					50	53	Basalt					
34	GW062887	6647018	507450	8	0	8	Clay					
					8	14	Shale	Shale		12	14	0.39
					14	24	Basalt	Basalt		18	20	0.52
35	GW063637	6646185	506590	2	0	2	Clay					
					2	8	Shale	Shale	5			
					8	14	Basalt	Basalt				
					14	16	Shale Broken Rock			15	16	0.65
					16	42	Basalt			42	44	0.13
					42	44	Shale Broken Rock					
					44	46	Basalt					
36	GW063638	6646615	507000	6	0	6	Hard Clay					
					6	12	Shale	Shale		8	9	0.13
					12	15	Hard Shale			14	15	0.26
					15	19	Basalt	Basalt				
37	GW063655	6647125	507460	8	0	8	Clay					
					8	20	Shale	Shale				
					20	26	Basalt	Basalt				
					26	28	Rock Broken			27	29	0.65
	01400000				28	29	Basalt					
38	GW063664	6651285	511110	9	0	9	Gravel clay					
					9	34	Basalt	Basalt				
					34	36	Shale	Shale		34	36	0
	014 0007 10	0050005		_	36	45	Basalt	Basalt				
39	GW 063710	6650285	504975	8	0	8	Clay					

Locality	DLWC Bore			Bedrock				Bedrock			·····	
Plan no.	No.	Northing	Easting	Depth		Overburden	material	material	S.W.L (m)	Water bea	irina zones	Yield(L/s)
							Geological					
					From	То	description			From	То	
					8	32	Shale	····			Concernation of the Concer	
					32	36	Shale	Shale				
					36	42	Basalt	Basalt		36	37	0.13
					42	43	Rock Broken			42	43	0.13
					43	50	Shale			50	51	0.26
					50	55	Basalt					
40	GW063728	6652400	512500	6	0	6	Clay					
					6	10	Shale	Shale				
					10	15	Shale					
					15	17	Rock Broken			15	17	1.04
					17	24	Basalt	Basalt				
					24	27	Shale			26	27	0.78
					27	37	Basalt Shale					
41	GW063912	6651335	512560	1	0	1	Clay					
					1	10	Shale	Shale				
					10	15	Shale					
					15	37	Basalt	Basalt		29	30	0.1
					37	54	Granite	Granite				
					54	56	Black					
					56	67	Basalt	Basalt				
42	GW064118	6653440	513370	12	0	7	Soil		2			
					7	12	Clay					
					12	18	Shale	Shale		12	18	0.6
					18	18.1	Basalt	Basalt				
43	GW064174	6653750	513360	0	0	16	Clay/ soft Shale	Shale				
					16	26	Shale			19	20	0.3
					26	30	Shale			25	26	0.3
44	GW064368	6653900	513490	22	0	2	Soil					
					2	22	Clay			21	22	0.3
					22	26	Shale	Shale		25	27	0.3
					26	32	Shale			30	31	0.1
	•••••				32	34	Shale					
45	GW064539	6653940	512940	2	0	2	Clay					
					2	16	Basalt	Basalt				

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburden	material	material	S.W.L (m)	Water bea	arina zones	Yield(L/s)
			_				Geological	1				
					From	То	description			From	То	
					16	30	Basalt	Basalt				••••••••••••••••••••••••••••••••••••••
					30	34	Shale	Shale				
					34	45	Basalt	Basalt				
					45	47	Rock Broken		45	46	47	0.4
					47	52	Basalt					
46	GW064686	6653650	513465	0	0	14	Shale	Shale				
					14	30	Coal/Shale					
					30	36	Shale			34	35	0.2
					36	38	Coal/Shale			38	46	0.8
					38	47	Shale					
					47	49	Shale					
47	GW064687	6653650	513465	8	0	8	Clay					
					8	92	Shale	Shale	20	28	30	0.1
					92	122	Sandstone	Sandstone		45	60	0.8
										75	90	1.5
										90	122	4
48	GW064794	6652160	511040	1	0	1	Clay					
					1	2	Shale	Shale	1			
					2	26	Basalt	Basalt				
					26	27	Broken Basalt			26	27	0.1
					27	76	Basalt					
					76	88	Granite	Granite		77	78	0.3
49	GW065609	6646235	506430	0	0	2	Shale	Shale				
					2	9	Basalt	Basalt				
					9	11	Broken Rock			9	11	0.5
	_				11	25	Basalt					
50	GW065856	6651230	512450	19	0	19	Brown Clay		4.3	28	31	0.06
					19	55	Chert	Chert		41.5	42.5	0.14
51	GW065858	6651890	512980		0	55			2.1	18	19	0.34
52	GW065859	6651740	512680	10	0	10	soil		3.5			
					10	34	Chert	Chert		24	25	0.78
					34	37	Slate	Slate		33	34	0.78
					37	49	Chert			37	38	2.4
53	GW065881	6653280	513445	7	0	3	fill	10.101				

Locality	DLWC Bore			Bedrock				Bedrock				·····
Plan no.	No.	Northing	Easting	Depth		Overburden	material	material	S.W.L (m)	Water bea	rina zones	Yield(L/s)
							Geological		× ′			
					From	То	description			From	То	
					3	7	Sand Gravel		6			
					7	26	Soft Shale	Shale				
					26	32	Hard Shale			23	37	0.6
					32	37	Fractured Basalt	Basalt				
54	GW065993	6652900	512550	0.2	0	0.2	topsoil					
					0.2	12	Soft Shale	Shale	9			
					12	24	Hard Shale					
					24	36	Shale					
					36	43	Basalt	Basalt				
					43	48	Fractured Basalt			43	48	3.16
55	GW066158	6654170	512630	4	0	1	Clay					
					1	4	Gravel and Shale					
					4	6	Shale	Shale	~	4	6	0.5
					6	18	Basalt	Basalt				
					18	20	Fractured Basalt			18	20	2
					20	23	Basalt					
56	GW066175	6652405	511965	16	0	0.3	Brown topsoil					
					0.3	4	Brown Clay					
					4	12	Red Clay					
					12	13	Brown clay					
					13	16)inner Plate granules	;				
					16	18	Hard Brown Shale	Shale				
					18	49	Basalt	Basalt	18			
					49	54	Fractured Basalt			49	54	2.27
57	GW066299	6650335	508300	13	0	1	Topsoil					
					1	13	Clay					
					13	29	Soft Shale	Shale	21			
					29	34	Hard Shale					
					34	38	Saturated Soft Shale			34	38	0.8
					38	40	Basalt	Basalt				
58	GW066470	6645000	506800						12.5	26	30	0.8
										35	36	0.2
59	GW066666	6647545	504965	0	0	18	Brown Shale	Shale	18			
					18	37	Basalt	Basalt				

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburden	material	material	S.W.L (m)	Water bea	iring zones	Yield(L/s)
							Geological					
					From	То	description			From	То	
					37	42	Broken Basalt			37	42	1.52
					42	43	Basalt					
60	GW068230	6651321	512187	0	0	3	SHale	Shale				
					3	31	Soft Shale		27	28	32	0.3
					31	32	Quartz			48	50	0.2
					32	48	Hard Granite	Granite				
					48	50	Quartz					
					50	52	Hard Granite					
61	GW068483	6652090.1	511879.7	4	0	2	Topsoil					
					2	4	Soil Bound Gravel					
					4	16		Granite				
					16	20	Granite mix Quartz		16.5	20	26	0.1
					20	80	Granite and Quartz			74	76	0.1
62	GW068763	6650750	507503.6	0.6	0	0.6	Topsoil					
					0.6	18	Soft Shale	Shale				
					18	40	Brown Shale		18			
					40	49		Basalt				
					49	54	Broken Basalt			49	54	2.53
63	GW068806	6652003	512165.9	4	0	1	Topsoil					
					1	4	Clay					
					4	10	Shale	Shale	9.3	4	10	0.1
					10	14	Shale					
					14	20	Basalt	Basalt				
					20	28	Fractured Basalt			20	28	0.4
					28	31	Quartz					
64	GW068986	6650681.9	510863	0	0	5	Brown Shale	Shale				
					5	21			9			
					21	25	Cracky Basalt	Basalt		21	25	0.38
					25	27						
65	GW069009	6653833	512983.1	0	0	34		Shale	30.7	0.3		
					34	38	Shale	Shale				
					38	42	Hard Shale	Shale				
66	GW070097	6653714	512916.4	0.3	0	0.3	Red Topsoil					
					0.3	40	Brown Shale	Shale	20			

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburder	n material	material	S.W.L (m)	Water bea	ring zones	Yield(L/s)
							Geological					
					From	То	description			From	То	
					40	44	Cracky Shale			40	44	0.25
					44	76	Grey Shale					
					76	79		Basalt				
					79	84	Cracky Basalt			79	84	0.76
					84	86						
67	GW070282	6650105	506011	2	0	2	Clay/Shale					
					2	10	Soft Shale		8.9			
					10	12	Puggie Clay					
					12	16	Weathered Shale	Shale				
					16	26	Hard Shale			16	26	0.8
					26	28	Basalt	Basalt				
					28	30	Fractured Basalt					
					30	36	Basalt					
68	GW070291	6654336	510807.6	0~9	0	9	athered Rock and C	lay	~			
					9	18	Weathered Shale	Shale				
					18	48	yered Shale and Cla	ay		18	48	2.27
69	GW070520	6653685	512955	6	0	1	topsoil					
					1	6	Gravel					
					6	10	Soft Shale	Shale				
					10	26	Shale		16.7	20	26	0.1
					26	32	Hard Shale			36	45	0.4
					32	36	Soft Shale					
	_				36	45	Hard and Soft Shale	ł				
70	GW070542	6652270	513209						1.8			1
71	GW071040	6654150	512465	3	0	3	Clay					
					3	18	Shale	Shale				
					18	20	Broken Rock	Basalt				
					20	22	Basalt			21	22	0.3
					22	24	Broken Rock			22	23	1
					24	26	Basalt			26	27	1
					26	27	Broken Rock					
72	GW071128	6654065.6	511963	0	0	12	Soft Brown Shale	Shale				
					12	36	Hard Brown Shale		20			
					36	39	ırd Grey Cracky Sha	ιle		36	39	0.12

Locality	DLWC Bore		T	Bedrock				Bedrock	ſ			
Plan no.	No.	Northing	Easting	Depth		Overburden	material	material	S.W.L (m)	Water bea	rina zones	Yield(L/s)
		Ū.					Geological					
					From	То	description			From	То	
				· · · · · · · · · · · · · · · · · · ·	39	40	Hard Grey Shale					
					40	68		Basalt				
					68	73	Fractured Basalt			68	73	5.94
73	GW071290	6654161	512684	2	0	2	Clay					
					2	15	Soft Shale	Shale				
					15	17	Broken Rock			15	17	0.4
					17	28	Basalt	Basalt		28	30	2
					28	30	Broken Basalt					
					30	31	Basalt					
74	GW071387	6653010	512778	5	0	0.6	Red Topsoil					
					0.6	5	Red Clay					
					5	12	Brown Shale	Shale	9			
					12	18	Grey Shale					
					18	32	Basalt	Basalt		32	36	1.89
					32	36	Broken Basalt					
75	GW071911	6646840	508125	3	0	0.2	Topsoil					
					0.2	1	Red Clay					
					1	3	Brown Clay					
					3	12	Soft Brown Shale	Shale				
					12	15	Brown Shale		12			
					15	30	Grey Basalt	Basalt				
					30	35	Cracky Black Basalt			30	35	0.38
					35	66	Black Basalt			60	70	16.42
	_				66	70	ractured Grey Basal	lt				
76	GW072512	6653988.4	513398.7	7	0	0.6	Black Topsoil					
					0.6	7	Brown Clay					
					7	18	Brown Shale	Shale	10			
					18	31	Basalt	Basalt				
	011/05555				31	36	Broken Basalt			31	36	1.77
77	GW072693	6650812.9	510496.6	0	0	5	Brown Shale	Shale				
					5	28	Blue Shale		27			
					28	31	Cracky Basalt	Basalt		28	31	0.06
					31	50	Basalt					
					50	54	Cracky Basalt			50	54	0.13

Locality	DLWC Bore			Bedrock				Bedrock			1	
Plan no.	No.	Northing	Easting	Depth		Overburden	material	material	S.W.L (m)	Water bea	aring zones	Yield(L/s)
		-					Geological				1	
					From	То	description			From	То	
					54	73	Basalt					
78	GW072728	6651000.8	512047.8	7.6	0	0.6	Topsoil					
					0.6	4.5	rown Clay and Grav	vel	3.5			
					4.5	7.6	actured metasedima	aet		4.5	10.6	0.4
					7.6	10.6	Weathered Basalt	Basalt				
					10.6	19	Hard Basalt					
79	GW072933	6652268.6	513209.4		0	0.6						
					0.6	5.5	ine sand small grav	el	4			
					5.5	7.6	Bentonite clay					
					7.6	10	e sand and large gra	avel		7.6	10	
					10	21.5	diment and Gravel ((uniform) st	ringers	10	21.5	0.9
80	GW073055	6654499.6	513259.2	2	0	0.3	Brown Topsoil		-			
					0.3	2	Red CLay					
					2	3	Brown Shale	Shale				
					3	9	Brown Shale					
					9	56	Basalt	Basalt	48			
					56	61	Broken Basalt			56	61	3.79
81	GW073162	6644886	506800.3	0	0	6	Shale	Shale				
					6	40	Basalt	Basalt	30			
					40	43	Broken Shale			41	43	0.99
					43	49	Basalt					
82	GW073175	6652974	512860.6	5	0	0.3	Red Topsoil					
					0.3	5	Red Clay					
					5	18	Broown Shale	Shale	6			
					18	19	Grey hard Shale					
					19	24	Broken Grey Shale			19	24	0.76
83	GW073178	6653357	513320	5	0	0.6	Topsoil					
					0.6	5	Brown Clay					
					5	19	Brown Shale	Shale	6			
					19	24	Brown Shale			19	24	0.76
84	GW073189	6647188.7	506531	8	0	0.3	Grey Topsoil					
					0.3	8	Brown Shale	Shale				
					8	14	Basalt	Basalt	9			
					14	18	Cracky Basalt			14	18	0.18

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburder	n material	material	S.W.L (m)	Water bea	irina zones	Yield(L/s)
			-			T	Geological		, í			
					From	То	description			From	То	
85	GW073205	6653072.7	510871.1	0.3	0	0.3	Brown Topsoil			haran		
					0.3	9	Brown Shale	Shale				
					9	27	Grey Shale		18			
					27	32	Grey Shale			27	32	0.51
					32	40	Grey Basalt	Basalt				
					40	43	Black Basalt					
					43	48	Cracky Black Basalt			43	48	0.76
86	GW073256	6650793.8	504444.6	0	0	12	Brown Shale	Shale	12			
					12	31	Grey Shale					
					31	36	rey Shale reef Quar	tz		31	36	0.76
87	GW073299	6654280.4	513332.6	1.5	0	0.3	Brown Topsoil					
					0.3	1.5	Brown Clay					
					1.5	5	Brown SHale	Shale				
					5	20	Grey Shale		9			
					20	26	Basalt	Basalt				
					26	30.5	Broken Basalt			26	30.5	2.53
88	GW103414	6645071	508797		0	39						3.75
89	GW300734	6652908	510956	3	0	3	red Clay					
					3	9	Brown Shale	Shale				
					9	29	Basalt	Basalt	10			
					29	34	Cracky Basalt			29	34	0.51
					34	53	Basalt					
					53	58	Broken Basalt			53	58	1.01
					58	62	Basalt					
90	GW300931	6647578	506824	3	0	0.6	Topsoil			0	28	0.51
					0.6	3	Brown Clay					
					3	9	Brown Shale	Shale	8			
					9	24	Basalt	Basalt				
					24	28	Cracky Basalt					
					28	44	Basalt					
					44	48	Broken Basalt			44	48	2.02
91	GW300999	6650265	504641	6	0	6	Pink Shale	Shale	18			
					6	33	Basalt	Basalt				
					33	37	Cracked Basalt			35	37	0.26

Locality	DLWC Bore			Bedrock				Bedrock		·····		
Plan no.	No.	Northing	Easting	Depth		Overburden	material	material	S.W.L (m)	Water bea	ring zones	Yield(L/s)
		-				1	Geological					
					From	То	description			From	То	
					37	43	Basalt					
					43	48	Cracked Basalt			43	48	0.38
92	GW301007	6653643	513554									
93	GW301087	6652500	513221	2	0	0.3	Brown Topsoil					
					0.3	2	Brown Clay	Shale				
					2	32	Brown Shale	Basalt	18			
					32	43	Basalt					
					43	48	Broken Basalt			43	48	1.82
94	GW301193	6649260	506842	10	0	10	Clay		8	0	0	0.2
					10	12	Weathered Shale	Shale		10	12	0.2
					12	24.4	Shale					
					24.4	25.9	hale and Reef Quar	tz				
					25.9	29.6	Shale					
95	GW301200	6646293	506163	1.2	0	0.6	Brown Topsoil					
					0.6	1.2	Brown Clay					
					1.2	8	Brown Shale	Shale				
					8	9	Weathered Basalt	Basalt				
					9	33	Basalt		9			
					33	38	Broken Basalt			33	38	0.76
96	GW301239	6644886	506878	0	0	3	Broken Shale	Shale				
					3	33	Basalt	Basalt	6			
					33	38	Cracky Basalt			33	38	0.51
97	GW301250	6653077	510951	7.6	0	0.6	Topsoil					
					0.6	7.6	Clay and Floaters					
					7.6	24.4	Fractured Shale	Shale	4	11	24.4	1
					24.4	31.4	Shale					
98	GW301322	6650191	504246	0.3	0	0.3	Topsoil					
					0.3	12	Yellow Shale	Shale	12			
					12	24	Basalt	Basalt				
					24	29	Crackt Basalt			24	29	0.38
					29	36	Basalt					
99	GW301331	6646908	505015	12	0	12	Red/ Brown Shale					
					12	18	Brown Shale	Shale				
					18	41	Basalt	Basalt	18			

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburden i	material	material	S.W.L (m)	Water bea	irina zones	Yield(L/s)
		-					Geological				T	
					From	То	description			From	То	
					41	46	Broken Basalt		•	41	46	1.9
					46	48	Basalt					
100	GW301377	6653767	512069						0.7			
101	GW301392	6654128	512911	0	0	12	Brown Shale					
					12	36	Grey Shale	Shale	18			
					36	49	Basalt	Basalt				
					49	54	Broken Basalt			49	54	1.14
102	GW301547	6650265	504641	0	0	6	Pink Shale	Shale	18			
					6	33	Basalt	Basalt				
					33	37	Cracky Basalt			33	37	0.25
					37	43	Basalt			43	48	0.38
					43	48	Cracky Basalt					
103	GW301578	6650899	510158	5	0	0.3	Red Topsoil					
					0.3	5	Red Clay					
					5	9	Brown Shale	Shale				
					9	34	Basalt	Basalt	9			
					34	39	Cracky Basalt			34	39	0.25
					39	42	Basalt					
104	GW301886	6653233	513198		0	5						3.33
105	GW301925	6654206	512655	4	0	4	Gravel and Clay					
					4	6	Shale	Shale				
					6	24	Basalt	Basalt	20			
					24	27	Broken rock			26	27	0.61
					27	35	Basalt					
					35	38	Shale			35	38	0.61
					38	47	Basalt					
					47	50	Broken Rock			47	50	2.47
					50	52	Basalt					
106	GW302022	6645110	507038	2.6								
107	GW302055	6653270	512255		0	75						1.89
108	GW302295	6644796	506981	1	0	1	Shale	Shale				
					1	22	Basalt	Basalt				
					22	26	Fractured Basalt					
L	·····				26	58	Soft Basalt		38			

Locality	DLWC Bore			Bedrock				Bedrock				
Plan no.	No.	Northing	Easting	Depth		Overburden	material	material	S.W.L (m)	Water bea	ring zones	Yield(L/s)
					Geological						· · /	
					From	То	description			From	То	
					58	61	Basalt			58	61	0.3
					61	64	Basalt			61	64	0.2
109	GW302315	6649210	507477	13.4	0	0.6	Fill					
					0.6	1.2	Soil					
					1.2	13.4	Slop and Stones		2			
					13.4	62.4	Firm Grey shale	Shale		24	56	1
110	GW302330	6649704	507949	9	0	0.6	Topsoil					
					0.6	6	Brown Clay		2			
					6	9	Grey Clay					
					9	12	Brown Shale	Shale				
					12	25	Brown SHale					
					25	28	Basalt	Basalt				
					28	33	Cracky Basalt			28	33	
					33	36	Basalt					
					36	41	Cracky Basalt			36	41	5
					41	42	Basalt					









Date/Time :18-Apr-2002 10:01 AM User :LCAIRNS Report :RMGW001D.QRP Executable :S:\G5\PROD32\GROUND.EXE Exe Date :05-Dec-2001 System :Groundwater Database :Dlwcp

DEPARTMENT OF LAND & WATER CONSERVATION Work Summary

GW014246

Converted From HYDSYS

License :								
Work Type :Well Work Status :(Unknown) Construct. Method :(Unknown) Owner Type :Private			Au	thorised Purpose	(\$)	Inten IRRIC	ded Purpose(s) GATION	
Commenced Date : Completion Date :01-Nov-1955	Final Deptl Drilled Deptl	n: 6.1 n: 6.1	0 m 0 m					
Contractor Name : Driller :								
Property : GWMA : GW Zone :			Si	anding Water Le Salin Yio	vel : ity : eld :		Good	
Site Details								
Site Chosen By	For Lice	County m A :RALEIGH nsed :		Parish BONVIL	LE	Portio 202	on/Lot DP	
Region :30 - NORTH CO. River Basin :205 - BELLINGE Area / District :	AST ER RIVER			CMA Map : Grid Zone :		Scale :		
Elevation : Elevation Source :(Unknown)				Northing :0 Easting :5	5647197 505820	La Long	titude (S) :30° 1 itude (E) :153°	8' 25'' 3' 38''
GS Map :0092A2 AM	G Zone :56		Co	ordinate Source :				
Construction Negative depths ind H P Component Type 1 1 Casing Timber	icate Above Ground From (m) -0.30	Level;H-Hole;P•Pipe;O	D-Outside ID (mm)	Diameter; ID-Inside Dia Interval Details	ameter;C-Ceme	nted;SL-Slot Lengt	h;A-Aperture;GS-Gr	ain Size;Q-Quantity
Water Bearing Zones	0.50	-0.50 1524		(Unknown)				
From (m) To (m) Thickness (m) WBZ 5.20 6.10 0.90 Uncom	Type asolidated	S.V	V.L. (m) 2.70	D.D.L. (m)	Yield (L/s) 2.53	Hole Depth (m)	Duration (hr)	Salinity (mg/L) Good
From (m) To (m) Thickness(m) Drillers Descrip 0.00 6.10 6.10 Gravel Creek	tion < Water Supply			Geolog Grave	ical Material 1	Comm	ents	
Pumping Tests - Summa Pumping Test Type Date Durati	aries on S.W.L. (m) D.E	D.L. (m) Yield (L/s)	Intake De	pth (m) Test Method	To Meas	sure Water Level	To Measure Dicebo	Toctod Ry
(I Single-Rate Pumping Test 06-Nov-1955 10.	nr) 00 2.70	4.60 2.53		4.90 (Unknown)			i o sicusore pischi	inge Testeu by
Pumping Tests - Reading Pumping Test Type Date Time (min	gs 15) S.W.L. (m) D.E	D.L. (m) Yield (L/s)	Intake De	pth (m) Test Method	To Meas	ure Water Level	To Measure Discha	rge Tested By
		(No Pumping Tes	t Reading	g Details Found)				
Chemical Treatment	Duration	Success (No Chemical Tr	reatment	Details Found)				
				, ,				
Development Method Time Taken		Other Develop	oment Meth	od				
		(No Develop)	ment Det	ails Found)				

Remarks

GW017890

Converted From HYDSYS

anonoco						
License :		A+	horised Purnose(s)		Intended Purpose(s)	
Work Type :Well Work Status :(Unknown) Construct. Method :(Unknown) Owner Type :Private		Aut	uor iscu i ui pose(s)		DOMESTIC	
Commenced Date : Completion Date :01-Dec-1953	Final Depth : Drilled Depth :	7.00 m 0.00				
Contractor Name : Driller :						
Property : GWMA : GW Zone :		Sta	anding Water Level Salinity Yield	: :	(Unknown)	
Site Details						
Site Chosen By	Coun Form A :FITZ Licensed :	nty ROY	Parish MOONEE		Portion/Lot DP 259	
Region :30 - NORTH CC River Basin :205 - BELLING Area / District :	DAST ER RIVER		CMA Map : Grid Zone :	Sca	le :	
Elevation : Elevation Source :(Unknown)			Northing :665 Easting :512	53630 2295	Latitude (S) :30° 1 Longitude (E) :153°	4' 56" 7' 40"
GS Map :0092A2 AN	MG Zone :56	Co	ordinate Source :			
Construction Negative depths in	ndicate Above Ground Level;H-Hole;	;P-Pipe;OD-Outside	Diameter;ID-Inside Diam	eter;C-Cemented;SL-	Slot Length;A-Aperture;GS-G	irain Size;Q-Quantity
H P Component Type 1 1 Casing Timber	From (m) To (m) OD (m) -0.10 <t< td=""><td>mm) ID (mm) 1829</td><td>Interval Details (Unknown)</td><td></td><td></td><td></td></t<>	mm) ID (mm) 1829	Interval Details (Unknown)			
Water Bearing Zones From (m) To (m) Thickness (m) WB	3Z Type (No Wal	S.W.L. (m) ter Bearing Zone	D.D.L. (m) 2 Details Found)	Yield (L/s) Hole 1	Depth (m) Duration (hr)	Salinity (mg/L)
Drillers Log From (m) To (m) Thickness(m) Drillers Description	ription (No	Drillars Log D	Geologic	al Material	Comments	
	(100	Drillers Log De	ians Pound)			
Pumping Tests - Summ Pumping Test Type Date Dur	1aries ration S.W.L. (m) D.D.L. (m) Y (hr)	'ield (L/s) Intake D	epth (m) Test Method	To Measure Wa	ter Level To Measure Disc	harge Tested By
Single-Rate Pumping Test 01-Dec-1953	8.00 2.10 5.50	1.01	6.40 (Unknown)			
Pumping Tests - Readi Pumping Test Type Date Time (ngs mins) S.W.L. (m) D.D.L. (m) Y (No Pum)	'ield (L/s) Intake D Iping Test Readii	epth (m) Test Method ag Details Found)	To Measure Wa	ter Level To Measure Disc	harge Tested By
Chemical Treatment	Duration	Success				
	(No Chu	emical Treatmen	t Details Found)			
Development						
Method Time Ta	ken Ot	her Development Mo	thod			
	(No	Development D	etails Found)			
Remarks						

*** End of GW017890 ***

GW033417

Converted From HYDSYS

License :						
Work Type :Well Work Status :(Unknown) Construct. Method :(Unknown) Owner Type :Private			Authorised Purpose(s) Inte DO	ended Purpose(s) MESTIC	
Commenced Date : Completion Date :01-May-1971	Final Depth : Drilled Depth :	10.10 m 10.10 m				
Contractor Name : Driller :						
Property : GWMA : GW Zone :			Standing Water Lev Salinit Yiel	el : y : d :	Potable	
Site Details						
Site Chosen By	Co Form A :FI Licensed :	ounty TZROY	Parish MOONEE	Por 12	ion/Lot DP	
Region :30 - NORTH CC River Basin :205 - BELLING Area / District :	DAST ER RIVER		CMA Map : Grid Zone :	Scale :		
Elevation : Elevation Source :(Unknown)			Northing :60 Easting :51	553853 I 13657 Lo	atitude (S) :30° 14' 4 ngitude (E) :153° 8' 3	48'' 31''
GS Map :0092A2 AN	IG Zone :5 6		Coordinate Source :			
P Component Type 1 1 Casing Concrete CyInder	dicate Above Ground Level;H-H From (m) To (m) O -0.30 -0.30	ole;P-Pipe;OD-Out D (mm) ID (r 914	side Diameter;ID-Inside Dian nm) Interval Details (Unknown)	neter;C-Cemented;SL-Slot Le	ngth;A-Aperture;GS-Grain	Size;Q-Quantity
From (m) To (m) Thickness (m) WBZ 3.00 3.20 0.20 Uncc 10.10 10.70 0.60 Fract	Z Type onsolidated ured	S.W.L. (n 0.9 9.1	a) D.D.L. (m) 10 0	Yield (L/s) Hole Depth (r	1) Duration (hr) S	Salinity (mg/L) Potable Potable
To (m) To (m) Thickness(m) Drillers Description 0.00 1.83 1.83 Soil Clay 1.83 7.62 5.79 Clay Light 7.62 10.06 2.44 Shale Hard 10.06 10.07 0.01 Rock	plion Shale Water Supply Water Supply		Geologic Soil Clay Shale Rock	al Material Con	iments	
Pumping Tests - Summ	aries tion S.W.L. (m) D.D.L. (m)	Yield (L/s) Intak	e Denth (m) Test Method	To Monsure Water Laure	To Magging Dischause	
Single-Rate Pumping Test 01-May-1971 7.	(hr) 2.00 3.70 6.10	0.38	7.30 (Unknown)	To measure water Lever	10 Measure Discharge	l ested By
Pumping Tests - Reading Pumping Test Type Date Time (m	IGS ins) S.W.L. (m) D.D.L. (m)	Yield (L/s) Intak	e Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
	(No Pu	mping Test Rea	ding Details Found)			
Chemical Treatment	Duration	Success				
	(No C	hemical Treatm	ent Details Found)			
Development		then Development	M -41-3			
	·· (N.	o Development	Details Found			
	(14)	o ocretopment	verans i ouna)			
Remarks 104.8m from pacific ocean						

*** End of GW033417 ***

GW033418

Converted From HYDSYS

License :		1	Authorised Purpose(s)		Intende	ed Purpose(s)	
Work Type :Well Work Status :(Unknown) Construct. Method :(Unknown) Owner Type :Private		Δ.	u p uve(u)		DOME	STIC	
Commenced Date : Completion Date :01-Jan-1970	Final Depth : Drilled Depth :	7.90 m 7.90 m					
Contractor Name : Driller :							
Property : GWMA : GW Zone :			Standing Water Leve Salinit Yiel	el : y : d :		(Unknown)	
Site Details							
Site Chosen By	Co Form A :FI7 Licensed :	unty ſZROY	Parish MOONEE	;	Portion 12	/Lot DP	
Region : 30 - NORTH River Basin : 205 - BELLI Area / District :	I COAST INGER RIVER		CMA Map : Grid Zone :		Scale :		
Elevation : Elevation Source :(Unknown)			Northing :6 Easting :5	653850 13793	Lat Longi	itude (S) :30° 14 tude (E) :153° 8	' 48" ' 36"
GS Map : 0092A2	AMG Zone :56		Coordinate Source :				
H P Component Type 1 1 Casing Concrete Cynder	hs indicate Above Ground Level;H-Ho From (m) To (m) O 0.00 0.00	ole;P-Pipe;OD-Outs D (mm) ID (n 914	side Diameter;ID-Inside Dia nm) Interval Details (Unknown)	meter;C-Ceme	nted;SL-Slot Lengt	n;A-Aperture;GS-Gra	in Size;Q-Quantity
Water Bearing ZonesFrom (m)3.704.901.20	WBZ Type Unconsolidated	S.W.L. (n 2.7	n) D.D.L. (m) 70	Yield (L/s) 0.51	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown)
Trom (m) To (m) Thickness(m) Drillers I 0.00 4.57 4.57 Sand Ga 4.57 7.92 3.35 Clay	Description ravel		Geolog Sand Clay	ical Material	Comm	ents	
Pumping Tests - Sun Pumping Test Type Date	Imaries Duration S.W.L. (m) D.D.L. (m)	Yield (L/s) Intal	ke Depth (m) Test Method	To Mea	sure Water Level	To Measure Discha	rge Tested By
Single-Rate Pumping Test 06-Jun-1970	168.00 3.00 4.90	22.73	6.70 (Unknown)				
Pumping Tests - Rea Pumping Test Type Date Ti	dings me (mins) S.W.L. (m) D.D.L. (m) (No Pi	Yield (L/s) Intal umping Test Red	ke Depth (m) Test Method ading Details Found)	To Mea	sure Water Level	To Measure Discha	rge Tested By
Chemical Treatment	Duration (No (Success Chemical Treati	nent Details Found)				
Development	e Taken	Other Developmen	t Method				
	(1	vo Developmen	t Details Found)				
Remarks							
45.7M FROM PACIFIC OCEAN WATER QUAI	LITY ORIGINALLY 1ST CLASS-NOW	SALTY- JUNE70	W033418 ***				

GW047708

Converted From HYDSYS

••				
License :30BL115142 Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air		Authorised Purpose DOMESTIC IRRIGATION STOCK	(s) Inten IRR I	ded Purpose(s) GATION
Commenced Date : Completion Date :01-Mar-1980	Final Depth : Drilled Depth :	22.00 m		
Contractor Name : Driller :		22.00 m		
Property : - WATSON'S GWMA : - GW Zone : -		Standing Water Le Salin Yi	vel : ity : eld :	0-500 ppm
Site Details				
Site Chosen By	Coun Form A :FITZF Licensed :FITZF	ty Parish ROY COFF ROY COFF	Porti d L6 DF LT 6 I	m/Lot DP 2558554 (358) DP 588554
Region :30 - NORTH C River Basin :204 - CLAREN Area / District :	OAST CE RIVER	CMA Map : Grid Zone :	Scale :	
Elevation : Elevation Source :(Unknown)		Northing :: Easting :	5650300 La 505897 Long	titude (S) :30° 16' 44" ;itude (E) :153° 3' 41"
GS Map : 0092A2 A	MG Zone :56	Coordinate Source :		
P Component Type 1 1 Casing (Unknown) 1 1 Opening Slots	ndicate Above Ground Level;H-Hole;F From (m) To (m) OD (m 0.00 20.00 1 17.00 20.00 1	P-Pipe;OD-Outside Diameter;ID-Inside Dia m) ID (mm) Interval Details 15 Driven into I 15 L Mechanicalli	ameter;C-Cemented;SL-Slot Leng	:h;A-Aperture;GS-Grain Size;Q-Quanti
Water Bearing ZonesFrom (m)To (m)Thickness (m)WB18.0019.001.00Frac	5Z Type stured	S.W.L. (m) D.D.L. (m)	Yield (L/s) Hole Depth (m)	Duration (hr) Salinity (mg/L)
To (m) To (m) Thickness(m) Drillers Descr 0.00 18.00 18.00 Shale Clay 18.00 22.00 4.00 Shale Wate	iption Y Supply	Geolog Shale Shale	ical Material Comm	ents
Pumping Tests - Summ umping Test Type Date Dur ingle Rate Pumping Test 12 Mar 1990	ation S.W.L. (m) D.D.L. (m) Yiel	d (L/s) Intake Depth (m) Test Method	To Measure Water Level	To Measure Discharge Tested By
Pumping Tests - Poodi	n	1.30 Airlift		
Imping Test Type Date Time (r	nins) S.W.L. (m) D.D.L. (m) Yiel (No Pumpi	d (L/s) Intake Depth (m) Test Method ng Test Reading Details Found)	To Measure Water Level	To Measure Discharge Tested By
Chemical Treatment	Duration S	UCCESS		
	(No Chem	ical Treatment Details Found)		
Development				
iethod Time Take	en Other	Development Method		
	(No De	evelopment Details Found)		
lemarks				
	***	End of GW047708 ***		

CM047088

Converted From HYDSYS

GW047988							
License :30BL116665			Authorized Durnes	a(s)	Intende	d Purnose(s)	
Work Type :Bore open thru rock Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			IRRIGATION		IRRIGA	TION	
Commenced Date : Completion Date :01-Mar-1981	Final Depth : Drilled Depth :	27.50 m 27.50 m	1				
Contractor Name : Driller :							
Property : GWMA : - GW Zone : -			Standing Water I Sal	Level : inity : (ield :		(Unknown)	
Site Details							
Site Chosen By	Form A : Licensed :	C ounty FITZROY FITZROY	Parish COFF COFF		Portion 148 148	/Lot DP	
Region : 30 - NORTH COAS River Basin : 205 - BELLINGER Area / District :	ST RIVER		CMA Mag Grid Zono	9537-3N 2:56/2	COFFS HARE Scale :1:25,0	30UR 000	
Elevation : Elevation Source :(Unknown)			Northing Easting	; :6653035 ; :512035	Lati Longi	itude (S) :30° 15' 1 tude (E) :153° 7' 3	5" 0"
GS Map :0092A2 AMG	Zone :56		Coordinate Source	e :GD.,ACC.MA	ĄР		
Construction Negative depths indica	ate Above Ground Level;H	-Hole;P-Pipe;OD-	Outside Diameter;ID-Inside	Diameter;C-Ceme	nted;SL-Slot Length	;A-Aperture;GS-Grain	Size;Q-Quantity
H P Component Type 1 1 Casing Threaded Steel	From (m) To (m) 0.00 6.60	OD (mm) I 127	D (mm) Interval Details (Unknow	n)			
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ T6.607.400.80Fracture21.0027.506.50Fracture	ype d d	S.W.I	L. (m) D.D.L. (m) 1.00 1.00	Yield (L/s) 0.82 6.31	Hole Depth (m)	Duration (hr) 5	Salinity (mg/L) (Unknown) (Unknown)
Drillers Log From (m) To (m) Thickness(m) Drillers Description 0.00 1.80 1.80 Clay 1.80 3.40 1.60 Gravel 3.40 3.80 0.40 Gravel Clay 3.80 9.00 5.20 Shale Water S 9.00 10.70 1.70 Quartz 10.70 13.80 3.10 Shale 13.80 21.00 7.20 Shale Black 22.30 25.00 2.70 Shale Water S 25.00 26.00 1.00 Quartz Water S 25.00 25.00 1.50 Shale Water S	on Supply Supply Supply Supply Supply		Ge Cl Gr Sh In Sh Ba Sh Sh Sh	ological Material ay avel ale valid Code ale ale salt ale valid Code ale	Comm	ents	
Pumping Tests - Summa Pumping Test Type Date Duration	ries m S.W.L. (m) D.D.L. (m) Yield (L/s) I	ntake Depth (m) Test Meth	od To Mea	sure Water Level	To Measure Discharg	e Tested By
(hi Single-Rate Pumping Test 03-Mar-1981	r) 1.00	6.31	Bailer				
Pumping Tests - Reading	35 s) S.W.L. (m) D.D.L. (m)	ı) Yield (L/s) l	Intake Depth (m) Test Meth	od To Mea	sure Water Level	To Measure Discharg	e Tested By
	(No	Pumping Test	Reading Details Found	d)			
Chemical Treatment Treatment Method	Duration (N	Success o Chemical Tre	eatment Details Found)			
Development Method Time Taken		Other Develops (No Develops	ment Method vent Details Found)				

Remarks

GW047988

Converted From HYDSYS

*** End of GW047988 ***

GW048616

Converted From HYDSYS

License :30BL107387		ł	Authorised Purpose(s)		Intende	ed Purpose(s)	
Work Type :Well Work Status :Test Hole Construct. Method :(Unknown) Owner Type :Private		I	DOMESTIC		GENEF	RAL USE	
Commenced Date : Completion Date :	Final Depth : Drilled Depth :	5.50 m 0.00					
Contractor Name : Driller :							
Property : GWMA : - GW Zone : -			Standing Water Leve Salinit Yield	el : y : d :		(Unknown)	
Site Details						·	
Site Chosen By	C Form A :F Licensed :F	county ITZROY ITZROY	Parish MOONEE MOONEE		Portion 327 LT 327	J/Lot DP DP 752834	
Region :30 - NORTH River Basin :205 - BELLIN Area / District :	COAST NGER RIVER		CMA Map : Grid Zone :		Scale :		
Elevation : Elevation Source :(Unknown)			Northing :60 Easting :51	653725 12075	Lat Longi	itude (S) :30° 14' itude (E) :153° 7'	52" 32"
GS Map :0092A2	AMG Zone :56		Coordinate Source :				
H P Component Type 1 1 Casing Drilled	is indicate Above Ground Level;H-I From (m) To (m) 0.00 0.00	Hole;P-Pipe;OD-Out OD (mm) ID (r 2000	side Diameter;ID-Inside Diar nm) Interval Details (Unknown)	neter;C-Cemei	nted;SL-Slot Lengtł	n;A-Aperture;GS-Grair	n Size;Q-Quantity
Water Bearing ZonesFrom (m)To (m)Thickness (m)	WBZ Type (No	S.W.L. (n Water Bearing Z	n) D.D.L. (m) Zone Details Found)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
Drillers Log From (m) To (m) Thickness(m) Drillers D	escription	(No Drillers Log	Geologi Details Found)	ical Material	Comm	ents	
Pumping Tests - Sum Pumping Test Type Date Single-Rate Pumping Test 01-Jan-1977	Duration S.W.L. (m) D.D.L. (m) (hr)	Yield (L/s) Inta	ke Depth (m) Test Method (Unknown)	To Mea	sure Water Level	To Measure Dischar	ge Tested By
Pumping Tests - Read Pumping Test Type Date Tim	dings ne (mins) S.W.L. (m) D.D.L. (m) (No i	Yield (L/s) Inta Pumping Test Re	ke Depth (m) Test Method ading Details Found)	To Mea	sure Water Level	To Measure Dischar	ge Tested By
Chemical Treatment	Duration (No	Success Chemical Treat	ment Details Found)				
Development Method Time	Taken	Other Developmen (No Developmen	t Method t Details Found)				
Remarks							
		*** End of G	W048616 ***				

GW040234

Converted From HYDSYS

G11043234					Converteu	TOM HIDSYS
License :30BL109047						
Work Type :Bore open thru rock Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Authorised Purpose(s) DOMESTIC	Inte DOM	nded Purpose(s) ⁄IESTIC	
Commenced Date : Completion Date :01-Dec-1978	Final Depth : Drilled Depth :	22.60 m 22.50 m				
Contractor Name : Driller :						
Property : GWMA : - GW Zone : - Site Details			Standing Water Leve Salinity Yield	1: y: 1:	(Unknown)	
Site Chosen By		a .				
She Chosen By	Form A :F Licensed :F	County RALEIGH RALEIGH	Parish BONVILL BONVILL	Porti E L2 D E LT 2	on/Lot DP P246562 (11) DP 246562	
Region : 30 - NORTH COA River Basin : 205 - BELLINGER Area / District :	ST R RIVER		CMA Map : Grid Zone :	Scale :		
Elevation : Elevation Source :(Unknown)			Northing :66 Easting :50	46887 L 7597 Lon	atitude (S) :30° 18' 3 gitude (E) :153° 4' 4	35" 14"
GS Map :0092A2 AMG	Zone : 56		Coordinate Source :			
Construction Negative depths indica H P Component Type	ate Above Ground Level;H- From (m) To (m)	Hole;P-Pipe;OD-Out	iside Diameter;ID-Inside Diam	eter;C-Cemented;SL-Slot Len	gth;A-Aperture;GS-Grain	Size;Q-Quantity
1 1 Casing P.V.C.	0.00 6.00	104	Driven into Hol	e		
From (m) To (m) Thickness (m) WBZ T 11.60 11.60 0.00 Fracture 15.00 15.00 0.00 Fracture	ype d d	S.W.L. (r	n) D.D.L. (m)	Yield (L/s) Hole Depth (m) Duration (hr) S	Salinity (mg/L) (Unknown) (Unknown)
19.20 19.20 0.00 Fracture	d	10.5	50	0.50		(Unknown)
From (m) To (m) Thickness(m) Drillers Description 0.00 5.45 5.45 Clay 5.45 11.60 6.15 Clay Shale 11.60 22.50 10.90 Basalt Water	n Supply		Geologica Clay Clay Basalt	ıl Material Com	ments	
Pumping Tests - Summar Pumping Test Type Date Duration	r ies 1 S.W.L. (m) D.D.L. (m)	Yield (L/s) Intal	se Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Torted Pr
Single-Rate Pumping Test 12-Dec-1978	10.50	0.50	(Unknown)		10 measure Discharge	rested by
Pumping Tests - Reading	IS					
Pumping Test Type Date Time (mins)) S.W.L. (m) D.D.L. (m)	Yield (L/s) Intak	e Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
	(No F	Pumping Test Rea	ding Details Found)			
Chemical Treatment	Duration	Success				
	(No)	Chemical Treatm	ent Details Found)			
	(110)	Secondar Fredh	an Dennis Pouna)			
Development						
Method Time Taken		Other Development	Method			
	(1	No Development	Details Found)			
Remarks						

*** End of GW049234 ***

GW050939

Converted From HYDSYS

License :30BL115133		Authorised P	urnose(s)	Intended	l Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		DOMESTIC STOCK	m pose(s)	DOMES STOCK	TIC	
Commenced Date : Completion Date :01-Apr-1980	Final Depth : Drilled Depth :	27.00 m 27.00 m				
Contractor Name : Driller :						
Property : GWMA : - GW Zone : -		Standing W	ater Level : Salinity : Yield :		Good	
Site Details						
Site Chosen By	Count Form A :RALEI Licensed :RALE	y I IGH I IGH I	Parish BONVILLE BONVILLE	Portion/ 10 67	Lot DP	
Region :30 - NORTH COA River Basin :205 - BELLINGE Area / District :	AST R RIVER	CM/ Grid	A Map : I Zone :	Scale :		
Elevation : Elevation Source :(Unknown)		No E	rthing :6646400 asting :507762	Latii Longit	tude (S) :30° 18' 51' ude (E) :15 3° 4' 51'	
GS Map :0092A2 AM	G Zone :56	Coordinate S	Source :			
H P Component Type 1 1 Casing (Unknown) 1 1 Opening Slots	icate Above Ground Level;H-Hole;P From (m) To (m) OD (m 0.00 27.00 1 24.00 27.00 1	-Pipe;OD-Outside Diameter;IE m) ID (mm) Interval I 15 I 15 I)-Inside Diameter;C-Cem Details Driven into Hole Aechanically Slotted; SL: 0	ented;SL-Slot Length; mm; A: 0mm	A-Aperture;GS-Grain Si	ze;Q-Quantity
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ20.0023.003.00Fracture	Type red	S.W.L. (m) D.D.L. (n	n) Yield (L/s) 0.65	Hole Depth (m)	Duration (hr) Sa	linity (mg/L) (Unknown)
From (m) To (m) Thickness(m) Drillers Descrip 0.00 9.00 9.00 Clay 9.00 27.00 18.00 Shale Water	tion Supply		Geological Material Clay Shale	Comme	nts	
Pumping Tests - Summa Pumping Test Type Date Durat Single-Rate Pumping Test 29-Apr-1980	aries ion S.W.L. (m) D.D.L. (m) Yie hr) .00	ld (L/s) Intake Depth (m) Te 0.65 Ai	st Method To Me	asure Water Level	To Measure Discharge	Tested By
Pumping Tests - Readin Pumping Test Type Date Time (mi	IGS ins) S.W.L. (m) D.D.L. (m) Yie (No Pump	eld (L/s) Intake Depth (m) Te ing Test Reading Details	st Method To Me Found)	easure Water Level	To Measure Discharge	Tested By
Chemical Treatment	Duration (No Cher	Success nical Treatment Details .	Found)			
Development Method Time Take	n Oth (No l	er Development Method Development Details Fou	nd)			
Remarks						
			et.			

*** End of GW050939 ***

GW051021

Converted From HYDSVS

							Converier	1100011105
License :30BL1	14796							
Work Type :Bore Work Status :(Unkno Construct. Method :Rotary Owner Type :Private	own) Air			Authorised Purpose(DOMESTIC	(s)	Inten DOM	ded Purpose(s) ESTIC	
Commenced Date : Completion Date :01-Feb	Fir 1980 Drill	nal Depth : ed Depth :	21.00 m 21.00 m					
Contractor Name : Driller :								
Property : GWMA : - GW Zone : -				Standing Water Le [.] Salin Yio	vel : ity : eld :		Good	
Site Details	· 							
Site Chosen By		C Form A :F Licensed :F	C ounty ITZROY ITZROY	Parish COFF COFF		Portio L4 DP LT 4 I	m/Lot DP 588554 (358) DP 588554	
Region :30 - N River Basin :204 - C Area / District :	ORTH COAST CLARENCE RIVE	R		CMA Map : Grid Zone :		Scale :		
Elevation : Elevation Source :(Unknov	wn)			Northing :6 Easting :5	5650172 505875	Lat Long	titude (S) :30° 16 itude (E) :153° 3	' 48" ' 40"
GS Map :0092A2	AMG Zone	:56		Coordinate Source :				
P Component Type 1 1 Casing (Unknown) 1 1 Opening Slots	ve depths indicate Abov	ve Ground Level;H-ł m (m) To (m) (0.00 18.00 15.00 18.00	Hole;P-Pipe;OD-O DD (mm) ID 115 115	utside Diameter;ID-Inside Dia (mm) Interval Details Driven into F 1 Mechanically	imeter;C-Cemei Iole / Slotted; SL: 0m	nted;SL-Slot Lengt m; A: 0mm	h;A-Aperture;GS-Gra	n Size;Q-Quant
From (m) To (m) Thickme 10.00 15.00 18.00 20.00	ess (m) WBZ Type 5.00 (Unknown) 2.00 Fractured		S.W.L. ((m) D.D.L. (m)	Yield (L/s) 0.01 0.07	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown) (Unknown)
To (m) To (m) Thickness(m) Dr 0.00 15.00 15.00 15.00 15.00 15.00 21.00 6.00 St	illers Description ay Shale ale Water Supply		,	Geolog Clay Shale	ical Material	Comm	ents	(0 11110 7713)
Pumping Tests - S umping Test Type Date ingle-Rate Pumping Test 23-Feb-19	Summaries Duration S.W (hr) 180 1.00	.L. (m) D.D.L. (m)	Yield (L/s) Inta 0.08	ake Depth (m) Test Method Airlift	To Meas	ure Water Level	To Measure Dischar	ge Tested By
Pumping Tests - F umping Test Type Date	Readings Time (mins) S.W.	L. (m) D.D.L. (m) (No Pa	Yield (L/s) Inta sumping Test Re	ike Depth (m) Test Method ading Details Found)	To Meas	ure Water Level	To Measure Dischar	ge Tested By
Chemical Treatme	nt Durat	ion	Success					
		(No C	Chemical Treati	nent Details Found)				
Development	Time Taken	(/	Other Developmen lo Developmen	t Method t Details Found)				
lemarks								
			*** 1	TOFIODI was				

*** End of GW051021 ***

GW051415

Converted From HYDSYS

GW051415							
License :30BL117904		Δ	uthorised Purpose(s)	Inten	ded Purpose(s)		
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :Private		D	OMESTIC TOCK	DOM STOC	DOMESTIC STOCK		
Commenced Date : Completion Date :01-Dec-1980	Final Depth : Drilled Depth :	35.70 m 35.70 m					
Contractor Name : Driller :							
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :		Good		
Site Details				-			
Site Chosen By	C Form A :Fl Licensed :Fl	ounty ITZROY ITZROY	Parish MOONEE MOONEE	Porti L1 DI LT 1	o n/Lot DP 2517281 (106) DP 517281		
Region : 30 - NORTH River Basin : 205 - BELLI Area / District :	I COAST INGER RIVER		CMA Map : Grid Zone :	Scale :			
Elevation : Elevation Source :(Unknown)			Northing :6653 Easting :5123	313 La 38 Lon	atitude (S) :30° 15' 6" gitude (E) :153° 7' 42	, H ,	
GS Map :0092A2	AMG Zone :56		Coordinate Source :				
H P Component Type 1 1 Casing Threaded Steel 1 1 Opening Slots	ths indicate Above Ground Level;H-F From (m) To (m) (0.00 35.60 18.60 36.60	Hole;P-Pipe;OD-Outs DD (mm) ID (m 115 115	side Diameter;ID-Inside Diamete nm) Interval Details Driven into Hole 1 SL: 0mm; A: 0mm	er;C-Cemented;SL-Slot Len	gth;A-Aperture;GS-Grain S	ize;Q-Quantity	
Water Bearing Zones From (m) To (m) Thickness (m) 21.00 21.30 0.30	WBZ Type Fractured	S.W.L. (m	ı) D.D.L. (m) Vi	eld (L/s) Hole Depth (m 0.19) Duration (hr) Sa	i linity (mg/L) Good	
Torillers Log From (m) To (m) Thickness(m) Drillers 0.00 1.20 1.20 Soil 1.20 14.90 13.70 Clay SI 14.90 35.70 20.80 Basalt	Description hale Interlayere Water Supply		Geological Soil Clay Basalt	Material Con	ments		
Pumping Tests - Sun Pumping Test Type Date	Duration S.W.L. (m) D.D.L. (m)	Yield (L/s) Intak	e Depth (m) Test Method Airlift	To Measure Water Level	To Measure Discharge	Tested By	
Pumping Tests - Rea Pumping Test Type Date Ti	inne (mins) S.W.L. (m) D.D.L. (m) (No I	Yield (L/s) Intal Pumping Test Rec	ee Depth (m) Test Method ading Details Found)	To Measure Water Level	To Measure Discharge	Tested By	
Chemical Treatment Treatment Method	Duration (No	Success Chemical Treatn	nent Details Found)				
Development Method Time	ne Taken	Other Development (No Development	t Method t Details Found)				
Remarks							
		*** End of G	W051415 ***				

GW051708

Converted From HYDSYS

						contretter	
License :30BL114964							
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		Au D(ithorised Purpose(DMESTIC	s)	Inten DOM	ded Purpose(s) ESTIC	
Commenced Date : Completion Date :01-Apr-1980	Final Depth : Drilled Depth :	18.30 m 18.00 m					
Contractor Name : Driller :							
Property : GWMA : - GW Zone : -		S	tanding Water Lev Salini Yie	vel : ity : eld :		Good	
Site Details							
ite Chosen By	Cou Form A :RAL Licensed :RAL	nty LEIGH LEIGH	Parish BONVIL BONVIL	LE LE	Portio 22 21	on/Lot DP	
Region :30 - NORTH CO River Basin :205 - BELLINGE Area / District :	AST ER RIVER		CMA Map :9 Grid Zone :5	9537-3N 56/2	COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :(Unknown)	(Unknown)		Northing :6 Easting :5	646295 06670	Latitude (S) :30° 18' 54" Longitude (E) :153° 4' 10"		" 54" -' 10"
GS Map : 0092A2 AM	G Zone :56	Co	ordinate Source :				
P Component Type 1 Casing Welded Steel 1 Opening Slots	licate Above Ground Level;H-Hole From (m) To (m) OD (0.00 14.00 9.00 14.00	(P-Pipe;OD-Outside) (mm) ID (mm) 115 115	Diameter;ID-Inside Dia Interval Details Driven into F 1 Mechanically	meter;C-Ceme Iole	nted;SL-Slot Lengt m: A: 0mm	h;A-Aperture;GS-Gra	iin Size;Q-Quant
From (m) To (m) Thickness (m) WBZ 10.00 12.00 2.00 Fractu 16.00 18.00 2.00 Fractu	Type rred rred	S.W.L. (m)	D.D.L. (m)	Yield (L/s) 0.39 0.26	Hole Depth (m)	Duration (hr)	Salinity (mg/L) Good Good
rom (m) To (m) Thickness(m) Drillers Descrip 0.00 9.00 9.00 Clay Some Si 9.00 18.00 9.00 Shale Water	tion mall Gravel Supply		Geolog Clay Shale	ical Material	Comm	ents	000
Pumping Tests - Summa nping Test Type Date Durati gle-Rate Pumping Test 28-Apr-1980 1	aries ion S.W.L. (m) D.D.L. (m) Yi ir) 00 12.20	ield (L/s) Intake Do	epth (m) Test Method 15.20 Airlift	To Meas	ure Water Level	To Measure Dischar	rge Tested By
Pumping Tests - Reading uping Test Type Date Time (min	GS 15) S.W.L. (m) D.D.L. (m) Yi (<i>No Pump</i>	ield (L/s) Intake De	epth (m) Test Method g Details Found)	To Meas	ure Water Level	To Measure Dischar	rge Tested By
Chemical Treatment	Duration (No Cher	Success mical Treatment	Details Found)				
l evelopment hod Time Taken	Oth (No L	er Development Met Development Det	hod tails Found)				
emarks							

*** End of GW051708 ***

GW052382

Converted From HYDSYS

License :30BL117034			Authorized Purpose(s)	Intende	d Purnose(s)			
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			DOMESTIC STOCK	GENEF	GENERAL USE			
Commenced Date : Completion Date :01-Nov-1980	Final Depth : Drilled Depth :	19.50 m 19.50 m						
Contractor Name : Driller :								
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :		Good			
Site Details						ingeningen som en so gegening		
Site Chosen By County Form A :RALEIC Licensed :RALEIC			Parish BONVILLE BONVILLE	Portion L21 (10 L21	Portion/Lot DP L21 (10) L21			
Region :30 - NORTH COA River Basin :205 - BELLINGE Area / District :	AST R RIVER		CMA Map : 9537-3 Grid Zone : 56/2	3N COFFS HARI Scale :1:25,	30UR 000			
Elevation : Elevation Source :(Unknown)			Northing :66467 Easting :50752	6765Latitude (S) :30° 18' 39"525Longitude (E) :153° 4' 42"				
GS Map :0092A2 AM	G Zone :56		Coordinate Source :GD.,A	CC.MAP				
Construction Negative depths indi	cate Above Ground Level;H-H	łole;P-Pipe;OD-C	utside Diameter;ID-Inside Diameter;	C-Cemented;SL-Slot Length	ı;A-Aperture;GS-Grain Si	ze;Q-Quantity		
HPComponentType11Casing(Unknown)11OpeningSlots	From (m) To (m) C 0.00 18.30 6.10 18.30	DD (mm) ID 115 115	(mm) Interval Details Driven into Hole 1 Mechanically Slotter	d; SL: Omm; A: Omm				
Water BearingZonesFrom (m)To (m)Thickness (m)WBZ12.0012.200.20Uncon	Type solidated	S.W.L.	(m) D.D.L. (m) Yiel	d (L/s) Hole Depth (m) 0.75	Duration (hr) Sa	linity (mg/L) Good		
From (m) To (m) Thickness(m) Drillers Descrip 0.00 1.20 50.11 1.20 Soil 1.20 12.20 11.00 Clay Water State State 13.70 19.50 5.80 Shale	tion Supply		Geological M Soil Clay Gravel Shale	aterial Comm	ents			
Pumping Tests - Summa	aries							
Pumping Test Type Date Durati (() Single-Rate Pumping Test 29-Nov-1980 1	ion S.W.L. (m) D.D.L. (m) hr) .00	Yield (L/s) In 0.75	take Depth (m) Test Method Airlift	To Measure Water Level	To Measure Discharge	Tested By		
Pumping Tests - Readin Pumping Test Type Date Time (mi	gs ns) S.W.L. (m) D.D.L. (m) (<i>No P</i>	Yield (L/s) In Pumping Test K	take Depth (m) Test Method Reading Details Found)	To Measure Water Level	To Measure Discharge	Tested By		
Chemical Treatment	Duration	Success						
	(No	Chemical Tree	utment Details Found)					
Development Method Time Take	n	Other Developm	ent Method					
	(No Developme	ent Details Found)					
Remarks								

*** End of GW052382 ***
GW053093

Converted From HYDSYS

License :30BL136732					
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		Authorised Purpose(DOMESTIC STOCK	s) Inter IRRI	ı ded Purpose(s) GATION	
Commenced Date : Completion Date :01-Feb-1981	Final Depth : Drilled Depth :	6.70 m 6.70 m			
Contractor Name : Driller :					
Property : GWMA : - GW Zone : -		Standing Water Lev Salini Yie	vel : ty : ld :	(Unknown)	
Site Details					
Site Chosen By	Count Form A :FITZR Licensed :FITZR	y Parish OY COFF OY COFF	Porti 201 201	on/Lot DP	
Region :30 - NORTH (River Basin :205 - BELLIN Area / District :	COAST IGER RIVER	CMA Map :9 Grid Zone :5	537-3N COFFS HAI 6/2 Scale :1:2:	RBOUR 5,000	
Elevation : Elevation Source :(Unknown)		Northing :6 Easting :5	649300 La 07450 Lon	utitude (S) :30° 17' 1 gitude (E) :153° 4' 3	6" 9"
GS Map :0092A2	AMG Zone :56	Coordinate Source :C	D.,ACC.MAP		
Construction Negative depths	indicate Above Ground Level;H-Hole;P-	Pipe;OD-Outside Diameter;ID-Inside Dia	meter;C-Cemented;SL-Slot Leng	th;A-Aperture;GS-Grain	Size;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots	From (m) To (m) OD (mn) 0.00 6.00 11 0.00 6.00 11	n) ID (mm) Interval Details 5 Seated 5 1 Mechanically	Slotted; SL: 0mm; A: 0mm		
Water Bearing ZonesFrom (m)To (m)Thickness (m)W4.906.701.80U	/BZ Type nconsolidated	S.W.L. (m) D.D.L. (m)	Yield (L/s) Hole Depth (m) 0.65	Duration (hr) S	alinity (mg/L)
Trom (m) To (m) Thickness(m) Drillers Des 0.00 1.50 50:1 1.50 Soil 1.50 4.90 3.40 Clay Gravel Wat 4.90 6.70 1.80 Gravel Wat	cription Yel ater Supply	Geologi Soil Clay Gravej	cal Material Comm	vents	
Pumping Tests - Sumr Pumping Test Type Date Date	Naries	(1/c) Intoko Donth (m) Test Mathad			
Single-Rate Pumping Test 27-Feb-1981	(hr) 1.00	0.65 Airlift	10 Measure Water Level	To Measure Discharge	Tested By
Pumping Tests - Read	ings (mins) S.W.L. (m) D.D.L. (m) Yield (No Pumpin	(L/s) Intake Depth (m) Test Method g Test Reading Details Found)	To Measure Water Level	To Measure Discharge	Tested By
Chemical Treatment	Duration Su	ccess			
	(No Chemie	cal Treatment Details Found)			
Development					
Time Ta	Ken Other I	Development Method velopment Details Found)			
Remarks		~,			
	*** 1	and of GW053093 ***			

End of GW053093

GW053268

Converted From HYDSYS

License :30BL119304		Anthonized Dumpose(5)	Intended Purnose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :Private		Autorised Purpose(s) DOMESTIC IRRIGATION STOCK	IRRIGATION
Commenced Date : Completion Date :01-May-1980	Final Depth :28Drilled Depth :28	3.30 m 3.30 m	
Contractor Name : Driller :			
Property : GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	0-500 ppm
Site Details			
Site Chosen By	County Form A :FITZRO) Licensed :FITZRO)	Parish A MOONEE A MOONEE	Portion/Lot DP LOT 359 DP44800 LT359 DP44800
Region :30 - NORTH COAS River Basin :205 - BELLINGER Area / District :	ST RIVER	CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARBOUR Scale :1:25,000
Elevation : Elevation Source :(Unknown)		Northing :6652145 Easting :511250	Latitude (S) :30° 15' 47" Longitude (E) :153° 7' 2"
GS Map :0092A2 AMG	Zone : 56	Coordinate Source :GD., ACC.	MAP
H P Component Type 1 1 Casing (Unknown) 1 1 Opening Slots	To (m) To (m) OD (mm) 0.00 28.30 115 0.00 18.30 115	De;OD-Outside Diameter,ID-Inside Diameter,C-Cer ID (mm) Interval Details Driven into Hole 1 Slotted On Site; SL: 0mm;	mented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity A: 0mm
From (m) To (m) Thickness (m) WBZ T 2.00 2.10 0.10 Unconso 7.00 7.60 0.60 Unconso	ype Jiidated Jiidated	S.W.L. (m) D.D.L. (m) Yield (L/s 0.26 0.35) Hole Depth (m) Duration (hr) Salinity (mg/L) 5 9 (Unknown) 9
Torillers Log From (m) To (m) Thickness(m) Drillers Description 0.00 6.00 6.00 Soil Stones Stones 6.00 28.30 22.30 Granite Water	on Mater Supply : Supply	Geological Materia Soil Granite	I Comments
Pumping Tests - Summa	ries		
Pumping Test Type Date Duratio (http://www.com/actionality.com/act	n S.W.L. (m) D.D.L. (m) Yield (L/s) Intake Depth (m) Test Method To N	feasure Water Level To Measure Discharge Tested By
Single-Rate Pumping Test 14-May-1980	2.10	0.65 All lift	
Pumping Test Type Date Time (min:	jS s) S.W.L. (m) D.D.L. (m) Yield (<i>(No Pumping</i>)	L/s) Intake Depth (m) Test Method To N Test Reading Details Found)	leasure Water Level To Measure Discharge Tested By
Chemical Treatment	Duration Suc	cess	
	(No Chemic	al Treatment Details Found)	
Development	Other D	evelopment Method	
	(No Dev	velopment Details Found)	
Remarks ORARA EAST STATE FOREST NO 536			

*** End of GW053268 ***

GW05/211

Converted From HVDEVE

GW034211							Converte	a From HYDS
License :30B	L113983							
Work Type :Bore Work Status :(Unk Construct. Method :Rota Owner Type :Priva	rnown) ry Air ate			Authorised Purpose(DOMESTIC	s)	Inten DOM	d ed Purpose(s) IESTIC	
Commenced Date : Completion Date :01-F	eb-1981	Final Depth : Drilled Depth :	46.60 n 46.60 n	1 1				
Contractor Name : Driller :								
Property : GWMA : - GW Zone : -				Standing Water Lev Salini Yie	vel : ity : eld :		Good	
Site Details								
Site Chosen By		Form A : Licenseci :	County FITZROY FITZROY	Parish MOONEI MOONEI	E E	Portic 106 P+ Po	on/Lot DP	
Region :30 - River Basin :205 - Area / District :	NORTH COAS BELLINGER	ST RIVER		CMA Map :9 Grid Zone :5	9537-3N 16/2	COFFS HAR Scale :1:25	₹BOUR 5,000	
Elevation : Elevation Source :(Unkr	nown)			Northing :6 Easting :5	653275 12325	La Long	.titude (S) :30° 15 gitude (E) :153° 7	' 7" ' 41"
GS Map :00924	A2 AMG	Zone :5 6		Coordinate Source :C	GD.,ACC.MA	\ P		
Construction Neg	ative depths indica	ate Above Ground Level;H	-Hole;P-Pipe;OD-C	Dutside Diameter;ID-Inside Dia	meter;C-Cemer	nted;SL-Slot Leng	th;A-Aperture;GS-Gra	in Size;Q-Quantity
H P Component Type 1 1 Casing Welded Steel 1 1 Opening Slots		From (m)To (m)0.0046.9029.9046.90	OD (mm) ID 110 110	(mm) Interval Details Driven into H 1 Mechanically	lole Slotted; SL: Om	ın; A: Omm		
Water Bearing Zo	ones							
From (m) To (m) Thic 35.00 35.00 42.00 42.70	kness (m) WBZ Ty 0.00 Fractured 0.70 Fractured	/pe 1 1	S.W.L.	(m) D.D.L. (m)	Yield (L/s) 0.10 0.19	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown) (Unknown)
Drillers Log								
From (m) To (m) Thickness(m) 0.00 3.00 3.00 3.00 12.10 9.10 12.10 15.20 3.10 15.20 46.60 31.40	Drillers Description Soil Clay Shale Basalt Water S	n Supply		Geologi Soil Clay Shale Basalt	cal Material	Comm	ients	
Pumping Tests -	Summar	ries						
'umping Test Type Date Single-Rate Pumping Test 25-Feb	te Duration (hr) p-1981	S.W.L. (m) D.D.L. (m)	Yield (L/s) Int 0.29	ake Depth (m) Test Method (Unknown)	To Meas	ure Water Level	To Measure Dischar	rge Tested By
Pumping Tests -	Reading	S						
umping Test Type Dat	te Time (mins)	S.W.L. (m) D.D.L. (m)	Yield (L/s) Int Pumping Test Re	ake Depth (m) Test Method eading Details Found)	To Measu	ıre Water Level	To Measure Dischar	ge Tested By
				<i>,</i>				
Chemical Treatm	ent	Duration	Success					
		(No	Chemical Treat	tment Details Found)				
Development	Time Taken		Other Developme	nt Method				
		(No Developmer	nt Details Found)				
Remarks								
			*** End of G	W054211 ***				

GW054211

GW054334

Converted From HYDSYS

License :30BL115471 Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air			Authorised Purpose(s) DOMESTIC	Intended P DOMESTIC	'urpose(s) C	
Owner Type :Private Commenced Date : Completion Date :01-Apr-1980	Final Depth : Drilled Depth :	30.00 m 0.00				
Contractor Name : Driller :						
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	(U	(nknown)	
Site Details						
Site Chosen By	Co Form A :RA Licensed :RA	unty ALEIGH ALEIGH	Parish BONVILLE BONVILLE	Portion/Lo 67 P+ Port 67	ot DP	
Region :30 - NORTH COA River Basin :205 - BELLINGEF Area / District :	ST RIVER		CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARBOU Scale :1:25,000	JR	
Elevation : Elevation Source :(Unknown)			Northing :6646100 Easting :507180	Latitud Longitud	le (S) :30° 19' 0" e (E) :153° 4' 29"	
GS Map :0092A2 AMO	Zone : 56		Coordinate Source :GD.,ACC	C.MAP		
Construction Negative depths indic H P Component Type	ate Above Ground Level;H-H From (m) To (m) O	ole;P-Pipe;OD-C D (mm) ID No Constructio	outside Diameter;ID-Inside Diameter;C-C (mm) Interval Details on Details Found)	Semented;SL-Slot Length;A-A	Aperture;GS-Grain Size;(Q-Quantity
Water Bearing Zones From (m) To (m) Thickness (m) WBZ T	'ype (No V	S.W.L. Vater Bearing	(m) D.D.L. (m) Yield (I Zone Details Found)	./s) Hole Depth (m) Du	ration (hr) Salinit	y (mg/L)
Drillers Log From (m) To (m) Thickness(m) Drillers Description	ion (1	No Drillers Lo	Geological Mater og Details Found)	rial Comments		
Pumping Tests - Summa Pumping Test Type Date Duratio (h Single-Rate Pumping Test 24-Apr-1980	r) 6.00 20.00	Yield (L/s) In 0.83	take Depth (m) Test Method To (Unknown)) Measure Water Level To	Measure Discharge 7	fested By
Pumping Tests - Reading Pumping Test Type Date Time (mir	gs s) S.W.L. (m) D.D.L. (m) (<i>No P</i> a)	Yield (L/s) In umping Test F	ttake Depth (m) Test Method Te Reading Details Found)	o Measure Water Level To	Measure Discharge 7	fested By
Chemical Treatment	Duration (No (Success Chemical Trea	atment Details Found)			
Development Method Time Taken	(1	Other Developm No Developm	ent Method ent Details Found)			
Remarks						
		<u>ቀቀቀ ፲ - 1 - 6</u>	C111054224 ***			

End of GW054334

GW054719

Converted From HYDSYS

anou+110							
License :30BL117519		A	thorized Durmana(a)		Intende	d Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :Private		Au DO STO	morised Purpose(s) MESTIC DCK		DOMES STOCK	eu rurpose(s) STIC S	
Commenced Date : Completion Date :01-Dec-1980	Final Depth : Drilled Depth :	21.00 m 21.00 m					
Contractor Name : Driller :							
Property : GWMA : - GW Zone : -		S	tanding Water Leve Salinit Yiel	el : y : d :		Good	
Site Details							
Site Chosen By	Cou Form A :RAI Licensed :RA	unty LEIGH LEIGH	Parish BONVILL BONVILL	.E .E	Portion 201 201	n/Lot DP	
Region : 30 - NORTH COA River Basin : 205 - BELLINGEF Area / District :	ST K RIVER		CMA Map :9 Grid Zone :5	537-3N 6/2	COFFS HARE Scale :1:25,0	BOUR 000	
Elevation : Elevation Source :(Unknown)			Northing :6 Easting :5	646040 05125	Lati Longi	itude (S) :30° 19' 2 tude (E) :153° 3' 1	2"
GS Map : 0092A2 AMC	J Zone : 56	Co	oordinate Source :G	D.,ACC.MA	ĄР		
Construction Negative depths indic	ate Above Ground Level;H-Hol	le;P-Pipe;OD-Outside	e Diameter;ID-Inside Dia	meter;C-Ceme	nted;SL-Slot Length	n;A-Aperture;GS-Grain	Size;Q-Quantity
H P Component Type 1 1 Casing (Unknown) 1 1 Opening Slots	From (m) To (m) OD 0.00 21.00 9.00 21.00) (mm) ID (mm) 115 115) Interval Details (Unknown) 1 SL: 0mm; A:	Omin			
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ T16.0018.002.00Unknes	Гуре wn)	S.W.L. (m)	D.D.L. (m)	Yield (L/s) 1.30	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown)
To (m) To (m) Thickness(m) Drillers Descript 0.00 2.00 Soil 2.00 Soil 2.00 9.00 7.00 Soil Gravel 9.00 11.00 2.00 Soil Gravel 11.00 15.00 4.00 Soil Gravel 15.00 21.00 6.00 Gravel Soil	ion 9 Interlayere Water Sup <u>r</u>	bly	Geolog Soil Soil Soil Soil Grave	ical Material	Comme	ents	·
Pumping Tests - Summa Pumping Test Type Date Duration	I ries on S.W.L. (m) D.D.L. (m)	Yield (L/s) Intake l	Depth (m) Test Method	To Mea	sure Water Level	To Measure Discharg	e Tested By
(h Single-Rate Pumping Test 18-Dec-1980	r)	1.30	(Unknown)				
Pumping Tests - Reading Pumping Test Type Date Time (mir	GS 15) S.W.L. (m) D.D.L. (m) (No Pu.	Yield (L/s) Intake l mping Test Readi	Depth (m) Test Method ing Details Found)	To Mea	sure Water Level	To Measure Discharg	e Tested By
Chemical Treatment Treatment Method	Duration (No C	Success Themical Treatmen	nt Details Found)				
Development							
Metnoa Time Taken	(N	o Development D	Details Found)				
Remarks							
		*** End of GW	054719 ***				

GW055122

Converted From HYDSYS

GW055122					•	Converteu Fi	01110313
License :30BL119303			Authorised Purpose	(s)	Intende	ed Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			DOMESTIC STOCK		DOME STOCE	STIC C	
Commenced Date : Completion Date :01-Mar-1981	Final Depth : Drilled Depth :	19.80 m 19.80 m					
Contractor Name : Driller :							
Property : GWMA : - GW Zone : -			Standing Water L Sali Y	evel : nity : ield :		(Unknown)	
Site Details							
Site Chosen By	Form A License	County A :RALEIGH d :RALEIGH	Parish BONVI BONVI	LLE LLE	Portion 24 24	n/Lot DP	
Region : 30 - NORTH COA River Basin : 205 - BELLINGEI Area / District :	AST R RIVER		CMA Map Grid Zone	:9537-3N :56/2	COFFS HAR Scale :1:25,	BOUR ,000	
Elevation : Elevation Source :(Unknown)			Northing Easting	:6647000 :507510	Lat Long	itude (S) :30° 18' 3 itude (E) :153° 4' 4	51" -1"
GS Map : 0092A2 AM0	G Zone :56		Coordinate Source	:GD.,ACC.M	AP		
Construction Negative depths indi	cate Above Ground Leve	el;H-Hole;P-Pipe;OD-C	Dutside Diameter;ID-Inside I	Diameter;C-Cem	ented;SL-Slot Lengt	h;A-Aperture;GS-Grain	Size;Q-Quantity
H P Component Type 1 1 Casing (Unknown) 1 1 Opening Slots	From (m) To 0.20 20 8.00 20	(m) OD (mm) II 0.20 115 0.00 115) (mm) Interval Details Seated on 1 Mechanica	Bottom ally Slotted; SL: 01	nm; A: 0mm		
Water BearingZonesFrom (m)To (m)Thickness (m)WBZ10.7012.201.50(Unknow)	Type own)	S.W.L	. (m) D.D.L. (m)	Yield (L/s) 0.52	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown)
To (m) To (m) Thickness(m) Drillers Descript 0.00 3.00 3.00 Soil 3.00 16.80 13.80 Clay Some Gr 16.80 19.80 3.00 Shale	tion cavel Water Supply		Geo Soi Cla Sha	logical Material 1 Ay 11e	Comm	ients	
Pumping Tests - Summa Pumping Test Type Date Durati	ion S.W.L. (m) D.D.L.	. (m) Yield (L/s) Ir	ntake Depth (m) Test Metho	d To Me	asure Water Level	To Measure Discharg	e Tested By
() Single-Rate Pumping Test 10-Mar-1981	hr)	0.52	Airlift				
Pumping Tests - Readin Pumping Test Type Date Time (min	gs ns) S.W.L. (m) D.D.L (. (m) Yield (L/s) Ii No Pumping Test I	ntake Depth (m) Test Metho Reading Details Found	d To Me	asure Water Level	To Measure Discharg	e Tested By
Chemical Treatment							
Treatment Method	Duration	Success					
		(No Chemical Tre	atment Details Found)				
Development							
Method Time Taker	1	Other Developu	ent Method				
		(No Developm	ent Details Found)				
Remarks							
		*** End of	GW055122 ***				

GW055297

Converted From HYDSYS

				, in an			
License :30BL117612			Authorized Dumper-(-)		Inter-1	od Dunness(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Autnorised Purpose(s) DOMESTIC		Intend DOME	ea Purpose(s) STIC	
Commenced Date : Completion Date :01-Jul-1981	Final Depth : Drilled Depth :	27.40 m 27.40 m					
Contractor Name : Driller :							
Property : GWMA : - GW Zone : -			Standing Water Leve Salinit Yiel	el : y : d :		(Unknown)	
Site Details							
Site Chosen By	Co Form A :FI Licensed :FI	unty FZROY FZROY	Parish MOONEE MOONEE		Portio 324 324	n/Lot DP	
Region :30 - NORTH CC River Basin :205 - BELLING Area / District :)AST ER RIVER		CMA Map : Grid Zone :		Scale :		
Elevation : Elevation Source :(Unknown)			Northing :60 Easting :51	653787 11662	Lat Long	itude (S) :30° 14 itude (E) :153° 7	' 50" ' 16"
GS Map :0092A1 AM	AG Zone :56		Coordinate Source :		-		
Construction Negative depths in	dicate Above Ground Level;H-Hr	ole;P-Pipe;OD-C	Outside Diameter;ID-Inside Diar	neter;C-Cement	ed;SL-Slot Lengt	h;A-Aperture;GS-Gra	in Size;Q-Quantity
H P Component Type 1 1 Casing (Unknown) 1 1 Opening Slots	From (m) To (m) O -0.60 27.40 9.80 27.40	D (mm) ID 115 115) (mm) Interval Details Driven into H 1 Mechanically	ole Slotted; SL: Omm	; A: 0mm		
From (m) To (m) Thickness (m) WB 13.70 15.20 1.50 Unit 21.30 22.90 1.60 Unit	Z Type (nown) (nown)	S.W.L.	. (m) D.D.L. (m)	Yield (L/s) 0.65 0.39	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown) (Unknown)
Drillers Loa							
From (m) To (m) Thickness(m) Drillers Descritoria 0.00 0.91 0.91 Topsoil 0.91 27.40 26.49 Water Supp	iption 1y		Geologi Topso: (Unkno	cal Material il own)	Comm	ents	
Pumping Tests - Summ Pumping Test Type Date Dura	aries ation S.W.L. (m) D.D.L. (m)	Yield (L/s) Ιπ	itake Depth (m) Test Method	To Measu	re Water Level	To Measure Discha	rge Tested By
Single-Rate Pumping Test 29-Jul-1981	(hr)	1.04	Airlift				
Pumping Tests - Reading	ngs						
Pumping Test Type Date Time (n	ains) S.W.L. (m) D.D.L. (m)	Yield (L/s) In	take Depth (m) Test Method	To Measu	re Water Level	To Measure Discha	rge Tested By
	(No Pi	imping Test R	Reading Details Found)				
Chemical Treatment							
Treatment Method	Duration	Success					
	(No C	Chemical Trea	atment Details Found)				
Development							
Method Time Tak	en	Other Developm	ent Method				
	(1	Vo Developme	ent Details Found)				
Remarks							
		*** End of (GW055297 ***				

GW055517

Converted From HYDSYS

anoocon						
License :30BL120663			uthonized Durnese(s)	Int	anded Burnese(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		A E	OMESTIC		MESTIC	
Commenced Date : Completion Date :01-Jun-1981	Final Depth : Drilled Depth :	29.00 m 29.00 m				
Contractor Name : Driller :						
Property : GWMA : - GW Zone : -			Standing Water Level Salinity Yield	: : :	(Unknown)	
Site Details						
Site Chosen By	Form A : Licensed :	C ounty RALEIGH RALEIGH	Parish BONVILLE BONVILLE	Po L2 L2	r tion/Lot DP 3 DP537097 (29) 3 DP537097 (P+ Po#	
Region :3 0 - NORTH CO River Basin : 205 - BELLING Area / District :	DAST ER RIVER		CMA Map :953 Grid Zone :56/2	7-3N COFFS H 2 Scale : 1	ARBOUR :25,000	
Elevation : Elevation Source :(Unknown)			Northing :664 Easting :506	6250 290 L	Latitude (S) :30° 18 ongitude (E) :153° 3	' 55" ' 56"
GS Map :0092A2 Al	MG Zone :56	(C oordinate Source :GD	.,ACC.MAP		
Construction Negative depths in	ndicate Above Ground Level;H	I-Hole;P-Pipe;OD-Outs	side Diameter;ID-Inside Diame	ter;C-Cemented;SL-Slot L	ength;A-Aperture;GS-Gra	in Size;Q-Quantity
HPComponentType11CasingP.V.C.11OpeningSlots	From (m) To (m) -0.30 29.00 5.30 29.30	OD (mm) ID (m 100 100	m) Interval Details Seated on Botton 1 Mechanically Sl	n otted; SL: Omm; A: Omm		
Water BearingZonesFrom (m)To (m)Thickness (m)WB11.0011.000.00Frag	Z Type ctured	S.W.L. (m) D.D.L. (m)	Yield (L/s) Hole Depth 0.19	(m) Duration (hr)	Salinity (mg/L) (Unknown)
Torillers Log From (m) To (m) Thickness(m) Drillers Desci 0.00 4.30 4.30 Clay 4.30 29.00 24.70 Basalt Wate	ription .er Supply		Geologica Clay Basalt	l Material C	omments	
Pumping Tests - Sumn Pumping Test Type Date Dur	Taries ration S.W.L. (m) D.D.L. (m) Yield (L/s) Intak	e Depth (m) Test Method	To Measure Water Le	vel To Measure Discha	rge Tested By
Single-Rate Pumping Test 26-Jun-1981	(hr)	0.19	Airlift			
Pumping Tests - Readi Pumping Test Type Date Time (mins) S.W.L. (m) D.D.L. (m (<i>No</i>) Yield (L/s) Intak Pumping Test Rea	e Depth (m) Test Method ding Details Found)	To Measure Water Le	vel To Measure Discha	rge Tested By
	1	r o	.,			
Chemical Treatment	Duration	Success				
	(N	o Chemical Treatn	uent Details Found)			
Development Method Time Ta	ken	Other Development	Method			
		(No Development	Details Found)			
Remarks						

*** End of GW055517 ***

GW055518

Converted From HYDSYS

License :30BL121132		A		Tradara - 3 -		
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		Authorised Purpo DOMESTIC	DSE(S)	Intended DOMES	1 Furpose(s) TIC	
Commenced Date : Completion Date :01-Nov-1981	Final Depth : Drilled Depth :	23.00 m 23.00 m				
Contractor Name : Driller :						
Property : GWMA : - GW Zone : -		Standing Water St	Level : alinity : Yield :		(Unknown)	
Site Details						
Site Chosen By	Cou Form A :RA Licensed :RA	inty Paris LEIGH BON LEIGH BON	s h VILLE VILLE	Portion/ L24 (29) L24 (P+	Lot DP Port 29)	
Region :30 - NORTH CO/ River Basin :205 - BELLINGE Area / District :	AST ER RIVER	CMA Ma Grid Zon	ap :9537-3N ne :56/2	COFFS HARB Scale :1:25,0	OUR 00	
Elevation : Elevation Source :(Unknown)		Northi Eastin	ng :6646250 ng :506245	Latit Longit	ude (S) :30° 18' 53 ude (E) :153° 3' 54	5" 4"
GS Map :0092A2 AM	IG Zone :56	Coordinate Sour	ce :GD.,ACC.MA	AP		
Construction Negative depths ind	licate Above Ground Level;H-Hol	e;P-Pipe;OD-Outside Diameter;ID-Insid	le Diameter;C-Ceme	nted;SL-Slot Length;	A-Aperture;GS-Grain \$	Size;Q-Quantit
H P Component Type 1 1 Casing (Unknown) 1 1 Opening Slots	From (m) To (m) OD 0.00 23.00 11.00 23.00	Image: Image of the systemImage of the systemImage of the systemImage of the system12711111	i into Hole ım; A: 0mm			
From (m) To (m) Thickness (m) WBZ 10.00 13.00 3.00 Fractu 19.00 21.00 2.00 Fractu	Type ured ured	S.W.L. (m) D.D.L. (m)	Yield (L/s) 0.26 0.31	Hole Depth (m)	Duration (hr) S	alinity (mg/L) (Unknown) (Unknown)
To (m) To (m) Thickness(m) Drillers Descrip 0.00 1.00 1.00 Soil 1.00 2.00 1.00 Clay 2.00 10.00 8.00 Shale 10.00 23.00 13.00 Basalt Wate	ytion Yr Supply	C S S E	Geological Material Soil Clay Shale Basalt	Commer	ıts	
Pumping Tests - Summa	aries	Vield (I (2) - Intoles Donth (m) Test Med	had Ta Maa	www.Water Level	To Manual Disahawa	Trated Dr.
Single-Rate Pumping Test 13-Nov-1981	(hr) 3. w.L. (iii) D.D.L. (iii)	0.57 Airlift	nou iomea	sure water Level	To Measure Discharge	Tested by
Pumping Tests - Readin Pumping Test Type Date Time (mi	ins) S.W.L. (m) D.D.L. (m) (No Put	Yield (L/s) Intake Depth (m) Test Met mping Test Reading Details Fou	nd)	sure Water Level	To Measure Discharge	Tested By
Chemical Treatment						
l reatment Method	Duration (No C	Success hemical Treatment Details Found	d)			
Davidanimant						
Method Time Take	m C)ther Development Method				
	(N	o Development Details Found)				
		1 ,				
Remarks		•				

GW056113

Converted From HYDSYS

anocorro								
License :30BL12214	48							
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private				Authorised Purpose(s) DOMESTIC)	Intend GENEI	e d Purpose(s) RAL USE	
Commenced Date : Completion Date :01-Feb-198	32 D	Final Depth : Drilled Depth :	23.00 m 23.00 m	1				
Contractor Name : Driller :								
Property : GWMA : - GW Zone : -				Standing Water Lev Salini Yie	el : ty : ld :		(Unknown)	
Site Details								
Site Chosen By		Form A : Licensed :	C ounty FITZROY FITZROY	Parish COFF COFF		Portion L1 DP5 L1 DP5	h/Lot DP 585500 (14) 585500	
Region :3 0 - NOR River Basin :2 04 - CLA Area / District :	TH COAST ARENCE R	Γ IVER		CMA Map :9 Grid Zone :5	537-3N 6/2	COFFS HAR Scale :1:25,	BOUR 000	
Elevation : Elevation Source :(Unknown))			Northing :6 Easting :5	650365 04240	Lat Long	itude (S) :30° 16 itude (E) :153° 2	' 42" ' 39"
GS Map :0092A2	AMG 2	Zone :56		Coordinate Source :C	JD.,ACC.MA	Р		
Construction Negative of	lepths indicate	e Above Ground Level;H	-Hole;P-Pipe;OD-	Outside Diameter;ID-Inside Dia	meter;C-Cement	ted;SL-Slot Lengt	n;A-Aperture;GS-Gra	in Size;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots		From (m) To (m) 0.00 23.00 5.00 23.00	OD (mm) I 127 127	D (mm) Interval Details Seated on Bo 1 Mechanically	ttom Slotted; SL: 0mn	n; A: Omm		
Water Bearing ZoneFrom (m)17.0020.003	(m) WBZ Typ 6.00 Fractured	e	S.W.I	 (m) D.D.L. (m) 6.00	Yield (L/s) 0.65	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown)
Trom (m) To (m) Thickness(m) Drille 0.00 3.00 3.00 Clay 3.00 23.00 20.00 Shall	rs Description e Water Su	pply		Geolog Clay Shale	ical Material	Comm	ents	
Pumpina Tests - Su	ımmar	ies						
Pumping Test Type Date	Duration	S.W.L. (m) D.D.L. (m)	Yield (L/s)	ntake Depth (m) Test Method	To Measu	ire Water Level	To Measure Discha	rge Tested By
Single-Rate Pumping Test 18-Feb-1982	()	6.00	0.65	Airlift				
Pumping Tests - Re Pumping Test Type Date	eadings	S S.W.L. (m) D.D.L. (m) Yield (L/s) I	ntake Depth (m) Test Method	To Measu	ıre Water Level	To Measure Discha	rge Tested By
		(No	Pumping Test	Reading Details Found)				
Chemical Treatmen	t	Duration	Success					
) Chemical Tre	atment Details Found)				
		,710						
Development								
Method 1	lime Taken		Other Developr	nent Method				
			(No Developn	ent Details Found)				
Remarks								

*** End of GW056113 ***

GW056456

Converted From HYDSYS

License :30BL122700		A	••••••••••••••••(-)		Teter le l Deserver	-)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		Auth DOM STOC	DELISEG PUPPOSE(S) ESTIC IK		DOMESTIC STOCK	8)
Commenced Date : Completion Date :01-Feb-1982	Final Depth : Drilled Depth :	22.00 m 22.00 m				
Contractor Name : Driller :						
Property : GWMA : - GW Zone : -		Star	nding Water Level Salinity Yield	: : :	(Unknown)
Site Details						
Site Chosen By	Cour Form A :RAL Licensed :RAL	nty EIGH EIGH	Parish BONVILLE BONVILLE		Portion/Lot DP 110 P+ Port 110	
Region :30 - NORTH COA River Basin : 205 - BELLINGE Area / District :	AST R RIVER		CMA Map :953 Grid Zone :56/	37-3N COF 2 Sca	FS HARBOUR ale :1:25,000	
Elevation : Elevation Source :(Unknown)			Northing :664 Easting :50	45940 5565	Latitude (S) :30 Longitude (E) :15)° 19' 6" 53° 3' 28"
GS Map :0092A2 AM	G Zone :56	Coor	dinate Source :GE	.,ACC.MAP		
Bit Matrix Component Type Type 1 1 Casing P.V.C. 1 1 Opening Slots	cate Above Ground Level;H-Hole From (m) To (m) OD (0.00 22.00 10.00 22.00	;P-Pìpe;OD-Outside D mm) ID (mm) I 125 125	iameter;ID-Inside Diam Interval Details Seated on Botto 1 Mechanically S	eter;C-Cemented;SL- m hotted; SL: 0mm; A: 0n	Slot Length;A-Aperture;G	S-Grain Size;Q-Quantity
Water Bearing Zones From (m) To (m) Thickness (m) WBZ 9.00 12.00 3.00 Uncon 18.00 20.00 2.00 Fracture	Type solidated red	S.W.L. (m)	D.D.L. (m)	Yield (L/s) Hole 1 0.26 0.39	Depth (m) Duration (hr)	Salinity (mg/L) (Unknown) (Unknown)
Torillers Log From (m) To (m) Thickness(m) Drillers Description 0.00 4.00 4.00 Clay 4.00 17.00 13.00 Gravel Clay 17.00 22.00 5.00 Shale Water	tion Interlayere Water Supply Supply		Geologic: Clay Gravel Shale	al Material	Comments	
Pumping Tests - Summa Pumping Test Type Date Durati	aries ion S.W.L. (m) D.D.L. (m) Y	ïield (L/s) – Intake Dep	th (m) Test Method	To Measure Wa	ter Level To Measure I	Discharge Tested By
(I Single-Rate Pumping Test 19-Feb-1982	hr)	0.65	Airlift			
Pumping Tests - Readin Pumping Test Type Date Time (min	gs ns) S.W.L. (m) D.D.L. (m) Y	'ield (L/s) Intake Dep	th (m) Test Method	To Measure Wa	ter Level To Measure l	Discharge Tested By
	(No Pum	ping Test Reading	Details Found)			
Chemical Treatment Treatment Method	Duration (No Chu	Success emical Treatment 1	Details Found)			
Development Method Time Taker	n Ot	her Development Meth	od			
	(No	Development Det	ails Found)			
Remarks						

*** End of GW056456 ***

GW057225

Converted From HYDSYS

.

License :30BL122198		Authorized Durnese(s)	Intended Purnose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		DOMESTIC	DOMESTIC
Commenced Date : Completion Date :01-Nov-1981	Final Depth : 35.00 orilled Depth : 35.00	m m	
Contractor Name : Driller :			
Property : GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	(Unknown)
Site Details			
Site Chosen By	County Form A :RALEIGH Licensed :RALEIGH	Parish BONVILLE BONVILLE	Portion/Lot DP L3 DP246562 (11) LT 3 DP 246562
Region : 30 - NORTH COAST River Basin : 205 - BELLINGER F Area / District :	RIVER	CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARBOUR Scale :1:25,000
Elevation : Elevation Source :(Unknown)		Northing : 6646890 Easting : 507435	Latitude (S) :30° 18' 35" Longitude (E) :153° 4' 38"
GS Map :0092A2 AMG 2	Zone : 56	Coordinate Source :GD.,ACC.M	IAP
Construction Negative depths indicate	e Above Ground Level;H-Hole;P-Pipe;O[D-Outside Diameter; ID-Inside Diameter; C-Cerr	ented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots	From (m) To (m) OD (mm) 0.00 36.00 127 18.00 36.00 127	ID (mm) Interval Details (Unknown) 1 SL: 0mm; A: 0mm	
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ Typ29.0031.002.00Fractured	e S.W	7.L. (m) D.D.L. (m) Yield (L/s) 0.39	Hole Depth (m) Duration (hr) Salinity (mg/L) (Unknown)
To (m) To (m) Thickness(m) Drillers Description 0.00 3.00 3.00 Soil 3.00 14.00 11.00 Shale 24.00 35.00 11.00 Shale	upply	Geological Material Soil Shale Shale Basalt	Comments
Pumping Tests - Summar	ies		
Pumping Test Type Date Duration (hr) Single-Rate Pumping Test 13-Nov-1981 13-Nov-1981	S.W.L. (m) D.D.L. (m) Yield (L/s) 0.39	Intake Depth (m) Test Method To Me Airlift	easure Water Level To Measure Discharge Tested By
Pumping Tests - Reading Pumping Test Type Date Time (mins)	S S.W.L. (m) D.D.L. (m) Yield (L/s)	Intake Depth (m) Test Method To M	easure Water Level To Measure Discharge Tested By
	(No Pumping Tes	t Reading Details Found)	
Chamical Trastment			
Treatment Method	Duration Success		
	(No Chemical T	reatment Details Found)	
Development			
Method Time Taken	Other Develo	pment Method	
	(No Develop	oment Details Found)	
Remarks			

*** End of GW057225 ***

GW058648

Converted From HYDSYS

a 11030040						
License :30BL128978						
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :Private			Authorised Purpose(s) DOMESTIC	Int DO	ended Purpose(s) MESTIC	
Commenced Date : Completion Date :01-Jan-1979	Final Depth : Drilled Depth :	20.00 m 0.00				
Contractor Name : Driller :						
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	:	(Unknown)	
Site Details						
Site Chosen By	(Form A :F Licensed :F	County TITZROY TITZROY	Parish COFF COFF	Po 96 96	tion/Lot DP	
Region : 30 - NORTH C River Basin : 205 - BELLIN Area / District :	COAST GER RIVER		CMA Map : 953 Grid Zone : 56/2	7-3N COFFS H 2 Scale :1	ARBOUR :25,000	
Elevation : Elevation Source :(Unknown)			Northing :665 Easting :512	1135 310 L	Latitude (S) :30° 16' 17 ongitude (E) :153° 7' 41	7'' ''
GS Map : 0092A2	MG Zone :56		Coordinate Source :GD.	,ACC.MAP		
Construction Negative depths	indicate Above Ground Level;H-	Hole;P-Pipe;OD-C	Outside Diameter; ID-Inside Diame	ter;C-Cemented;SL-Slot L	ength;A-Aperture;GS-Grain S	ize;Q-Quantity
H P Component Type	From (m) To (m)	OD (mm) ID	(mm) Interval Details			
		(No Constructi	on Details Found)			**
Water Bearing Zones From (m) To (m) Thickness (m) W	'BZ Type	S.W.L.	. (m) D.D.L. (m) Y	/ield (L/s) Hole Depth	(m) Duration (hr) S	alinity (mg/L)
	(No	Water Bearing	g Zone Details Found)			
Drillers Log From (m) To (m) Thickness(m) Drillers Des	cription	(No Drillers L	Geological og Details Found)	Material C	omments	
Pumping Tests - Sum	maries					
Pumping Test Type Date D	uration S.W.L. (m) D.D.L. (m)	Yield (L/s) In	take Depth (m) Test Method	To Measure Water Le	vel To Measure Discharge	Tested By
Single-Rate Pumping Test 01-Jan-1984	()	0.13	(Unknown)			
Pumping Tests - Read	ings	Viold (L/n) Ir	tale Danth (m) Test Mathad	To Monguno Water Lo	ual Ta Maagura Disabawaa	Tested Bu
rumping test type Date Time	(Mans) 3. W.L. (m) D.D.L. (m)	Pumping Test F	Reading Details Found)	To Measure Water Le	10 Measure Discharge	resteu by
	(110)	uniping resi r	county Dennis I bundy			
Chemical Treatment	Duration	Success				
i realment Michiou	(No	Chemical Tree	atment Details Found)			
	(1.0					
Development						
Method Time T	aken	Other Developm	ent Method			
		(No Developme	ent Details Found)			
Demerko						
remarks						

*** End of GW058648 ***

GW059004

Converted From HYDSYS

License :30BL117135		4 41		Intondo		
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :Private		Auti DON IRR STO	norisea Purpose(s) MESTIC IGATION ICK	intende IRRIGA	a rurpose(s) TION	
Commenced Date : Completion Date :01-Nov-1982	Final Depth : Drilled Depth :	23.50 m 23.50 m				
Contractor Name : Driller :						
Property : GWMA : - GW Zone : -		Sta	anding Water Level : Salinity : Yield :		(Unknown)	
Site Details						
Site Chosen By	C Form A :R. Licensed :R.	ounty ALEIGH ALEIGH	Parish BONVILLE BONVILLE	Portion L102 DI NOT AV	/ Lot DP P608862 (162) ∀AILABLE	
Region :30 - NORTH CO/ River Basin :205 - BELLINGE Area / District :	AST R RIVER		CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARE Scale :1:25,0	OUR 000	
Elevation : Elevation Source :(Unknown)			Northing :6647675 Easting :506325	5 Lati Longi	tude (S) :30° 18' 9 tude (E) :153° 3' 5)'' 57''
GS Map :0092A2 AM	G Zone :56	Cor	ordinate Source :GD.,AC	C.MAP		
Construction Negative depths ind	Errom (m) To (m)	lole;P-Pipe;OD-Outside	Diameter;ID-Inside Diameter;C-	-Cemented;SL-Slot Length	;A-Aperture;GS-Grain	Size;Q-Quantity
H P Component Type 1 1 Casing Threaded Steel 1 1 Opening Slots	-0.50 23.50 5.50 23.50	127 127	Seated on Bottom 1 SL: 0mm; A: 0mm			
From (m) To (m) Thickness (m) WBZ 7.00 8.00 1.00 Uncor 17.00 19.00 2.00 Fracture	Type isolidated ired	S.W.L. (m)	D.D.L. (m) Yield	(L/s) Hole Depth (m) 0.26 0.52	Duration (hr)	Salinity (mg/L) (Unknown) (Unknown)
From (m) To (m) Thickness(m) Drillers Descrip 0.00 2.00 2.00 Soil 2.00 7.00 5.00 Clay White 7.00 17.00 10.00 Shale 17.00 23.50 6.50 Blue Metal	tion Water Supply Water Supply		Geological Mat Soil Clay Shale Blue Metal	erial Comme	nts	
Pumping Tests - Summ	aries	Viold (V /e) - Testeller D	anth (m) Tost Mathad	Fo Moosure Woter Level	To Moscure Disobare	a Tactad By
Pumping Test Type Date Durate Single-Rate Pumping Test 03-Nov-1982 03-Nov-1982	hr)	0.78	(Unknown)	to Measure Water Level	To measure Discharg	c Testeu Dy
Pumping Tests - Readin	as					
Pumping Test Type Date Time (m	ins) S.W.L. (m) D.D.L. (m)	Yield (L/s) Intake D	epth (m) Test Method	Fo Measure Water Level	To Measure Discharg	e Tested By
	(No F	'umping Test Readir	ıg Details Found)			
Chemical Treatment						
Treatment Method	Duration	Success				
	(No	Chemical Treatmen	t Details Found)			
Development						
Method Time Take	n	Other Development Me	ethod			
	(No Development De	etaus Found)			
Remarks						

*** End of GW059004 ***

GW059050

Converted From HYDSYS

License :30BL126752			Authorized Dumpose(s)		Intende	d Dumposo(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :Private			Authorised Purpose(s) DOMESTIC IRRIGATION STOCK		Intende IRRIGA	ATION	
Commenced Date : Completion Date :01-Jun-1983	Final Depth : Drilled Depth :	50.00 m 50.00 m					
Contractor Name : Driller :							
Property : - LUCAS'S GWMA : - GW Zone : -			Standing Water Level Salinity Yield	:		(Unknown)	
Site Details							
Site Chosen By	Form A Licensed	County FITZROY FITZROY	Parish MOONEE MOONEE		Portion LOT 35 LOT 35	59 DP44800 59 DP 44800	
Region :3 0 - NORTH River Basin : 205 - BELLIN Area / District :	COAST NGER RIVER		CMA Map :95 Grid Zone :56	37-3N /2	COFFS HARI Scale :1:25,	BOUR 000	
Elevation : Elevation Source :(Unknown)			Northing :66: Easting :51	52220 1115	Lati Longi	itude (S) :30° 15 tude (E) :153° 6	' 41" ' 56"
GS Map :0092A2	AMG Zone :56		Coordinate Source :GI	D.,ACC.M	AP		
Construction Negative depth	ns indicate Above Ground Level;	H-Hole;P-Pipe;OD-Ou	tside Diameter;ID-Inside Diam	eter;C-Ceme	ented;SL-Slot Length	n;A-Aperture;GS-Gra	ain Size;Q-Quantity
H P Component Type 1 1 Casing (Unknown) 1 1 Opening Slots	From (m) To (m 0.00 50.00 32.00 50.00) OD (mm) ID () 125) 125	mm) Interval Details Seated on Botto 1 SL: Omm; A: O	nini mini			
Water Bearing ZonesFrom (m)To (m)36.0045.009.00	WBZ Type Fractured	S.W.L . (m) D.D.L. (m)	Yield (L/s) 0.39	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown)
Trom (m) To (m) Thickness(m) Drillers D 0.00 2.00 2.00 Soil 0.00 2.00 2.00 Stones 2.00 36.00 34.00 Basalt 36.00 50.00 5.00 Basalt	escription Floater Mater Supply		Geologic Soil Stones Basalt Shale Basalt	al Material	Comm	ents	
Pumping Tests - Sum Pumping Test Type Date	Duration S.W.L. (m) D.D.L. (r	n) Yield (L/s) Inta	ske Depth (m) Test Method	To Me	asure Water Level	To Measure Disch:	urge Tested By
Single-Rate Pumping Test 17-Jun-1983	(hr) 2.00	0.39	48.00 Turbine Pump, Su	ıbm			
Pumping Tests - Read Pumping Test Type Date Tim	dings ne (mins) S.W.L. (m) D.D.L. (n (No	n) Yield (L/s) Inta 9 Pumping Test Re	ake Depth (m) Test Method rading Details Found)	To Me	asure Water Level	To Measure Discha	arge Tested By
Chemical Treatment	Duration	Success					
	(1	lo Chemical Treat	ment Details Found)				
Development Method Time	Taken	Other Developmen	nt Method 1t Details Found)				
Remarks							
STATE FOREST NO 8		*** End of G	W059050 ***				

GW059711

Converted From HYDSYS

License :30BL120717		Authorized Purnosa(s)	Intended Purnesale)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		DOMESTIC	DOMESTIC	
Commenced Date : Completion Date :01-Nov-1981	Final Depth : 24.00 Drilled Depth : 24.00	m m		
Contractor Name : Driller :				
Property : GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	(Unknown)	
Site Details				
Site Chosen By	County Form A :FITZROY Licensed :FITZROY	Parish MOONEE MOONEE	Portion/Lot DP L2 DP542426 (14) LT 2 DP 542426	
Region :3 0 - NORTH COA: River Basin : 205 - BELLINGER Area / District :	ST RIVER	CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARBOUR Scale :1:25,000	
Elevation : Elevation Source :(Unknown)		Northing : 6653300 Easting : 512830	Latitude (S) :30° 15 Longitude (E) :153° 7	6" 60"
GS Map :0092A2 AMG	Zone : 56	Coordinate Source :GD.,ACC	C.MAP	
Construction Negative depths indic	ate Above Ground Level;H-Hole;P-Pipe;OI	D-Outside Diameter; ID-Inside Diameter; C-0	Cemented;SL-Slot Length;A-Aperture;GS-Gra	in Size;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots	From (m) To (m) OD (mm) 0.00 24.00 127 12.00 24.00 127	ID (mm) Interval Details Seated on Bottom 1 Mechanically Slotted; S	:L: 0mm; A: 0mm	
From (m) To (m) Thickness (m) WBZ T 12.00 14.00 2.00 Uncons 15.00 18.00 3.00 Fracture	ype S.W Didated	/.L. (m) D.D.L. (m) Yield (I C C	L/s) Hole Depth (m) Duration (hr) .13 .52	Salinity (mg/L) (Unknown) (Unknown)
Trom (m) To (m) Thickness(m) Drillers Descripti 0.00 2.00 2.00 Soil 2.00 15.00 13.00 Clay Water St 15.00 24.00 9.00 Shale Water St	on ⊐pply Supply	Geological Mate Soil Clay Shale	rial Comments	
Pumping Tests - Summa Pumping Test Type Date Duratio	ries n S.W.L. (m) D.D.L. (m) Yield (L/s)	Intake Depth (m) Test Method Te	o Measure Water Level To Measure Discha	rge Tested By
(h Single-Rate Pumping Test 11-Nov-1981	r) 0.65	Airlift		
Pumping Tests - Reading Pumping Test Type Date Time (min	35 s) S.W.L. (m) D.D.L. (m) Yield (L/s)	Intake Depth (m) Test Method To	o Measure Water Level To Measure Discha	rge Tested By
	(No Pumping Tes	st Reading Details Found)		
Chemical Treatment	Duration Success	in the Details Found		
	(No Chemical I	reatment Details Founa)		
Development	Other Devide	anmant Mathad		
ine Taken	(No Develor	oment Details Found)		
	(no Develop	men Denno i Onna)		
Remarks				

*** End of GW059711 ***

GW060108

Converted From HYDSYS

411000100										
License :	30BL178164							.		
Work Type : Work Status : Construct. Method : Owner Type :	Bore (Unknown) Rotary Air Private				Authorised DOMESTI STOCK	i Purpose(s) C		Intend IRRIG	ed Purpose(s) ATION	
Commenced Date : Completion Date :	01-Jul-1984	Final Dept Drilled Dept	:h : :h :	36.00 36.00	m m					
Contractor Name : Driller :										
Property : GWMA : GW Zone :	- "JARRETT'S" - -				Standing	Water Leve Salinit Yiel	el : y : d :		(Unknown)	
Site Details										
Site Chosen By		Fo Lic	Co orm A :FI ensed :FI	unty TZROY TZROY		Parish COFF COFF	*****	Portio LOT 1 LT 1 D	n/Lot DP DP362238 DP 362238	
Region : River Basin : Area / District :	30 - NORTH COA 205 - BELLINGEF	ST R RIVER			C. G	MA Map :95 rid Zone :56	537-3N 5/2	COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :	(Unknown)					Northing :60 Easting :50	548700 08435	Lat Long	itude (S) :30° 17' itude (E) :153° 5'	36" 16"
GS Map :	0092A2 AMC	G Zone :56			Coordinat	e Source :G	D.,ACC.MA	AP		
Construction	Negative depths indic	ate Above Groun	d Level;H-H	ole;P-Pipe;OD	-Outside Diamete	r;ID-Inside Diar	neter;C-Cernei	nted;SL-Slot Lengt	h;A-Aperture;GS-Grai	n Size;Q-Quantity
HPComponentType11CasingP.V.C.11OpeningSlots11OpeningSlots		From (m) 0.00 10.00 24.00	To (m) O 36.00 16.00 36.00	D (mm) 125 125 125	ID (mm) Interva	I Details Seated on Both Plastic; SL: Or Plastic; SL: Or	tom nm; A: 0mm nm; A: 0mm			
From (m) To (n) 13.00 16.0 29.00 31.0	Thickness (m) WBZ T 00 3.00 (Unknes) 00 2.00 (Unknes)	Ype wn) wn)		S.W.	.L. (m) D.D.L	. (m)	Yield (L/s) 0.65 1.30	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown) (Unknown)
Drillers Log										
From (m) To (m) Thiel 0.00 1.00 1.00 1.00 4.00 7.00 7.00 13.00 13.00 13.00 16.00 29.00 29.00 31.00 36.00	<pre>kness(m) Drillers Descript 1.00 Topsoil Blac 3.00 Clay 3.00 Shale 6.00 Basalt 3.00 Rock Broken 13.00 Rock Broken 2.00 Rock Broken 5.00 Basalt</pre>	on k Water Supply Water Supply				Geologi Topsoi Clay Shale Basalt Rock Basalt Rock Basalt	cal Material i 1 : : :	Comm	ients	
Pumping Tes	ts - Summa	ries		Viold (L/c)	Intoko Donth (m)	Test Mathad	Ta Maa	www.Woton Level	T- M Dib	
Single-Rate Pumping Test	09-Jul-1984	r)	D.D.L. (III)	1.95	Intake Depth (m)	Airlift	10 Meas	sure water Level	10 Measure Dischar	ge Tested By
Pumpina Tes	ts - Readin	as								
Pumping Test Type	Date Time (min	s) S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Intake Depth (m)	Test Method	To Meas	sure Water Level	To Measure Dischar	ge Tested By
			(No Pı	mping Test	t Reading Deta	ils Found)				
Chemical Tre	atment									
Treatment Met	hod	Duration	(No C	Success	e atur aut Datail	(Found)				
			(100 C	nemicai Ir	eaiment Detäll	s rouna)				
Development	rimo Takan			Other Devel-	mont Method					
	inne taken		73	la Davalan	ment Dotails E	ound)				
			(1	o Developi	ment Details F	липа)				

Remarks

GW061184

Converted From HYDSYS

License :30BL133224			Authonical Durrage (-)		Intended Dermana(a)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Autorisea Purpose(s) DOMESTIC STOCK		unenaea rurpose(s) DOMESTIC STOCK	
Commenced Date : Completion Date :01-Aug-1985	Final Depth : Drilled Depth :	25.00 m 25.00 m				
Contractor Name : Driller :						
Property : GWMA : - GW Zone : -			Standing Water Leve Salinit Yiele	el : y : d :	(Unknown)	
Site Details						
Site Chosen By	Co Form A :RA Licensed :RA	ounty ALEIGH ALEIGH	Parish BONVILL BONVILL	E	Portion/Lot DP 24 PT24	
Region :30 - NORTH CC River Basin :205 - BELLING Area / District :	DAST ER RIVER		CMA Map :95 Grid Zone :56	537-3N COFFS 5/2 Scale	S HARBOUR 2 :1:25,000	
Elevation : Elevation Source :(Unknown)	•		Northing :66 Easting :50	547515 07565	Latitude (S) :30° 18 Longitude (E) :153° 4	' 14" ' 43"
GS Map :0092A2 AN	IG Zone :56		Coordinate Source :G	D.,ACC.MAP		
Construction Negative depths in	dicate Above Ground Level;H-Ho	ole;P-Pipe;OD-Ou	tside Diameter;ID-Inside Dian	neter;C-Cemented;SL-SI	ot Length;A-Aperture;GS-Gra	in Size;Q-Quantity
HPComponentType11CasingP.V.C.11OpeningSlots - Vertical	From (m) To (m) OI 0.00 25.00 19.00 25.00	D (mm) ID (125 125	mm) Interval Details Seated on Bott 1 Mechanically	tom Slotted; SL: 0mm; A: 1.5m	m	
Water BearingZonesFrom (m)To (m)Thickness (m)WB21.0023.002.00Frac	Z Type tured	S.W.L. (1	m) D.D.L. (m)	Yield (L/s) Hole De 1.30	pth (m) Duration (hr)	Salinity (mg/L) (Unknown)
Tron (m) To (m) Thickness(m) Drillers Description 0.00 3.00 3.00 Soil 3.00 7.00 4.00 Clay 7.00 21.00 14.00 Basalt 23.00 25.00 2.000 Basalt	ption ctured Basalt Water Supp	ly	Geologi Soil Clay Fasalt Invali Basalt	cal Material	Comments	
Pumping Tests - Summ	aries					
Pumping Test Type Date Dura	ation S.W.L. (m) D.D.L. (m) (hr)	Yield (L/s) Inta	ke Depth (m) Test Method	To Measure Water	Level To Measure Discha	rge Tested By
Single-Rate Pumping Test 15-Aug-1985		1.30	Airlift			
Pumping Iests - Headin Pumping Test Type Date Time (n	195 nins) S.W.L. (m) D.D.L. (m)	Yield (L/s) Inta	ke Depth (m) Test Method	To Measure Water	Level To Measure Discha	rge Tested By
	(No Pi	umping Test Re	ading Details Found)			
Chamical Treatment						
Treatment Method	Duration	Success				
	(No C	Chemical Treat	ment Details Found)			
Development		Other Development	A Mada a			
ислов ите так	()	Vo Developmen	n Method at Details Found)			
	(1					
Remarks						

*** End of GW061184 ***

DEPARTMENT OF LAND & WATER CONSERVATION

Work Summary

GW061618

Converted From HYDSYS

License :30BL133638				T. (
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Autnorised Purpose(s) DOMESTIC STOCK	Intende DOME: STOCK	ca rurpose(s) STIC
Commenced Date : Completion Date :01-Nov-1985	Final Depth : Drilled Depth :	32.00 m 32.00 m			
Contractor Name :D C JACKWITZ Driller :1022	Z JACKWITZ, Douglas Char	rles			
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	1.56 L/s	(Unknown)
Site Details					
Site Chosen By	Co Form A :FF Licensed :FF	unty FZROY FZROY	Parish MOONEE MOONEE	Portion LOT 10 LT 101	VLot DP 11 DP604622 DP 604622
Region :30 - NORTH (River Basin :205 - BELLIN Area / District :	COAST GER RIVER		CMA Map :9537-4 Grid Zone :56/2	S MOONEE BE Scale :1:25,0	ACH 000
Elevation : Elevation Source :(Unknown)			Northing :665376 Easting :51207	67 Lati 5 Longi	tude (S) :30° 14' 51" tude (E) :153° 7' 32"
GS Map : 0092A1	MG Zone :56		Coordinate Source :GD.,A	CC.MAP	
Construction Negative depths	indicate Above Ground Level;H-He	ole;P-Pipe;OD-Ou	tside Diameter;ID-Inside Diameter;	C-Cemented;SL-Slot Length	;A-Aperture;GS-Grain Size;Q-Quantity
H P Component Type 1 Hole Hole 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical	From (m) To (m) O. 0.00 32.00 0.00 32.00 0.00 32.00 32.00 0.00 32.00	D (mm) ID (125 125 125	mm) Interval Details Rotary Seated on Bottom 1 PVC; SL: 150mm; A	s: 3mm	
From (m) To (m) Thickness (m) W 18.00 20.00 7.00	/BZ Type ractured ractured ractured	S.W.L . ()	m) D.D.L. (m) Yiek	d (L/s) Hole Depth (m) 0.39 0.39 0.78	Duration (hr) Salinity (mg/L) (Unknown) (Unknown) (Unknown)
To (m) To (m) Thickness(m) Drillers Des 0.00 4.00 24.00 Clay 4.00 29.00 25.00 Shale War 29.00 31.00 2.00 Shale Har 31.00 32.00 1.00 Shale Har	cription ter Supply rd Water Supply rd Basalt		Geological M Clay Shale Shale Shale	aterial Comme	ents
Pumping Tests - Sumi Pumping Test Type Date D	maries uration S.W.L. (m) D.D.L. (m)	Yield (L/s) Inta	ke Depth (m) Test Method	To Measure Water Level	To Measure Discharge Tested By
Single-Rate Pumping Test 19-Nov-1985	()	1.56	Airlift		
Pumping Tests - Read	lings				
Pumping Test Type Date Time	e (mins) S.W.L. (m) D.D.L. (m)	Yield (L/s) Inta	ading Details Found)	To Measure Water Level	To Measure Discharge Tested By
	(14011)	imping test Ke	ading Delaits Pouna)		
Chemical Treatment	Duration	Sugars			
reament section	(No C	Chemical Treat	ment Details Found)		
Development Method Time T Jetting 1.00	'aken	Other Developmer	tt Method		
Remarks					
		*** End of G	W061618 ***		

GW061642

Converted From HYDSYS

GW001042					
License :30BL133943	3		uthorisod Purnoso (s)	Inton	dad Burnosa(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		D	OMESTIC	DOM	ESTIC
Commenced Date : Completion Date :01-Mar-1986	Final Depth : 5 Drilled Depth :	53.00 m 53.00 m			
Contractor Name : Driller :1504	JACKWITZ, William De	ouglas			
Property : GWMA : - GW Zone : -			Standing Water Level Salinity Yield	: : :	(Unknown)
Site Details					
Site Chosen By	Form A : Licensed :	County RALEIGH RALEIGH	Parish BONVILLE BONVILLE	Porti L3 (2 LT3 F	on/Lot DP 3) YT23
Region :30 - NORT River Basin :205 - BELI Area / District :	H COAST LINGER RIVER		CMA Map :953 Grid Zone :56/	7-3N COFFS HAD 2 Scale :1:2	RBOUR 5,000
Elevation : Elevation Source :(Unknown)			Northing :664 Easting :508	6825 La 387 Lon	ıtitude (S) :30° 18' 37" gitude (E) :153° 5' 14"
GS Map :0092A2	AMG Zone :56	(Coordinate Source :GD	.,ACC.MAP	
Begin value Negative de H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical 1 1 Opening Slots - Vertical	pths indicate Above Ground Level;H From (m) To (m) 0.00 53.00 14.00 20.00 47.00 53.00	I-Hole;P-Pipe;OD-Outsi OD (mm) ID (m 125 125 125 125	de Diameter;ID-Inside Diame m) Interval Details Seated on Botto 1 SL: Ornm; A: 3r 2 SL: Omm; A: 3r	ster;C-Cemented;SL-Slot Len; ຫ ພາ ພາ)th;A-Aperture;GS-Grain Size;Q-Qu
From (m) To (m) Thickness (n) 16.00 28.00 12.0 45.00 50.00 5.0	 WBZ Type Fractured (Unknown) 	S.W.L. (m)) D.D.L. (m)	Yield (L/s) Hole Depth (m 0.39 1.56) Duration (hr) Salinity (mq (Unkno (Unkno
To (m) To (m) Thickness(m) Drillers 0.00 3.00 3.00 Shale 3.00 16.00 13.00 Basal 16.00 18.00 2.00 Rock : 18.00 40.00 22.00 Basal 18.00 45.00 5.00 Basal 45.00 50.00 5.00 Basal 50.00 53.00 3.00 Basal	; Description t Broken Shale Water Supply t Water Supply z Shale t Hard Broken Water Supply t		Geologica Shale Basalt Rock Basalt Invalić Basalt Rock Basalt	l Material Com Code	ments
Pumping Tests - Sul Pumping Test Type Date	mmaries Duration S.W.L. (m) D.D.L. (m (hr)) Yield (L/s) Intake	e Depth (m) Test Method	To Measure Water Level	To Measure Discharge Tester
Single-Rate Pumping Test 06-Mar-1986		1.95	Airlift		
Pumping Test Type Date	AGINGS Time (mins) S.W.L. (m) D.D.L. (m) Yield (L/s) Intak	e Depth (m) Test Method	To Measure Water Level	To Measure Discharge Tester
	(No	Pumping Test Rea	ding Details Found)		
Chamical Tractment					
Treatment Method	Duration	Success			
	(Ne	o Chemical Treatm	ent Details Found)		
Development Method Tin	me Taken	Other Development	Method		
		(No Development	Details Found)		

Remarks

GW062887

Converted From HYDSYS

GW002007							
License :30BL134946			A. d				
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Authorised Purpose(s) DOMESTIC		Intend DOME	ea Purpose(s) STIC	
Commenced Date : Completion Date :01-Jul-1986	Final Depth : Drilled Depth :	24.00 m 24.00 m					
Contractor Name : Driller :1504	JACKWITZ, William Do	ouglas					
Property : GWMA : - GW Zone : -			Standing Water Level Salinity Yield	:		(Unknown)	
Site Details							
Site Chosen By	(Form A :F Licensed :F	C ounty RALEIGH RALEIGH	Parish BONVILLE BONVILLE	3	Portio L4 (24 LT4 P	n/Lot DP) [² 4	
Region :30 - NORTH (River Basin :205 - BELLIN Area / District :	COAST GER RIVER		CMA Map :953 Grid Zone :56/	37-3N /2	COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :(Unknown)			Northing :664 Easting :507	47018 7450	Lat Long	itude (S) :30° 18 itude (E) :153° 4	31" 39"
GS Map : 0092A2	AMG Zone :56		Coordinate Source :GI	.,ACC.MAP)		
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical Water Bearing Zones From (m) To (m) Thickness (m) V 12.00 14.00 2.00 From (m) From (m)	From (m) To (m) 0.00 24.00 12.00 24.00 WBZ Type ractured	OD (mm) ID 125 125 S.W.L.	(mm) Interval Details Seated on Botto 1 SL: Omm; A: 3 (m) D.D.L. (m)	om mn Yield (L/s) 0.39	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown)
18.00 20.00 2.00 F	ractured			0.52			(Unknown)
From (m) To (m) Thickness(m) Drillers Des 0.00 8.00 8.00 Clay 8.00 14.00 6.00 Shale 14.00 24.00 10.00 Basalt S	cription hale Water Supply		Geologic Clay Shale Basalt	al Material	Comm	ents	
Pumping Tests - Sum Pumping Test Type Date D	maries uration S.W.L. (m) D.D.L. (m)	Yield (L/s) Inv	ake Depth (m) Test Method	To Measur	re Water Level	To Measure Discha	rge Tested By
Single-Rate Pumping Test 24-Jul-1986	()	0.91	Airlift				
Pumping Tests - Read Pumping Test Type Date Time	lings e (mins) S.W.L. (m) D.D.L. (m) (<i>No</i> .	Yield (L/s) Int Pumping Test Re	ake Depth (m) Test Method eading Details Found)	To Measu	re Water Level	To Measure Discha	rge Tested By
Chemical Treatment	Duration	Success					
	(No	Chemical Trea	tment Details Found)				
Development	`aken	Other Developme	nt Method				
		(No Developme	nt Details Found)				
Remarks		- 					

*** End of GW062887 ***

GW063637

Converted From HYDSYS

License :30BL177585			Authorized Durness	c)	Intond	ad Durnosa(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			IRRIGATION	8)	DOME STOCI	STIC	
Commenced Date : Completion Date :01-Sep-1986	Final Depth : Drilled Depth :	46.00 m 46.00 m					
Contractor Name : Driller :1504 Ja	ACKWITZ, William Dougl	as					
Property : - MC DONALDS GWMA : - GW Zone : -			Standing Water Le Salin Yi	vel : ity : eld :	5.00 m 0.65 L/s	(Unknown)	
Site Details							
Site Chosen By	Cou Form A :RAL Licensed :RAL	nty .EIGH .EIGH	Parish BONVII BONVII	LE LE	Portio LOT 5 LT 51	n/Lot DP 1 DP800733 DP 800733	
Region :30 - NORTH CO/ River Basin :205 - BELLINGE Area / District :	AST R RIVER		CMA Map : Grid Zone :	9537-3N 56/2	COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :(Unknown)			Northing : Easting :	6646185 506590	Lat Long	itude (S) :30° 18' itude (E) :153° 4'	58" 7"
GS Map :0092A2 AM	G Zone :56		Coordinate Source :	GD.,ACC.MA	ĄΡ		
Construction Negative depths ind	icate Above Ground Level;H-Hole	e;P-Pipe;OD-Ou	tside Diameter;ID-Inside D	iameter;C-Ceme	nted;SL-Slot Lengt	h;A-Aperture;GS-Grair	n Size;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical	From (m) To (m) OD 0.00 46.00 15.00 46.00	(mm) ID (125 125	mm) Interval Details Seated on E 1 PVC; SL: 0	lottom mm; A: 3mm			
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ15.0016.001.00Fractu42.0044.002.00Fractu	Type red ired	S.W.L. (m) D.D.L. (m)	Yield (L/s) 0.65 0.13	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown) (Unknown)
Brom (m) To (m) Thickness(m) Drillers Descrip 0.00 2.00 Clay 2.00 8.00 6.00 Shale 8.00 14.00 6.00 Basalt 14.00 16.00 2.00 Shale 16.00 42.00 26.00 Basalt 42.00 44.00 2.00 Shale Broke 44.00 46.00 2.00 Basalt	Mion n Rock Water Supply n Rock Water Supply		Geold Clay Shal Basa Shal Basa Shal Basa	gical Material e lt e lt e llt	Comn	ients	
Pumping Tests - Summa Pumping Test Type Date Durat	aries ion S.W.L. (m) D.D.L. (m) Y	Yield (L/s) Int:	ake Depth (m) Test Method	To Mea	sure Water Level	To Measure Dischar	ge Tested By
Single-Rate Pumping Test 23-Sep-1986	hr)	0.65	Airlift				
Pumping Tests - Readin Pumping Test Type Date Time (mi	I GS ins) S.W.L. (m) D.D.L. (m) M (No Pun	Yield (L/s) Int: nping Test Re	ake Depth (m) Test Method ading Details Found)	To Mea	sure Water Level	To Measure Dischar	ge Tested By
Chemical Treatment	Duration	Success					
	(No Ch	emical Treat	ment Details Found)				
Development Method Time Take	n O (No	ther Developmen Developmen	nt Method nt Details Found)				
Remarks							

*** End of GW063637 ***

Converted From HYDSYS

GW063638					Converted Fro	m HYDSYS
License :30BL135201 Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Authorised Purpose(s) DOMESTIC	Intend DOME	ed Purpose(s) SSTIC	
Commenced Date : Completion Date :01-Nov-1986	Final Depth : Drilled Depth :	19.00 m 19.00 m				
Contractor Name : Driller :1504	JACKWITZ, William Dou	glas				
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :		(Unknown)	
Site Details						
Site Chosen By	Co Form A :RA Licensed :RA	unty ALEIGH ALEIGH	Parish BONVILLE BONVILLE	Portio L221 I LT 221	n/Lot DP DP247724 (20) DP 247724	
Region : 30 - NORTH C River Basin : 205 - BELLINC Area / District :	OAST JER RIVER		CMA Map :953 Grid Zone :56/2	7-3N COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :(Unknown)			Northing :6640 Easting :5070	5615 Lat 200 Long	itude (S) :30° 18' 44 itude (E) :153° 4' 22	
GS Map : 0092A2 A	MG Zone :56		Coordinate Source :GD.	,ACC.MAP		
Construction Negative depths i	ndicate Above Ground Level;H-He	ole;P-Pipe;OD-C	Outside Diameter; ID-Inside Diamet	er;C-Cemented;SL-Slot Lengt	h;A-Aperture;GS-Grain Si	ze;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical	From (m) To (m) O 0.00 19.00 8.00 19.00	D (mm) ID 125 125	e (mm) Interval Details Seated on Bottom 1 SL: 0mm; A: 3mm	ı m		
From (m) To (m) Thickness (m) WI 8:00 9:00 1:00 Fra 14:00 15:00 1:00 Fra	BZ Type actured actured	S.W.L.	(m) D.D.L. (m) Y	ield (L/s) Hole Depth (m) 0.13 0.26	Duration (hr) Sa	linity (mg/L) (Unknown) (Unknown)
Drillers Loa						
From (m) To (m) Thickness(m) Drillers Desc 0.00 6.00 6.00 Clay Hard 6.00 12.00 6.00 Shale Watt 12.00 15.00 3.00 Shale Hard 15.00 19.00 4.00 Basalt	ription er Supply d Water Supply		Geological Clay Shale Shale Basalt	Material Comm	ients	
Pumping Tests - Sumn	naries					
Pumping Test Type Date Du	ration S.W.L. (m) D.D.L. (m) (hr)	Yield (L/s) In	take Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
Single-Rate Pumping Test 01-Nov-1986	7.00	0.39	Airlift			
Pumping Tests - Readi Pumping Test Type Date Time (INGS (mins) S.W.L. (m) D.D.L. (m) (No Pt	Yield (L/s) In umping Test R	take Depth (m) Test Method Reading Details Found)	To Measure Water Level	To Measure Discharge	Tested By
	(1101)		county Details I build)			
Chemical Treatment	Duration	Success				
	(No C	Chemical Tree	utment Details Found)			
Development Method Time Ta	ken (N	Other Developm lo Developme	ent Method ent Details Found)		x	
Remarks						
		*** End of (GW063638 ***			

GW063655

Converted From HYDSYS

<u>awoo3033</u>							
License :30BL	135206					(
Work Type :Bore Work Status :(Unkn Construct. Method :Rotar Owner Type :Privat	own) y Air e			Authorised Purpose(s) DOMESTIC STOCK	I S	ntended Purpose(s) DOMESTIC STOCK	
Commenced Date : Completion Date :01-Se	p-1986 I	Final Depth : Drilled Depth :	25.00 m 29.00 m	L .			
Contractor Name : Driller :1504	JAC	KWITZ, William Do	ouglas				
Property : GWMA : - GW Zone : -				Standing Water Level Salinity Yield	:	(Unknown)	
Site Details							
Site Chosen By		Form A : Licensed :	C ounty RALEIGH RALEIGH	Parish BONVILLE BONVILLE		Portion/Lot DP .2 DP711234 (24) .T 2 DP 711234	
Region :30 - River Basin :205 - Area / District :	NORTH COAS BELLINGER I	Г RIVER		CMA Map :953 Grid Zone :56/	37-3NCOFFS2Scale	HARBOUR :1:25,000	
Elevation : Elevation Source :(Unkn	own)			Northing :664 Easting :50	47125 7460	Latitude (S) :30° 18' Longitude (E) :153° 4'	27" 39"
GS Map :0092A	AMG 2	Zone : 56		Coordinate Source :GD	.,ACC.MAP		
Construction Neg	ative depths indicate	e Above Ground Level;H	-Hole;P-Pipe;OD-0	Outside Diameter;ID-Inside Diame	eter;C-Cemented;SL-Slo	t Length;A-Aperture;GS-Grain	n Size;Q-Quantity
H P Component Type 1 Backfill Backfill Backfill 1 1 Casing P.V.C. 1 1 Opening Slots - Vertica	I	From (m) To (m) 25.00 29.00 0.00 25.00 13.00 25.00	OD (mm) II 0 125 125	D (mm) Interval Details Seated on Botto 1 Plastic; SL: Omr	m n; A: 3mm		
Water Bearing Zc From (m) To (m) Thic 27.00 29.00 Thic	kness (m) WBZ Typ 2.00 Fractured	e	S.W.L	. (m) D.D.L. (m)	Yield (L/s) Hole Dep 0.65	oth (m) Duration (hr)	Salinity (mg/L) (Unknown)
From (m) To (m) Thickness(m) 0.00 8.00 8.00 8.00 20.00 12.00 20.00 26.00 6.00 28.00 28.00 2.00 28.00 29.00 1.00	Drillers Description Clay Shale Basalt Rock Broken Wa Basalt Water S	ter Supply upply		Geologicz Clay Shale Basalt Rock Basalt	l Material	Comments	
Pumping Tests -	Summar	ies					
Pumping Test Type Da Single-Rate Pumping Test 26-Sep	te Duration (hr) p-1986	S.W.L. (m) D.D.L. (m)	• Yield (L/s) Ir 0.65	ntake Depth (m) Test Method Airlift	To Measure Water	Level To Measure Dischar	ge Tested By
Pumping Tests - Pumping Test Type Da	Reading	S S.W.L. (m) D.D.L. (m)) Yield (L/s) Ir	ntake Depth (m) Test Method	To Measure Water	Level To Measure Dischar	ge Tested By
		(No	Pumping Test I	Reading Details Found)			
Chemical Treatm	nent	Duration	Success				
		(Na	o Chemical Tree	atment Details Found)			
Development	Time Taken		Other Developm	ent Method ent Details Found)			
			, Deretophi				
Remarks							
			*** End of	GW063655 ***			

GW063664

Converted From HYDSYS

GW003004							
License :30BL135216			A		T 4 J		
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Authorised Pur DOMESTIC	pose(s)	DOME	ea Purpose(s) ESTIC	
Commenced Date : Completion Date :01-Oct-1986	Final Depth : Drilled Depth :	45.00 m 45.00 m	1				
Contractor Name :D C JACKWITZ Driller :1139 JA	ACKWITZ, William Doug	glas					
Property : GWMA : - GW Zone : -			Standing Wat	er Level : Salinity : Yield :		(Unknown)	
Site Details							C 247000 000 10000 0000 0000000
Site Chosen By	Co Form A :FIT Licensed :FIT	unty 'ZROY 'ZROY	Pa MC MC	rish DONEE DONEE	Portio LOT 1 284	n/Lot DP DP814190	
Region : 30 - NORTH COA River Basin : 205 - BELLINGE Area / District :	AST R RIVER		CMA I Grid Z	Map :9537-3N Cone :56/2	COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :(Unknown)			Nortl Eas	ning :6651285 ting :511110	Lat Long	titude (S) :30° 16' 12 itude (E) :153° 6' 50	2" 6"
GS Map :0092A2 AM	G Zone :56		Coordinate So	urce :GD.,ACC.M	IAP		
Construction H P Component Type 1 Backfill Backfill	cate Above Ground Level;H-Ho From (m) To (m) OI 0.00 45.00	le;P-Pipe;OD-() (mm) II	Outside Diameter;ID-In D (mm) Interval Deta	side Diameter;C-Cem nils	ented;SL-Slot Lengt	h;A-Aperture;GS-Grain S	Size;Q-Quantity
Water Bearing Zones From (m) To (m) Thickness (m) WBZ / 100 34.00 36.00 2.00 Fracture	Type red	S.W.L	(m) D.D.L. (m)	Yield (L/s) 0.00	Hole Depth (m)	Duration (hr) S	alinity (mg/L) (Unknown)
To (m) To (m) Thickness(m) Driflers Descript 0.00 9.00 9.00 Gravel Clay 9.00 34.00 25.00 Basalt 34.00 36.00 2.00 Shale Water 36.00 45.00 9.00 Basalt	tien Supplγ			Geological Material Gravel Basalt Shale Basalt	Comm	ients	
Pumping Tests - Summa Pumping Test Type Date Durati (1) Single-Rate Pumping Test 01-Oct-1986	aries on S.W.L. (m) D.D.L. (m) 1r)	Yield (L/s) I	ntake Depth (m) Test M (Unkn	fethod To Me	asure Water Level	To Measure Discharge	Tested By
Pumping Tests - Reading	gs ns) S.W.L. (m) D.D.L. (m)	Yield (L/s) I	ntake Depth (m) Test M	lethod To Me	asure Water Level	To Measure Discharge	Tested By
	(No Pu	mping Test l	Reading Details Fo	ound)			
Chemical Treatment	Duration	Success					
	(No C	hemical Tre	atment Details Foi	und)			
Development Method Time Taken	н с (N)ther Developn 'o Developm	nent Method ent Details Found)	1			
Remarks							
		444 m 1 0	CITED COCCI www				

*** End of GW063664 ***

GW063710

Converted From HYDSYS

License :30BL178550					,	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		Au DO	uthorised Purpose(s) OMESTIC	Intend DOME	led Purpose(s) ESTIC	
Commenced Date : Completion Date :01-Sep-1986	Final Depth : Drilled Depth :	55.00 m 55.00 m				
Contractor Name : Driller :						
Property : - MORRISON'S GWMA : - GW Zone : -		S	Standing Water Level Salinity Yield		(Unknown)	
Site Details						
Site Chosen By	Cour Form A :FITZ Licensed :FITZ	nty ZROY ZROY	Parish COFF COFF	Portio LOT 1 LT 1 D	n/Lot DP DP 835865 DP 835865	
Region :30 - NORTH CO River Basin :204 - CLARENC Area / District :	AST E RIVER		CMA Map : 953 Grid Zone : 56/2	7-3N COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :(Unknown)			Northing :665 Easting :504	0285 Lat 975 Long	titude (S) :30° 16' 44 itude (E) :153° 3' 6"	11
GS Map :0092A2 AM	1G Zone :56	С	oordinate Source :GD	,ACC.MAP		
Construction Negative depths include H P Component Type I I Casing P.V.C. I I Opening Slots - Vertical	dicate Above Ground Level;H-Hole From (m) To (m) OD (0.00 55.00 26.00 55.00	e;P-Pipe;OD-Outsic (mm) ID (mm 125 125	de Diameter;ID-Inside Diame n) Interval Details Seated on Botton 1 Plastic; SL: 0mm	er;C-Cemented;SL-Slot Lengt 1 ; A: 3mm	h;A-Aperture;GS-Grain S	ize;Q-Quantity
From (m) To (m) Thickness (m) WB2 36.00 37.00 1.00 Fract 42.00 43.00 1.00 Fract 50.00 51.00 1.00 Fract	7 Type ured ured ured	S.W.L. (m)	D.D.L. (m) Y	field (L/s) Hole Depth (m) 0.13 0.13 0.26	Duration (hr) Sa	linity (mg/L) (Unknown) (Unknown) (Unknown)
Brom (m) To (m) Thickness(m) Drillers Description 0.00 8.00 8.00 Clay Dry 8.00 32.00 24.00 Shale 32.00 4.00 Shale Main 36.00 4.00 Shale Main 42.00 6.00 Basalt Wate Main 42.00 50.00 7.00 Shale 50.00 55.00 5.00 Basalt Wate	ption m Hard er Supply 1 Water Supply er Supply		Geological Clay Shale Basalt Rock Shale Basalt	Material Comm	nents	
Pumping Tests - Summ Pumping Test Type Date Dura	aries tion S.W.L. (m) D.D.L. (m) Y	Yield (L/s) Intake	Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
Single-Rate Pumping Test 23-Sep-1986	()	0.52	Airlift			
Pumping Tests - Readin Pumping Test Type Date Time (m	1GS iins) S.W.L. (m) D.D.L. (m) Y (No Pum)	Yield (L/s) Intake uping Test Read	Depth (m) Test Method ling Details Found)	To Measure Water Level	To Measure Discharge	Tested By
Chamical Treatment						
Treatment Method	Duration	Success				
	(No Chu	emical Treatme	ent Details Found)			
Development Method Time Take	en Ot	ther Development M	fethod			
	(No	Development L	Jeiaus Found)			
Remarks						

*** End of GW063710 ***

Converted From HYDSYS

GW063728			Converted F	rom HYDSYS
License :30BL177295 Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		Authorised Purpose(s) DOMESTIC	Intended Purpose(s) IRRIGATION	
Commenced Date :FinaCompletion Date :01-Nov-1986Driller	al Depth : 37.00 m al Depth : 37.00 m			
Contractor Name :D C JACKWITZ Driller :1504 JACKWIT	'Z, William Douglas			
Property : - HAMEY & CO GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	(Unknown) 1.82 L/s	
Site Details				
Site Chosen By	County Form A :FITZROY Licensed :FITZROY	Parish COFF COFF	Portion/Lot DP LOT 3 DP872151 148	
Region :30 - NORTH COAST River Basin :205 - BELLINGER RIVEI Area / District :	٦	CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARBOUR Scale :1:25,000	
Elevation : Elevation Source :(Unknown)		Northing :6652400 Easting :512500	Latitude (S) :30° 15' 3 Longitude (E) :153° 7' 4	36" 48"
GS Map :0092A2 AMG Zone	:56	Coordinate Source :GD.,ACC.	MAP	
Construction Negative depths indicate Abov	e Ground Level;H-Hole;P-Pipe;OD-C	Dutside Diameter; ID-Inside Diameter; C-Ce	mented;SL-Slot Length;A-Aperture;GS-Grain	Size;Q-Quantity
H P Component Type From 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical	n (m) To (m) OD (mm) H 0.00 37.00 125 10.00 37.00 125) (mm) Interval Details Seated on Bottom 1 PVC; Slotted In Hole; SL:	150mm; A: 3mm	
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ Type15:0017:002:00Fractured26:0027:001:00Fractured	S.W.L	. (m) D.D.L. (m) Yield (L/s 1.0 0.71) Hole Depth (m) Duration (hr) 5 4 3	Salinity (mg/L) (Unknown) (Unknown)
To (m) To (m) Thickness(m) Drillers Description 0.00 6.00 6.00 Clay Wet 6.00 10.00 4.00 Shale 10.00 15.00 5.00 Shale 17.00 24.00 7.00 Basalt 24.00 27.00 30.00 Shale	ater Supply	Geological Materia Clay Shale Shale Rock Basalt Shale Basalt	l Comments	
Pumping Tests - Summaries Pumping Test Type Date Duration S.W. (hr)	L. (m) D.D.L. (m) Yield (L/s) Ir	ntake Depth (m) Test Method To N	feasure Water Level To Measure Discharg	e Tested By
Pumping Test Orkering Pumping Test Pumping Test Pumping Test Time (mins)	1.62 L. (m) D.D.L. (m) Yield (L/s) In (No Pumping Test I	atake Depth (m) Test Method To N Reading Details Found)	1easure Water Level To Measure Discharg	e Tested By
Chemical Treatment Treatment Method Durat	ion Success (No Chemical Tree	atment Details Found)		
Development Method Time Taken	Other Developm (No Developm)	ent Method ent Details Found)		
Remarks	(/ ///	,		

Insufficient map details. Need to check exact location of bore. Replaced license 30BL135490

*** End of GW063728 ***

GW063912

Converted From HYDSYS

<u>awo03312</u>						
License :30BL135347			Authorized Purnose(s)	Inter	ded Purnose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :Private			DOMESTIC	DOM	ESTIC	
Commenced Date : Completion Date :01-Nov-1986	Final Depth : Drilled Depth :	67.00 m 67.00 m				
Contractor Name : Driller :1504	JACKWITZ, Willian	1 Douglas				
Property : GWMA : - GW Zone : -			Standing Water Leve Salinity Yield	1: /: 1:	(Unknown)	
Site Details						
Site Chosen By	Form . License	County A :FITZROY d :FITZROY	Parish COFF COFF	Porti L22 E LT 22	DR/Lot DP DP716144 (248) DP 716144	
Region :30 - NORTH (River Basin :205 - BELLIN Area / District :	COAST (GER RIVER		CMA Map :95 Grid Zone :56	37-3N COFFS HAI /2 Scale :1:2:	RBOUR 5,000	
Elevation : Elevation Source :(Unknown)			Northing :66 Easting :51	51335 La 2560 Lon	titude (S) :30° 16' 10 gitude (E) :153° 7' 50)")"
GS Map :0092A2	AMG Zone :56		Coordinate Source :GI	D.,ACC.MAP		
CONSTRUCTION Possible content H P Component Type 1 1 Casing P.V.C. 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical Vater Bearing Zones Vater	From (m) To 0.00 33 0.00 67 19.00 37 31.00 3' 55.00 6'	(m) OD (mm) ID 7.00 125 7.00 100 7.00 125 7.00 100 7.00 100 7.00 100	(mm) Interval Details (Unknown) (Unknown) 1 SL: 0mm; A: 3 2 SL: 0mm; A: 0 3 SL: 0mm; A: 0			120, Q-Q200 mil
From (m) To (m) Thickness (m) V 29.00 30.00 1.00 F	VBZ Type ractured	S.W.L.	(m) D.D.L. (m)	Yield (L/s) Hole Depth (m) 0.10	Duration (hr) Sa	dinity (mg/L) (Unknown)
To (m) To (m) Thickness(m) Drillers Des 0.00 1.00 1.00 Clay 1.00 10.00 9.00 Shale So 10.00 15.00 50.00 Shale So 37.00 54.00 17.00 Granite 54.00 56.00 20.00 Basalt	scription ft dium Hard ater Supply		Geologic Clay Shale Basalt Granit (Unkno Basalt	al Material Com e wn)	nents	
Pumping Tests - Sum	maries					
Yumping Test Type Date D	uration S.W.L. (m) D.D.L (hr)	. (m) Yield (L/s) Int	ake Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
Pumping Tests - Read Pumping Test Type Date Time	l ings e (mins) S.W.L. (m) D.D.L	. (m) Yield (L/s) Int No Pumping Test R	(Unknown) ake Depth (m) Test Method eading Details Found)	To Measure Water Level	To Measure Discharge	Tested By
	,	r O				
Chemical Treatment Freatment Method	Duration	Success (No Chemical Trea	tment Details Found)			
Development Method Time T	`aken	Other Developme	nt Method			
		(No Developme	nt Details Found)			
Remarks						

GW064118

Converted From HYDSYS

41104110					.		
License :30BL135350			Authorised Purpos	e(s)	Intend	ed Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :Private			DOMESTIC STOCK		DOMESTIC STOCK		
Commenced Date : Completion Date :01-Nov-1986	Final Depth : Drilled Depth :	18.00 m 18.10 m	1 1 .				
Contractor Name : Driller :							
Property : GWMA : - GW Zone : -			Standing Water L Sal Y	Level : inity : Kield :		(Unknown)	
Site Details			na analy in the Alexandra dia ang mananana a				
Site Chosen By	Form A	County FITZROY FITZROY	Parish MOON MOON	IEE IEE	Portio L100 E LT 100	n/Lot DP DP629555 (11)) DP 629555	
Region :3 0 - NORTH COA River Basin : 205 - BELLINGEF Area / District :	ST R RIVER		CMA Map Grid Zone	9537-3N 56/2	COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :(Unknown)			Northing Easting	; :6653440 ; :513370	Lat Long	itude (S) :30° 15' itude (E) :153° 8'	2" 20"
GS Map :0092A2 AMO	G Zone :56		Coordinate Source	GD.,ACC.M	AP		
Construction Negative depths indic	ate Above Ground Level;	I-Hole;P-Pipe;OD-(Outside Diameter; ID-Inside	Diameter;C-Ceme	ented;SL-Slot Lengt	h;A-Aperture;GS-Grair	Size;Q-Quantit
H P Component Type 1 1 Casing P.V.C. 1 1 Casing P.V.C. 1 1 Opening Screen	From (m) To (m) 0.00 8.00 0.00 16.00 16.00 16.20	OD (mm) II 150 125 100	D (mm) Interval Details (Unknow Seated on 1 Surescree	n) Bottom n; Stainless Steel; S	L: Omm; A: .6mm		
Water Bearing Zones							
From (m) To (m) Thickness (m) WBZ T 12.00 18.00 6.00 Fracture	Type ed	S.W.L	(m) D.D.L. (m) 2.00	Yield (L/s) 0.60	Hole Depth (m)	Duration (hr)	Salinity (mg/L) (Unknown)
Drillers Log							
From (m) To (m) Thickness(m) Drillers Descripting 0.00 7.00 7.00 Topsoil Sand 7.00 12.00 5.00 Clay 12.00 18.00 6.00 Shale Water 18.00 18.10 0.10 Basalt	on Supply		Geo Top Cla Sha Bas	D ogical Material osoil ay ale salt	Comm	ents	
Pumping Tests - Summa umping Test Type Date Duratio	ries on S.W.L. (m) D.D.L. (n	ı) Yield (L/s) Iı	ntake Depth (m) Test Metho	rd To Mea	sure Water Level	To Measure Dischar	ge Tested By
ingle-Rate Pumping Test 01-Nov-1986	r) 2.00	0.60	(Unknown)				
Pumping Tests - Reading	qs						
'umping Test Type Date Time (min	s) S.W.L. (m) D.D.L. (n	ı) Yield (L/s) Iı	ntake Depth (m) Test Metho	d To Mea	sure Water Level	To Measure Dischar	ge Tested By
	(No	Pumping Test I	Reading Details Found	9			
Chemical Treatment							
reatment Method	Duration	Success					
	(N	o Chemical Tre	atment Details Found)				
Development							
Levelopment Aethod Time Taken		Other Developm	ent Method				
		(No Developm	ent Details Found)				
		·					
Remarks							

*** End of GW064118 ***

GW064174

Converted From HYDSYS

License :30BL136246			Authorized Durpass(r)	Turton	lad Dramana(a)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Authorised Furpose(s) DOMESTIC	DOM	ied Purpose(s) ESTIC	
Commenced Date : Completion Date :01-Nov-1987	Final Depth Drilled Depth	30.00 m 30.00 m				
Contractor Name : Driller :1504	JACKWITZ, Willia	m Douglas				
Property : GWMA : - GW Zone : -			Standing Water Level Salinity Yield	: : :	Good	
Site Details						
Site Chosen By	Forn Licen	County n A :FITZROY sed :FITZROY	Parish MOONEE MOONEE	Portio 11 PT11	on/Lot DP	
Region : 30 - NORTH River Basin : 205 - BELLI Area / District :	COAST NGER RIVER		CMA Map :953 Grid Zone :56/	37-4S MOONEE B 2 Scale :1:25	EACH 5,000	
Elevation : Elevation Source :(Unknown)			Northing :665 Easting :513	53750 La 3360 Long	titude (S) :30° 14' 52" gitude (E) :153° 8' 20"	
GS Map :0092A1	AMG Zone :56		Coordinate Source :GD	.,ACC.MAP		
Construction Negative depth	ns indicate Above Ground L	evel;H-Hole;P-Pipe;OD-O	utside Diameter;ID-Inside Diame	eter;C-Cemented;SL-Slot Leng	th;A-Aperture;GS-Grain Siz	e;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical	From (m) 7 0.00 18.00	To (m) OD (mm) ID 30.00 150 30.00 150	(mm) Interval Details Seated on Botto 1 Mechanically Sl	m lotted; SL: Omm; A: 3mm		
Water Bearing Zones						
From (m) To (m) Thickness (m) 19.00 20.00 1.00 25.00 26.00 1.00	WBZ Type Fractured Fractured	S.W.L.	(m) D.D.L. (m)	Yield (L/s) Hole Depth (m) 0.30 0.30	Duration (hr) Sali	nity (mg/L) Good Good
Drillers Log						
From (m) To (m) Thickness(m) Drillers D 0.00 16.00 16.00 Clay 0.00 16.00 16.00 Shale Si 16.00 26.00 10.00 Shale W 26.00 30.00 4.00 Shale M	escription oft ater Supply edium Hard		Geologica Clay Shale Shale Shale	ıl Material Comm	nents	
Pumping Tests - Sum	maries					
Pumping Test Type Date	Duration S.W.L. (m) D.D (hr)	.L. (m) Yield (L/s) Int	ake Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
Single-Rate Pumping Test 25-Nov-1987		0.60	Airlift			
Pumping Tests - Read	dings					
Pumping Test Type Date Tin	ie (mins) S.W.L. (m) D.D	.L. (m) Yield (L/s) Int (No Pumping Test Re	ake Depth (m) Test Method eading Details Found)	To Measure Water Level	To Measure Discharge	Tested By
Chamical Treatment						
Treatment Method	Duration	Success				
		(No Chemical Trea	tment Details Found)			
Davalarment						
Development Method Time	Taken	Other Developme	nt Method			
		(No Developme	nt Details Found)			
Remarks						
		*** End of G	W064174 ***			

GW064368

Converted From HYDSYS

G W 004300						
License :30BL136656				- /		
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Authorised Purpose(s) DOMESTIC	Intend DOME	ed Purpose(s) STIC	
Commenced Date : Completion Date :01-Sep-1987	Final Depth : Drilled Depth :	34.00 m 34.00 m				
Contractor Name : Driller :1504	JACKWITZ, William Do	uglas				
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :		Good	
Site Details						
Site Chosen By	C Form A :F Licensed :F	ounty ITZROY ITZROY	Parish MOONEE MOONEE	Portio L1 DP LT 1 D	n /Lot DP 231123 (42) IP 231123	de com allo - e - e (e / ye che/ dess
Region : 30 - NORTH River Basin : 205 - BELLIN Area / District :	COAST NGER RIVER		CMA Map : 9537 Grid Zone : 56/2	-4S MOONEE BI Scale :1:25,	EACH 000	
Elevation : Elevation Source :(Unknown)			Northing :6653 Easting :5134	900 Lat 90 Long	itude (S) :30° 14' 47 itude (E) :153° 8' 25	
GS Map :0092A1	AMG Zone :56		Coordinate Source :GD.,	ACC.MAP		
Construction Negative depth	s indicate Above Ground Level;H-H	Hole;P-Pipe;OD-Ou	tside Diameter;ID-Inside Diamete	r;C-Cemented;SL-Slot Lengt	n;A-Aperture;GS-Grain S	ize;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical	From (m) To (m) C 0.00 34.00 34.00 18.00 34.00	DD (mm) ID (150 150	mm) Interval Details Seated on Bottom 1 Mechanically Slott	ed; SL: 0mm; A: 3mm		
Water Bearing Zones						
From (m) To (m) Thickness (m) Y 21.00 22.00 1.00	VBZ Type Jnconsolidated Fractured fractured	S.W.L. (m) D.D.L. (m) Yie	eld (L/s) Hole Depth (m) 0.30 0.30 0.10	Duration (hr) Sa	linity (mg/L) Good Good Good
Drillers Log						
From (m) To (m) Thickness(m) Drillers Detection 0.00 2.00 2.00 Soil 2.00 22.00 20.00 Clay Wat 22.00 26.00 4.00 Shale Sc 26.00 32.00 6.00 Shale Sc 32.00 34.00 2.00 Shale Cc	s cription :er Supply ft ter Supply pal Medium Hard		Geological N Soil Clay Shale Shale Shale	Aaterial Comm	ents	
Pumping Tests - Sum Pumping Test Type Date I	maries Duration S.W.L. (m) D.D.L. (m)	Yield (L/s) Inta	ike Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
Single-Rate Pumping Test 04-Sep-1987	(hr)	0.70	Airlift			
Pumping Tests - Read	lings					
Pumping Test Type Date Tim	e (mins) S.W.L. (m) D.D.L. (m)	Yield (L/s) Inta	ke Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
	(No P	Pumping Test Re	ading Details Found)			
Chemical Treatment	Duration	Success				
	(No	Chemical Treat	ment Details Found)			
Development						
Method Time 7	l'aken .	Other Developmen	it Method			
	(wo Developmen	u Details Found)	,		
Remarks						

*** End of GW064368 ***

GW064539

Converted From HYDSYS

<u>anou-303</u>							
License :30BL136971							
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Authorised Purpose(s) DOMESTIC STOCK		Intended Purpose(s) DOMESTIC STOCK		
Commenced Date : Completion Date :01-Nov-1987	Final Depth : Drilled Depth :	52.00 m 52.00 m					
Contractor Name : Driller :1504	JACKWITZ, William Do	uglas				-	
Property : GWMA : - GW Zone : -	Property : GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :		Good		
Site Details							
ite Chosen By County Form A :FITZRO Licensed :FITZRO			Parish MOONEE MOONEE		Portion/Lot DP L131 DP599061 (212) LT 131 DP 599061		
Region :3 0 - NORTH River Basin : 205 - BELLII Area / District :	COAST NGER RIVER		CMA Map :953 Grid Zone :56/	37-4S MOOI /2 Scal	NEE BEACH e :1:25,000		
Elevation : Elevation Source :(Unknown)			Northing :665 Easting :512	53940 2940	Latitude (S) :30° 14 Longitude (E) :153° 8	45" 4"	
GS Map :0092A1	AMG Zone :56		Coordinate Source :GD	.,ACC.MAP			
Construction Negative depth	s indicate Above Ground Level;H-I	lole;P-Pipe;OD-Ou	tside Diameter;ID-Inside Diame	eter;C-Cemented;SL-SI	ot Length;A-Aperture;GS-Gra	in Size;Q-Quantity	
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical	From (m) To (m) 0 0.00 52.00 40.00 52.00	DD (mm) ID (150 150	mm) Interval Details Seated on Botto 1 Mechanically St	m lotted; SL: 0mm; A: 3mm	1		
Water Bearing Zones							
From (m) To (m) Thickness (m) 46.00 47.00 1.00	WBZ Type Fractured	S.W.L. (1 45.	n) D.D.L. (m) 00	Yield (L/s) Hole De 0.40	pth (m) Duration (hr)	Salinity (mg/L) Good	
To (m) To (m) Thickness(m) Drillers D 0.00 2.00 2.00 Clay 2.00 16.00 14.00 Shale S 16.00 34.00 14.00 Basalt 30.00 34.00 11.00 Basalt 45.00 47.00 2.00 Resalt	s cription Dft Dken Basalt Water Supply		Geologica Clay Shale Basalt Shale Basalt Rock Basalt	ıl Material	Comments		
Pumping Tests - Sum Pumping Test Type Date	maries Duration S.W.L. (m) D.D.L. (m)	Yield (L/s) Inta	ke Depth (m) Test Method	To Measure Water	Level To Measure Discha	rge Tested By	
Single-Rate Pumping Test 01-Nov-1987	(hr) 45.00	0.40	(Unknown)				
Pumping Tests - Read Pumping Test Type Date Tin	e (mins) S.W.L. (m) D.D.L. (m)	Yield (L/s) Inta	ke Depth (m) Test Method	To Measure Water	Level To Measure Discha	rge Tested By	
	(No P	umping Test Re	ading Details Found)				
Chamical Treatment							
Treatment Method	Duration	Success					
	(No	Chemical Treatr	nent Details Found)				
Development							
Method Time	ſaken	Other Developmen	t Method				
	(No Developmen	t Details Found)				
Remarks							

*** End of GW064539 ***

GW064686

Converted From HYDSYS

License :30BL137	198			Authorised Purp	ose(s)	Intend	ed Purpose(s)	
Work Type :Bore Work Status :(Unknow Construct. Method :Rotary A Owner Type :Private	n) ir			DOMESTIC STOCK		DOME STOCI	STIC K	
Commenced Date : Completion Date :15-Jan-19	988 I	Final Depth : Drilled Depth :	49.0 49.0	0 m 0 m				
Contractor Name :W.D. JA0 Driller :1326	CKWITZ JAC	KWITZ, Wiliar	m D.					
Property : GWMA : - GW Zone : -				Standing Water S	· Level : alinity : Yield :	1.00 L/s	Good	
Site Details								
Site Chosen By		Form	County A :FITZROY sed :FITZROY	Paris MOC MOC	sh DNEE DNEE	Portion LOT 4 PT11	n/Lot DP DP834748	
Region : 30 - NO River Basin : 205 - Bl Area / District :	RTH COAST ELLINGER H	Г RIVER		CMA Ma Grid Zog	ap :9537-4S ne :56/2	MOONEE BE Scale :1:25,	EACH 000	
Elevation : Elevation Source :(Unknow	n)			Northin Eastin	ng :6653650 ng :513465	Lat Longi	itude (S) :30° 14 itude (E) :153° 8	55" 24"
GS Map :0092A1	AMG 2	Zone :56		Coordinate Sour	ce :GD.,ACC.M	AP		
Best Struction Negative H P Component Type 1 Hole Hole Hole 1 1 Casing PVC Class 6 1 1 Opening Slots - Vertical	e depths indicate	Above Ground Let From (m) T 0.00 0.00 31.00	evel;H-Hole;P-Pipe; 'o (m) OD (mm) 49.00 160 49.00 150 49.00 150	DD-Outside Diameter;ID-Insic ID (mm) Interval Details Rotary Seated 1 PVC; S	de Diameter;C-Ceme s Air on Bottom Sawn; SL: 150mm; A:	ented;SL-Slot Length 3mm	n;A-Aperture;GS-Gra	n Size;Q-Quantity
From (m) To (m) Thickness 34.00 35.00 35.00 38.00 46.00 36.00	es (m) WBZ Typ 1.00 Fractured 8.00 Fractured	e	S.	W.L. (m) D.D.L. (m)	Yield (L/s) 0.20 0.80	Hole Depth (m)	Duration (hr)	Salinity (mg/L) Good Good
From (m) To (m) Thickness(m) Dri 0.00 14.00 14.00 Sha 14.00 30.00 16.00 Cod 30.00 36.00 6.00 Sha 36.00 38.00 2.00 Cod 38.00 47.00 9.00 Sha	Hers Description ale Soft al Medium Ha ale Orange W al Medium Ha ale Broken W ale Medium H	rd Shale ater Supply rd Shale ater Supply ard		C S S C S S S	Geological Material Shale Shale Shale Shale Shale Shale	Comm	ents	
Pumping Tests - S	ummari	ies						
Pumping Test Type Date Single-Rate Pumping Test 15-Jan-198	Duration (hr)	S.W.L. (m) D.D.	L. (m) Yield (L/s)	Intake Depth (m) Test Met	thod To Mea	asure Water Level	To Measure Discha	rge Tested By
Pumping Tests - R Pumping Test Type Date	eadings	S S.W.L. (m) D.D.	.L. (m) Yield (L/s) (No Pumping Te	Intake Depth (m) Test Met	nd)	asure Water Level	To Measure Discha	rge Tested By
Chemical Treatmen	nt	Duration	Success					
			(No Chemical)	Treatment Details Found	<i>d</i>)			
Development Method	Time Taken		Other Devel (No Develo	opment Method pment Details Found)				
Remarks								
			*** End	of GW064686 ***				

GW064687

Converted From HYDSYS

License :	30BL1371	98				4 41	onicad Dunnaca(n)	Intond	ad Dumposo(s)	
Work Type : Work Status : Construct. Method : Owner Type :	Bore (Unknown Rotary Air Private	i) -				DON STO	AESTIC CK	5)	DOME	STIC	
Commenced Date : Completion Date :	19-Sep-19	88 E	Final Dep Drilled Dep	th : th :	122.00 122.00	m m					
Contractor Name : Driller :	SLADE D 1200	RILLING SLAI	DE, Paul Ec	lwin							
Property : GWMA : GW Zone :	-					Sta	nding Water Lev Salini Yie	vel : ity : eld :	20.00 m 730.00 mg/L 4.00 L/s	501-1000 ppm	
Site Details											
Site Chosen By			Fo	Corm A :FI censed :FI	ounty TZROY TZROY		Parish MOONE MOONE	E E	Portion LOT 4 PT11	n /Lot DP DP834748	
Region : River Basin : Area / District :	30 - NOF 205 - BE	RTH COAST LLINGER F	RIVER				CMA Map :9 Grid Zone :5	9537-4S 56/2	MOONEE BI Scale :1:25,	EACH 000	
Elevation : Elevation Source :	(Unknown	ı)					Northing : Easting :	6653650 513465	Lat Long	itude (S) :30° 14' itude (E) :153° 8'	55" 24"
GS Map :	0092A1	AMG 2	Cone :56			Coo	rdinate Source :(GD.,ACC.M.	AP		
Construction	Negative	depths indicate	Above Grour	nd Level;H-H	lole;P-Pipe;Ol	D-Outside	Diameter;ID-Inside Dia	ameter;C-Ceme	nted;SL-Slot Lengt	h;A-Aperture;GS-Grain	n Size;Q-Quantity
H P Component Type 1 Hole Hole Hole 1 1 Casing Steel			From (m) 0.00 0.00	To (m) C 122.00 9.50	DD (mm) 150 150	ID (mm)	Interval Details Down Hole Driven into D	Hammer Hole			
Water Bearing From (m) To (r	g Zone n) Thickness	95 (m) WBZ Typ	e		S.W	V.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
28.00 30.0 45.00 60.1 75.00 90.0 90.00 122.0	00 1 00 1 00 1 00 3	2.00 Fractured5.00 Fractured5.00 Fractured2.00 Consolidat	ed					0.10 0.80 1.50 4.00	30.00 60.00 90.00 122.00		2100.00 1350.00 1850.00 730.00
From (m) To (m) Thick 0.00 8.00 92.00 92.00 122.00	kness(m) Drill 8.00 Clay 84.00 Sha 30.00 San	ers Description Y le Water Su dstone Wate:	pply r Supply				Geolog Clay Shal Sanda	gical Material e stone	Comm	ents	
Pumping Tes	ts - Si	ummari	ies								
Single Pate Pupping Test	Date	Duration (hr)	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Intake De	pth (m) Test Method	To Mea	sure Water Level	To Measure Dischar	ge Tested By
	to D	odina	20.00		4.00		Anne				
Pumping Test Type	Date	Time (mins)	S .W.L. (m)	D.D.L. (m)	Yield (L/s)	Intake De	pth (m) Test Method	To Mea	sure Water Level	To Measure Dischar	ge Tested By
				(No P	umping Tes	st Readin	g Details Found)				
		- 4									
Treatment Me	eatmer	זנ	Duration		Success						
				(No	Chemical T	reatment	Details Found)				
Development	t										
Method		Time Taken		,	Other Develo	pment Met	hod				
				(,	ivo Develop	oment De	iaus round)				
Remarks											
TDS = 730 MG/L											
					*** 17	- C WOC	ACOM ***				

*** End of GW064687 ***

GW064794

Converted From HYDSYS

License :30BL178962				X 4 1	- J D (-)	
Work Type :Bore open thru rock Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			DOMESTIC	IRRIG	ation	
Commenced Date : Completion Date :27-Sep-1988	Final Depth : Drilled Depth :	88.00 m 88.00 m				
Contractor Name :D C JACKWITZ Driller :1504 JAC	KWITZ, William Do	ouglas				
Property : - " LUCAS' " GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	19.00 m 0.40 L∕s		
Site Details						
Site Chosen By	(Form A :F Licensed :F	C ounty FITZROY FITZROY	Parish MOONEE MOONEE	Portion LOT 3: LOT 3:	n/Lot DP 59 DP44800 59 DP44800	
Region : 30 - NORTH COAS River Basin : 205 - BELLINGER Area / District :	T RIVER		CMA Map : 9537-3] Grid Zone : 56/2	N COFFS HAR Scale :1:25,	BOUR ,000	
Elevation : 0.00 Elevation Source :			Northing :665216 Easting :511040	60 Lat D Long	itude (S) :30° 15' 4 itude (E) :153° 6' 5	3" 3"
GS Map :0092A2 AMG	Zone : 56		Coordinate Source :			
P Component Type 1 Hole Hole Hole 1 1 Casing PVC Class 6	e Above Ground Level;H- From (m) To (m) 0.00 88.00 1.00 2.00	Hole;P-Pipe;OD-Ou OD (mm) ID (175 160	utside Diameter;ID-Inside Diameter;C (mm) Interval Details Rotary Air Driven into Hole	C-Cemented;SL-Slot Lengt	h;A-Aperture;GS-Grain S	Size;Q-Quantity
Water BearingZonesFrom (m)To (m)Thickness (m)WBZ Ty26.0027.001.00Fractured77.0078.001.00Fractured	pe	S.W.L. (19	m) D.D.L. (m) Yield	(L/s) Hole Depth (m) 0.10 0.30	Duration (hr) S	alinity (mg/L)
Tron (m) To (m) Thickness(m) Drillers Description 0.00 1.00 1.00 CLAY BOULDERS 1.00 2.00 1.00 SHALE 2.00 26.00 24.00 BASALT 26.00 27.00 1.00 BROKEN BASALT 27.00 76.00 49.00 BASALT 76.00 88.00 12.00 GRANITE	1		Geological Mat	terial Comm	ents	
Pumping Tests - Summar Pumping Test Type Date Duration (hr)	ies S.W.L. (m) D.D.L. (m)	Yield (L/s) Int:	ake Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
Single-Rate Pumping Test 27-Sep-1988	19.00	0.40	Airlift			
Pumping lests - Heading Pumping Test Type Date Time (mins)	S S.W.L. (m) D.D.L. (m) (<i>No</i> 1	Yield (L/s) Inta Pumping Test Re	ake Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
Chemical Treatment	Duration	Success O Chemical Treat	ment Details Found)			
Development Method Time Taken		Other Developmen (No Developmen	nt Method nt Details Found)			
Remarks						

*** End of GW064794 ***
GW065609

Converted From HYDSYS

License :30BL137911		Ant	porised Purpose(s)	Intenc	led Purnose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		DOM	AESTIC	DOMI	ESTIC	
Commenced Date : Completion Date :09-Jun-1988	Final Depth : Drilled Depth :	25.00 m 25.00 m				
Contractor Name :D C JACKWITZ Driller :1326 J	ACKWITZ, Wiliam D.					
Property : GWMA : - GW Zone : -		Sta	nding Water Level : Salinity : Yield :	0.50 L/s	Good	
Site Details						
Site Chosen By	Count Form A :RALE Licensed :RALE	y IGH IGH	Parish BONVILLE BONVILLE	Portio LOT 1 LT113	n/Lot DP 13 DP771573 DP703008	
Region :30 - NORTH CO River Basin :205 - BELLINGE Area / District :	AST ER RIVER		CMA Map : 9537- Grid Zone : 56/2	3N COFFS HAR Scale :1:25	BOUR ,000	
Elevation : 0.00 Elevation Source :			Northing :66462 Easting :50643	235 La 60 Long	titude (S) :30° 18' 5 situde (E) :153° 4' 1	56" ["
GS Map :0092A2 AN	IG Zone :56	Coo	ordinate Source :			
H P Component Type 1 Hole Hole Hole 1 1 Casing P.V.C. 1 1 Opening Slots - Vertical	Jicate Above Ground Level;H-Hole;P From (m) To (m) OD (m) 0.00 25.00 1 0.00 25.00 1 7.00 25.00 1	P-Pipe;OD-Outside (m) ID (mm) (60 (50) (50)	Diameter;ID-Inside Diameter Interval Details Rotary Air Seated on Bottom 1 PVC; Oxy-Acetyler	;C-Cemented;SL-Slot Lengi ne Slotted; SL: 150mm; A: 3m	th;A-Aperture;GS-Grain	Size;Q-Quantity
Water Bearing ZonesFrom (m)To (m)Thickness (m)WB29.0011.002.00Fract	Z Type ured	S.W.L. (m)	D.D.L. (m) Yie	ld (L/s) Hole Depth (m) 0.50	Duration (hr)	Salinity (mg/L) Good
Drillers Log From (m) To (m) Thickness(m) Drillers Descri 0.00 2.00 SHALE 2.00 SHALE 2.00 9.00 7.00 BASALT 9.00 11.00 2.00 BRASALT	ption		Geological M	laterial Comn	ients	
Pumping Tests - Summ Pumping Test Type Date Dura	ATIES tion S.W.L. (m) D.D.L. (m) Yie (hr)	ld (L/s) Intake De	pth (m) Test Method	To Measure Water Level	To Measure Discharg	e Tested By
Dumping Tosts - Doadir		0.50	Allm			
Pumping Test Type Date Time (m	ins) S.W.L. (m) D.D.L. (m) Yie (<i>No Pump</i>	ld (L/s) Intake De ing Test Readin	pth (m) Test Method g Details Found)	To Measure Water Level	To Measure Discharg	e Tested By
Chemical Treatment	Duration S	Success nical Treatment	Details Found)			
	(no chen	mem i reatment	zenno i vanu)			
Development Method Time Take	en Othe	er Development Met	hod			
	(No L	pevelopment De	uuis rouna)			
Remarks						

*** End of GW065609 ***

GW065856

Converted From HYDSYS

			and the second secon	n tyrad de China an de Cristian y S				
License :30	BL138931			Authorised Purpose(5)	Intend	ed Purpose(s)	
Work Type :Bo Work Status :(U Construct. Method :Rc Owner Type :Pri	ore inknown) otary Air ivate			TEST BORE	-,	MONI	TORING BORE	
Commenced Date : Completion Date :30	-Nov-1988	Final Depth : Drilled Depth :	55.00 m 55.00 m					
Contractor Name : Driller :15	62	MORTON, Kevin Charle	s					
Property : GWMA : - GW Zone : -				Standing Water Lev Salini Yie	vel : ity : eld :	4.30 m 160.00 mg/L 0.14 L/s	0-500 ppm	
Site Details								
Site Chosen By		C Form A :F Licensed :F	County ITZROY ITZROY	Parish COFF COFF		Portio LOT 3 LT2 D	n/Lot DP 01 DP778576 P542407	
Region : 30 River Basin : 20 Area / District :	- NORTH CO 5 - BELLING	DAST ER RIVER		CMA Map : Grid Zone :	9537-3N 56/2	COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :	0.00			Northing : Easting :	5651230 512450	Lat Long	itude (S) :30° 16 itude (E) :153° 7	14" 46"
GS Map :009	92A2 AI	MG Zone :56		Coordinate Source :				
H P Component Type H Hole Hole 1 Casing PVC Clas	Negative depths ir s 9	rdicate Above Ground Level;H- From (m) To (m) 0.00 55.00 0.00 18.00	Hole;P-Pipe;OD-C OD (mm) ID 150 140	utside Diameter;ID-Inside Dia (mm) Interval Details Rotary Air	ameter;C-Ceme	ented;SL-Slot Lengt	h;A-Aperture;GS-Gra	in Size;Q-Quanti
From (m) To (m) 28.00 31.00 41.50 42.50	Zones Thickness (m) WB 3.00 1.00	Z Туре	S.W.L.	(m) D.D.L. (m) 4.30 4.30	Yield (L/s) 0.06 0.14	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
To (m) To (m) Thickness 0.00 19.00 19 19.00 55.00 36	ss(m) Drillers Descr .00 SOIL/SUBSC .00 CHERT:BLAC 8-40m. OUZ	iption ILL:RED BROWN HEAVY CLAY K MASSIVE SILICEOUS. CI RTZ FILLED FRACTURES BE	MATERIAL AY FILLED FRA TWEEN 40-55m	Geolog CTURES BETWEEN 2	gical Material	Comm	ents	
Pumping Tests	5 - Sumn Date Dur	1aries ation S.W.L. (m) D.D.L. (m)	Yield (L/s) In	take Depth (m) Test Method	To Mea	sure Water Level	To Measure Discha	rge Tested By
Single-Rate Pumping Test 30)-Nov-1988	(hr) 4.30	0.14				ro measure pisem	Ge restea by
Pumping Tests Pumping Test Type	5 - Readi Date Time (1	ngs nins) S.W.L. (m) D.D.L. (m)	Yield (L/s) In	take Depth (m) Test Method	To Mea	sure Water Level	To Measure Discha	rge Tested By
		(No I	Pumping Test R	eading Details Found)				
Chemical Trea	tment	Duration	Success					
		(No	Chemical Trea	tment Details Found)				
Development ^{Method} Air Remarks	Time Tal 1.50	ken	Other Developme	ent Method				
			*** End of (GW065856 ***				

GW065858

Converted From HYDSYS

License :30BL138933			Authonized Dumpson	-)	Intond	od Dunnoso(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			TEST BORE	\$)	MONI	TORING BORE	
Commenced Date : Completion Date :01-Dec-1988	Final Depth : Drilled Depth :	55.00 m 0.00					
Contractor Name : Driller :1562	MORTON, Kevin Charle	es					
Property : GWMA : - GW Zone : -			Standing Water Lev Salini Yie	vel : ity : eld :		501-1000 ppm	
Site Details							
Site Chosen By	Form A : Licensed :	County FITZROY FITZROY	Parish COFF COFF		Portion 34 LT2 DI	n /Lot DP P542407	
Region :30 - NORTH (River Basin :205 - BELLIN Area / District :	COAST IGER RIVER		CMA Map :9 Grid Zone :5	9537-3N 56/2	COFFS HAR Scale :1:25,	BOUR 000	
Elevation : 0.0 Elevation Source :R.L. at Surface	00		Northing :6 Easting :5	5651890 512980	Lat Long	itude (S) :30° 15' itude (E) :153° 8'	52" 6"
GS Map : 0092A2	AMG Zone :56		Coordinate Source :				
Construction Negative depths	s indicate Above Ground Level;H	-Hole;P-Pipe;OD-O	utside Diameter;ID-Inside Dia	ameter;C-Ceme	ented;SL-Slot Lengt	n;A-Aperture;GS-Grair	Size;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Casing Pressure Cemented Casing	From (m) To (m) 0.00 6.00 0.00 6.00	OD (mm) ID 140 150	(mm) Interval Details Cemented				
From (m) To (m) Thickness (m) V 18.00 19.00 1.00 23.00 1.00	VBZ Type	S.W.L.	(m) D.D.L. (m) 2.10 2.10	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L) 501-1000 ppm 501-1000 ppm
Drillers Log From (m) To (m) Thickness(m) Drillers Des	scription		Geolog	cial Material	Comm	ents	
		(No Drillers Lo	g Details Found)				
Pumping Tests - Sum Pumping Test Type Date D	maries uration S.W.L. (m) D.D.L. (m)	Yield (L/s) Int	ake Depth (m) Test Method	To Mea	sure Water Level	To Measure Dischar	ge Tested By
Single-Rate Pumping Test 01-Dec-1988	(hr) 2.10	0.34					
Pumping Tests - Read Pumping Test Type Date Time	lings e (mins) S.W.L. (m) D.D.L. (m) (No) Yield (L/s) Int Pumping Test R	ake Depth (m) Test Method eading Details Found)	To Mea	sure Water Level	To Measure Dischar;	ge Tested By
Chemical Treatment	Duration	Success					
	(Na	o Chemical Trea	tment Details Found)				
Development Method Time T	`aken	Other Developme (No Developme	nt Method nt Details Found)				
Remarks							
		*** End of (GW065858 ***				

GW065859

Converted From HYDSYS

GW003033									
License :30BL1	79157		************************						
Work Type :Bore Work Status :(Unkno Construct. Method :Rotary Owner Type :Private	own) Air				Authorised Purpos IRRIGATION RECREATION (GF	se(s) ROUNDWAT	Intend MONI ER)	ed Purpose(s) FORING BORE	
Commenced Date : Completion Date :29-No	/-1988 I	Final Depth : Drilled Depth :	4 4	9.00 m 9.00 m					
Contractor Name : Driller :1562	MOI	RTON, Kevin Cl	harles						
Property : - "P. GWMA : - GW Zone : -	ACIFIC BAY R	ESORT "			Standing Water I Sa	Level : linity : Yield :	3.56 m 1,600.00 mg/L 1.88 L/s	1001-3000 ppm	
Site Details									4
Site Chosen By		Form License	County A :FITZRO ed :FITZRO	Y Y	Parish COFF COFF	1	Portio LOT 1 LT 13	n/Lot DP 3 DP808966 DP 808966	
Region :3 0 - N River Basin :205 - Area / District :	IORTH COAST BELLINGER F	ſ RIVER			CMA Maj Grid Zone	p :9537-3N e :56/2	COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :	0.00				Northing Easting	g :6651740 g :512680	Lat Long	itude (S) :30° 15' itude (E) :153° 7'	57" 55"
GS Map : 0092A	2 AMG 2	Zone :56			Coordinate Source	e :			
H P Component Type 1 Hole Hole Hole 1 I Casing PVC Class 9	tive depths indicate	e Above Ground Lev From (m) To 0.00 4 0.00 1	vel;H-Hole;P-Pi (m) OD (mm) 19.00 150 2.00 140	pe;OD-O ID	utside Diameter;ID-Inside (mm) Interval Details Rotary A	Diameter;C-Cen	nented;SL-Slot Lengt	n;A-Aperture;GS-Grai	in Size;Q-Quantity
Water Bearing Zo From (m) To (m) Thick 24.00 25.00 33.00 33.00 34.00 37.00	NES ness (m) WBZ Typ 1.00 1.00 1.00 Fractured	e		S.W.L.	(m) D.D.L. (m) 3.50 3.50	Yield (L/s) 0.78 0.78 2.40	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
Drillers Log From (m) To (m) Thickness(m) 0.00 10.00 10.00 10.00 34.00 24.00 34.00 37.00 3.00 37.00 49.00 12.00	Drillers Description SOIL/SUBSOIL:R - RED/WHITE/B CHERT:SILICEOU SLATE:SILICEOU CHERT:SILICEOU	ED CLAY SOILS (LUE S,BLACK S ELACK SLADE (S ELACK	WITH CHERT H WITH QUARTZ	PEBBLES VEININ	Ge VARIABLY BANDED	eological Material	Comm	ents	
Pumping Tests - Pumping Test Type Dat	Summar	ies S.W.L. (m) D.D.I	(m) Yield ((L/s) In	ake Depth (m) Test Meth	od To Ma	easure Water Level	To Measure Discha	rge Tested By
Single-Rate Pumping Test 29-Nov	-1988	3.50		1.88					
Pumping Tests - Pumping Test Type Dat	Reading	S S.W.L. (m) D.D.I	(m) Yield (No Pumping	(L/s) In g Test R	ake Depth (m) Test Meth	od To Ma	easure Water Level	To Measure Dischar	rge Tested By
Chemical Treatm	ent	Duration	Suc	cess					
			(No Chemic	al Trea	tment Details Found,)			
Development Air Remarks	Time Taken 3.00		Other D	evelopme	nt Method				
			*** F	nd of C	GW065859 ***				

GW065881

Converted From HYDSYS

Liceux : 3001.13976 Authorised Purpose(s) DOMESTIC DoMESTIC									
Automate Purpose(s) Definition (Purpose(s)) Definition (Purpose(s)) Week Shares (Takingan) STOCK STOCK Owner Type Plava Stock STOCK STOCK Stock STOCK Stock STOCK Stock STOCK Stock STOCK Stock STOCK Stock STOCK Stock STOCK S	License	:30BL138976						D	
Marcine Markelling Markelling Markelling Consequence Markelling Consequence Markelling Consequence Markelling Markelling Consequence Salanding Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Consequence Co	Work Type Work Status Construct. Method Owner Type	:Bore :(Unknown) :Rotary :Private			Authorised Purpose(s) DOMESTIC STOCK		Intended DOMEST STOCK	Purpose(s) YC	
Procent or Market Science Market Sc	Commenced Date Completion Date	: :18-Feb-1989	Final Depth : Drilled Depth :	37.00 m 37.00 m					
Property : Standing Water Leef : 6.00 m. Silver Lee : Yield : 0.60 L/s Standard Mater Leef : Northig: Operation/Loo DP Licensed : Standard Mater Leef : Northig: Dottion/Loo DP Licensed : Standard Mater Leef : Northig: Dottion/Loo DP Licensed : Standard Mater Leef : Northig: Dottion/Loo DP Licensed : Standard Mater Leef : Northig: Dottion/Loo DP Licensed : Region :: 0.00 Partial Construction Dottion/Loo DP Construction Region :: 0.00 Northig: Latitude (S): 30° 15° 7°. Construction Northig: Northig: 605328 Latitude (S): 30° 15° 7°. Construction Native State State : State : State : Processer Northig: 605328 Latitude (S): 30° 15° 7°. Construction Native State State : State : State : Processer 0.00 500 100 00 00 00 00 00 00 00 00 00 00 00	Contractor Name Driller	:D C JACKWITZ :1249	JACKWITZ, Douglas Ch	arles					
Site Chosen By County For a STITZROY Licensed FITZROY Licensed FITZROY MOONEE Parish MOONEE PortionLet DP LIT 100 Pro29355 LT 100 Pro29355 Regin: 30 - NORTH COAST Regin: 30 - NORTH COAST Restin: 312-000 COAST MOONEE LIT 100 Pro29355 LT 100 Pro29355 Regin: 30 - NORTH COAST Restin: 312-000 COAST MOONEE LIT 100 Pro29355 LT 100 Pro29355 Regin: 30 - NORTH COAST Restin: 312-000 COAST MOONEE LIT 100 Pro29355 Televation Status (Status (Property GWMA GW Zone	: : - : -			Standing Water Level Salinity Yield	l: /: l:	6.00 m 0.60 L/s		
Site Chosen By County Form A :FTTZROY Licensed :FTTZROY MOONEE Parish LOT 101 DF623555 LOT 010 DF623555 Region :30 - NORTH COAST River Bash: 205 - BELLINGER RIVER Area / District : CMA Map :9537-3N Grid Zane :562 COFFS HARBOUR Grid Zane :562 COFFS HARBOUR Scale :1: 25,000 Elevation : 0.00 Northing :6653280 Latitude (5) :30" 15 ?" Casting : 513445 Longitude (6) :150" 8: 2.3" I : 0.00 Northing :6653280 Latitude (5) :30" 15 ?" Casting : 513445 Longitude (6) :150" 8: 2.3" I : 0.00 Northing :6653280 Latitude (5) :150" 8: 2.3" I : 0.00 Northing :6653280 Latitude (5) :150" 8: 2.3" I : Construction Nogaline disples indicate house Ground Level/Hiele P-Pipe CD-Duilde Dameter-D-trade Dameter-D-trade trade to the set of t	Site Details								
Argin 1: 0: ONTH COAST TAYE BASIN 2:0: 0 BELLINGER RIVER TAYE JOINT 1: 0: 00 CMA Map :9537-30 Grid Zune :562 COFFS HARBOUR Stati: 1: 25,000 Beration 1: 0: 00 0: 00 Northing :0653263 Latitude (S) :30° 15 7°. Longitude (E) :153° 8' 23°. Grid Zune : 502 AMG Zune : 506 Coordinate Surere : Easting :013445 Latitude (S) :30° 15 7°. Longitude (E) :153° 8' 23°. Mark Day : 002A2 AMG Zune : 50 Coordinate Surere : Easting :013445 Latitude (S) :30° 15 7°. Longitude (E) :153° 8' 23°. Mark Day : 002A2 AMG Zune : 50 Coordinate Surere : Easting :013445 Latitude (S) :30° 15 7°. Mark Day : 002A2 AMG Zune : 502 Coordinate Surere : Easting :013445 Longitude (E) :153° 8' 23°. Mark Day : 002A2 AMG Zune : 500 Dol umin Internal Details I Commenter Wetcome Coordinate Surere : Easting :01345 Longitude (E) :153° 8' 23°. Mark Day : 002A Term (00) Totin 0 Doum Internal Details I Commenter Wetcome Coordinate Surere : Easting :01300 Longitude (E) :153° 8' 23°. Mark Day : 0030 Term (00) Totin 0 Doum Internal Details I Commenter Wetcome Coordinate Surere : Easting :13000 Longitude (E) :153° 8' 23°. Mark Day : 0030 Term (00) Totin 0 Doum Internal Details Found : Easting :13000 I Long I Partice : Easting :13000 I L	Site Chosen By		C Form A :F Licensed :F	ounty ITZROY ITZROY	Parish MOONEE MOONEE		Portion/L LOT 101 LT 100 D	ot DP DP629555 P 629555	
Elevations 0.00 Northing :6632432 Latitude (S) :30° 15 '7' GN May :00024 MGZ Zon: 50 Coordinate Source : Component Pipe (S) Processour (S) Procesour (S) Processour (S) Processour (S) Processou	Region River Basin Area / District	:30 - NORTH CC :205 - BELLING :	DAST ER RIVER		CMA Map :953 Grid Zone :56/	37-3N C /2	OFFS HARBO Scale :1:25,000	UR 0	
Yes Yes Coordinate Source : Provide depths helicits Accore Ground Lavel 4H4 (dap P-Plac OD-Outside Damater (D-Partice Damater C)-Cametod (dap (dap (dap (dap (dap (dap (dap (da	Elevation Elevation Source	: 0.00 :			Northing :66: Easting :51	53280 3445	Latitu Longitue	de (S) :30° 15' ´ de (E) :153° 8' ´	7" 23"
Mediative depths Indicate Above Ground Level, H-Hole, P-Popo, OD-Outside Diamater, D-Inside Diamater, D-Centended, SL, Stot Lengthy, A-Agenture, GS-Grain Size, O-Quarter, If Component Type Fermi (m) To (m) Dataria I Coming Type Fermi (m) To (m) Dataria I Coming PVC Classis 0.00 57.00 140 Sector Data I Coming PVC Classis 0.00 57.00 140 Sector Data Differed Edepths Indicate Above Ground Level, H-Hole, P-Popo, OD-Outside Diamater, D-Instaling Sector Data Sector Data Differed Edepths Indicate Above Ground Level, H-Hole, P-Popo, OD-Outside Diamater, D-Instaling Sector Data Sector Data Differed Edepths Indicate Above Twill Subary Status Sector Data Sector Data Sector Data Differed Edepths Indicate Above Twill Subary Status Subary Status Subary Status Subary Status Subary Status Differed Edepths Indicate Above Eduption Subary Status Subary Status Subary Status Subary Status Subary Status Differed Edepths Indicate Above Eduption Subary Status Subary Status Subary Status Subary Status Subary Status Subary Status	GS Map	:0092A2 AN	1G Zone :5 6		Coordinate Source :				
I) I Composed I Type NC Classica Ponc (m) 0.00 To (m) 0.00 D (man) 0.00 D (man) 0.00<	Construction	Negative depths in	dicate Above Ground Level;H-I	lole;P-Pipe;OD-C	Outside Diameter; ID-Inside Diam	eter;C-Cemented	;SL-Slot Length;A-	Aperture;GS-Grain	Size;Q-Quantity
Water Bearing Zones Print (m)	HPComponentType11CasingPVC11CasingPVC11OpeningSlots	Class 9 Class 9 - Vertical	From (m) To (m) 0.00 8.00 0.00 37.00 23.00 34.00	DD (mm) ID 160 140 140	(mm) Interval Details Seated on Botto 1 PVC; Sawn; SL	om 2 150mm; A: 3mm			
Driller's Log Toring Test Werther Wither Secret prior Geological Material Comments Single Rate Pumping Test Type Date Duration SWLE (MD D.D.L. (m) D.D.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Discharge Tested By Pumping Test Type Date Duration SWL. (m) D.D.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Discharge Tested By Single-Rate Pumping Test Type Date Duration SWL. (m) D.D.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Discharge Tested By Pumping Test Type Date Time (mins) S.W.L. (m) D.D.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Discharge Tested By Pumping Test Type Date Time (mins) S.W.L. (m) D.D.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Discharge Tested By Chemical Treatment Method Date Time (mins) S.W.L. (m) D.D.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Discharge Tested By Chemical Treatment Method Duration Success Chemical Treatment De	Water Bearin From (m) To (23.00	<i>g</i> Zones (m) Thickness (m) WB 00 14.00 Frac	Z Type uured	S.W.L.	(m) D.D.L. (m) 6.00	Yield (L/s) H 0.60	lole Depth (m) D	uration (hr)	Salinity (mg/L)
Pumping Test S - Summaries Pumping Test Type Date Output (hr) (hr) <t< td=""><td>To (m) To (m) Th (m) 0.00 3.00 7.00 7.00 26.00 32.00 32.00 37.00 37.00</td><td>ckness(m) Drillers Descri 3.00 FILL 4.00 SAND GRAVE 19.00 SOFT SHALE 6.00 HARD SHALE 5.00 FRACTURED</td><td>ption L BASALT</td><td></td><td>Geologica</td><td>al Material</td><td>Comments</td><td>5</td><td></td></t<>	To (m) To (m) Th (m) 0.00 3.00 7.00 7.00 26.00 32.00 32.00 37.00 37.00	ckness(m) Drillers Descri 3.00 FILL 4.00 SAND GRAVE 19.00 SOFT SHALE 6.00 HARD SHALE 5.00 FRACTURED	ption L BASALT		Geologica	al Material	Comments	5	
Pumping Test Type Date Duration (hr) S.W.L. (m) D.D.L. (m) Yield (L/s) Intake Depth (m) Test Method To Measure Water Level To Measure Discharge Tested By Single-Rate Pumping Test 18-Feb-1989 6.00 0.60 Airlift To Measure Water Level To Measure Discharge Tested By Pumping Test S - Readings Pumping Test Type Date Time (mims) S.W.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Water Level To Measure Discharge Tested By Pumping Test Type Date Time (mims) S.W.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Water Level To Measure Discharge Tested By (No Pumping Test Type Date Time (mims) S.W.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Water Level To Measure Discharge Tested By (No Pumping Test Type Date Time (mims) S.W.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Water Level To Measure Discharge Tested By (No Chemical Treatment Details Found) No Other Development Method (No Development Details Found) No No No	Pumping Tes	sts - Summ	aries						
Single-Rate Pumping Test 18-Feb-1989 6.00 0.60 Airlift Pumping Tests - Readings Pumping Test Type Date Time (mins) S.W.L. (m) D.D.L. (m) Yield (L/s) Intake Depth (m) Test Method To Measure Water Level To Measure Discharge Tested By (No Pumping Test Reading Details Found) Chemical Treatment Method Duration Success (No Chemical Treatment Details Found) No Chemical Treatment Details Found) Evelopment Method Time Taken Other Development Method (No Development Details Found) Remarks	Pumping Test Type	Date Dura	tion S.W.L. (m) D.D.L. (m) (hr)	Yield (L/s) In	take Depth (m) Test Method	To Measure	Water Level T	o Measure Discharg	e Tested By
Pumping Tests - Readings Pumping Test Type Date Time (mins) S.W.L. (m) Vield (L/s) Intake Depth (m) Test Method To Measure Water Level To Measure Discharge Tested By (No Pumping Test Reading Details Found) Image: Chemical Treatment Method Duration Success (No Chemical Treatment Method Duration Success (No Chemical Treatment Details Found) Development Time Taken Other Development Method (No Development Details Found) Remarks Image: Chemical Treatment Details Found) Image: Chemical Treatment Details Found)	Single-Rate Pumping Test	18-Feb-1989	6.00	0.60	Airlift				
Chemical Treatment Treatment Method Development Method Time Taken Other Development Method (No Development Details Found)	Pumping Test Pumping Test Type	S ts - Readii Date Time (n	1955 nins) S.W.L. (m) D.D.L. (m) (No F	Yield (L/s) In Pumping Test R	take Depth (m) Test Method Peading Details Found)	To Measure	Water Level T	o Measure Discharg	e Tested By
Development Method Time Taken Other Development Method (No Development Details Found)	Chemical Treatment M	eatment	Duration	Success					
Development Method Time Taken Other Development Method (No Development Details Found)			(No	Chemical Trea	utment Details Found)				
Remarks	Developmen Method	t Time Tak	en (Other Developm No Developme	ent Method ent Details Found)				
	Remarks								
				444 5 • ^ -	33307 5 001 ++++				

End of GW065881

GW065993

Converted From HYDSYS

<u>ano03330</u>					
License :30BL144075			Authorized Democrate	Intended Dumoso(e)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			Authorised Furpose(s) RECREATION (GROUNDWATER)) RECREATION (GROUNDWATER)	
Commenced Date : Completion Date :01-Dec-1991	Final Depth Drilled Depth	: 48.00 m : 48.00 m			
Contractor Name :TANNER DRI Driller :1412	LLING TANNER, Robert	Leslie			
Property : - KORORA F GWMA : - GW Zone : -	PUBLIC SCHOOL		Standing Water Level : Salinity : Yield :	9.00 m Good 3.16 L/s	
Site Details					
Site Chosen By	For Lice	County m A :FITZROY ased :FITZROY	Parish COFF COFF	Portion/Lot DP LOT 244 DP752817 LT 244 DP 752817	
Region :30 - NORTH River Basin :204 - CLARE Area / District :	COAST NCE RIVER		CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARBOUR Scale :1:25,000	
Elevation : 0. Elevation Source :	00		Northing :6652900 Easting :512550	Latitude (S) :30° 15' 19" Longitude (E) :153° 7' 50"	
GS Map :0092A2	AMG Zone :56		Coordinate Source :		
H P Component Type 1 Hole Hole 1 Hole Hole 1 Item to be and the second	From (m) 0.00 12.00 -0.30 43.00	Level; H-Hole; P-Pipe; OD-O To (m) OD (mm) ID 12.00 170 48.00 170 48.00 152 48.00 152	(mm) Interval Details Rotary Air Down Hole Hammer -98 Seated on Bottom 1 PVC Class 9; SL: 100mm; A: 2	.6mm	uty
From (m) To (m) Thickness (m) <ththickness (m)<="" th=""> Thickness (m)</ththickness>	WBZ Type Fractured	S.W.L.	(m) D.D.L. (m) Yield (L/s) 9.00 3.16	Hole Depth (m)Duration (hr)Salinity (mg/L)48.001.00Goo	.) d
To (m) To (m) Thickness(m) Drillers D 0.00 0.20 0.20 BROWN TO 0.20 12.00 11.80 SOFT BROWN TO 12.00 24.00 12.00 HARD BROWN TO 24.00 36.00 12.00 GREY SHARD 36.00 43.00 7.00 BASALT 43.00 48.00 5.00 FRACTURE	escription DESOIL OWN SHALE OWN SHALE ALE ED BASALT		Geological Material	Comments	
Pumping Tests - Sum Pumping Test Type Date	Duration S.W.L. (m) D.	D.L. (m) Yield (L/s) In	take Depth (m) Test Method To Measu	ure Water Level To Measure Discharge Tested B	ły
Single-Rate Pumping Test 01-Dec-1991	9.00	3.16			
Pumping Tests - Read Pumping Test Type Date Tim	dings ne (mins) S.W.L. (m) D.	.D.L. (m) Yield (L/s) In (No Pumping Test K	take Depth (m) Test Method To Meass Reading Details Found)	ure Water Level To Measure Discharge Tested B	y
Chemical Treatment	Duration	Success (No Chemical Tree	atment Details Found)		
Development Method Time Air 1.00	Taken	Other Developm	ent Method		
neillaiks					

*** End of GW065993 ***

GW066158

Converted From HYDSYS

License :30BL138334 Work Type :Bore Work Status :(Unknown)		A E	Authorised Purpose(s DOMESTIC	;)	Intended Purpose(s) DOMESTIC	
Construct. Method :Rotary Air Owner Type :Private						
Commenced Date : Completion Date :01-Oct-1988	Final Depth : Drilled Depth :	23.00 m 23.00 m				
Contractor Name :W.D. JACKWITZ Driller :1504 JA	CKWITZ, William Doug	las				
Property : GWMA : - GW Zone : -			Standing Water Lev Salini Yie	vel : ty : id : 2.00	L/s	
Site Details						
Site Chosen By	Con Form A :FIT Licensed :FIT	unty 'ZROY 'ZROY	Parish COFF COFF		Portion/Lot DP LOT A DP374980 212	
Region :30 - NORTH COAS River Basin :205 - BELLINGER Area / District :	ST RIVER		CMA Map :9 Grid Zone :5	2537-4S MOON 66/2 Scale	√EE BEACH e :1:25,000	
Elevation : 0.00 Elevation Source :			Northing :6 Easting :5	5654170 512630	Latitude (S) :30° 14 Longitude (E) :153° 7	' 38" ' 53"
GS Map :0092A1 AMG	Zone : 56	(Coordinate Source :			
Construction Negative depths indica	ate Above Ground Level;H-Ho	le;P-Pipe;OD-Outs	side Diameter;ID-Inside Dia	imeter;C-Cemented;SL-SI	ot Length;A-Aperture;GS-Gra	in Size;Q-Quantity
HPComponentType1HoleHole1ICasingP.V.C.	From (m) To (m) OD 0.00 23.00 0.00 3.00	(mm) ID (m 160 175	im) Interval Details Rotary Air			
1 1 Casing P.V.C. 1 1 Opening Slots - Vertical	0.00 23.00 5.00 23.00	140 140	Seated on Bo 1 PVC; Sawn;	ottom SL: 150mm; A: 3mm		
From (m) To (m) Thickness (m) WBZ T 4.00 6.00 2.00 Fracture 18.00 20.00 Construction	ype d	S.W.L. (m) D.D.L. (m)	Yield (L/s) Hole De 0.50 2.00	pth (m) Duration (hr)	Salinity (mg/L)
To (m) To (m) Thickness(m) Drillers Description 0.00 1.00 1.00 CLAY 1.00 4.00 3.00 GRAVEL & SHAL 4.00 6.00 2.00 SHALE 6.00 18.00 12.00 BASALT 18.00 20.00 3.00 BASALT	on E		Geolog	ical Material	Comments	
Pumping Tests - Summal	r ies 1 S.W.L. (m) D.D.L. (m)	Yield (L/s) Intak	e Depth (m) Test Method	To Measure Water	Level To Measure Discha	røe Tested By
(hr Single-Rate Pumping Test 01-Oct-1988)	2.00	p ()		20101 10 Mensure Disena	.ge rested by
Pumping Tests - Reading Pumping Test Type Date Time (mins	\$S) S.W.L. (m) D.D.L. (m) (No Put	Yield (L/s) Intak mping Test Rea	e Depth (m) Test Method ding Details Found)	To Measure Water	Level To Measure Discha	rge Tested By
Chemical Treatment	Duration	Success				
	(No C)	hemical Treatm	eent Details Found)			
Development						
Method Time Taken	c)ther Development	Method			
	(No	o Development	Details Found)			
Remarks						

*** End of GW066158 ***

GW066175

Converted From HYDSYS

License :30BL144161					
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		AS	Authorised Purpose(s) TOCK	Intended Purpose(s) STOCK	
Commenced Date : Completion Date :24-Jan-1992	Final Depth : Drilled Depth :	54.00 m 54.00 m			
Contractor Name :TANNER DRILI Driller :1412	LING TANNER, Robert Leslie				
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	18.00 m Good 2.27 L/s	
Site Details					
Site Chosen By	Cou Form A :FIT Licensed :FIT	inty ZROY ZROY	Parish MOONEE MOONEE	Portion/Lot DP LOT 367 DP44801 LT 367 DP 44801	
Region :30 - NORTH CO River Basin :204 - CLAREN Area / District :	DAST CE RIVER		CMA Map :9537-3N Grid Zone :56/2	COFFS HARBOUR Scale :1:25,000	
Elevation : 4.00 Elevation Source :Est. Contour 8-15) m (A.H.D.) 5M.		Northing :6652405 Easting :511965	Latitude (S) :30° 15' 35 Longitude (E) :153° 7' 28	5" 3"
GS Map : 0092A2 Al	MG Zone :56	(Coordinate Source :GD.,ACC.M	ЛАР	
Construction Negative depths in	ndicate Above Ground Level;H-Hol	e;P-Pipe;OD-Outs	side Diameter;ID-Inside Diameter;C-Cer	nented;SL-Slot Length;A-Aperture;GS-Grain S	ize;Q-Quantity
H P Component Type 1 Hole Hole 1 Hole Hole 1 Hole Hole 1 Casing Steel	From (m) To (m) OD 0.00 16.00 16.00 18.00 18.00 54.00 0.00 18.00	(mm) ID (m 170 170 152 164	nm) Interval Details Rotary Air Down Hole Hammer Down Hole Hammer Welded		
Water Bearing ZonesFrom (m)To (m)Thickness (m)WB49.0054.005.00	3Z Type	S.W.L. (m 18.0	a) D.D.L. (m) Yield (L/s) 0 2.27	Hole Depth (m) Duration (hr) Sa 54.00 2.00	alinity (mg/L) Good
Drillers Log From (m) To (m) Thickness(m) Drillers Desc 0.00 0.30 0.30 BROWN TOPS 0.30 4.00 3.70 BROWN TOPS 1.30 12.00 8.00 RED CLAY 12.00 13.00 16.00 3.00 DINNER PLJ 16.00 18.00 2.00 HARD BROWN LAS 18.00 49.00 31.00 BRASAT 49.00 54.00 5.00 FRACTURED	ription SOIL Y ATE GRANULES (DRY) N SHALE BASALT		Geological Material	Comments	
Pumping Tests - Sumn Pumping Test Type Date Dur	TATIES ration S.W.L. (m) D.D.L. (m) (hr)	Yield (L/s) Intak	e Depth (m) Test Method To M	easure Water Level To Measure Discharge	Tested By
	(No Pun	nping Test Sum	emary Details Found)		
Pumping Tests - Readi Pumping Test Type Date Time (mins) S.W.L. (m) D.D.L. (m) (No Puu	Yield (L/s) Intak mping Test Rea	ee Depth (m) Test Method To M ading Details Found)	easure Water Level To Measure Discharge	Tested By
Chemical Treatment	Duration (No C)	Success hemical Treatm	rent Details Found)		
DevelopmentMethodTime TaAir2.00Remarks	ken C)ther Development	Method		

GW066299

Converted From HYDSYS

License •30RI	140277							
Work Type : Work Status :(Unkr Construct. Method :Rotar Owner Type :	lown) y Air			Authorised Purpose(s DOMESTIC)	Intended Purpo DOMESTIC STOCK	se(s)	
Commenced Date : Completion Date :11-No	ov-1989 I	Final Depth : Drilled Depth :	40.00 m 40.00 m	1				
Contractor Name :D C J. Driller :1424	ACKWITZ JAC	KWITZ, Douglas Ch	arles					
Property : GWMA : - GW Zone : -				Standing Water Lev Salini Yiel	el: 2 ty: ld:	1.00 m 0.80 L/s		
Site Details								
Site Chosen By		C Form A :F Licensed :F	County ITZROY ITZROY	Parish COFF COFF		Portion/Lot DP LOT 1 DP78164 LT 1 DP 781643	3	
Region : 30 - River Basin : 205 - Area / District :	NORTH COAST BELLINGER F	Γ RIVER		CMA Map : Grid Zone :	S	Scale :		
Elevation : Elevation Source :Est. C	30.00 m (/ ontour 8-15M.	A.H.D.)		Northing :6 Easting :5	650335 08300	Latitude (S) Longitude (E)	:30° 16' 43" :153° 5' 11"	
GS Map :0092A	AMG 2	Zone :5 6		Coordinate Source :G	D.,ACC.MAP			
Construction Neg	ative depths indicate	e Above Ground Level;H-I	Hole;P-Pipe;OD-(Outside Diameter;ID-Inside Dia	meter;C-Cemented;	SL-Slot Length;A-Aperture	;GS-Grain Size;Q-Qua	ntity
H P Component Type 1 Hole Hole Hole 1 I Casing PVC Class 9 1 I Opening Slots - Vertical	L	From (m) To (m) 0.00 40.00 0.00 40.00 33.00 40.00	OD (mm) II 168 160 160	D (mm) Interval Details Rotary Air Seated on Boi 1 PVC Class 9;	ttom Sawn; SL: 150mm; A	: 3mm		
Water Bearing Zo From (m) To (m) Thic 34.00 38.00 Thic	NICS kness (m) WBZ Typ 4.00 Fractured	e	S.W.L	. (m) D.D.L. (m) 21.00	Yield (L/s) Ho 0.80	le Depth (m) Duration (hr) Salinity (mg/	L)
Trom (m) To (m) Thickness(m) 0.00 1.00 1.00 1.00 13.00 12.00 13.00 29.00 16.00 29.00 34.00 5.00 38.00 40.00 2.00	Drillers Description TOPSOIL CLAY SOFT SHALE HARD SHALE SATURATED SOFT BASALT	SHALE		Geologi	ical Material	Comments		
Pumping Tests -	Summar	ies						
Pumping Test Type Da	te Duration (hr)	S.W.L. (m) D.D.L. (m)	Yield (L/s) It	ntake Depth (m) Test Method	To Measure V	Vater Level To Measur	e Discharge Tested	Ву
Single-Rate Pumping Test 11-Nov	v-1989	21.00	0.80					
Pumping Tests - Pumping Test Type Da	Readings	S .W.L. (m) D.D.L. (m)	Yield (L/s) In	ntake Depth (m) Test Method	To Measure V	Vater Level To Measur	e Discharge Tested	By
		(NO F	'umping Test I	Reading Details Found)				
Chemical Treatm	ent	Duration	Success					
		(No	Chemical Tree	atment Details Found)				
Development Method	Time Taken	(Other Developm No Developm	ent Method ent Details Found)				
Remarks								
			*** Fnd of	CW066200 ***				

*** End of GW066299 ***

GW066470

Converted From HYDSYS

411000110			
License :30BL140770		Authorized Dumpers(a)	Intended Dumpers(a)
Work Type : Work Status :(Unknown) Construct. Method : Owner Type :		Authorised Purpose(s) DOMESTIC STOCK	Intended Purpose(s)
Commenced Date : Completion Date :	Final Depth : Drilled Depth :		
Contractor Name : Driller :			
Property : GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	
Site Details			
Site Chosen By	County Form A :RALEIGH Licensed :RALEIGH	Parish BONVILLE BONVILLE	Portion/Lot DP LOT 41 DP595841 LT41 DP595841
Region : 30 - NORTH COAS River Basin : 205 - BELLINGER Area / District :	ST RIVER	CMA Map : Grid Zone :	Scale :
Elevation : 27.00 m Elevation Source :Est. Contour 8-15M.	(A.H.D.)	Northing : 6645000 Easting : 506800	Latitude (S) :30° 19' 36" Longitude (E) :153° 4' 15"
GS Map :0092A2 AMG	Zone :56	Coordinate Source :GD.,ACC.M.	ĄP
Best Provided by the structure Negative depths indication H P Component Type I I Casing P.V.C. I I Opening Slots - Vertical	Ite Above Ground Level;H-Hole;P-Pipe;OD- From (m) To (m) OD (mm) I -0.30 40.00 160 18.00 40.00 160	Outside Diameter,ID-Inside Diameter,C-Ceme D (mm) Interval Details Seated on Bottom 1 Mechanically Slotted; SL: 0n	nted;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity
From (m) To (m) Thickness (m) WBZ T 26.00 30.00 4.00 Fracture 35.00 36.00 1.00 Fracture	ype S.W.I d d	L. (m) D.D.L. (m) Yield (L/s) 12.50 0.80 12.50 0.20	Hole Depth (m) Duration (hr) Salinity (mg/L)
Drillers Log From (m) To (m) Thickness(m) Drillers Description	on (No Drillers I	Geological Material Log Details Found)	Comments
Pumping Tests - Summa Punuping Test Type Date Duratio	ries n S.W.L. (m) D.D.L. (m) Yield (L/s) 1	Intake Depth (m) Test Method To Mea	sure Water Level To Measure Discharge Tested By
(, (No Pumping Test 3	Summary Details Found)	
Pumping Tests - Reading Pumping Test Type Date Time (mins	S S.W.L. (m) D.D.L. (m) Yield (L/s) 1 (No Punping Test	Intake Depth (m) Test Method To Mea Reading Details Found)	sure Water Level To Measure Discharge Tested By
Chemical Treatment	Duration Success (No Chemical Tre	eatment Details Found)	
Development Method Time Taken	Other Developn (No Developn	ment Method nent Details Found)	
Remarks			

*** End of GW066470 ***

GW066666

Converted From HYDSYS

L'		
License :30BL142604	Authorised Purpose(s)	Intended Purpose(s)
Work Type : Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :	DOMESTIC	DOMESTIC STOCK
Commenced Date :Final Depth :Completion Date :16-Feb-1991Drilled Depth :	43.00 m 43.00 m	
Contractor Name :TANNER DRILLING Driller :1412 TANNER, Robert Leslie		
Property : GWMA : - GW Zone : -	Standing Water Level : Salinity : Yield :	18.00 m Good 1.52 L∕s
Site Details		
Site Chosen By Count Diviner Form A :RALE Licensed :RALE	ty Parish NGH BONVILLE NGH BONVILLE	Portion/Lot DP LOT 300 DP804293 LT 300 DP 804293
Region :30 - NORTH COAST River Basin :205 - BELLINGER RIVER Area / District :	CMA Map : Grid Zone :	Scale :
Elevation : 20.00 m (A.H.D.) Elevation Source :Est. Contour 8-15M.	Northing : 6647545 Easting : 504965	Latitude (S) :30° 18' 13" Longitude (E) :153° 3' 6"
GS Map :0092A2 AMG Zone :56	Coordinate Source :GD.,ACC.N	МАР
Negative depths indicate Above Ground Level;H-Hole;F H P Component Type From (m) To (m) OD (m) 1 Hole Hole 0.00 43.00 1 1 1 Casing PVC Class 9 -0.30 43.00 1 1 1 Opening Slots - Vertical 37.00 42.00 1	P-Pipe;OD-Outside Diameter;ID-Inside Diameter;C-Cer m) ID (mm) Interval Details 170 Down Hole Hammer 152 -98 Glued; Cemented; Seated of 152 I PVC Class 9; Sawn; SL: 10	nented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity on Bottom 20mm; A: 2.5mm
Water BearingZonesFrom (m)To (m)Thickness (m)WBZ Type37.0042.005.00Fractured	S.W.L. (m) D.D.L. (m) Yield (L/s) 18.00 1.52	Hole Depth (m) Duration (hr) Salinity (mg/L) 43.00 1.50 Good
Torillers Log From (m) To (m) Thickness(m) Drillers Description 0.00 18.00 18.00 BROWN SHALE 18.00 37.00 19.00 BASALT 37.00 42.00 5.00 BROKEN BASALT 42.00 43.00 1.00 BASALT	Geological Material	Comments
Pumping Tests - Summaries Pumping Test Type Date Duration S.W.L. (m) D.D.L. (m) Yie (hr)	eld (L/s) Intake Depth (m) Test Method To M	easure Water Level To Measure Discharge Tested By
(No Pumpi	ing Test Summary Details Found)	
Dumning Tests - Deadings		
Pumping Test Type Date Time (mins) S.W.L. (m) D.D.L. (m) Yie (No Pump	eld (L/s) Intake Depth (m) Test Method To M ing Test Reading Details Found)	ieasure Water Level To Measure Discharge Tested By
Chemical Treatment Treatment Method Duration	Success	
(No Cher	nical Treatment Details Found)	
Development Method Time Taken Othe Air 1.00 Remarks	er Development Method	
:	* End of GW0666666 *	

GW068230

Converted From HYDSYS

License :30BL140384		Authorized Durness(a)	Intended Durmage (a)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		Authorised Purpose(s) DOMESTIC STOCK	Intended Purpose(s)
Commenced Date :12-Nov-1989 Completion Date :12-Nov-1989	Final Depth :52.00 mDrilled Depth :52.00 m		
Contractor Name :Douglas JACKWITZ Driller :1424 JAC	CKWITZ, Douglas Charles		
Property : GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	27.00 m 0.50 L/s
Site Details			
Site Chosen By	County Form A :FITZROY Licensed :FITZROY	Parish MOONEE MOONEE	Portion/Lot DP LT19 DP771618 LT 19 DP 771618
Region :30 - NORTH COAS River Basin :205 - BELLINGER Area / District :	T RIVER	CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARBOUR Scale :1:25,000
Elevation : 0.00 Elevation Source :		Northing :6651321.2 Easting :512187	Latitude (S) :30° 16' 11" Longitude (E) :153° 7' 36"
GS Map : AMG	Zone : 56	Coordinate Source :	
H P Component Type I Hole Hole 1 I Casing P.V.C. 1 I Opening Slots - Vertical 1 I Opening Slots - Vertical	From (m) To (m) OD (mm) ID 0.00 52.00 168 160 28.00 34.00 160 46.00 52.00 160	(mm) Interval Details Rotary Air Seated on Bottom 1 PVC; Sawn; SL: 150mm; A: 2 PVC; Sawn; SL: 150mm; A:	anted;SL-Slot Length;A-Apenture;GS-Grain Size;G-Quantity 3mm 3mm
From (m) To (m) Thickness (m) WBZ Ty 28.00 32.00 4.00 Fractured 48.00 50.00 2.00	pe S.W.L. 27	(m) D.D.L. (m) Yield (L/s) 0.30 7.00 0.20	Hole Depth (m) Duration (hr) Salinity (ng/L)
Torillers Log From (m) To (m) Thickness(m) Drillers Description 0.00 3.00 Shale Shale 3.00 31.00 28.00 Soft Shale 31.00 32.00 1.00 Quartz 32.00 48.00 16.00 Hard Granite 48.00 50.00 2.00 Hard Granite	n	Geological Material Shale Shale Invalid Code Granite Invalid Code Granite	Comments
Pumping Tests - Summai Pumping Test Type Date Duration (hr)	S.W.L. (m) D.D.L. (m) Yield (L/s) Int	take Depth (m) Test Method To Me	asure Water Level To Measure Discharge Tested By
	(No Pumping Test Su	ummary Details Found)	
Pumping Tests - Reading Pumping Test Type Date Time (mins)	S S.W.L. (m) D.D.L. (m) Yield (L/s) Int (<i>No Pumping Test R</i>)	take Depth (m) Test Method To Me eading Details Found)	asure Water Level To Measure Discharge Tested By
Chemical Treatment	Duration Success (No Chemical Trea	tment Details Found)	
Development Method Time Taken	Other Developme (No Developme	ent Method nt Details Found)	

Remarks

GW068483

Converted From HYDSYS

License :30BL140865			Authorized Durnes	e(s)	Intond	ed Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			DOMESTIC		DOME	STIC	
Commenced Date : Completion Date :26-Feb-1990	Final Dept Drilled Dept	h: 80.00 h: 80.00	m m				
Contractor Name : Driller :1504	JACKWITZ, Wil	liam Douglas					
Property : GWMA : - GW Zone : -			Standing Water L Sal Y	evel : inity : /ield :			
Site Details							
Site Chosen By	Fo Lice	County rm A :FITZROY ensed :FITZROY	Parish MOON MOON	IEE IEE	Portio LT370 LT 370	n/Lot DP DP44803 DP 44803	
Region :3 0 - NORTH River Basin : 205 - BELLI Area / District :	I COAST INGER RIVER		CMA Map Grid Zone	:9537-3N :56/2	COFFS HAR Scale :1:25,	BOUR 000	
Elevation : 0 Elevation Source :	0.00		Northing Easting	:6652090.1 :511879.7	Lat Longi	itude (S) :30° 15' 4 itude (E) :153° 7' 2	6" 25"
GS Map :	AMG Zone :56		Coordinate Source	:GD.,ACC.GI	5		
Construction Negative dept	ths indicate Above Ground	1 Level;H-Hole;P-Pipe;OE	-Outside Diameter;ID-Inside	Diameter;C-Cemer	nted;SL-Slot Lengtl	n;A-Aperture;GS-Grain	Size;Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots	From (m) 0.00 23.00	To (m) OD (mm) 80.00 150 80.00 150	ID (mm) Interval Details Seated on 1 Plastic; S	Bottom L: 150mm; A: 3mm			
Water Bearing Zones From (m) To (m) Thickness (m) 20.00 26.00 6.00 74.00 76.00 2.00	WBZ Type Fractured Fractured	S.W	.L. (m) D.D.L. (m)	Yield (L/s) 0.10 0.10	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
Torillers Log From (m) To (m) Thickness(m) Drillers I 0.00 2.00 Top Soi 2.00 4.00 2.00 soil Bo 4.00 16.00 12.00 anite 20.00 80.00 60.00 Granite	Description il bund Gravel e Mix Quartz e & Quartz		Gee So: Gra Gra Gra Gra	ological Material 11 avel anite anite anite	Comm	ents	
Pumping Tests - Sun Pumping Test Type Date	IMATIES Duration S.W.L. (m) D	D.D.L. (m) Yield (L/s)	Intake Depth (m) Test Metho	d To Meas	sure Water Level	To Measure Discharg	e Tested By
Single-Rate Pumping Test 26-Feb-1990 Single-Rate Pumping Test 26-Feb-1990	(hr) 0.00 0.00 0.00 16.50	0.00 0.00 0.00 0.20	0.00				
Pumping Tests - Rea Pumping Test Type Date Tin	dings me (mins) S.W.L. (m) I	D.D.L. (m) Yield (L/s) (No Pumping Tes.	Intake Depth (m) Test Metho t Reading Details Found	d To Meas	sure Water Level	To Measure Discharg	e Tested By
Chemical Treatment							
Treatment Method	Duration	Success (No Chemical Tr	reatment Details Found)				
Development							
Method Time	e Taken	Other Develop (No Develop)	oment Method ment Details Found)				
Remarks							
		*** End o	f GW068483 ***				

GW068763

Converted From HYDSYS

License :30	OBL142404				Anf	horised Pur	mose(s)		Intend	ed Purnose(s)		
Work Type :B Work Status :(l Construct. Method :R Owner Type :Pr	ore Jnknown) otary Air rivate				DON	MESTIC	pose(s)		DOME	ESTIC		
Commenced Date : Completion Date :17	7-Jan-1991	Final Depth Drilled Depth	1: 1:	0.00 54.00	m							
Contractor Name :T. Driller :14	ANNER DRILLI 412 T	NG TANNER, Robert	Leslie									
Property : GWMA : - GW Zone : -	-				St	anding Wat	er Level : Salinity : Yield :		18.00 m 2.53 L/s	Good		
Site Details												
Site Chosen By		For Lice	Co rm A :FIT nsed :FIT	unty TZROY TZROY		Pa CC CC	rish)FF)FF		Portio LOT 5 LT 552	n/Lot DP 52 DP802101 2 DP 802101		
Region :30 River Basin :20 Area / District :	0 - NORTH CO 05 - BELLINGE	AST ER RIVER				CMA I Grid Z	Map :9537-: Zone :56/2	3N	COFFS HAR Scale :1:25	BOUR ,000		
Elevation : Elevation Source :	0.00					Nort Eas	hing :66507 sting :50750	/50)3.6	Lat Long	titude (S) :30° 1 itude (E) :153°	6' 29" 4' 41"	
GS Map :	AM	IG Zone :56			Co	ordinate So	urce :GD.,A	ACC.GIS	;			
H P Component Type 1 Hole Hole Hole 1 1 Casing PVC Cla 1 1 Opening Slots - V	Negative depths inc uss 9 fertical	dicate Above Ground From (m) 0.00 -0.30 49.00	Level;H-Hc To (m) OI 54.00 54.00 54.00	ole;P-Pipe;O[D (mm) 170 152 152	D-Outside ID (mm) -98	Diameter;ID-Ir Interval Det Dov Glu 1 PVC	nside Diameter; ails vn Hole Hamme ed; Seated on Bo C Class 9; Sawn;	;C-Cemen er ottom ; SL: 100m	nted;SL-Slot Lengt	h;A-Aperture;GS-Gi	rain Size	;Q-Quantity
Water Bearing From (m) To (m) 49.00 54.00	Zones Thickness (m) WB2 5.00 Fract	СТуре ured		S.W	'.L. (m) 18.00	D.D.L. (m)	Yiel	ld (L/s) 2.53	Hole Depth (m) 54.00	Duration (hr) 1.50	Salin	ity (mg/L) Good
From (m) To (m) Thickm 0.00 0.60 0 0.60 18.00 1 18.00 40.00 22 40.00 49.00 54.00	ess(m) Drillers Descrip 0.60 Brown Topsc 7.40 Soft Brown 2.00 Brown Shale 9.00 5.00 Broken Base	ption Sahle Hlt					Geological M Topsoil Shale Shale Basalt Basalt	laterial	Comm	ents		
Pumping Test Pumping Test Type	S - SUMM Date Dura	aries tion S.W.L. (m) D	.D.L. (m)	Yield (L/s)	Intake De	epth (m) Test N	fethod	To Meas	ure Water Level	To Measure Disch	arge	Tested By
Single-Rate Pumping Test Single-Rate Pumping Test	17-Jan-1991 17-Jan-1991	0.00 0.00 0.00 0.00	0.00 0.00	0.00 0.00		0.00						
Pumping Test Pumping Test Type	S - Readir Date Time (m	IGS ins) S.W.L. (m) D	.D.L. (m) (<i>No Pu</i>	Yield (L/s)	Intake Do t Readin	epth (m) Test N 1g Details Fe	Method Dund)	To Meas	ure Water Leveł	To Measure Disc!	large	Tested By
Chemical Trea Treatment Metho	atment	Duration	(No C	Success Themical T	reatmen	t Details Fo	und)					
Development Method Air	Time Take 1.50	'n		Other Develo	pment Me	thod						
Remarks												
ncc = i				*** I	C C X X O	(07/3 ***						

*** End of GW068763 ***

GW068806

Converted From HYDSYS

License :30B	L141993				Authori	sed Purpose(s)		Intend	ed Purpose(s)	
Work Type :Bor Work Status :(Un Construct. Method :Rot Owner Type :Priv	e known) ary Air ate				DOMES STOCK	TIC		DOME STOCI	STIC STIC	
Commenced Date : Completion Date :20-1	Dec-1990	Final Dep Drilled Dep	th : th :	31.00 31.00	m m					
Contractor Name : Driller :										
Property : GWMA : - GW Zone : -					Standi	ng Water Leve Salinit Yiel	el : y : d :			
Site Details										
Site Chosen By		F Li	Co orm A :Fľ censed :Fľ	ounty FZROY FZROY		Parish MOONEE MOONEE		Portion LT2 D LT2 D	n /Lot DP P523509 P523509	
Region :30 River Basin :205 Area / District :	- NORTH CO - BELLING	DAST ER RIVER				CMA Map :95 Grid Zone :50	537-3N 5/2	COFFS HAR Scale :1:25	BOUR 000	
Elevation : Elevation Source :	0.00)				Northing :60 Easting :51	652003 12165.9	Lat Long	itude (S) :30° 15' itude (E) :153° 7'	48" 35"
GS Map :	Al	MG Zone :56			Coordi	nate Source :G	D.,ACC.GIS	5		
Construction N	egative depths ir	ndicate Above Grou	nd Level;H-H	ole;P-Pipe;Ol	D-Outside Diam	eter;ID-Inside Diar	neter;C-Cemer	nted;SL-Slot Lengt	n;A-Aperture;GS-Grai	n Size;Q-Quantity
HPComponentType11CasingP.V.C.11OpeningSlots		From (m) 0.00 4.00	To (m) O 31.00 31.00	D (mm) 150 150	ID (mm) Inte	rval Details Seated on Bot Sawn; SL: 150	tom Jmm; A: 3mm			
From (m) To (m) To 4.00 10.00 28.00	CONES nickness (m) WB 6.00 Frac 8.00 Frac	3Z Type ctured ctured		S.W	7. L. (m) D.] 9.30	D.L. (m)	Yield (L/s) 0.10 0.40	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
To (m) To (m) Thickness(0.00 1.00 1.0 1.00 4.00 3.0 4.00 10.00 6.0 10.00 14.00 4.0 20.00 20.00 6.0 28.00 31.00 3.0	m) Drillers Descu 00 00 00 Grey Shale 00 00 Fractured 00 Quartz	ription Basalt				Geologi Topso: Clay Shale Basalt Basalt Invali	cal Material i1 : : : : : : : : : :	Comm	ents	
Pumping Tests Pumping Test Type	- Sumn Date Dur	1<i>aries</i> ration S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Intake Depth (m) Test Method	To Meas	sure Water Level	To Measure Dischar	ge Tested By
Single-Rate Pumping Test 20- Single-Rate Pumping Test 20-	Dec-1990 Dec-1990	(hr) 0.00 0.00 0.00 9.30	0.00 0.00	0.00 0.50	0.	00				
Pumping Tests Pumping Test Type	- Readi Date Time (1	ngs mins) S.W.L. (m)	D.D.L. (m) (No Pi	Yield (L/s) umping Tes	Intake Depth (at Reading De	m) Test Method etails Found)	To Meas	sure Water Level	To Measure Dischar	ge Tested By
Chemical Treat, Treatment Method	ment	Duration	(No C	Success Chemical T	reatment Det	ails Found)				
Development Method	Time Tal	ken	(1	Other Develo No Develop	pment Method ment Details	Found)				
Remarks										

*** End of GW068806 ***

GW068986

Converted From HYDSYS

		1907 C											
License :3	0BL142241					A -	uthoricad Dum	nnee(r)		Intond	ed Purnece(e)		
Work Type :F Work Status :(Construct. Method :F Owner Type :F	Bore Unknown) Rotary Air Private					A) D	OMESTIC	ho2c(2)		DOME	ESTIC		
Commenced Date : Completion Date :3	80-Jan-1991	Di	Final Dep rilled Dep	oth : oth :	27.0 27.0	0 m 0 m							
Contractor Name : Driller : I	412	TAN	NER, Robe	ert Leslie									
Property : GWMA : GW Zone :	-					ł	Standing Wate	er Level : Salinity : Yield :	:		Good		
Site Details										une la sur la			
Site Chosen By			F Li	Co orm A :FI censed :FI	ounty TZROY TZROY		Par COI COI	ish FF FF		Portio LOT 3 LT 3 D	n/Lot DP DP261343 DP 261343		
Region :: River Basin :2 Area / District :	30 - NORT 205 - BELL	H COAST LINGER R	IVER				CMA N Grid Zo	1ap :953' one :56/2	7-3N 2	COFFS HAR Scale :1:25	BOUR ,000		
Elevation : Elevation Source :		0.00					North East	ung :665 ting :510	0681.9 863.6	Lat Long	titude (S) :30° itude (E) :153	16' 31' ° 6' 47'	1
GS Map :		AMG Z	one :56			C	Coordinate Sou	irce :GD.	,ACC.GI	S			
Construction H P Component Type	Negative de	pths indicate	Above Grou From (m) -0.30	nd Level;H-H To (m) 0 27.00	lole;P-Pipe; DD (mm) 125	OD-Outsi ID (mi	de Diameter;ID-Ins m) Interval Deta Seate	side Diamet ils ed on Botton	ter;C-Ceme	nted;SL-Slot Lengt	h;A-Aperture;GS-(Grain Si:	ze;Q-Quantit
Water Bearing From (m) To (m) 21.00 25.0	<i>Zones</i> Thickness (m 0 4.0	 WBZ Type 0 Fractured 	2		S.	.W.L. (m) 9.00	D.D.L. (m)	¥	ield (L/s) 0.38	Hole Depth (m)	Duration (hr)	Sal	inity (mg/L) Good
From (m) To (m) Thick 0.00 5.00 21.00 21.00 25.00 27.00 25.00 25.00	aness(m) Drillers 5.00 Brown 16.00 4.00 Cracky 2.00	Description Shale Y Basalt						Geological Shale Basalt Basalt Basalt	Material	Comm	ients		
Pumping Tes Pumping Test Type	ts - Sui Date	Duration	es S.W.L. (m)	D.D.L. (m)	Yield (L/s) Intake	e Depth (m) Test M	lethod	To Mea	sure Water Level	To Measure Dis	charge	Tested By
Single-Rate Pumping Test Single-Rate Pumping Test	30-Jan-1991 30-Jan-1991	0.00	0.00 9.00	0.00 0.00	0.00	D 8	0.00						
Pumping Tes Pumping Test Type	ts - Rea Date T	adings Fime (mins)	S.W.L. (m)	D.D.L. (m) (<i>No P</i>	Yield (L/s Pumping T) Intako est Read	e Depth (m) Test M ding Details Fo	lethod ound)	To Mea	sure Water Level	To Measure Dis	charge	Tested By
Chemical Tre	atment		Duration		Succes	s							
				(No	Chemical	Treatm	ent Details Fou	und)					
Development	Tir	ne Taken		(Other Deve No Develo	elopment opment	Method Details Found)						
Remarks						•							
					*** 17		U0/000/ ***						

*** End of GW068986 ***

GW069009

Converted From HYDSYS

License '3	OBI 144448										
Work Type :E Work Status :(Construct. Method :F Owner Type :F	Bore Unknown) Rotary Air Private					Aut DO STC	horised Purpose MESTIC DCK	e(s)	Intend DOME STOCI	ed Purpose(s) ESTIC K	
Commenced Date : Completion Date :0)5-Nov-1991	D	Final Dept rilled Dept	h: h:	42.00 42.00	m m					
Contractor Name :I Driller :1	D C JACKW 424	ITZ JACH	WITZ, Dou	ıglas Cha	rles						
Property : GWMA : GW Zone :	-					St	anding Water L Sali Y	evel : nity : 'ield :	30.70 m 0.30 L/s	Good	
Site Details											
Site Chosen By Diviner			Fo Lice	Co rm A :Fľ ensed :Fľ	ounty FZROY FZROY		Parish MOON MOON	EE EE	Portio LOT A PT14	n/Lot DP DP390702	
Region :3 River Basin :2 Area / District :	0 - NORTI 205 - BELL	H COAST INGER R	IVER				CMA Map Grid Zone	:9537-4S :56/2	MOONEE BI Scale :1:25	EACH ,000	
Elevation : Elevation Source :		0.00					Northing Easting	:6653833 :512983.1	Lat Long	itude (S) :30° 14' itude (E) :153° 8'	49" 6"
GS Map :		AMG Z	Cone : 56			Co	ordinate Source	:GD.,ACC.GI	S		
H P Component Type 1 Hole Hole Hole 1 1 Casing PVC CI 1 1 Opening Slots - V	Negative dep ass 9 Vertical	oths indicate	Above Ground From (m) 0.00 -0.30 33.00	To (m) O 42.00 42.00 42.00	ole;P-Pipe;Ol D (mm) 168 160 160	D-Outside ID (mm)	Diameter;ID-Inside I Interval Details Rotary Air Glued; Sec 1 PVC Class	Diameter;C-Ceme ated on Bottom 5 9; Sawn; SL: 150r	nted;SL-Slot Lengt nm; A: 3mm	h;A-Aperture;GS-Grai	n Size;Q-Quantity
Water Bearing From (m) To (m) 34.00 38.00	Zones Thickness (m 4.00) WBZ Type) Fractured	2		S.W	7 .L. (m) 30.70	D.D.L. (m)	Yield (L/s) 0.30	Hole Depth (m)	Duration (hr) 1.00	Salinity (mg/L) Good
From (m) To (m) Thick 0.00 34.00 3 34.00 38.00 42.00	ness(m) Drillers 64.00 4.00 Shale 4.00 Hard S	Description Water Bea hale	ring				Geo l Sha Sha Sha	logical Material le le le	Comm	ents	
Pumping Test	ts - Sur	nmari	es								
Pumping Test Type Single-Rate Pumping Test Single-Rate Pumping Test	Date 05-Nov-1991 05-Nov-1991	Duration (hr) 0.00 0.00	0.00 0.00	0. D.L. (m) 0.00 0.00	Yield (L/s) 0.00 0.00	Intake D	epth (m) Test Methoo 0.00	i To Mea	sure Water Level	To Measure Dischar	ge Tested By
Pumping Test Pumping Test Type	t s - Rea Date T	idings	S.W.L. (m) I	D.D.L. (m) (<i>No Pi</i>	Yield (L/s) umping Tes	Intake D	epth (m) Test Methoo ag Details Found)	d To Mea	sure Water Level	To Measure Dischar	ge Tested By
Chemical Trea Treatment Meth	atment		Duration	(No C	Success Chemical T	reatmen	t Details Found)				
Development ^{Method} Air Remarks	Tim 1.00	e Taken			Other Develo	pment Me	thod				
					*** End o	of GW0	59009 ***				

GW070097

Converted From HYDSYS

License :30BL150503			Authorised Purpose(s)	Intende	ed Purpose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			DOMESTIC	DOME	STIC
Commenced Date : Completion Date :29-Aug-1992	Final Depth : Drilled Depth :	86.00 m 86.00 m			
Contractor Name :TANNER DF Driller :1412	RILLING TANNER, Robert Le	slie			
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	20.00 m 1.01 L/s	Good
Site Details					
Site Chosen By Diviner Driller	Form License	County A :FITZROY ed :FITZROY	Parish MOONEE MOONEE	Portion LOT A LT A D	VLot DP DP381203 P 381203
Region : 30 - NORTH River Basin : 205 - BELL Area / District :	H COAST INGER RIVER		CMA Map :9537- Grid Zone :56 /2	4S MOONEE BE Scale :1:25,0	ACH 000
Elevation : Elevation Source :	0.00		Northing :66537 Easting :51291	714.1 Lati 16.4 Longi	tude (S) :30° 14' 53" tude (E) :153° 8' 3"
GS Map :	AMG Zone :56		Coordinate Source :GD.,A	ACC.GIS	
Negative dep H P Component Type 1 Hole Hole Hole 1 Hole Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical 1 1 Opening Slots - Vertical	From (m) To 0.00 5 50.00 8 -0.30 8 40.00 4 79.00 8	(el;H-Hole;P-Pipe;OD-Ou (m) OD (mm) ID (0.00 170 6.00 152 4.00 152 4.00 152	tside Diameter;ID-Inside Diameter mm) Interval Details Rotary Air Down Hole Hamme -98 Glued; Seated on B 1 PVC Class 9; Sawn PVC Class 9; SL: 1	r;C-Cemented;SL-Slot Length er tottom 1; SL: 100mm; A: 2.6mm 100mm; A: 2.6mm	;A-Aperture;GS-Grain Size;Q-Quantity
From (m) To (m) Thickness (m) 40.00 44.00 4.00 79.00 84.00 5.00) WBZ Type) Fractured) Fractured	S.W.L. (20, 20.	m) D.D.L. (m) Yie 00 00	eld (L/s) Hole Depth (m) 0.25 86.00 0.76	Duration (hr) Salinity (mg/L) 2.00 Good
Troillers Log From (m) To (m) Thickness(m) Drillers 0.00 0.30 0.30 Red To 0.30 40.00 39.70 Brown 40.00 44.00 4.00 Cracky 44.00 76.00 32.00 Greey S 76.00 79.00 3.00 79.00 S4.00 84.00 86.00 2.00 Cracky	Description psoil Shale Shale hale Basalt		Geological M Topsoil Shale Shale Basalt Basalt Basalt	faterial Comme	ents
Pumping Tests - Sun Pumping Test Type Date	nmaries Duration S.W.L. (m) D.D.I	. (m) Yield (L/s) Inta	ike Depth (m) Test Method	To Measure Water Level	To Measure Discharge Tested By
Single-Rate Pumping Test 29-Aug-1992 Single-Rate Pumping Test 29-Aug-1992	(hr) 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00		
Pumping Tests - Rea Pumping Test Type Date T	ime (mins) S.W.L. (m) D.D.I	(m) Yield (L/s) Inta No Pumping Test Re	ske Depth (m) Test Method rading Details Found)	To Measure Water Level	To Measure Discharge Tested By
Chemical Treatment Treatment Method	Duration	Success (No Chemical Treat	ment Details Found)		
Development Method Tim Air 2.00	ne Taken)	Other Developmen	nt Method		
Remarks					
ACC = 7		*** End of G	W070097 ***		

GW070282

License :30BL150261				
Work Type :Bore Work Status :(Unknown) Construct. Method :Rot. Rev. Circ. Owner Type :	Air	Authorised Purpose(s) DOMESTIC STOCK	Intended Purpose(s DOMESTIC)
Commenced Date : Completion Date :14-Jul-1992	Final Depth : Drilled Depth :	36.00 m 36.00 m		
Contractor Name :D Jackwitz Driller :1326	JACKWITZ, Wiliam D.			
Property : GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	: 8.90 m : Good : 0.80 L/s	
Site Details				
Site Chosen By Diviner	Coun Form A :FITZ Licensed :FITZ	ty Parish ROY COFF ROY COFF	Portion/Lot DP LT22 DP853824 LT112 DP814132	
Region :30 - NORTH River Basin : Area / District :	COAST	CMA Map : Grid Zone :	Scale :	
Elevation : Elevation Source :		Northing :6650 Easting :5060	0105 Latitude (S) : 30° 011 Longitude (E) : 152	° 16' 50" 3° 3' 45"
GS Map :	AMG Zone :56	Coordinate Source :Map	o Interpretation	
H P Component Type 1 Hole Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	is indicate Above Ground Level;H-Hole; From (m) To (m) OD (n 0.00 36.00 -0.30 36.00 12.00 36.00	P-Pipe;OD-Outside Diameter;ID-Inside Diamet nm) ID (mm) Interval Details 168 Rotary 160 Glued; Seated on 160 PVC Class 9; Sav	ter;C-Cemented;SL-Slot Length;A-Aperture;GS Bottom wn; SL: 150mm; A: 3mm	-Grain Size;Q-Quantity
From (m) To (m) Thickness (m) 16.00 26.00 10.00	WBZ Type	S.W.L. (m) D.D.L. (m) Y 8.90	/ield (L/s) Hole Depth (m) Duration (hr) 0.80 0.50	Salinity (mg/L) Good
Totaliers Log From (m) To (m) Thickness(m) Drillers D 0.00 2.00 2.00 CLAY/SH 2.00 10.00 8.00 SOFT SH 10.00 12.00 2.00 PUGGTE G 12.00 16.00 4.00 WEATHER 16.00 26.00 10.00 HARD SH 26.00 28.00 2.00 BASALT 28.00 30.00 2.00 BASALT	escription ALE ALE CLAY ED SHALE ALE (WATER) ED BASALT	Ģeological	Material Comments	
Pumping Tests - Sum	maries	ald (1/c) - Intaka Danth (m) Tact Mathad	To Magnuto Water Lovel — To Magnuto D	only was a Tracked Du
rumping rest rype Date D	(hr) (No Pump	ing Test Summary Details Found)	10 Measure water Level 10 Measure D	scharge Tested by
Pumping Tests - Read Pumping Test Type Date Tim	dings ne (mins) S.W.L. (m) D.D.L. (m) Yi (No Pump	eld (L/s) Intake Depth (m) Test Method ping Test Reading Details Found)	To Measure Water Level To Measure Di	scharge Tested By
Chemical Treatment Treatment Method	Duration (No Che.	Success mical Treatment Details Found)		
Development Method Air 0.50 Remarks	Taken Oth	er Development Method		
	**	* End of GW070282 ***		

GW070201

Converted From HYDSYS

GW070291							
License :30BL150529			Authorized Dumose(s)	\ \	Intended I	humoso(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			DOMESTIC STOCK	,	DOMESTI STOCK	C	
Commenced Date : Completion Date :03-Sep-1992	Final Depth : Drilled Depth :	48.00 m 48.00 m					
Contractor Name : Driller :							
Property : - BONGIL BONGI GWMA : - GW Zone : -	L		Standing Water Lev Saliniv Yiel	el : ty : ld :			
Site Details							
Site Chosen By	Form	County A :FITZROY ed :FITZROY	Parish MOONEE MOONEE	2	Portion/Lo L31 DP245 PT229 (LT	ot DP 5924 74 DP245924)	
Region :3 0 - NORTH COAS River Basin : 205 - BELLINGER Area / District :	ST RIVER		CMA Map :9 Grid Zone :5	537-4S N 6/2	100NEE BEAC Scale :1:25,000	ΣH	
Elevation : 0.00 Elevation Source :R.L. at Surface			Northing :6 Easting :5	654336.4 10807.6	Latitud Longitud	le (S) :30° 14' 33" e (E) :153° 6' 44"	
GS Map : AMG	Zone :5 6		Coordinate Source :C	GD., ACC. GIS			
Construction Negative depths indica	ate Above Ground Le	evel;H-Hole;P-Pipe;OD-O	utside Diameter;ID-Inside Dia	meter;C-Cemented	;SL-Slot Length;A-A	Aperture;GS-Grain Size;	Q-Quantity
H P Component Type 1 1 Casing P.V.C. 1 1 Opening Slots	From (m) T 0.00 24.00	o (m) OD (mm) ID 48.00 138 48.00 138	(mm) Interval Details Seated on Bo 1 Sawn; SL: Or	ttom nm; A: 4mm			
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ Ty18.0048.0030.00Fracture	ype d	S.W.L.	(m) D.D.L. (m)	Yield (L/s) H 2.27	lole Depth (m) Du	ration (hr) Salini	ty (mg/L)
Toro (m) To (m) Thickness(m) Drillers Description 0.00 9.00 9.00 9.00 Weathered Root 9.00 18.00 9.00 Weathered Shale 18.00 48.00 30.00 Layred Shale	n k & Clay le : & Clay		Geolog Rock Shale Shale	ical Material	Comments		
Pumping Tests - Summa	ries	I (m) Viold (I/s) Int	ake Denth (m) Test Method	To Measure	Water Level To	Moasuro Dischargo	Fostad By
Implify rescription Date Date (In Single-Rate Pumping Test 03-Sep-1992 0.0 Single-Rate Pumping Test 03-Sep-1992 0.0	0 0.00 0 0.00	0.00 0.00 0.00 2.27	0.00				
Pumping Tests - Reading Pumping Test Type Date Time (mins	jS) S.W.L. (m) D.D	L. (m) Yield (L/s) Int	ake Depth (m) Test Method	To Measure	Water Level To	Measure Discharge	Fested By
		(No Pumping Test R	eading Details Found)				
Chemical Treatment	Duration	Success					
		(No Chemical Trea	tment Details Found)				
Development		Other Developme	ant Mathad				
		(No Developme	nt Details Found)				
Remarks							
ACC = 7							
		*** End of (GW070291 ***				

GW070520

Converted From HYDSYS

License :30BL150916			Authorised Purpose(s)	Intend	ed Purnose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :Private]	DOMESTIC STOCK	DOME	STIC K	
Commenced Date : Completion Date :01-Dec-1992	Final Depth : Drilled Depth :	45.00 m 45.00 m				
Contractor Name :William Douglas . Driller :1504	JACKWITZ JACKWITZ, William Doug	glas				
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	16.70 m 0.50 L/s	Good	
Site Details						
Site Chosen By	Co Form A :FIT Licensed :FIT	unty ZROY ZROY	Parish MOONEE MOONEE	Portion LB DP: LT B D	n/Lot DP 390702 (14) DP 390702	
Region :30 - NORTH CC River Basin :205 - BELLING Area / District :	AST ER RIVER		CMA Map : 9537-4 Grid Zone :56/2	S MOONEE BE Scale :1:25,	EACH 000	
Elevation : 50.00 Elevation Source :Est. Contour 8-15	m (A.H.D.) M.		Northing :665368 Easting :512955	5 Lati Longi	itude (S) :30° 14' 5 tude (E) :153° 8' 5	4" "
GS Map :0092A1 AM	1G Zone :56		Coordinate Source :GD.,AC	CC.MAP		
Construction Negative depths in	dicate Above Ground Level;H-Ho	le;P-Pipe;OD-Out	side Diameter;ID-Inside Diameter;C	-Cemented;SL-Slot Length	n;A-Aperture;GS-Grain	Size;Q-Quantity
HPComponentType1HoleHole11CasingPVC Class 911OpeningSlots - Vertical	From (m) To (m) OE 0.00 45.00 -0.30 45.00 -0.30 45.00 -0.30 45.00	D (mm) ID (n 168 160 160	mm) Interval Details Rotary Glued; Seated on Bot 1 PVC Class 9; Mechan	tom ically Slotted; SL: .15mm; A	: 3mm	
Water Bearing Zones						
From (m) To (m) Thickness (m) WB2 20.00 26.00 6.00 Fract 36.00 45.00 9.00 Fract	Z Type ured ured	S.W.L. (n 16.7	n) D.D.L. (m) Yield 70	(L/s) Hole Depth (m) 0.10 0.40	Duration (hr) 5	alinity (mg/L) Good
Torillers Log From (m) To (m) Thickness(m) Drillers Descri 0.00 1.00 100 Topsoil 1.00 6.00 5.00 Gravel - so 0.00 26.00 16.00 Shale - so 10.00 26.00 16.00 Shale - wai 26.00 32.00 6.00 Shale - so 32.00 36.00 4.00 Shale - so 36.00 45.00 9.00 Shale - has	ption Dil bound Et er at 20m Et Et cd & soft		Geological Ma Topsoil Gravel Shale Shale Shale Shale Shale	terial Comm	ents	
Pumping Tests - Summ Pumping Test Type Date Dura	aries tion S.W.L. (m) D.D.L. (m)	Yield (L/s) Intal	ke Depth (m) Test Method	Fo Measure Water Level	To Measure Discharge	Tested By
Single-Rate Pumping Test 01-Dec-1992	(hr)					
Pumping Tests - Readin Pumping Test Type Date Time (n	1GS nins) S.W.L. (m) D.D.L. (m) (No Pu	Yield (L/s) Intal mping Test Red	ke Depth (m) Test Method	Fo Measure Water Level	To Measure Discharge	Tested By
Chemical Treatment	Duration	Success				
	(No C	hemical Treatn	nent Details Found)			
Development Method Time Take Air 1.00	en (Other Development	Method			
neillaiks						
		*** End of GV	W070520 ***			

GW070542

Converted From HYDSYS

GW0/0342			
License :30BL150785			
Work Type :Battery Spears Work Status :(Unknown) Construct. Method :Hand Auger Owner Type :Private	ð	Authorised Purpose(s) INDUSTRIAL RECREATION (GROUNDWATE	Intended Purpose(s) IRRIGATION IRR
Commenced Date : Fin Completion Date :01-Dec-1992 Drill	al Depth : 3 ed Depth : 0	3.60 m 0.00	
Contractor Name : Driller :			
Property : GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	1.80 m Fair 1.00 L/s
Site Details			
Site Chosen By	County Form A :FITZROY Licensed :FITZROY	Parish Y COFF Y COFF	Portion/Lot DP L85 DP228405 LT85 DP228405
Region : 30 - NORTH COAST River Basin : 205 - BELLINGER RIVE Area / District :	ER	CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARBOUR Scale :1:25,000
Elevation : 7.00 m (A.H. Elevation Source :Est. Contour 8-15M.	D.)	Northing :6652269.9 Easting :513209.8	Latitude (S) :30° 15' 40" Longitude (E) :153° 8' 14"
GS Map :0092A2 AMG Zone	e :56	Coordinate Source :GD.,ACC.G	IS
Construction Negative depths indicate Abo	ove Ground Level;H-Hole;P-Pip	pe;OD-Outside Diameter;ID-Inside Diameter;C-Cem	ented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity
H P Component Type Fr 1 Hole Hole Hole I 1 1 Opening Screen - Gauze/Mesh Fr	rom (m) To (m) OD (mm) 0.00 3.60 20 0.00 1.80 50	ID (mm) Interval Details Hand Auger 1 Stainless Steel; SL: 0mm; (U	Juknown)
Water Bearing Zones			
From (m) To (m) Thickness (m) WBZ Type	(No Water E	S.W.L. (m) D.D.L. (m) Yield (L/s) Bearing Zone Details Found)	Hole Depth (m) Duration (hr) Salinity (mg/L)
Drillors Log			
From (m) To (m) Thickness(m) Drillers Description		Geological Material	Comments
	(No Dri	llers Log Details Found)	
Pumping Tests - Summaries	5 W.L. (m) D.D.L. (m) Yield ((L/s) Intake Depth (m) Test Method To Me	easure Water Level To Measure Discharge Tested By
Single-Rate Pumping Test 01-Dec-1992	1.80 2.30	1.00	
Pumping Tests - Readings			
Pumping Test Type Date Time (mins) S.	W.L. (m) D.D.L. (m) Yield ((L/s) Intake Depth (m) Test Method To Me	easure Water Level To Measure Discharge Tested By
	(No Pumping	g Test Reading Details Found)	
Chamical Treatment			
Treatment Method Dur	ration Suc	ccess	
	(No Chemic	al Treatment Details Found)	
Development			
Method Time Taken	Other D	Development Method	
	(No Dev	velopment Details Found)	
Remarks			
Water extracted from 20mm gravel layer by Gomesh Stainless Ste Well / Other Works: Method of Construction - Sandscren Liner : Type: Full Flow Sandscreen	el screens in a row (three). Helica	al Rotor shallow well pump 0.75 hp.	

Diameter (m): 50mm Screen Length: 0.6 x 3 in line Casing: PVC - withdrawn

GW071040

Converted From HYDSYS

License :30BL152794			Authorised Purpose(s)	Intend	ed Purpose(s)	_
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private]	DOMESTIC	DOME	STIC	
Commenced Date : Completion Date :26-Jul-1993	Final Depth : Drilled Depth :	27.00 m 27.00 m				
Contractor Name :William Douglas JAC Driller :1504 JAC	KWITZ KWITZ, William Doug	glas				
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	10.00 m 2.30 L/s		
Site Details						
Site Chosen By	Co Form A :FIT Licensed :FIT	unty TZROY TZROY	Parish MOONEE MOONEE	Portion LT 1 D LT 3 D	n/Lot DP P419284 P 234485	
Region :30 - NORTH COAST River Basin :205 - BELLINGER F Area / District :	Г RIVER		CMA Map : 9537- Grid Zone : 56/2	4S MOONEE BE Scale :1:25,	EACH 000	
Elevation : 20.00 m (<i>z</i> Elevation Source :Est. Contour 8-15M.	A.H.D.)		Northing :66541 Easting :51346	150 Lat 65 Long	itude (S) :30° 14' 39 itude (E) :153° 8' 24)")
GS Map :0092A1 AMG Z	Zone :56		Coordinate Source :GD.,A	ACC.MAP		
Construction Negative depths indicate	e Above Ground Level;H-Ho	ole;P-Pipe;OD-Out	side Diameter;ID-Inside Diameter	r;C-Cemented;SL-Slot Lengt	h;A-Aperture;GS-Grain S	ize;Q-Quantity
H P Component Type 1 Hole Hole 1 1 Casing PVC Class 9	From (m) To (m) OI 0.00 27.00 -0.30 27.00	D (mm) ID (n 168 160	nm) Interval Details Rotary Glued; Seated on B	lottom		
From (m) To (m) Thickness (m) WBZ Typ 21.00 22.00 1.00 Fractured 22.00 23.00 1.00 Fractured 26.00 27.00 1.00 Fractured	re	S.W.L. (r	n) D.D.L. (m) Yie	eld (L/s) Hole Depth (m) 0.30 1.00 1.00	Duration (hr) Sa	alinity (mg/L)
To (m) Thickness(m) Drillers Description 0.00 3.00 3.00 Clay 3.00 18.00 15.00 Shale 18.00 22.00 2.00 Rock eroken 20.00 22.00 2.00 Bassalt 22.00 24.00 20.00 Broken Rock 24.00 26.00 2.00 Broken Rock 26.00 27.00 1.00 Broken Rock			Geological M Clay Shale Basalt Basalt Basalt Basalt Basalt	faterial Comm	ents	
Pumping Tests - Summar	ies SWL (m) DDL (m)	Vield (L/s) Inta	ke Denth (m) Test Method	To Measure Water Level	To Measure Discharge	Tected Ry
(hr)	(No Pu	mping Test Sur	nmary Details Found)	to measure water Lever	to weasure Discharge	Tested by
			- ,			
Pumping Tests - Readings Pumping Test Type Date Time (mins)	S S.W.L. (m) D.D.L. (m) (No PL	Yield (L/s) Inta Imping Test Re	ke Depth (m) Test Method ading Details Found)	To Measure Water Level	To Measure Discharge	Tested By
Chemical Treatment	Duration (No C	Success Chemical Treats	nent Details Found)			
Development Method Time Taken Air 1.00	,	Other Developmen	t Method			
Remarks						

*** End of GW071040 ***

Warning To Clients: This raw data has been supplied to the Department of Land and Water Conservation (DLWC) by drillers, licensees and other sources. The DLWC does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data. 79

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GW071128

Converted From HYDSYS

License :30BL142414			Authorised Purpose(s)	Intended	Purpose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			DOMESTIC	DOMEST	ric
Commenced Date : Completion Date :16-Apr-1993	Final Depth : Drilled Depth :	73.00 m 73.00 m			
Contractor Name :TANNER DRILLIN Driller :1412 TA	G NNER, Robert Leslie				
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	20.00 m 6.06 L/s	Good
Site Details					
Site Chosen By	Co Form A :FI Licensed :FI	ounty TZROY TZROY	Parish MOONEE MOONEE	Portion/I PT1 DP5 ⁻ PT312	Lot DP 73131
Region : 30 - NORTH COA River Basin : 205 - BELLINGEF Area / District :	ST RIVER		CMA Map : 9537-48 Grid Zone : 56/2	MOONEE BEA Scale :1:25,00	.СН)0
Elevation : 0.00 Elevation Source :			Northing :6654065. Easting :511963.2	6 Latitu Longitu	ıde (S) :30° 14' 41" ıde (E) :153° 7' 28"
GS Map : AMO	Zone : 56		Coordinate Source :GD.,ACC	C.GIS	
H P Component Type H Hole Hole Hole Hole I Casing PVC Class 9 I Opening Slots - Vertical Water Bearing Zones From (m) To (m) Thickness (m) WBZ T 36.00 39.00 3.00 Fractur 68.00 73.00 5.00 Fractur	From (m) To (m) C 0.00 12.00 12.00 12.00 73.00 -0.30 42.00 36.00 39.00 -0.30 42.00 36.00 39.00 -0.30 42.00 36.00 39.00 -0.30 42.00 36.00 39.00 -0.30 -0.30 Yype -0.30 -0.30 -0.30	DD (mm) 140 140 125 125 S.W.L. (20 20	Interval Details Rotary Air Down Hole Hammer -75 Glued; Suspended in Cli 1 PVC Class 9; Sawn; SL m) D.D.L. (m) 00 0 .00 5	amps : 100mm; A: 2.6mm /s) Hole Depth (m) E .12 .94 73.00	Duration (hr) Salinity (mg/L) 1.00 Good
To (m) To (m) Thickness(m) Drillers Description 0.00 12.00 12.00 Soft Brown S 12.00 36.00 24.00 Hard Brown S 36.00 39.00 3.00 Hard Grey Cr 39.00 40.00 1.00 Hard Grey Sh 40.00 68.00 28.00 68.00 Fractured Ba	ion hale hale acky Shale ale salt		Geological Mater Shale Shale Shale Shale Basalt Basalt	ial Comment	ts
Pumping Tests - Summa Pumping Test Type Date Duratio (h	n S.W.L. (m) D.D.L. (m)	Yield (L/s) Int:	ake Depth (m) Test Method To	Measure Water Level	To Measure Discharge 👘 Tested By
Single-Rate Pumping Test16-Apr-19930.0Single-Rate Pumping Test16-Apr-19930.0	00 0.00 0.00 00 0.00 0.00	0.00 0.00	0.00		
Pumping Tests - Reading Pumping Test Type Date Time (min	gs s) S.W.L. (m) D.D.L. (m) (No P	Yield (L/s) Inta umping Test Re	ake Depth (m) Test Method To eading Details Found)	Measure Water Level 🧳	To Measure Discharge Tested By
Chemical Treatment Treatment Method	Duration (No	Success Chemical Treat	tment Details Found)		
Development Method Air 1.00 Remarks		Other Developme	nt Method		
ACC = 7		*** End of G	SW071128 ***		

GW071290

Converted From HYDSYS

	n an					
License :30BL152625		А	uthorised Purpose(s)	Intende	d Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		II	RRIGATION	IRRIGA	ATION	
Commenced Date : Completion Date :25-Jul-1993	Final Depth : Drilled Depth :	31.00 m 31.00 m				
Contractor Name :D C JACKWITZ Driller :1504 J.	ACKWITZ, William Doug	glas				
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	10.00 m 2.40 L/s	Good	
Site Details			·			
Site Chosen By	Con Form A :FIT Licensed :FIT	unty TZROY TZROY	Parish MOONEE MOONEE	Portion LOT 12 LT 12 E	/Lot DP DP582285 DP 582285	
Region : 30 - NORTH CO River Basin : 205 - BELLINGE Area / District :	AST R RIVER		CMA Map :9537-48 Grid Zone :56/2	MOONEE BE Scale :1:25,(ACH)00	
Elevation : 50.00 r Elevation Source :Est. Contour 8-15M	n (A.H.D.) 1.		Northing :6654161 Easting :512684	Lati Longi	tude (S) :30° 14' 38 tude (E) :153° 7' 55	
GS Map :0092A1 AM	G Zone :56	(Coordinate Source :GD.,AC	C.MAP		
Construction Negative depths ind	icate Above Ground Level;H-Ho	ole;P-Pipe;OD-Outs	ide Diameter;ID-Inside Diameter;C-	Cemented;SL-Slot Length	;A-Aperture;GS-Grain S	ize;Q-Quantity
H P Component Type 1 Hole Hole 1 I Sing PVC Class 9 1 J Opening Slots - Vertical 1 I Opening Slots - Vertical	From (m) To (m) OI 0.00 31.00 -0.30 31.00 -0.30 31.00 18.00 25.00 31.00	D (mm) ID (m 168 160 160 160	m) Interval Details Rotary Air Glued; Seated on Botto 1 PVC Class 9; Sawn; SI 2 PVC Class 9; Sawn; SI	m :: 150mm; A: 3mm :: 150mm; A: 3mm		
From (m) To (m) Thickness (m) WBZ 15.00 17.00 2.00 28.00 30.00 2.00	Type	S.W.L. (m)) D.D.L. (m) Yield ()	L/s) Hole Depth (m) .40 .00	Duration (hr) Sa	linity (mg/L) Good
Drillers Log						
From (m) To (m) Thickness(m) Drillers Descrip 0.00 2.00 2.00 Clay 2.00 15.00 13.00 Soft shale 15.00 17.00 2.00 Broken rock 17.00 28.00 11.00 basalt 28.00 30.00 2.00 broken rock 30.00 31.00 1.00 Basalt	tion basalt		Geological Mate	rial Comme	nts	
Pumping Tests - Summa Pumping Test Type Date Durat	aries ion S.W.L. (m) D.D.L. (m) hr)	Yield (L/s) Intak	e Depth (m) Test Method Ta	o Measure Water Level	To Measure Discharge	Tested By
	(No Put	mping Test Sum	mary Details Found)			
Pumping Tests - Readin	as					
Pumping Test Type Date Time (mi	(<i>No Pu</i>	Yield (L/s) Intaka Imping Test Read	e Depth (m) Test Method Test Method Test Method Test Method Test Sector (m) Test Method (m) Te	o Measure Water Level	To Measure Discharge	Tested By
Chemical Treatment						
Treatment Method	Duration (No C	Success Chemical Treatm	ent Details Found)			
Method Time Take	n (Other Development	Method			
Remarks						

*** End of GW071290 ***

GW071387

License :30BL152	2724			- , , , , ,	
Work Type :Bore Work Status :(Unknow Construct. Method :Rotary Owner Type :	vn)		Authorised Purpose(s) DOMESTIC	Intended F DOMESTI	²urpose(s) C
Commenced Date : Completion Date :16-Jul-19	Final De 993 Drilled De	pth: 36.00 pth: 36.00	m m		
Contractor Name :TANNE Driller :1412	R DRILLING TANNER, Rot	pert Leslie			
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	9.00 m Go 1.89 L/s	bod
Site Details					
Site Chosen By Diviner Driller] L	County Form A :FITZROY icensed :FITZROY	Parish COFF COFF	Portion/Lo LOT 11 DI LT 11 DP 2	bt DP P228917 228917
Region :30 - NC River Basin : Area / District :	DRTH COAST		CMA Map : Grid Zone :	Scale :	
Elevation : Elevation Source :			Northing :6653 Easting :5127	010Latitud78Longitud	le (S) :30° 15' 16" e (E) :153° 7' 58"
GS Map :	AMG Zone :56		Coordinate Source :		
H P Component Type 1 Hole Hole 1 Hole Hole 1 1 Casing 1 1 Opening 1 1 Opening	From (m) 0.00 18.00 -0.30 17.00 32.00	To (m) OD (mm) 18.00 170 36.00 140 18.00 150 36.00 125 35.00 125	ID (mm) Interval Details Rotary Air Down Hole Hamn -100 Glued; Suspended -75 Glued; Seated on I PVC Class 9; SL:	ner in Clamps Bottom 100mun; A: 2.6mm	perure,05-0ran 5/2e,0-0uanity
From (m) To (m) Thickne 32.00 36.00	ess (m) WBZ Type 4.00	S.V	V.L. (m) D.D.L. (m) Yi 9.00	ield (L/s) Hole Depth (m) Du 1.89 36.00	ration (hr) Salinity (mg/L) 1.00 Good
Trom (m) To (m) Thickness(m) Dr 0.00 0.60 0.60 Re 0.60 5.00 4.40 Re 5.00 12.00 7.00 BR 12.00 18.00 6.00 GR 18.00 32.00 14.00 BR	illers Description ID TOPSOIL ID CLAY IOWN SHALE LEY SHALE ISALT IOKEN BASALT		Geological 1	Material Comments	
Pumping Tests - S	Summaries) D.D.I. (m) Vield (I./s)	Intake Donth (m) Tast Method	To Moosure Water Lovel To	Massura Disabarga — Tastad Bu
ramping rest sype Date	(hr)	(No Pumping Tes	t Summary Details Found)	To inclusive mater Derer To	incasure discharge reside by
Pumping Tests - F Pumping Test Type Date	Readings Time (mins) S.W.L. (m) D.D.L. (m) Yield (L/s) (No Pumping Tex	Intake Depth (m) Test Method st Reading Details Found)	To Measure Water Level To	Measure Discharge Tested By
Chemical Treatme	P int Duration	Success (No Chemical T	reatment Details Found)		
Development Air Bomarka	Time Taken 1.00	Other Develo	pment Method		
neillains		**** 117 11	of C W071397 ***		
		TTT End	UL G WU/130/ ****		

GW071911

Converted From HYDSYS

License :30BL15322	24			Aut	horised	Purpose(s)		Intend	ed Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private)			DOI REC	MESTIC	DN (GROUNE	OWATER)	RECRI (GROU	EATION JNDWATER)	
Commenced Date : Completion Date :01-Oct-199	Fin 03 Drill	nal Depth : led Depth :	70.00 70.00	m m						
Contractor Name :TANNER I Driller :1412	DRILLING TANNE	R, Robert Lesl	lie							
Property : - BISHO GWMA : - GW Zone : -	P DRUITT CO	LLEGE		St	anding V	Water Level : Salinity : Yield :	1	2.00 m 6.79 L/s	Good	
Site Details										
Site Chosen By Diviner Driller		Form A Licensed	County :RALEIGH :RALEIGH			Parish BONVILLE BONVILLE		Portion LOT 9 LT 9 D	n /Lot DP DP813195 PP 813195	
Region :3 0 - NOR River Basin : 204 - CLA Area / District :	TH COAST ARENCE RIVE	ĒR			CM Gr	IA Map :9537 id Zone :56/2	-3N C	OFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :Est. Contou	10.00 m (A.H ur 8-15M.	.D.)			N	orthing :6646 Easting :5081	840 25	Lat Long	itude (S) :30° 18 itude (E) :153° 5	36" 5' 4"
GS Map :0092A2	AMG Zon	e : 56		Co	ordinate	Source :GD.,	ACC.MAP			
Construction Negative of H P Component Type 1 Hole Hole Hole 1 Hole Hole Hole 1 Hole Hole Hole 1 Opening Slots - Vertical 1 Opening Slots - Vertical	depths indicate Ab	rom (m) To (r 0.00 12. 12.00 70. -0.30 70. 30.00 35. 60.00 70.	 h;H-Hole;P-Pipe;O n) OD (num) 00 140 00 125 00 125 00 125 00 125 	D-Outside ID (mm)	Diameter; Interval	ID-Inside Diamete Details Rotary Percussion Glued; Seated on 1 PVC Class 9; Saw PVC Class 9; Saw	er;C-Cemented; Bottom; Cap m; SL: 0mm; A: 1 n; SL: 0mm; A: 1	SL-Slot Lengt 2.6mm 2.6mm	h;A-Aperture;GS-Gra	ain Size;Q-Quantity
From (m) To (m) Thickness 30.00 35.00 5 60.00 70.00 10	(m) WBZ Type 5.00 Fractured 0.00 Fractured		S.V	V.L. (m) 12.00 12.00	D.D.L.	(m) Yi	eld (L/s) H 0.38 16.42	ole Depth (m) 70.00	Duration (hr) 1.00	Salinity (mg/L) Good
Torillers Log From (m) To (m) Thickness(m) Drille 0.00 0.20 0.20 Dille 0.20 1.00 0.80 Red 1.00 3.00 2.00 Brow 3.00 12.00 9.00 Soft 12.00 15.00 3.00 Brow 15.00 30.00 15.00 Grey 30.00 55.00 5.00 Craat 35.00 66.00 31.00 Blac 66.00 70.00 4.00 Frac	ers Description clay m clay : brown shale m shale v basalt :ky black basa :k basalt :tured grey ba	lt salt				Geological Topsoil Clay Clay Shale Shale Basalt Basalt Basalt Basalt	Material	Comn	ients	
Pumping Tests - Su		S	(m) Viald (I (a)	Intoka D	onth (m) 1	ort Mothod	To Moncuro	Water Loug	To Mooguno Disch	Tostod Dy
rumping test type Date	(hr)	(N	o Pumping Tes	t Summe	ary Detai	ls Found)	i o measure	water Level	i o measure Disch	arge rested by
Pumping Tests - Re Pumping Test Type Date	eadings Time (mins) S.	W.L. (m) D.D.L. (A	(m) Yield (L/s) No Pumping Te	Intake D st Readin	epth (m) T ng Detail	Sest Method (s Found)	To Measure	Water Level	To Measure Disch	arge Tested By
Chemical Treatment	nt Du	ration (Success No Chemical I	Freatmen	t Details	Found)				
Development Method Air Remarks	Time Taken 1.00		Other Develo	opment Me	ethod					
						J. 211				

GW072512

Converted From HYDSYS

License :30BL153126		Authorised Pu	rnnse(s)	Intended Purpose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		DOMESTIC	pose(s)	DOMESTIC
Commenced Date : Completion Date :02-Oct-1993	Final Depth : Drilled Depth :	36.00 m 36.00 m		
Contractor Name :TANNER DRILLIN Driller :1412 TA	NG ANNER, Robert Leslie			
Property : GWMA : - GW Zone : -		Standing Wa	ter Level : 10. Salinity : Yield : 0.	00 m Good 17 L/s
Site Details				
Site Chosen By Diviner Driller	Co Form A :FIT Licensed :FIT	unty Pa ZROY M ZROY M	rrish OONEE OONEE	Portion/Lot DP L1 DP234485 LT 1 DP 234485
Region : 30 - NORTH COA River Basin : 205 - BELLINGE Area / District :	AST R RIVER	CMA Grid	Map :9537-4S MO Zone :56/2 Sc	ONEE BEACH ale :1:25,000
Elevation : 0.00 Elevation Source :		Nor Ea	thing :6653988.4 sting :513398.7	Latitude (S) :30° 14' 44" Longitude (E) :153° 8' 21"
GS Map : AM	G Zone :56	Coordinate So	ource :PR.,ACC.GIS	
Construction Negative depths indi	cate Above Ground Level;H-Ho	le;P-Pipe;OD-Outside Diameter;ID-	Inside Diameter;C-Cemented;SL	-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity
H P Component Type 1 Hole Hole 1 Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	From (m) To (m) OI 0.00 18.00 18.00 18.00 36.00 -0.30 36.00 231.00 231.00 231.00 -0.30	O (mm) ID (mm) Interval Dc 170 Rc 170 Pc 170 Pc 152 Gl 152 1 PC	tails tary rcussion ued; Seated on Bottom; Cap 'C Class 9; Sawn; SL: 100mm; A: 2	2.6mm
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ31.0036.005.00Fracture	Type red	S.W.L. (m) D.D.L. (m) 10.00	Yield (L/s) Hole 1.77	Depth (m) Duration (hr) Salinity (mg/L) 36.00 1.00 Good
To (m) Thickness(m) Drillers Descrip 0.00 0.60 0.60 Black Top St 0.60 7.00 6.40 Brown Clay 7.00 18.00 11.00 Brown Shale 18.00 31.00 5.00 Broken Basa	tion bil		Geological Material Soil Clay Shale Basalt Basalt	Comments
Pumping Tests - Summa Pumping Test Type Date Durat	aries ion S.W.L. (m) D.D.L. (m)	Yield (L/s) Intake Depth (m) Test	Method To Measure W	ater Level To Measure Discharge Tested By
Single-Rate Pumping Test 02-Oct-1993 0 Single-Rate Pumping Test 02-Oct-1993 0	hr) 1.00 0.00 0.00 1.00 0.00 0.00	0.00 0.00 0.00		
Pumping Tests - Readin Pumping Test Type Date Time (mi	gs ns) S.W.L. (m) D.D.L. (m) (No Pt	Yield (L/s) Intake Depth (m) Test Imping Test Reading Details I	Method To Measure W Found)	ater Level To Measure Discharge Tested By
Chemical Treatment	Duration (No C	Success Chemical Treatment Details Fa	ound)	
Development Method Time Take Air 1.00 Remarks	n	Other Development Method		
ACC = 8		*** End of GW072512 ***		

GW072693

Converted From HYDSYS

License :30BL154677					Autho	rised Pur	pose(s)	Intend	led Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private					DOMI	ESTIC		DOME	ESTIC	
Commenced Date : Completion Date :17-May-1994	t D	Final Dep rilled Dep	th : th :	73.00 73.00	m m					
Contractor Name :TANNER DI Driller :1412	RILLING TANI	NER, Robe	ert Leslie							
Property : GWMA : - GW Zone : -					Stan	ding Wate	er Level : Salinity : Yield :	27.00 m 0.19 L/s	Good	
Site Details										
Site Chosen By		Fo	Corm A :FI censed :FI	ounty TZROY TZROY		Par CO CO	ish FF FF	Portio LOT 1 LT 10	n/Lot DP 0 DP807125 DP 807125	
Region : 30 - NORTI River Basin : 205 - BELL Area / District :	H COAST INGER R	IVER				CMA N Grid Z	1ap :9 537-3N one :56/2	COFFS HAR Scale :1:25	BOUR ,000	
Elevation : Elevation Source :	0.00					North East	ning :6650812.9 ting :510496.6	Lat Long	titude (S) :30° 16 itude (E) :153° 6	27" ' 33"
GS Map :	AMG Z	Cone :56			Coord	linate Sou	irce :GD.,ACC.G	IS		
Construction Negative dep	oths indicate	Above Grour	nd Level;H-H	lole;P-Pipe;O	D-Outside Dia	imeter;ID-In	side Diameter;C-Ceme	ented;SL-Slot Lengt	h;A-Aperture;GS-Gra	in Size;Q-Quantity
H P Component Type 1 Hole Hole 1 Hole Hole 1 I casing PVC Class 9		From (m) 0.00 5.00 0.00	To (m) C 5.00 73.00 30.50	DD (mm) 140 140 125	ID (mm) Ir	terval Deta Rota Percu Susp	ils ry ussion vended in Clamps			
Water Bearing Zones										
From (m) To (m) Thickness (m) 28.00 31.00 3.00 50.00 54.00 4.00) WBZ Type) Fractured) Fractured	2		S.V	V.L. (m) 27.00 27.00	D.D.L. (m)	Yield (L/s) 0.06 0.13	Hole Depth (m) 73.00	Duration (hr)	Salinity (mg/L) Good
To (m) To (m) Thickness(m) Drillers 0.00 5.00 5.00 Brown 5.00 28.00 23.00 Blue S 28.00 31.00 3.00 cracky 31.00 50.00 19.00 Basalt 50.00 54.00 4.00 Cracky 54.00 73.00 19.00 Basalt	Description Shale hale Basalt Basalt						Geological Material Shale Shale Basalt Basalt Basalt Basalt	Сопит	nents	
Pumping Tests - Sur	nmari	es S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Intake Dent	n (m) Test M	lethod To Me	asure Water Level	To Measure Discha	rge Tested By
Single-Rate Pumping Test 17-May-1994 Single-Rate Pumping Test 17-May-1994	(hr) 0.00 0.00	0.00 27.00	0.00	0.00 0.00		0.00				.ge rester 27
Pumping Tests - Rea Pumping Test Type Date T	idings	S.W.L. (m)	D.D.L. (m) (<i>No P</i>	Yield (L/s) umping Tes	Intake Dept	n (m) Test M Details Fo	lethod To Me	asure Water Level	To Measure Discha	rge Tested By
Chemical Treatment Treatment Method		Duration		Success						
			(No (Chemical T	reatment D	etails Fou	und)			
Development Method Tin Air 2.00 Remarks	ne Taken)			Other Develo	pment Metho	1				
ACC = 7				*** End (of GW072(i93 ***				

GW072728

Converted From HYDSYS

License :30BL154855			Authorised Purpose(s)	Intended Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			DOMESTIC	DOMESTIC	
Commenced Date : Completion Date :16-Jun-1994	Final Depth : Drilled Depth :	19.00 m 19.00 m			
Contractor Name :Puckeridge & Driller :1629	ε Co PUCKERIDGE, Glen	n			
Property : GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	3.50 m Good 0.40 L/s	
Site Details					
Site Chosen By Driller	Form A Licensed	County A :FITZROY d :FITZROY	Parish MOONEE MOONEE	Portion/Lot DP LOT 102 DP787588 LT102 DP787588	
Region : 30 - NORT River Basin : 205 - BELL Area / District :	H COAST INGER RIVER		CMA Map :9537-3N Grid Zone :56/2	COFFS HARBOUR Scale :1:25,000	
Elevation : Elevation Source :	0.00		Northing :6651000 Easting :512047.8	.8 Latitude (S) :30° 3 Longitude (E) :153	16' 21" ° 7' 31"
GS Map :	AMG Zone :56		Coordinate Source :GD.,AC	C.GIS	
Construction Negative dep	oths indicate Above Ground Leve	el;H-Hole;P-Pipe;OD-Ou	utside Diameter;ID-Inside Diameter;C-	Cemented;SL-Slot Length;A-Aperture;GS-	Grain Size;Q-Quantity
H P Component Type 1 Hole Hole 1 Hole Hole 1 I Casing PVC Class 9 1 1 Opening Slots - Vertical	From (m) To (0.00 12 12.00 19 0.00 19 6.00 19	(m) OD (mm) ID .00 165 .00 165 .00 135 .00 135	(mm) Interval Details Rotary Percussion Glued; Seated on Botto 1 PVC Class 9; Sawn; SI	m; Cap 2: 1300mm; A: 2mm	
Water Bearing Zones	;				
From (m) To (m) Thickness (m) 4.50 10.60 6.10	i) WBZ Type 0 Fractured	S.W.L . (3	(m) D.D.L. (m) Yield () .50 ()	L/s) Hole Depth (m) Duration (hr) 0.40 18.50 1.00	Salinity (mg/L) Good
Torillers Log From (m) To (m) Thickness(m) Drillers 0.00 0.60 0.60 Topsoid 0.60 4.50 3.90 Brown 4.50 7.60 3.10 Fracture 7.60 10.60 3.00 Weather 10.60 19.00 8.40 Hard E	Description il Clay & Gravel wred Meta Sediment pred Basalt Basalt		Geological Mate Topsoil Clay Sediment Basalt Basalt	rial Comments	
Pumping Tests - Sur Pumping Test Type Date	Duration S.W.L. (m) D.D.L.	. (m) Yield (L/s) Int	ake Depth (m) Test Method To	o Measure Water Level — To Measure Dis	scharge Tested By
Single-Rate Pumping Test 16-Jun-1994 Single-Rate Pumping Test 16-Jun-1994	(hr) 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00		
Pumping Tests - Rea Pumping Test Type Date T	adings Fime (mins) S.W.L. (m) D.D.L (1	. (m) Yield (L/s) Int No Pumping Test Re	ake Depth (m) Test Method T eading Details Found)	o Measure Water Level To Measure Dis	scharge Tested By
Chemical Treatment	Duration	Success			
		(No Chemical Trea	tment Details Found)		
Development Method Tin Air 1.00	ne Taken 0	Other Developme	nt Method		
Remarks					
		*** End of G	GW072728 ***		

GW072933

Converted From HYDSYS

License :30BL155034			Authorised Purpose(s)	Inter	ided Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private			INDUSTRIAL	INDU RECI (GRC	JSTRIAL REATION DUNDWATER)	
Commenced Date : Completion Date :02-Jun-1994	Final Depth : Drilled Depth :	21.50 m 21.50 m				
Contractor Name : Driller :1629	PUCKERIDGE, Glenn					
Property : - SMUGGLER GWMA : - GW Zone : -	S INN		Standing Water Level : Salinity : Yield :		Good	
Site Details						
Site Chosen By Driller	Form A Licensed	County :FITZROY :FITZROY	Parish COFF COFF	Porti LT85 LT85	on/Lot DP DP236115 DP236115	
Region : 30 - NORTH CO River Basin : 205 - BELLING Area / District :	DAST ER RIVER		CMA Map :9537 Grid Zone :56/2	-3N COFFS HA Scale :1:2	RBOUR 5,000	
Elevation : 0.00 Elevation Source :	l.		Northing :6652 Easting :5132	268.6 L 09.4 Lon	atitude (S) :30° 15' 40 ngitude (E) :153° 8' 14	
GS Map : Al	MG Zone :56		Coordinate Source :GD.,	ACC.GIS		
H P Component Type 1 1 Casing P.V.C. 1 1 Casing P.V.C. 1 1 Casing P.V.C. 1 1 Opening Slots	From (m) To (m 0.00 10.7 0.00 21.5 10.00 21.5	H-Hole;P-Pipe;OD-O) OD (mm) ID 0 135 0 110 0 110	utside Diameter;ID-Inside Diamete (mm) Interval Details Seated on Bottom Seated on Bottom 1 Sawn; SL: 0mm; A	r;C-Cemented;SL-Slot Len	ıgth;A-Aperture;GS-Grain S	ize;Q-Quantity
From (m) To (m) Thickness (m) WH 7.60 10.00 2.40 Una 10.00 21.50 11.50 11.50	Z Type onsolidated	S.W.L.	(m) D.D.L. (m) Yi 4.00 4.00	eld (L/s) Hole Depth (n	n) Duration (hr) Sa	l linity (mg/L) Good
To (m) To (m) Thickness(m) Drillers Desc 0.00 0.60 0.60 0.60 0.60 5.50 4.90 Fine Sand 5.50 7.60 2.10 Bentonite 7.60 10.00 2.40 Fine Sand 10.00 21.50 11.50 Fractured	iption And Small Gravel. Clay. And Large Gravel. Meta Sediment And Gra	avel (uniform) S	Geological N Topsoil Sand Clay Sand tringers. Sediment	Material Con	iments	
Pumping Tests - Sumn Pumping Test Type Date Dur	naries ration S.W.L. (m) D.D.L. (n (hr)	m) Yield (L/s) In	take Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
Single-Rate Pumping Test 02-Jun-1994	1.00 4.00 0.	00 0.90	21.00 Airlift			
Pumping Tests - Readi Pumping Test Type Date Time (mgs mins) S.W.L. (m) D.D.L. ((N)	m) Yield (L/s) In o Pumping Test R	take Depth (m) Test Method eading Details Found)	To Measure Water Level	To Measure Discharge	Tested By
Chemical Treatment	Duration (1	Success No Chemical Trea	tment Details Found)			
Development Method Time Ta	хел	Other Developme	ent Method nt Details Found)			
Remarks						

*** End of GW072933 ***

GW073055

Converted From HYDSYS

License :30BL17602	8				1 1			Intond	ad Dumpaga(a)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private					Aut DOI	norised Purpose(s) MESTIC		DOME	STIC	
Commenced Date : Completion Date :03-Sep-1994	4 D	Final Depth Drilled Depth	n : n :	61.00 61.00	m m					
Contractor Name :TANNER D Driller :1412	RILLING TAN	NER, Robert	t Leslie							
Property : - MIRAM GWMA : - GW Zone : -	BEENA				St	anding Water Lev Salinit Yiel	el : y : d :	48.00 m 3.76 L/s	Good	
Site Details										
Site Chosen By Diviner Driller		For Lice	Co rm A :FI ensed :FI	ounty TZROY TZROY		Parish MOONEE MOONEE		Portion PT212 LT 7 D	n/Lot DP LOT7 DP557758 P 557758	
Region :30 - NORT River Basin :205 - BEL Area / District :	FH COAST LINGER F	r RIVER				CMA Map :9 Grid Zone :5	537-4S 6/2	MOONEE BE Scale :1:25,	EACH 000	
Elevation : Elevation Source :	0.00					Northing :6 Easting :5	654499.6 13259.2	Lat Long	itude (S) :30° 14' itude (E) :153° 8'	27" 16"
GS Map :	AMG 2	Zone :56			Co	ordinate Source :C	D.,ACC.GIS	5		
Construction Negative do	epths indicate	e Above Ground	I Level;H-H	lole;P-Pipe;O[0-Outside	Diameter;ID-Inside Dia	meter;C-Cemer	nted;SL-Slot Lengtl	h;A-Aperture;GS-Grair	Size;Q-Quantity
H P Component Type 1 Hole Hole 1 Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical		From (m) 0.00 3.00 0.00 56.00	To (m) C 3.00 61.00 61.00 61.00	DD (mm) 140 140 125 125	ID (mm)	Interval Details Rotary Percussion Glued; Seated I PVC Class 9;	i on Bottom; Car Sawn; SL: 0mm	; A: 2.6mm		
Water Bearing ZonesFrom (m)56.0061.005.00	S m) WBZ Typ 00 Fractured)e		S.W	.L. (m) 48.00	D.D.L. (m)	Yield (L/s) 3.79	Hole Depth (m) 61.00	Duration (hr) 1.00	Salinity (mg/L) Good
Drillers Log From (m) To (m) Thickness(m) Driller 0.00 0.30 0.30 Brown 0.30 2.00 1.70 Red 2.00 3.00 1.00 Brown 3.00 9.00 6.00 Brown 9.00 56.00 47.00 Basa 56.00 61.00 5.00 Brown	s Description 1 Topsoil Clay 1 Shale 1 Shale 1t 1t 2n Basalt					Geolog Topso Clay Shale Shale Basal Basal	i cal Material il t	Comm	ients	
Pumping Tests - Su	mmar Duration	ies S.W.L. (m) D).D.L. (m)	Yield (L/s)	Intake D	enth (m) Test Method	To Mea	sure Water Level	To Measure Dischar	ge Tested By
Single-Rate Pumping Test 03-Sep-1994 Single-Rate Pumping Test 03-Sep-1994 O3-Sep-1994 03-Sep-1994	(hr) 0.00 0.00	0.00	0.00 0.00	0.00 0.00		0.00 Airlift				
Pumping Tests - Re Pumping Test Type Date	ading: Time (mins)	S S.W.L. (m) E).D.L . (m) (<i>No P</i>	Yield (L/s) Pumping Tes	Intake D t Readii	epth (m) Test Method 1g Details Found)	To Mea	sure Water Level	To Measure Dischar	ge Tested By
Chemical Treatmen	t	Duration		Success						
			(No	Chemical T	reatmen	t Details Found)				
Development Method T Air L	ime Taken 00			Other Develo	pment Me	thod				
Remarks										
				*** Fnd /	fCWA	73055 ***				

GW073162

Converted From HYDSYS

License :30BL17619	05				Aut	horised	Purpose(s)		Intend	led Purpose(s)	
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private					DOI	MESTIC			DOMI STOC	ESTIC K	
Commenced Date : Completion Date :25-Nov-19	94 D	Final Deptl rilled Deptl	h: h:	49.00 49.00	m m						
Contractor Name :D C JACK Driller :1504	WITZ JACI	KWITZ, Wil	liam Dou	ıglas							
Property : - RILEY GWMA : - GW Zone : -	S				St	anding V	Water Leve Salinity Yield	l: /: l:	30.00 m 0.99 L/s	Good	
Site Details											
Site Chosen By		Fo Lice	Co rm A :R. ensed :R.	ounty ALEIGH ALEIGH			Parish BONVILLI BONVILLI	E F	Portio LOT 3 LT 39	m/Lot DP 9 DP264404 DP 264404	
Region : 30 - NOR River Basin : 205 - BEL Area / District :	TH COAST LINGER R	IVER				CM Gri	IA Map :95 id Zone :56	37-3N /2	COFFS HAR Scale :1:25	8BOUR 5,000	
Elevation : Elevation Source :	0.00					N	orthing :66 Easting :50	44885.6 6800.3	La Long	titude (S) :30° 19 gitude (E) :153° 4	' 40" ' 15"
GS Map :	AMG Z	Cone :56			Coo	ordinate	Source :GI	D.,ACC.GIS	5		
Construction Negative d	epths indicate	Above Ground	l Level;H-H	lole;P-Pipe;O	D-Outside	Diameter;I	ID-Inside Diam	eter;C-Cemer	nted;SL-Slot Leng	th;A-Aperture;GS-Gra	in Size;Q-Quantity
H P Component Type 1 Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical		From (m) 0.00 -0.30 39.00	To (m) C 49.00 49.00 43.00	DD (mm) 168 160 160	ID (mm)	Interval 1	Details Rotary Glued; Seated o PVC Class 9; S	on Bottom awn; SL: 150n	ım; A: 3mm		
Water BearingZoneFrom (m)To (m)Thickness (41.0043.002	S m) WBZ Type .00 Fractured	2		S.V	V.L. (m) 30.00	D.D.L. (m)	Yield (L/s) 0.99	Hole Depth (m)	Duration (hr) 1.00	Salinity (mg/L) Good
To (m) To (m) Thickness(m) Driller 0.00 6.00 6.00 Shal 6.00 40.00 34.00 Basa 40.00 43.00 3.00 Brok 43.00 49.00 6.00 Basa	r s Description e lt en Shale lt						Gcologic Shale Basalt Shale Basalt	al Material	Comm	nents	
Pumping Tests - Su Pumping Test Type Date	mmari Duration	es S.W.L. (m) D	.D.L. (m)	Yield (L/s)	Intake De	pth (m) T	est Method	To Meas	sure Water Level	To Measure Discha	rge Tested By
Single-Rate Pumping Test 25-Nov-1994 Single-Rate Pumping Test 25-Nov-1994	(hr) 0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00		0.00					
Pumping Tests - Re Pumping Test Type Date	adings	S.W.L. (m) D	9.D.L. (m)	Yield (L/s)	Intake De	pth (m) T	est Method	To Meas	sure Water Level	To Measure Discha	rge Tested By
			(No P	umping Tes	st Readin	g Detail:	s Found)				
Chamical Treatmon	4										
Treatment Method	L	Duration		Success							
			(No (Chemical T	reatment	Details	Found)				
Development Air I. Remarks	ime Taken 00			Other Develo	pment Met	hod					
				*** End o	of GW07	'3162 **	*				

GW073175

Converted From HYDSYS

License :30BL176215		Autho	rised Purnose(s)	Intended Pur	nose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		DOM	ESTIC	DOMESTIC	
Commenced Date : Completion Date :24-Oct-1994	Final Depth : Drilled Depth :	24.00 m 24.00 m			
Contractor Name :TANNER DRILL Driller :1412	.ING TANNER, Robert Leslie				
Property : - HANSEN'S GWMA : - GW Zone : -		Stan	ding Water Level : Salinity : Yield :	6.00 m Good 0.76 L/s	
Site Details				ومرور والمراجع والمراجع والمراجع والمراجع والمراجع والمحاد والمراجع والمحاد والمراجع والمحاد	
Site Chosen By Diviner Driller	Co Form A :FI Licensed :FI	ounty FZROY FZROY	Parish COFF COFF	Portion/Lot I LOT 92 DP 22 LT 92 DP 228	DP 28917 917
Region : 30 - NORTH CO River Basin : 205 - BELLING Area / District :	DAST ER RIVER		CMA Map :9537-3N Grid Zone :56/2	N COFFS HARBOUR Scale :1:25,000	
Elevation : 0.00 Elevation Source :			Northing :6652974 Easting :512860.	4.2Latitude (6Longitude (S) :30° 15' 17" E) :153° 8' 1"
GS Map : AN	MG Zone :56	Coor	dinate Source :GD.,AC	CC.GIS	
Construction Negative depths in	ndicate Above Ground Level;H-H	ole;P-Pipe;OD-Outside Di	ameter;ID-Inside Diameter;C	-Cemented;SL-Slot Length;A-Aper	ture;GS-Grain Size;Q-Quantity
H P Component Type 1 Hole Hole 1 Hole Hole 1 I Casing PVC Class 9 1 1 Opening Slots - Vertical	From (m) To (m) O 0.00 18.00 24.00 -0.30 24.00 19.00 24.00	D (mm) ID (mm) In 140 140 125 125	nterval Details Rotary Percussion Glued; Seated on Botte I PVC Class 9; Sawn; S.	om; Cap L: 100mm; A: 2.6mm	
Water Bearing ZonesFrom (m)To (m)19.0024.005.00Frac	Z Type :tured	S.W.L. (m) 6.00	D.D.L. (m) Yield	(L/s) Hole Depth (m) Durati 0.76 24.00	on (hr) Salinity (mg/L) 1.00 Good
Torillers Log From (m) To (m) Thickness(m) Drillers Descr 0.00 0.30 0.30 Red Top So 0.30 Red Top So 0.30 5.00 4.70 Red Clay 13.00 Brown Shall 18.00 19.00 1.00 Grey Hard 19.00 Stop	iption Dil Shale Shale		Geological Mat Topsoil Clay Shale Shale Shale	erial Comments	
Pumping Tests - Summ Pumping Test Type Date Dur	Taries ration S.W.L. (m) D.D.L. (m)	Yield (L/s) Intake Dept	th (m) Test Method 7	Fo Measure Water Level To Me	asure Discharge Tested By
Single-Rate Pumping Test24-Oct-1994Single-Rate Pumping Test24-Oct-1994	(hr) 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00	0.00		
Pumping Tests - Reading Pumping Test Type Date Time (1	NGS mins) S.W.L. (m) D.D.L. (m) (<i>No P</i> .	Yield (L/s) Intake Dept umping Test Reading	th (m) Test Method T Details Found)	Fo Measure Water Level To Me	easure Discharge Tested By
or · · · · ·					
Treatment Method	Duration	Success			
	(No (Chemical Treatment L	Details Found)		
Development Method Time Tal Air 1.00 Remarks	ken	Other Development Metho	od		
		*** End of GW073	175 ***		

GW073178

License :30BL176223			Authorised Purpose(s)	Inte	ended Purpose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :			DOMESTIC	DO.	MESTIC
Commenced Date : Completion Date :24-Oct-1994	Final Depth : Drilled Depth :	24.00 m			
Contractor Name :TANNER DRIL Driller :1412	LING TANNER, Robert Leslie				
Property : - WATSON'S GWMA : - GW Zone : -			Standing Water Level Salinity Yield	l: 6.00 m 7: l: 0.76 L/s	Good
Site Details					
Site Chosen By	C Form A :F Licensed :F	ounty ITZROY ITZROY	Parish COFF COFF	Por LO' LT	tion/Lot DP Γ 28 DP 834749 28 DP 834749
Region :3 0 - NORTH C River Basin : Area / District :	OAST		CMA Map : Grid Zone :	Scale :	
Elevation : Elevation Source :			Northing :66 Easting :51	53357 1 3320 Lo	Latitude (S) :30° 15' 4" ongitude (E) :153° 8' 18"
GS Map : A	MG Zone :56		Coordinate Source :Ma	ap Interpretation	
H P Component Type 1 Hole Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	indicate Above Ground Level;H-F From (m) To (m) (0.00 24.00 0.00 24.00 19.00 24.00	Hole;P-Pipe;OD-Ou DD (mm) ID (140 125 125	tside Diameter;ID-Inside Diam mm) Interval Details Rotary -75 Glued; Seated of PVC Class 9; S	eter;C-Cemented;SL-Slot Le on Bottom awn; A: 2.6mm	ength;A-Aperture;GS-Grain Size;Q-Quantity
Water Bearing Zones From (m) To (m) Thickness (m) W 19.00 24.00 5.00 5.00	BZ Type	S.W.L. (1 6.	m) D.D.L. (m) 00	Yield (L/s) Hole Depth (0.76 24	m) Duration (hr) Salinity (mg/L) .00 1.00 Good
Trom (m) To (m) Thickness(m) Drillers Dess 0.00 0.60 0.60 Topsoil 0.60 5.00 4.40 Clay - br 5.00 19.00 14.00 Shale - br 19.00 24.00 5.00 Shale - br	r iption sandy orown prown interbedded with re	ef quartz	Geologic Topsoi Clay Shale Shale	al Material Co 1	mments
Pumping Tests - Summ Pumping Test Type Date Du	maries uration S.W.L. (m) D.D.L. (m) (hr)	Yield (L/s) Inta	ske Depth (m) Test Method	To Measure Water Lev	el To Measure Discharge Tested By
	(No P	umping Test Sur	mmary Details Found)		
Pumping Tests - Read	ings (mins) S.W.L. (m) D.D.L. (m) (No F	Yield (L/s) Inta Pumping Test Re	nke Depth (m) Test Method eading Details Found)	To Measure Water Lev	el To Measure Discharge Tested By
Chemical Treatment Treatment Method	Duration (<i>No</i>	Success Chemical Treat.	ment Details Found)		
DevelopmentMethodTime TaAir1.00Remarks	aken	Other Developmer	nt Method		
		*** End of G	W073178 ***		

GW073189

Converted From HYDSYS

License :30BL176248			
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		Authorised Purpose(s) DOMESTIC	Intended Purpose(s) DOMESTIC
Commenced Date : Completion Date :27-Oct-1994	Final Depth :18.00 mDrilled Depth :18.00 m	1	
Contractor Name :TANNER DRILLING Driller :1412 TAN	INER, Robert Leslie		
Property : - ROUILLON'S GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	9.00 m Good 0.18 L/s
Site Details			
Site Chosen By Diviner Driller	County Form A :RALEIGH Licensed :RALEIGH	Parish BONVILLE BONVILLE	Portion/Lot DP LOT 3 DP747644 LT 3 DP 747644
Region :30 - NORTH COAS River Basin :205 - BELLINGER F Area / District :	Г RIVER	CMA Map : 9537-3N Grid Zone : 56/2	COFFS HARBOUR Scale :1:25,000
Elevation : 0.00 Elevation Source :		Northing : 6647188.7 Easting : 506531	Latitude (S) :30° 18' 25" Longitude (E) :153° 4' 5"
GS Map : AMG 2	Zone : 56	Coordinate Source :GD.,ACC.C	SIS
H P Component Type 1 Hole Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	e Above Ground Level;H-Hole;P-Pipe;OD- From (m) To (m) OD (mm) E 0.00 5.00 140 5.00 18.00 140 -0.30 18.00 125 14.00 18.00 125	Outside Diameter;ID-Inside Diameter;C-Cen D (mm) Interval Details Rotary Percussion Glued; Seated on Bottom; 0 1 PVC Class 9; SL: 100mm;	nented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity Cap A: 2.6mm
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ Typ14.0018.004.00Fractured	pe S.W.I	L. (m) D.D.L. (m) Yield (L/s) 9.00 0.18	Hole Depth (m) Duration (hr) Salinity (mg/L) 18.00 1.00 Good
Trom (m) To (m) Thickness(m) Drillers Description 0.00 0.30 0.30 Grey Topsoil 0.30 8.00 7.70 Brown Shale 8.00 14.00 6.00 Basalt 14.00 18.00 4.00 Cracky Basalt	ì	Geological Material Topsoil Shale Basalt Basalt	Comments
Pumping Tests - Summar Pumping Test Type Date Duration	ies S.W.L. (m) D.D.L. (m) Yield (L/s) I	Intake Depth (m) Test Method To M	easure Water Level To Measure Discharge Tested By
(nr) Single-Rate Pumping Test 27-Oct-1994 0.00 Single-Rate Pumping Test 27-Oct-1994 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00	
Pumping Tests - Reading Pumping Test Type Date Time (mins)	S.W.L. (m) D.D.L. (m) Yield (L/s) I (No Pumping Test	Intake Depth (m) Test Method To M Reading Details Found)	easure Water Level To Measure Discharge Tested By
Chemical Treatment			
Treatment Method	Duration Success (No Chemical Tre	eatment Details Found)	
	(110 0101110001 110		
DevelopmentMethod AirTime Taken 1.00	Other Develops	ment Method	
neillaiks	*** Fnd of	f GW073189 ***	
GW073205

Converted From HYDSYS

411010200				
License :30BL176268		Authorized Purposed	x) Inter	nded Purnose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :Private		DOMESTIC	DOM	IESTIC
Commenced Date : Completion Date :17-Dec-1994	Final Depth : Drilled Depth :	48.00 m 48.00 m		
Contractor Name :TANNER DRILLING Driller :1412 TAN	NER, Robert Leslie			
Property : - LINDSAY'S GWMA : - GW Zone : -		Standing Water Le Salin Yio	vel: 18.00 m ity: 1.26 L/s	Good
Site Details				
Site Chosen By Diviner Driller	County Form A :FITZRC Licensed :FITZRC	Parish DY COFF DY COFF	Port LOT LT 1	ion/Lot DP 12 DP 736787 2 DP 736787
Region :30 - NORTH COAS [*] River Basin :205 - BELLINGER I Area / District :	r RIVER	CMA Map : Grid Zone :	O537-3N COFFS HA 56/2 Scale :1:2	RBOUR 25,000
Elevation : 0.00 Elevation Source :		Northing : Easting :	5653072.7 L 510871.1 Lor	atitude (S) :30° 15' 14" ngitude (E) :153° 6' 47"
GS Map : AMG 2	Zone :56	Coordinate Source :	GD.,ACC.GIS	
Negative depths indicate H P Component Type 1 Hole Hole 1 Hole Hole 1 Casing PVC Class 9 1 Opening Slots - Vertical 1 Opening Slots - Vertical	a Above Ground Level;H-Hole;P-I From (m) To (m) OD (mn 0.00 18.00 14 18.00 48.00 14 0.00 48.00 12 27.00 32.00 12 43.00 48.00	Pipe;OD-Outside Diameter;ID-Inside Di ID (mm) Interval Details 00 Rotary 00 Percussion 05 Glued; Seati 05 1 PVC Class 5 5 2 PVC Class 5	ameter;C-Cemented;SL-Slot Ler ed on Bottom; Cap ; Sawn; SL: 0mm; A: 2.6mm ; Sawn; SL: 0mm; A: 2.6mm	igth;A-Aperture;GS-Grain Size;Q-Quantity
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ Typ27.0032.005.00Fractured	ie	S.W.L. (m) D.D.L. (m) 18.00	Yield (L/s) Hole Depth (n 0.51	n) Duration (hr) Salinity (mg/L)
43.00 48.00 5.00 Fractured Drillers Log Thickness(m) Drillers Description 0.00 0.30 0.30 Brown Topsoil 0.30 9.00 8.70 Brown Shale 9.00 27.00 18.00 Grey Shale, Re 27.00 32.00 5.00 Grey Shale, Re 32.00 40.00 8.00 Grey Basalt 40.00 43.00 3.00 Black Basalt	ef Quartz	18.00 Tops Shal Shal Basa Basa	0.76 48.0 gical Material Con pil e e e lt lt	10 1.00 Good
43.00 48.00 5.00 Cracky Black B	asalt .	Basa	lt	
Pumping Test Type Date Duration	IES S.W.L. (m) D.D.L. (m) Yield	i (L/s) Intake Depth (m) Test Method	To Measure Water Level	To Measure Discharge Tested By
Single-Rate Pumping Test17-Dec-19940.00Single-Rate Pumping Test17-Dec-19940.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00		
Pumping Tests - Readings Pumping Test Type Date Time (mins)	S.W.L. (m) D.D.L. (m) Yield (No Pumpin	l (L/s) Intake Depth (m) Test Method 1g Test Reading Details Found)	To Measure Water Level	To Measure Discharge Tested By
Chemical Treatment Treatment Method	Duration St (No Chem	uccess ical Treatment Details Found)		
DevelopmentMethod AirTime Taken 1.00	Other	Development Method		
Remarks				

*** End of GW073205 ***

GW073256

Converted From HYDSYS

License :30BL17635 Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air	2				Aut	horised Purpo MESTIC	se(s)	Intende DOME:	e d Purpose(s) STIC	
Commenced Date : Completion Date :18-Nov-199	04 D	Final Depth rilled Depth	:	36.00 36.00	m m					
Contractor Name :TANNER I Driller :1412	DRILLING TAN	NER, Robert	Leslie							
Property : - PAUL'S GWMA : - GW Zone : -					Sta	anding Water Sa	Level : llinity : Yield :	12.00 m 0.76 L/s	Good	
Site Details										
Site Chosen By Diviner Driller		For Lice	Co m A :FI nsed :FI	ounty FZROY FZROY		Paris COFF COFF	h 7 7	Portion LOT 1 LT 1 D	J/Lot DP DP 351091 P 351091	
Region :3 0 - NOR River Basin : 204 - CLA Area / District :	TH COAST	VER				CMA Ma Grid Zon	p : 9537-3N e : 56/2	COFFS HARI Scale :1:25,0	30UR 000	
Elevation : Elevation Source :	0.00					Northin Eastin	g : 6650793.8 g : 504444.6	Lati Longi	itude (S) :30° 16' tude (E) :153° 2'	28" 46"
GS Map :	AMG Z	Cone :56			Coe	ordinate Sourc	e :GD.,ACC.GI	S		
H P Component Type 1 Hole Hole Hole 1 Hole Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	epths indicate	Above Ground From (m) 0.00 12.00 -0.30 31.00	Level;H-H4 To (m) O 12.00 36.00 36.00 36.00	ole;P-Pipe;OI D (mm) 140 140 125 125	D-Outside ID (mm)	Diameter;ID-Insid Interval Details Rotary Percuss Glued; i 1 PVC CI	e Diameter;C-Ceme ion Seated on Bottom; Caj ass 9; Sawn; SL: Omr	nted;SL-Slot Length 5 1; A: 2.6mm	ı;A-Aperture;GS-Grair	n Size;Q-Quantity
Water BearingZoneFrom (m)To (m)Thickness (31.0036.005	S m) WBZ Typ .00 Fractured	e		S.W	V.L. (m) 12.00	D.D.L. (m)	Yield (L/s) 0.76	Hole Depth (m) 36.00	Duration (hr) 1.00	Salinity (mg/L) Good
Trom (m) To (m) Thickness(m) Driller 0.00 12.00 12.00 Brown 12.00 31.00 19.00 Greyn 31.00 36.00 5.00 Greyn	r s Description n Shale Shale Shale Ree:	E Quartz				G s s s	eological Material hale hale hale	Comme	ents	
Pumping Tests - Su Pumping Test Type Date	Duration	es S.W.L. (m) D	D.L. (m)	Yield (L/s)	Intake D	epth (m) Test Met	hod To Mea	sure Water Level	To Measure Dischar	ge Tested By
Single-Rate Pumping Test18-Nov-1994Single-Rate Pumping Test18-Nov-1994	0.00	0.00 0.00	0.00 0.00	0.00 0.00		0.00				
Pumping Tests - Re Pumping Test Type Date	eadings Time (mins)	S.W.L. (m) D	.D.L. (m) (No Pi	Yield (L/s) umping Tes	Intake D st Readir	epth (m) Test Met 1g Details Four	hod To Mea ad)	sure Water Level	To Measure Dischar	ge Tested By
Chemical Treatmen	t	Duration	(No (Success Chemical T	Treatmen	t Details Found	<i>ł</i>)			
Development Method T Air L	'ime Taken 00			Other Develo	opment Me	thod				
neillaiks										

*** End of GW073256 ***

GW073299

Converted From HYDSYS

License :30BL176444		Α	uthorised Purpose(s)	Intende	ed Purpose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air		D IR	OMESTIC RRIGATION	DOME: IRRIGA	STIC ATION
Owner Type :Private					
Commenced Date : Completion Date :28-Sep-1994	Final Depth : Drilled Depth :	30.50 m 30.50 m			
Contractor Name :TANNER DRILLING Driller :1412 TAN	INER, Robert Leslie				
Property : - GATUM PTY LTI GWMA : - GW Zone : -)	:	Standing Water Level : Salinity : Yield :	9.00 m 2.53 L/s	Good
Site Details					
Site Chosen By	Co Form A :FI Licensed :FI	unty FZROY FZROY	Parish MOONEE MOONEE	Portion LOT 1 LT 1 D	/Lot DP DP661408 P 661408
Region :30 - NORTH COAST	ſ		CMA Map :953'	7-4S MOONEE BE	ACH
River Basin :205 - BELLINGER F Area / District :	RIVER		Grid Zone :56/2	Scale :1:25,0	900
Elevation : 0.00 Elevation Source :			Northing :6654 Easting :513	4280.4 Lati 332.6 Longi	itude (S) :30° 14' 34" tude (E) :153° 8' 19"
GS Map : AMG 2	Zone :56	C	Coordinate Source :GD.	,ACC.GIS	
Construction Negative depths indicate	e Above Ground Level;H-Ho	ole;P-Pipe;OD-Outsi	de Diameter;ID-Inside Diamet	er;C-Cemented;SL-Slot Length	;A-Aperture;GS-Grain Size;Q-Quantity
H P Component Type 1 Hole Hole 1 Hole Hole 1 I Casing P.V.C. 1 1 Opening Slots - Vertical	From (m) To (m) O 0.00 5.00 5.00 5.00 30.50 0.00 26.00 30.50 30.50	D (mm) ID (mr 140 140 125 125	n) Interval Details Percussion Down Hole Ham Glued; Seated on 1 PVC Class 9; Say	mer Bottom vn; SL: 100mm; A: 2.6mm	
Water Bearing Zones					
From (m) To (m) Thickness (m) WBZ Typ 26.00 30.50 4.50 Fractured	e	S.W.L. (m) 9.00	D.D.L. (m) Y	Yield (L/s) Hole Depth (m) 2.53 30.50	Duration (hr) Salinity (mg/L) 0.75 Good
Drillers Log					
From (m) To (m) Thickness(m) Drillers Description 0.00 0.30 0.30 Brown Topsoil 0.30 1.50 1.20 Brown Clay 1.50 5.00 3.50 Brown Shale 5.00 20.00 15.00 Green Shale 20.00 26.00 6.00 Basalt 26.00 30.50 4.50 Broken Basalt			Geological Topsoil Clay Shale Basalt Basalt	Material Comme	ents
Pumping Tests - Summar	ies	Viold (Y (a) Yestelia	Denth (a) Test Mathed	T- M	
Single-Rate Pumping Test 28-Sep-1994 0.00 Single-Rate Pumping Test 28-Sep-1994 0.00	0.00 0.00 0.00 0.00	0.00 0.00	0.00	to measure water Level	10 Measure Discharge Testen By
Pumping Tests - Reading	S				
Pumping Test Type Date Time (mins)	S.W.L. (m) D.D.L. (m)	Yield (L/s) Intake	Depth (m) Test Method	To Measure Water Level	To Measure Discharge Tested By
	(No Pı	umping Test Read	ling Details Found)		
Obernie el Trestresent					
Treatment Method	Duration	Success			
	(No C	Chemical Treatme	ent Details Found)		
Development					
Method Time Taken		Other Development N	Method		
	(^	to Development i	Details Found)		
Remarks					

*** End of GW073299 ***

GW103414

License :30BL17 Work Type :Bore Work Status :(Unknow Construct. Method : Owner Type :	7223 vn)		Authorised Purpose(s) DOMESTIC	Intended Pu DOMESTIC	rpose(s)
Commenced Date : Completion Date :	Final Dept Drilled Dept	h: 39.00 r h:	n		
Contractor Name :TANNE Driller :	R DRILLING				
Property : - CHR GWMA : - GW Zone : -	ISTIAN OUTREACH		Standing Water Level : Salinity : Yield :	3.75 L∕s	
Site Details					
Site Chosen By	Fo Lice	County rm A :RALEIGH ensed :RALEIGH	Parish BONVILLE BONVILLE	Portion/Lot LOT 101 DP LT 101 DP 8	DP 856741 56741
Region :30 - No River Basin : Area / District :	DRTH COAST		CMA Map : Grid Zone :	Scale :	
Elevation : Elevation Source :			Northing :664507 Easting :508797	Latitude Longitude	(S) :30° 19' 34" (E) :153° 5' 29"
GS Map :	AMG Zone :56		Coordinate Source :Map In	terpretation	
Construction Negati	ve depths indicate Above Ground	d Level;H-Hole;P-Pipe;OD	-Outside Diameter;ID-Inside Diameter;C	C-Cemented;SL-Slot Length;A-Ap	erture;GS-Grain Size;Q-Quantity
H P Component Type	From (m)	To (m) OD (mm)	ID (mm) Interval Details		
		(No Construc	tion Details Found)		
Water Bearing Zor From (m) To (m) Thickn	IES ess (m) WBZ Type	s.w. (No Water Bearin	L. (m) D.D.L. (m) Yield 1g Zone Details Found)	(L/s) Hole Depth (m) Dura	tion (hr) Salinity (mg/L)
Drillers Log From (m) To (m) Thickness(m) D	rillers Description	(No Drillers	Geological Ma Log Details Found)	terial Comments	
Pumping Tests - S Pumping Test Type Date	Summaries Duration S.W.L. (m) I (hr)	D.D.L. (m) Yield (L/s)	Intake Depth (m) Test Method	To Measure Water Level To M	leasure Discharge Tested By
		(No Pumping Test	Summary Details Found)		
Pumping Tests - I Pumping Test Type Date	Readings Time (mins) S.W.L. (m) 1	D.D.L. (m) Yield (L/s) (No Pumping Test	Intake Depth (m) Test Method Reading Details Found)	To Measure Water Level To N	leasure Discharge Tested By
Chemical Treatme	ent Duration	Success (No Chemical Tr	eatment Details Found)		
Development Method	Time Taken	Other Develop (No Develop)	ment Method nent Details Found)		
Remarks Form A Remarks:					

Casing - 6 inches to 75'. 4" to 130'. Static head 20 feet.

GW300734

License :30BL1 Work Type :Bore Work Status :(Unkno Construct. Method :Rotary Owner Type :	77710 own)			Au DC	thorised Purpo DMESTIC	se(s)	Intended DOMES	l Purpose(s) FIC	
Commenced Date : Completion Date :	Ľ	Final Depth Drilled Depth	: (62.00 m 62.00 m					
Contractor Name :Robert Driller :1412	Leslie TANNE TAN	R NER, Robert l	Leslie						
Property : - HA GWMA : - GW Zone : -	LLGATHS'			S	tanding Water Sa	Level : linity : Yield :	10.00 m 320.00 mg/L 1.01 L/s		
Site Details									
Site Chosen By Diviner Driller		Forr Licen	County n A :FITZRC sed :FITZRC	DY DY	Parisl MOO MOO	h NEE NEE	Portion/I LOT 5 D LT 5 DP	Lot DP P595554 595554	
Region : 30 - N River Basin : Area / District :	NORTH COAST				CMA Ma Grid Zon	p : e :	Scale :		
Elevation : Elevation Source :					Northin Eastin	g :6652908 g :510956	Latitı Longitı	ude (S) :30° 15' 19 1de (E) :153° 6' 50)")"
GS Map :	AMG 2	Zone :5 6		Co	oordinate Sourc	e:			
Negative H P Component Type 1 Hole Hole Hole 1 Hole Hole Hole 1 I Casing PVC Class 9 PVC Class 9 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical Water Bearing Zo From (m) To (m) Thick	Ive depths indicate	e Above Ground L From (m) 7 0.00 3.00 -0.30 3.00 29.00 53.00	.evel;H-Hole;P-F To (m) OD (mm 3.00 50 62.00 14 3.00 7 62.00 12 34.00 12 58.00 12	Pipe;OD-Outsid n) ID (mm 10 10 15 15 55 S.W.L. (m) 10 00 10 000	e Diameter;ID-Inside) Interval Details Rotary / Down H 0 Glued; I 5 C: 300-6 PVC Cl PVC Cl PVC Cl	Air lole Hammer Joriven into Hole; (Ur 500m; Glued; Seated ass 9; Sawn; SL: 100 ass 9; Sawn; SL: 100 Vield (L/s)	iknown); (Unknown) on Bottom; (Unknown) num; A: 2.6mm Hole Depth (m) I	-Aperture;GS-Grain S Packer Duration (hr) S:	ize;Q-Quantity alinity (mg/L)
29.00 34.00 53.00 58.00	5.00 5.00			10.00		0.51	62.00	2.00	320.00
Tom Tom Tom Thickness(m) 0.00 3.00 3.00 3.00 9.00 6.00 9.00 29.00 20.00 29.00 34.00 5.00 34.00 55.00 19.00 53.00 58.00 5.00 58.00 62.00 4.00	Drillers Description Red clay basal Brown shale Basalt Cracky basalt Basalt Broken basalt Basalt	t floaters			G	eological Material	Commen	ts	
Pumping Tests - Pumping Test Type Dat	Summar e Duration (hr)	ies S.W.L. (m) D.E	D.L. (m) Yield	ł (L/s) – Intake l	Depth (m) Test Meth	nod To Mea	asure Water Level	To Measure Discharge	Tested By
			(No Pumpin	g Test Summ	ary Details Four	ıd)			
Pumping Tests - Pumping Test Type Dat	Reading: e Time (mins)	S S.W.L. (m) D.I	D.L. (m) Yield (No Pumpir	d (L/s) Intake I ng Test Readi	Depth (m) Test Metl ing Details Foun	nod To Mea (d)	asure Water Level	To Measure Discharge	Tested By
Chemical Treatm	ent	Duration	Su (No Chema	uccess ical Treatmer	nt Details Found	!)			
Development ^{Method} Air Remarks	Time Taken 2.00		Other	Development M	fethod				

GW300931

License :30BL177822		Authorised Purnos	e(s) In	tended Purnose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :		DOMESTIC	D	DMESTIC
Commenced Date : Completion Date :22-Oct-1997	Final Depth : Drilled Depth :	48.00 m 48.00 m		
Contractor Name :Robert Leslie TANNE Driller :1701 TAN	ER INER, Robert Leslie			
Property : - ROSSIS' GWMA : - GW Zone : -		Standing Water I Sal Y	Level: 8.00 m inity: 210.00 m Yield: 2.53 L	i g/L /s
Site Details				
Site Chosen By Diviner Driller	County Form A :RALEI Licensed :RALEI	y Parish GH BONV GH BONV	Po ILLE LC ILLE L?	prtion/Lot DP DT 4 D P 747644 Γ 4 DP 747644
Region :30 - NORTH COAS' River Basin : Area / District :	Г	CMA Map Grid Zone): 2: Scale :	
Elevation : Elevation Source :		Northing Easting	; :6647578 ; :506824 I	Latitude (S) :30° 18' 12" Longitude (E) :153° 4' 15"
GS Map : AMG	Zone :56	Coordinate Source	:Map Interpretation	
Construction Negative depths indicat	e Above Ground Level;H-Hole;P-	Pipe;OD-Outside Diameter;ID-Inside	Diameter;C-Cemented;SL-Slot	Length;A-Aperture;GS-Grain Size;Q-Quantity
H P Component Type 1 Hole Hole 1 Hole Hole 1 I Cassing P.V.C. 1 I Opening Slots - Vertical 1 I Opening Slots - Vertical	From (m) To (m) OD (mr 0.00 3.00 11 3.00 48.00 22 -0.30 48.00 12 24.00 28.00 12 44.00 48.00 12	ID (mm) Interval Details 00 Rotary 00 Rotary 01 150 C: 600-61 70 150 C: 560-61 70 Sawn; SI Sawn; SI	00m; Glued; Seated on Bottom; (Ur wn; SL: 100mm; A: 2.6mm .: 100mm; A: 2.6mm	nknown); Packer
From (m) To (m) Thickness (m) WBZ Typ 0.00 28.00 28.00 44.00 48.00 40.00	pe	S.W.L. (m) D.D.L. (m) 8.00 8.00	Yield (L/s) Hole Deptl 0.51 2.02	h (m) Duration (hr) Salinity (mg/L) 48.00 2.00 210.00 48.00 2.00 210.00
Tom (m) To (m) Thickness(m) Drillers Description 0.00 0.60 0.60 Black top soil 0.60 3.00 2.40 Brown clay 3.00 9.00 6.00 Brown shale 9.00 24.00 15.00 Basalt 24.00 28.00 4.00 Cracky basalt 28.00 44.00 16.00 Basalt 44.00		Ge	ological Material d	Comments
Pumping Tests - Summar	ies SWI (m) DDI (m) Viel	d (I /c) - Intake Denth (m) Test Method	ad To Measure Water I	evel To Measure Discharge Tested By
(hr)	(No Pumpi	ng Test Summary Details Foun	d)	ter to measure bischarge reside by
Pumping Tests - Reading Pumping Test Type Date Time (mins)	S S.W.L. (m) D.D.L. (m) Yiel (No Pumpt	d (L/s) Intake Depth (m) Test Mething Test Reading Details Found	od To Measure Water L	evel To Measure Discharge Tested By
Chemical Treatment	Duration S (No Chen	iuccess nical Treatment Details Found,)	
DevelopmentMethodTime TakenAir2.00	Othe	r Development Method		
Remarks				
Warning To Clients: This raw data has been supplied to	the Department of Land and Wat	er Conservation (DI WC) hy drillers. I	icensees and other sources. The I)LWC does not verify the accuracy of this data.

GW300999

License :30BL177874		Authorised Purpose(s)	Intended I	Purpose(s)
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :		DOMESTIC STOCK	STOCK	
Commenced Date : Completion Date :12-Jan-1998	Final Depth :4Orilled Depth :4	8.00 m 8.00 m		
Contractor Name :Robert Leslie TANNE Driller :1412 TAN	R NER, Robert Leslie			
Property : - BURMESTERS' GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	18.00 m 220.00 mg/L Ge 0.63 L/s go	ood ood
Site Details				
Site Chosen By	County Form A :FITZRO Licensed :FITZRO	Parish Y COFF Y COFF	Portion/Lo LOT 3 DPO LOT 3 D I	bt DP 524590 P 624590
Region : 30 - NORTH COAST River Basin : Area / District :		CMA Map : Grid Zone :	Scale :	
Elevation : Elevation Source :		Northing :6650 Easting :5046	265Latitud541Longitud	le (S) :30° 16' 45" le (E) :153° 2' 54"
GS Map : AMG 2	Lone :56	Coordinate Source :		
Negative depths indicate H P Component Type 1 Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical 1 1 Opening Slots - Vertical	Above Ground Level;H-Hole;P-Pl From (m) To (m) OD (mm) 0.00 6.00 140 6.00 48.00 140 0.00 48.00 125 35.00 37.00 125 43.00 48.00 125	ipe;OD-Outside Diameter;ID-Inside Diameter ID (mm) Interval Details Rotary Rotary 113 C: 0-6m; Glued; PVC Class 9; SL: PVC Class 9; SL:	er;C-Cernented;SL-Slot Length;A-A Cemented; Seated on Bottom; (Unkno 100mm; A: 2.6mm 100mm; A: 2.6mm	Aperture;GS-Grain Size;Q-Quantity wn)
From (m) To (m) Thickness (m) WBZ Typ 35.00 37.00 2.00 43.00 48.00 5.00	e	S.W.L. (m) D.D.L. (m) Yi 18.00 18.00	ield (L/s) Hole Depth (m) Du 0.26 48.00 0.38 48.00	ration (hr) Salinity (mg/L) 2.00 220.00 2.00 220.00
Drillers Log From (m) To (m) Thickness(m) Drillers Description 0.00 6.00 9.1nk shale 6.00 33.00 27.00 basalt 33.00 37.00 4.00 cracked basalt 37.00 43.00 6.00 basalt 43.00 48.00 5.00 cracked basalt		Geological	Material Comments	
Pumping Tests - Summary Pumping Test Type Date Duration (hr)	S.W.L. (m) D.D.L. (m) Yield	(L/s) Intake Depth (m) Test Method	To Measure Water Level To	Measure Discharge Tested By
	(No Pumping	r Test Summary Details Found)		
Pumping Tests - Readings Pumping Test Type Date Time (mins)	S S.W.L. (m) D.D.L. (m) Yield (No Pumping	(L/s) Intake Depth (m) Test Method g Test Reading Details Found)	To Measure Water Level To	Measure Discharge Tested By
Chemical Treatment	Duration Suc	ccess		
	(No Chemic	cal Treatment Details Found)		
Development Method Time Taken Air 2.00 Remarks	Other I	Development Method		
REPLACED BY LICENSE 30BL178378	*** I	End of GW300999 ***		
	-			

GW301007

License :30BL154	911		
Work Type :Bore Work Status :(Unknown Construct. Method :Rotary Owner Type :	n)	Authorised Purpose(s) IRRIGATION	Intended Purpose(s) IRRIGATION
Commenced Date : Completion Date :	Final Depth : Drilled Depth :		
Contractor Name :Robert Le Driller :1701	slie TANNER TANNER, Robert Leslie		
Property : - PELIC GWMA : - GW Zone : -	AN BEACH TRAVELODGE RES.	Standing Water Level : Salinity : Yield :	Salty
Site Details			
Site Chosen By	County Form A :FITZROY Licensed :FITZROY	Parish MOONEE MOONEE	Portion/Lot DP LOT 101 DP629555 LT 101 DP 629555
Region : 30 - NO River Basin : Area / District :	RTH COAST	CMA Map : Grid Zone :	Scale :
Elevation : Elevation Source :		Northing : 6653643 Easting : 513554	Latitude (S) :30° 14' 55" Longitude (E) :153° 8' 27"
GS Map :	AMG Zone :56	Coordinate Source :	
Construction H P Component Type	e depths indicate Above Ground Level;H-Hole;P-Pipe;C From (m) To (m) OD (mm) (No Constru	DD-Outside Diameter;ID-Inside Diameter;C-Cem ID (mm) Interval Details uction Details Found)	ented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity
Water Bearing Zone From (m) To (m) Thicknes	ES s (m) WBZ Type S. ¹ (No Water Bea	W.L. (m) D.D.L. (m) Yield (L/s) ring Zone Details Found)	Hole Depth (m) Duration (hr) Salinity (mg/L)
Drillers Log From (m) To (m) Thickness(m) Dril	llers Description (No Driller	Geological Material rs Log Details Found)	Comments
Pumping Tests - S Pumping Test Type Date	Ummaries Duration S.W.L. (m) D.D.L. (m) Yield (L/s) (hr)	Intake Depth (m) Test Method To Me	asure Water Level To Measure Discharge Tested By
	(No Pumping Te.	st Summary Details Found)	
Pumping Tests - R Pumping Test Type Date	Peadings Time (mins) S.W.L. (m) D.D.L. (m) Yield (L/s) (No Pumping Te	Intake Depth (m) Test Method To Me est Reading Details Found)	asure Water Level To Measure Discharge Tested By
Chemical Treatmen	nt Duration Success (No Chemical 7	Treatment Details Found)	
Development Method	Time Taken Other Devel (No Develo	lopment Method opment Details Found)	
Remarks			
	*** End	of GW301007 ***	

GW301087

License :30BL176801 Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :		Authorised Purpose(s) DOMESTIC	Intended Purpose(s) DOMESTIC
Commenced Date : Completion Date :12-May-1995	Final Depth : 48.00 m Drilled Depth : 48.00 m		
Contractor Name :TANNER DRILLING Driller :1412 TAN	3 NNER, Robert Leslie		
Property : - PERRETT'S GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	18.00 m Good 1.82 L/s
Site Details			
Site Chosen By Diviner Driller	County Form A :FITZROY Licensed :FITZROY	Parish COFF COFF	Portion/Lot DP LOT 12 DP875340 LOT 2 DP563090
Region :30 - NORTH COAS River Basin : Area / District :	Т	CMA Map : Grid Zone :	Scale :
Elevation : Elevation Source :		Northing :6652500 Easting :513221	Latitude (S) :30° 15' 32" Longitude (E) :153° 8' 15"
GS Map : AMG	Zone : 56	Coordinate Source :	
H P Component Type 1 Hole Hole 1 Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	From (m) To (m) OD (mm) ID 0.00 6.00 140 6.00 48.00 125 43.00 48.00 125 43.00 48.00 125	(mm) Interval Details Rotary Air Down Hole Hammer -75 Glued; Seated on Bottom; C PVC Class 9; Slotted In Hol	ienred, SL-Sion Lengin, A-Apentire, GS-Grain Size; G-Quaniny iap e; SL: 100mm; A: 2.6mm
From (m) To (m) Thickness (m) WBZ Ty 43.00 48.00 5.00	pe S.W.L. 18	(m) D.D.L. (m) Yield (L/s) 8.00 1.82	Hole Depth (m) Duration (hr) Salinity (mg/L) 48.00 1.00 Good
To (m) To (m) Thickness(m) Drillers Description 0.00 0.30 0.30 BROWN TOPSOIL 0.30 2.00 1.70 BROWN CLAY 2.00 32.00 30.00 BROWN SHALE 32.00 43.00 11.00 BASALT	n	Geological Material	Comments
Pumping Tests - Summai Pumping Test Type Date Duration (hr)	S.W.L. (m) D.D.L. (m) Yield (L/s) Int	ake Depth (m) Test Method To Me	asure Water Level To Measure Discharge Tested By
	(No Pumping Test Su	ummary Details Found)	
Pumping Tests - Reading Pumping Test Type Date Time (mins)	IS S.W.L. (m) D.D.L. (m) Yield (L/s) Int (<i>No Pumping Test Re</i>	take Depth (m) Test Method To Me	easure Water Level To Measure Discharge Tested By
Chemical Treatment	Duration Success (No Chemical Treat	tment Details Found)	
Development Method Time Taken Air 1.00 Remarks	Other Developme	nt Method	
Form A Remarks: CASING CEMENTED BY 600 x 600 DEEP SURFACE PA	D. *** End of G	GW301087 ***	

GW301193

License :30BL176913				
Work Type :Bore Work Status :(Unknown) Construct. Method :Rot. Rev. Circ. Air Owner Type :		Authorised Pur DOMESTIC	pose(s) In De	tended Purpose(s) DMESTIC
Commenced Date : Completion Date :31-Aug-1995	Final Depth : Drilled Depth :	29.60 m 29.60 m		
Contractor Name :Puckeridge & Co Driller :1629 PU	CKERIDGE, Glenn			
Property : - SPAGNOLO'S GWMA : - GW Zone : -		Standing Wate	er Level: 8.00 m Salinity: Yield: 0.40 L	Good (s
Site Details				
Site Chosen By Driller	Count Form A :FITZR Licensed :FITZR	ty Par ROY CO ROY CO	ish Po FF Lo FF L	ortion/Lot DP DT 22 DP803289 7 22 DP 803289
Region : 30 - NORTH COA River Basin : Area / District :	ST	CMA M Grid Z	fap : one : Scale :	
Elevation : Elevation Source :		North Eas	ting :6649260 ting :506842	Latitude (S) :30° 17' 18" .ongitude (E) :153° 4' 16"
GS Map : AMO	G Zone :56	Coordinate Sou	irce :	
H P Component Type 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	ate Above Ground Level;H-Hole;F From (m) To (m) OD (m -0.20 29.60 23.60 29.60	P-Pipe;OD-Outside Diameter;ID-In m) ID (mm) Interval Deta 145 C: 0 145 PVC	side Diameter;C-Cemented;SL-Slot ils 1m; Glued Class 9; Sawn; SL: 6mm; A: 2mm	Length;A-Aperture;GS-Grain Size;Q-Quantity
Water Bearing Zones From (m) To (m) Thickness (m) WBZ T 0.00 0.00 0.00 WBZ T 10.00 12.00 2.00 T	Туре	S.W.L. (m) D.D.L. (m) 8.00	Yield (L/s) Hole Dept 0.20 0.20	1 (m) Duration (hr) Salinity (mg/L) 29.00 1.00 Good 13.00 0.50 Good
To (m) To (m) Thickness(m) Drillers Description 0.00 10.00 10.00 CLAY 10.00 22.00 WEATHERED SH 12.00 24.40 12.40 24.40 25.90 1.50 25.90 29.60 3.70	ion ALE QUART2		Geological Material	Comments
Pumping Tests - Summa Pumping Test Type Date Duratio (h	r) m S.W.L. (m) D.D.L. (m) Yie r)	eld (L/s) Intake Depth (m) Test N	lethod To Measure Water L	evel To Measure Discharge Tested By
	(No Pumpi	ing Test Summary Details Fo	ound)	
Pumping Tests - Reading Pumping Test Type Date Time (min	gs s) S.W.L. (m) D.D.L. (m) Yie (No Pump	eld (L/s) Intake Depth (m) Test N Ding Test Reading Details Fo	lethod To Measure Water L	evel To Measure Discharge Tested By
Chemical Treatment	Duration (No Cher	Success mical Treatment Details Fot	nd)	
Development Method Time Taken Surging 0.25	Oth	er Development Method		
nemarks	**	* End of GW301193 ***		

GW301200

hore casing mush	icu witti	UUU X OU(лып аеер с	amenteu surfac	oe pau.		*** End	of GW3	01200 **	*					
Hemarks	•	600 x 604)min deen o	remented surface	ce nad										
Develop Method Air	pme	ent	T 1	`ime Taken .00			Other Devel	opment Me	ethod						
Chemic Treatment		T EA Method	tmen	T	Duration	(No	Success Chemical 7	Treatmen	t Details	Found)					
Chamie	~~l *	Fran	tman	+			. –								
Pumpir Pumping Test Ty	1 g 7	ests	5 - Re Date	eadings	S S.W.L. (m)	D.D.L. (m) (<i>No</i> 1	Yield (L/s) Pumping Te	Intake D est Readir	epth (m) T ng Detail.	est Method s Found)	To Meas	sure Water Level	To Measure Dis	charge	Tested By
						(No F	Pumping Tes	st Summa	ary Detail	ls Found)					
Pumping Pumping Test Ty	ng 7	ests	5 - SU Date	I MMA I Duration (hr)	ies S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Intake D	epth (m) T	est Method	To Meas	ure Water Level	To Measure Dis	charge	Tested By
Drillers From (m) 0.00 0.60 1.20 8.00 9.00 33.00	Loc To (m) 0.60 1.20 8.00 9.00 33.00 38.00	Thicknes 0 0 6 1 24 5	s(m) Drille 60 BROW 60 BROW 80 BROW 00 WEAT 00 BASA 00 BROK	rs Description N TOPSOIL N CLAY N SHALE HERED BASA LT EN BASALT	LT					Geologi	ical Material	Comm	ents		
Water B From (m) 33.00	lear	ing 2 To (m) 7 38.00	Zone Thickness (5	S (m) WBZ Typ .00	e		S.Y	W.L. (m) 9.00	D.D.L. (m)	Yield (L/s) 0.76	Hole Depth (m) 38.00	Duration (hr) 1.00	Sali	nity (mg/L) Good
H P Compon H Hole Hole Hole Casing Opening	ent 1 I I	fype Hole Hole VC Class Slots - Ver	s 9 rtical		From (m) 0.00 9.00 -0.30 33.00	To (m) 9.00 38.00 38.00 38.00	OD (mm) 140 140 125 125	ID (mm) -75	Interval	Details Rotary Down Hole H Glued; Seated PVC Class 9;	lammer I on Bottom; Cap Sawn; SL: 100n	am; A: 2.6mm			
Constru	us M Intir	ар: ว п '	Vegative d	AIVIG 2	2 one :56 e Above Grou	ind Level;H-	Hole;P-Pipe;C	Co DD-Outside	Diameter;	Source :	meter;C-Cemer	nted;SL-Slot Lengt	h;A-Aperture;GS-	Grain Siz	e;Q-Quantity
E Elevation	Clevati n Sour	on : ce :		4 B.M.C. P	long -54			C	N	orthing :6 Easting :5	646293 06163	Lat Long	itude (S) :30° itude (E) :153	18' 54" ° 3' 51"	
Riv Area /	Regi er Ba Distr	on :30 sin : ict :	- NOR'	TH COAST	Γ				CM Gri	A Map : id Zone :		Scale :			
Site Chosen H Diviner	Ву	Drille	er		F Li	C Form A :R icensed :R	County RALEIGH RALEIGH			Parish BONVILI BONVILI	.E .E	Portion LOT 1 LOT 1	n/Lot DP DP862818 DP862818		
Site Det	ails														
I G	Proper GWN W Zo	rty: - IA: - me: -	" SAEC	TAN K'S "	INER, KOU	en Lesne		St	anding V	Vater Lev Salinit Yiel	el : ty : ld :	9.00 m 0.76 L/s	Good		
Contracto	or Nai	me :TA	NNER I	DRILLING	NED Dah	ant Laslia									
Comment	ced Da	ate : ate :		Γ	Final Dep Drilled Der	oth : oth :	38.00 38.00) m) m							
Wo Wor Construct. Owr	ork Ty k Stat Meth ner Ty	pe :Bo tus :(Ur od :Ro	re 1known) tary	1				Aut DOI IRR	horised MESTIC LIGATIO	Purpose(s) N)	Intend DOME	ed Purpose(s) STIC		
	Licer	1 se : 301	BL17917	75											

GW301239

License :30BL176844		A	uthorised Purpose(s)	Int	Intended Purpose(s)		
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :		D	OMESTIC	DC	MESTIC		
Commenced Date : Completion Date :26-Jun-1995	Final Depth : Drilled Depth :	38.00 m 38.00 m					
Contractor Name :R.L. TANNER Driller :1412 TAN	INER, Robert Leslie						
Property : - ELLEN'S GWMA : - GW Zone : -		;	Standing Water Level : Salinity : Yield :	6.00 m	Good		
Site Details							
Site Chosen By Diviner Driller	Count Form A :RALE Licensed :RALE	ty LIGH LIGH	Parish BONVILLE BONVILLE	Po LO LT	rtion/Lot DP T 43 DP264404 43 DP 264404		
Region :30 - NORTH COAS River Basin : Area / District :	Г		CMA Map : Grid Zone :	Scale :			
Elevation : Elevation Source :			Northing :6644 Easting :5068	4886 878 L	Latitude (S) :30° 19' 40" ongitude (E) :153° 4' 18"		
GS Map : AMG	Zone : 56	C	Coordinate Source :				
H P Component Type 1 Hole Hole Hole 1 Hole Hole Hole 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	e Above Ground Level;H-Hole;F From (m) To (m) OD (m 0.00 3.00 3.00 38.00 0.00 38.00 33.00 38.00	D-Pipe;OD-Outsi 140 140 125 - 125 -	de Diameter,ID-Inside Diamet m) Interval Details Rotary 75 Glued; Seated on PVC Class 9; Sav	ter;C-Cernented;SL-Slot L Bottom wn; SL: 100mm; A: 2.6mm	ength;A-Aperture;GS-Grain Size;Q-Qu	lantity	
Water Bearing ZonesFrom (m)To (m)Thickness (m)WBZ Ty33.0038.005.00	Je	S.W.L. (m) 6.00	D.D.L. (m) Y	7ield (L/s) Hole Depth 0.51 3	(m) Duration (hr) Salinity (m 8.00 1.00 G	g/L.) Jood	
Troillers Log From (m) To (m) Thickness(m) Drillers Description 0.00 3.00 3.00 BROWN SHALE 3.00 33.00 30.00 BASSALT 33.00 38.00 5.00 CRACKY BASSALT	,		Geological	Material C	omments		
Pumping Tests - Summar Pumping Test Type Date Duration (hr)	ies S.W.L. (m) D.D.L. (m) Yie	eld (L/s) Intake	Depth (m) Test Method	To Measure Water Le	vel To Measure Discharge Testec	ł By	
	(No Pumpi	ing Test Sumr	nary Details Found)				
Pumping Tests - Reading Pumping Test Type Date Time (mins)	S S.W.L. (m) D.D.L. (m) Yie (No Pump	eld (L/s) Intake ning Test Read	Depth (m) Test Method ding Details Found)	To Measure Water Le	vel To Measure Discharge Testec	i By	
Chemical Treatment	Duration (No Cher	Success mical Treatme	ent Details Found)				
DevelopmentMethod AirTime Taken 1.00Remarks	Othe	er Development I	Method				
)	* End of GW	/301239 *				

GW301250

Lice	ense :30BL	176864														
Work T Work Sta Construct. Metl Owner T	ype :Bore atus :(Unki hod :Rot. I ype :	10wn) Rev. Circ. A	Air					Auth DON	10rised 1ESTIC	Purpose	(s)		Intend DOMI	led Purpose(s) ESTIC		
Commenced D Completion D	Date : Date :12-Ja	n-1995	l Dr	inal Dep illed Dep	oth: oth:	31 31	.40 m .40 m									
Contractor Na Dri	ame :PUCI ller :1629	KERIDGE	& CO PUCK	ERIDGE	, Glenn											
Prope GWI GW Zd	erty : - FA MA : - one : -	AHEY'S						Sta	nding '	Water Lo Salii Y	evel : nity : ield :		4.00 m 1.00 L/s	Good		
Site Details	S															
Site Chosen By Driller				F Li	Corm A :F icensed :F	C ounty FITZROY FITZROY	7			Parish MOON MOON	EE EE		Portio LOT 3 LT 30:	n/Lot DP 05 DP752834 5 DP 752834		
Reg River Ba Area / Distr	;ion :30 - asin : rict :	NORTH C	OAST						CM Gr	IA Map id Zone	:	;	Scale :			
Elevat Elevation Sou	tion : irce :								N	lorthing Easting	:6653077 :510951		La Long	titude (S) :30° itude (E) :153°	15' 14" ' 6' 50"	
GS M	1ap :	А	MG Zo	me :56				Coo	rdinate	Source	:					
Construction H P Component 1 Hole 1 Hole 1 Casing 1 Opening	ON Type Hole Hole PVC Class 9 Slots - Vertica	ative depths	indicate A	(bove Grou From (m) 0.00 11.00 0.00 13.00	nd Level;H- To (m) 11.00 31.40 31.40 31.00	Hole;P-Pip OD (mm) 165 150 125 125	ie;OD-Ou	ıtside I (mm)	Diameter; Interval	ID-Inside E Details Rotary Air Down Hole Glued; Sea PVC Class	Diameter;C-Co e Hammer tted on Bottom 9; Sawn; SL:	emented; 18mm; A:	SL-Slot Lengt	h;A-Aperture;GS-(¥rain Siz	re;Q-Quantity
From (m) 11.00	To (m) Thie 24.40	CKNESS (M) W 13.40	BZ Type				S.W.L. (4	(m) .00	D.D.L.	(m)	Yield (L/ 1.0	(s) H 20	ole Depth (m) 30.00	Duration (hr) 1.00	Sali	inity (mg/L) Good
Drillers Log From (m) To (m) 0.00 0.60 0.60 7.60 7.60 24.40 24.40 31.40	g Thickness(m) 0.60 7.00 16.80 7.00	Drillers Dese TOP SOIL CLAY & FL FRACTURED SHALE	CATERS							Geol	ogical Materi	al	Comn	ients		
Pumping 7 Pumping Test Type	Tests -	Sumr ate Du	narie ration (hr)	?S S.W.L. (m)	D.D.L. (m)	Yield (I	./s) Inta	ake De	pth (m) 7	fest Method	l To	Measure `	Water Level	To Measure Dise	charge	Tested By
					(No F	Pumping 2	Test Su	mmar	y Detai	ls Found)					
Pumping 7 Pumping Test Type	Tests - Da	Read	ings (mins)	S.W.L. (m)	D.D.L. (m) (No 1	Yield (L Pumping	./s) Int: Test Re	ake De Padinz	pth (m) 1 g Detail	Cest Method (s Found)	l To	Measure '	Water Level	To Measure Disc	:harge	Tested By
Chemical Treatment	Treatn Method	nent	I	Juration	(No	Succ Chemico	ess al Treat	ment	Details	Found)						
Developme Air	ent	Time Ta 1.00	iken			Other De	evelopme	nt Metl	hod							
ησιιάϊ KS						*** Er	nd of G	W30	1250 **	**						

GW301322

License :30BL176986 Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type : Commenced Date :	Final Denth · 36.00 n	Authorised Purpose(s) DOMESTIC STOCK	Intended Purpose(s) DOMESTIC STOCK
Completion Date :28-Sep-1995	Drilled Depth : 36.00 n	n	
Contractor Name :TANNER DRILL Driller :1412	ING FANNER, Robert Leslie		
Property : - FOWLER'S GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	12.00 m Good 0.38 L/s
Site Details			
Site Chosen By Diviner Driller	County Form A :FITZROY Licensed :FITZROY	Parish COFF COFF	Portion/Lot DP LOT 16 DP713660 LT 16 DP 713660
Region : 30 - NORTH CO River Basin : Area / District :	AST	CMA Map : Grid Zone :	Scale :
Elevation : Elevation Source :		Northing : 6650191 Easting : 504246	Latitude (S) :30° 16' 47" Longitude (E) :153° 2' 39"
GS Map : AM	1G Zone :5 6	Coordinate Source :	
Construction Negative depths in H P Component Type 1 Hole Hole 1 Hole Hole 1 I Casing PVC Class 9 1 I Opening Slots - Vertical	From (m) To (m) OD (mm) I 0.00 12.00 140 12.00 140 -0.30 36.00 125 24.00 29.00 125	Outside Diameter;1D-Inside Diameter;C-Cem (D (mm) Interval Details Rotary Air Down Hole Hammer Glued; Seated on Bottom PVC Class 9; Sawn; SL: 100	ented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity)mm; A: 2.6mm
From (m) To (m) Thickness (m) WB2 24.00 29.00 5.00 5.00	Z Type S.W.J	L. (m) D.D.L. (m) Yield (L/s) 12.00 0.38	Hole Depth (m) Duration (hr) Salinity (mg/L) 36.00 1.00 Good
To (m) To (m) Thickness(m) Drillers Description 0.00 0.30 0.30 BLACK TOPS 0.30 12.00 11.70 YELLOW SHA 12.00 24.00 12.00 BASALT 24.00 29.00 5.00 CRACKY BAS 29.00 36.00 7.00 BASALT	ption JIL LE ALT	Geological Material	Comments
Pumping Tests - Summ Pumping Test Type Date Dura	Aries tion S.W.L. (m) D.D.L. (m) Yield (L/s) i (hr)	Intake Depth (m) Test Method To Me	asure Water Level To Measure Discharge Tested By
	(NOT unping Tests	summary Details Found)	
Pumping Tests - Readin Pumping Test Type Date Time (n	IGS nins) S.W.L. (m) D.D.L. (m) Yield (L/s) (No Pumping Test	Intake Depth (m) Test Method To Me Reading Details Found)	asure Water Level To Measure Discharge Tested By
Chemical Treatment	Duration Success (No Chemical Tre	eatment Details Found)	
Development Method Time Tak Air L.00 Remarks	en Other Develop	ment Method	
	*** End of	f GW301322 ***	

GW301331

License :30BL	177033										
Work Type :Bore Work Status :(Unki Construct. Method :Rotar Owner Type :	10wn) y Air				Auth DOM	orised 1 1ESTIC	Purpose(s)		Intende DOME	ed Purpose(s) STIC	
Commenced Date : Completion Date :30-O	ct-1995 I	Final Depth : Drilled Depth :		48.00 m 48.00 m							
Contractor Name :TAN Driller :1412	NER DRILLING TAN	NER, Robert I	eslie								
Property : - G GWMA : - GW Zone : -	ILL'S				Sta	nding V	Vater Leve Salinit Yiel	el: y: d:	18.00 m 1.90 L/s	Good	
Site Details											
Site Chosen By Diviner Driller		Forn Licen	Count n A :RALE sed :RALE	y IGH IGH			Parish BONVILL BONVILL	.E .E	Portion LOT 2 LT 2 D	VLot DP DP713643 P 713643	
Region :30 - River Basin : Area / District :	NORTH COAST	ſ				CM Gri	A Map : d Zone :		Scale :		
Elevation : Elevation Source :						N	orthing :60 Easting :50	646908 05015	Lati Longi	itude (S) :30° 18' tude (E) :153° 3'	34" 8"
GS Map :	AMG 2	Zone : 56			Coo	rdinate	Source :				
H P Component Type 1 Hole Hole 1 Hole Hole 1 I Casing PVC Class 9 1 I Opening Slots - Vertice	ative depths indicate	e Above Ground L From (m) 7 0.00 12.00 -0.30 41.00	evel;H-Hole;P fo(m) OD (m 12.00 1 48.00 1 48.00 1 46.00 1	P-Pipe;OD-C m) ID 140 140 125 125	outside [(mm) -75	Diameter;I Interval	D-Inside Diar Details Rotary Air Down Hole H Glued; Seated PVC Class 9;	ammer on Bottom Sawn; SL: 100mi	ted;SL-Slot Length n; A: 2.6mm	;A-Aperture;GS-Grai	n Size;Q-Quantity
Vvater Bearing Z From (m) To (m) Thi 41.00 46.00 46.00	DNES ckness (m) WBZ Typ 5.00	e		S.W.L. 1	(m) 8.00	D.D.L. (m)	Yield (L/s) 1.90	Hole Depth (m) 48.00	Duration (hr) 1.00	Salinity (mg/L) Good
Drillers Log From (m) To (m) Thickness(m) 0.00 12.00 12.00 12.00 18.00 6.00 18.00 41.00 23.00 41.00 46.00 5.00 46.00 48.00 2.00	Drillers Description RED TO BROWN S BROWN SHALE BASALT BROKEN BASALT	HALE					Geologi	cal Material	Comme	ents	
Pumping Tests - Pumping Test Type D	Summar ate Duration (hr)	ies S.W.L. (m) D.D	L. (m) Yie	eld (L/s) In	take De	pth (m) T	est Method	To Measu	ure Water Level	To Measure Discha	rge Tested By
			(NO Fumpi	ng test si	ummar	y Delali	s rouna)				
Pumping Tests	Reading	S S.W.L. (m) D.D	9.L. (m) Yie (No Pump	eld (L/s) In ing Test R	take De Reading	pth (m) T g Detail	est Method s <i>Found</i>)	To Meası	ıre Water Level	To Measure Discha	rge Tested By
Chemical Treatr	nent	Duration	(No Cher	Success nical Trec	atment	Details	Found)				
Development ^{Method} Air Remarks	Time Taken 1.00		Othe	er Developm	ent Met	hod					
			**1	* End of (GW30	1331 **	*				

GW301377

License :30BL177102 Work Type :Bore Work Status :(Unknown) Construct. Method : Owner Type :			Authorised Purpose(s) DOMESTIC	Intended Purpose(s) DOMESTIC
Commenced Date : Completion Date :01-Mar-1995	Final Depth : Drilled Depth :	2.50	m	
Contractor Name : Driller :	Janbrook, Gary			
Property : - WILLIAMS' GWMA : - GW Zone : -			Standing Water Level : Salinity : Yield :	0.70 m
Site Details				
Site Chosen By	Forn Licen	County n A :FITZROY sed :FITZROY	Parish MOONEE MOONEE	Portion/Lot DP LOT 101 DP604622 LT 101 DP 604622
Region : 30 - NORTH CO River Basin : Area / District :	DAST		CMA Map : Grid Zone :	Scale :
Elevation : Elevation Source :			Northing : 665376 Easting : 512069	7 Latitude (S) :30° 14' 51" Longitude (E) :153° 7' 32"
GS Map : Al	MG Zone :56		Coordinate Source :Map Int	terpretation
Construction Negative depths in	ndicate Above Ground L	evel;H-Hole;P-Pipe;OI	D-Outside Diameter;ID-Inside Diameter;C	-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity
H P Component Type 1 Hole Hole 1 Hole Hole 1 1 Casing Lining	From (m) 7 0.00 0.00 0.00	Fo (m) OD (mm) 2.50 2.50 2.50	ID (mm) Interval Details	
Water Bearing Zones				
From (m) To (m) Thickness (m) WE	ЗZ Туре	S.W	V.L. (m) D.D.L. (m) Yield	(L/s) Hole Depth (m) Duration (hr) Salinity (mg/L)
		(No water Bear)	ing zone Delaus Founa)	
Drillers Log From (m) To (m) Thickness(m) Drillers Description	iption	(No Drillers	Geological Mat Log Details Found)	terial Comments
Pumping Tests - Sump	naries			
Pumping Test Type Date Dur	ration S.W.L. (m) D.D (hr)	D.L. (m) Yield (L/s)	Intake Depth (m) Test Method	To Measure Water Level To Measure Discharge Tested By
		(No Pumping Test	t Summary Details Found)	
Pumping Tests - Readi Pumping Test Type Date Time (ngs mins) S.W.L. (m) D.E	D.L. (m) Yield (L/s) (No Pumping Tes	Intake Depth (m) Test Method At Reading Details Found)	To Measure Water Level To Measure Discharge Tested By
Chemical Treatment	Duration	Success (No Chemical T	reatment Details Found)	
Development Method Time Ta	ken	Other Develo	pment Method	
		(No Develop	oment Details Found)	

Remarks

Form A Remarks: GARY JANBROOK INSTALLED EXCAVATION. THE WORK IS 5 M ON RIGHT BANK OF COUGAL CREEK.

GW301392

License :30BL177136			
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Owner Type :		Authorised Purpose(s) DOMESTIC	Intended Purpose(s) DOMESTIC
Commenced Date : Completion Date :09-Dec-1995	Final Depth :54.00 mDrilled Depth :54.00 m		
Contractor Name :TANNER DRILLIN Driller :1412 TA	G NNER, Robert Leslie		
Property : - JACKSON'S GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	18.00 m Good 1.14 L/s
Site Details			
Site Chosen By Diviner Driller	County Form A :FITZROY Licensed :FITZROY	Parish MOONEE MOONEE	Portion/Lot DP LOT132 DP599061 LT 132 DP 599061
Region : 30 - NORTH COA River Basin : Area / District :	ST	CMA Map : Grid Zone :	Scale :
Elevation : Elevation Source :		Northing :6654128 Easting :512911	Latitude (S) :30° 14' 39" Longitude (E) :153° 8' 3"
GS Map : AMG	Zone :56	Coordinate Source :	
H P Component Type 1 Hole Hole 1 Hole Hole 1 I Casing PVC Class 9 1 I Opening Slots - Vertical	From (m) To (m) OD (mm) ID 0.00 2.00 140 140 -0.30 54.00 140 140 -0.30 54.00 125 49.00 54.00 125	(mm) Interval Details Rotary Rotary Glued; Seated on Bottom; C PVC Class 9; Sawn; SL: 10	anned, SL-Siot Lengin, A-Aperitire, SS-Srain Size, C-Quantity ap Dmm; A: 2.6mm
From (m) To (m) Thickness (m) WBZ T 49.00 54.00 5.00 5.00	ype S.W.L. 1	. (m) D.D.L. (m) Yield (L/s) 8.00 1.14	Hole Depth (m) Duration (hr) Salinity (mg/L) 54.00 1.00 Good
Torm (m) To (m) Thickness(m) Drillers Descripti 0.00 12.00 12.00 BROWN SHALE 12.00 36.00 24.00 GREY SHALE 36.00 49.00 13.00 BASALY 49.00 54.00 5.00 BROKEN BASALY	on F	Geological Material Shale Shale Basalt Basalt	Comments
Pumping Tests - Summa Pumping Test Type Date Duratio (h)	ries n S.W.L. (m) D.D.L. (m) Yield (L/s) In r)	take Depth (m) Test Method To Me	easure Water Level To Measure Discharge Tested By
	(No Pumping Test St	ummary Details Found)	
Pumping Tests - Reading Pumping Test Type Date Time (min	GS s) S.W.L. (m) D.D.L. (m) Yield (L/s) In (No Pumping Test R	ntake Depth (m) Test Method To Me Reading Details Found)	easure Water Level To Measure Discharge Tested By
Chemical Treatment	Duration Success (No Chemical Tred	atment Details Found)	
Development Method Time Taken Air 1.00 Remarks	Other Developme	ent Method	
	*** End of (GW301392 ***	

GW301547

License :30BL178378				
Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type :		Authorised Purpose(s) DOMESTIC IRRIGATION STOCK	Intended Pur DOMESTIC IRRIGATION STOCK	pose(s)
Commenced Date : Completion Date :	Final Depth :48.Drilled Depth :48.	00 m 00 m		
Contractor Name :T.D.M. P/ L. Driller :1701 TAN	INER, Robert Leslie			
Property : - BARROW'S GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	18.00 m 220.00 mg/L 0.63 L/s	
Site Details				
Site Chosen By Diviner Driller	County Form A :FITZROY Licensed :FITZROY	Parish COFF COFF	Portion/Lot I LOT 3 DP624 LT 3 DP 6245	DP 590 90
Region :30 - NORTH COAST River Basin : Area / District :	ſ	CMA Map : Grid Zone :	Scale :	
Elevation : Elevation Source :		Northing :665026 Easting :504641	5 Latitude (Longitude (l	S) :30° 16' 45" E) :153° 2' 54"
GS Map : AMG 2	Zone : 56	Coordinate Source :Map Int	erpretation	
H P Component Type 1 Hole Hole Hole 1 Leasing PVC Class 9 1 1 Opening Slots - Vertical 1 1 Opening Slots - Vertical 1 1 Opening Slots - Vertical	From (m) To (m) OD (mm) 0.00 6.00 140 6.00 48.00 140 -0.30 48.00 125 33.00 35.00 125 43.00 48.00 125	ID (mm) Interval Details Rotary Air Rotary Air 113 Glued; Seated on Bott PVC Class 9; Sawn; S PVC Class 9; Sawn; S	om L: 100mm; A: .6mm L: 100mm; A: .6mm	ure,05-oran 5/26,0-Quanty
From (m) To (m) Thickness (m) WBZ Tyr 33.00 37.00 4.00 43.00 48.00 5.00	be a state of the	S.W.L. (m) D.D.L. (m) Yield 10.00 18.00	(L/s) Hole Depth (m) Duratio 0.25 0.38 48.00	on (hr) Salinity (mg/L)
Torillers Log From (m) To (m) Thickness(m) Drillers Description 0.00 6.00 5.00 pink shale 6.00 33.00 27.00 basalt 33.00 37.00 4.00 cracky basalt 37.00 43.00 6.00 basalt 43.00 48.00 5.00 cracky basalt		Geological Mat Pink Streak Basalt Cracked Basalt Cracked	erial Comments s	
Pumping Tests - Summar Pumping Test Type Date Duration (hr)	ies S.W.L. (m) D.D.L. (m) Yield (L	/s) Intake Depth (m) Test Method 7	Fo Measure Water Level To Me	asure Discharge Tested By
	(No Pumping T	Fest Summary Details Found)		
Pumping Tests - Reading Pumping Test Type Date Time (mins)	S.W.L. (m) D.D.L. (m) Yield (L. (No Pumping 7	/s) Intake Depth (m) Test Method 7 Test Reading Details Found)	fo Measure Water Level To Me	asure Discharge Tested By
Chemical Treatment	Duration Succe (No Chemica	ess l Treatment Details Found)		
Development Method Time Taken Air 2.00	Other Dev	velopment Method		
nemarks				
	*** En	nd of GW301547 ***		

GW301578

Lice	ense :30BL177994	Ļ											
Work T Work Sta Construct. Metl Owner T	ype :Bore atus :(Unknown) hod :Rotary Air ype :					Aut DON STC	horised Purp MESTIC ICK	oose(s)		Intendo DOME STOCK	e d Purpose(s) STIC K		
Commenced D Completion D	Date : Date :14-Aug-1993	3 D	Final Dep rilled Dep	oth : oth :	42.00 42.00	m m							
Contractor Na Dri	ame :T.& M. P/ L ller :1701	TANI	NER, Robe	ert Leslie									
Prope GWI GW Zd	erty:-"DARB' MA:- one:-	Y'S "				St	anding Wate	er Level : Salinity : Yield :	9. 90. 0.	00 m 00 mg/L 35 L/s			
Site Details	S												
Site Chosen By Diviner	Driller		F	Co orm A :FI censed :FI	ounty TZROY TZROY		Par COF COF	ish FF FF		Portion LOT 11 LOT 11	1/Lot DP 1 DP807125 1 DP807125		
Reg River Ba Area / Dist	ion :30 - NORT asin : rict :	H COAST					CMA M Grid Zo	lap : one :	Sc	ale :			
Elevat Elevation Sou	tion : irce :						North East	ing :66508 ing :51015	399 58	Lati Longi	itude (S) :30° 16' tude (E) :153° 6'	24" 20"	
GS N	1ap :	AMG Z	Cone : 56			Coo	ordinate Sou	rce :Map I	Interpretation				
Bit Matrix P Component H P Hole 1 Hole 1 Casing 1 Casing 1 Opening	Negative de Type Hole PVC Class 9 PVC Class 9 Slots - Vertical	pths indicate	Above Groun From (m) 0.00 6.00 -0.30 -0.30 34.00	nd Level;H-H To (m) C 6.00 42.00 6.00 42.00 39.00	lole;P-Pipe;OE 200 (mm) 200 140 170 125 125	D-Outside ID (mm) 154 113	Diameter;ID-Ins Interval Detai Rotar Dowr Drive Gluec PVC	ide Diameter Is y Air 1 Hole Hamme n into Hole I; Seated on Bo Class 9; Sawn	;C-Cemented;SL er ottom ; SL: 100mm; A: 2	-Slot Length	n;A-Aperture;GS-Grai	। Size;Q-Quantity	
Water Bear From (m) 34.00	ring Zones To (m) Thickness (n 39.00 5.0) WBZ Type 0	2		s.w	.L. (m) 9.00	D.D.L. (m)	Yie	ld (L/s) Hole 0.25	Depth (m) 42.00	Duration (hr) 1.50	Salinity (mg/L) 90.00	
Drillers Log From (m) To (m) 0.00 0.30 5.00 9.00 34.00 39.00 39.00 42.00	g Thickness(m) Drillers 0.30 red t 4.70 red t 4.00 brown 25.00 basal 5.00 crack 3.00 basal	Description op soil lay shale t y basalt			A			Geological M Red Bands Red Clay I Brown Stre Basalt Cracked Basalt	laterial Bands eaks	Comme	ents		
Pumping 7 Pumping Test Type	Tests - Sui	mmari Duration (hr)	es S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Intake De	epth (m) Test Me	ethod	To Measure Wa	ter Level	To Measure Dischar	ge Tested By	
				(No Pi	umping Test	Summa	ry Details Fo	und)					
Pumping 7 Pumping Test Type	Tests - Rea Date	adings Fime (mins)	S.W.L. (m)	D.D.L. (m) (No P	Yield (L/s) umping Tes	Intake De t Readin	epth (m) Test Ma g Details Foi	ethod und)	To Measure Wa	iter Level	To Measure Dischar	ge Tested By	
Chemical Treatment Chlorine	Treatment Method Airlift		Duration		Success								
Developm Method Air	ent Tir	ne Taken 0			Other Develop	pment Met	thod						
Remarks													
					*** End o	of GW3()1578 ***					N	

GW301886

License :30BL176614 Work Type :Well Work Status :(Unknown) Construct. Method :Other Owner Type :Private		Authorised Purpose(s) INDUSTRIAL	Intended Purpose(s) IRRIGATION
Commenced Date : Completion Date :20-Dec-1994	Final Depth : Drilled Depth :	5.00 m	
Contractor Name : Driller :			
Property : - OPAL CO GWMΛ : - GW Zone : -	VE RESORT	Standing Water Level : Salinity : Yield :	4.00 m 3.33 L/s
Site Details			
Site Chosen By	County Form A :FITZRO Licensed :FITZRO	Parish DY MOONEE DY MOONEE	Portion/Lot DP LOT 3 DP841017 LOT 200 DP 794312
Region : 30 - NORTH River Basin : Area / District :	COAST	CMA Map : Grid Zone :	Scale :
Elevation : Elevation Source :		Northing : 6653233 Easting : 513198	Latitude (S) :30° 15' 8" Longitude (E) :153° 8' 14"
GS Map :	AMG Zone :56	Coordinate Source : Property	Details Only
Construction Negative dept H P Component Type	ns indicate Above Ground Level;H-Hole;P-F From (m) To (m) OD (mm (No Co	Pipe;OD-Outside Diameter;ID-Inside Diameter;C-C) ID (mm) Interval Details Instruction Details Found)	Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity
Water Bearing Zones From (m) To (m) Thickness (m)	WBZ Type (No Water	S.W.L. (m) D.D.L. (m) Yield (I Bearing Zone Details Found)	./s) Hole Depth (m) Duration (hr) Salinity (mg/L)
Drillers Log From (m) To (m) Thickness(m) Drillers E	escription (No D)	Geological Mater rillers Log Details Found)	ial Comments
Pumping Tests - Sum Pumping Test Type Date	Duration S.W.L. (m) D.D.L. (m) Yield (hr)	(L/s) Intake Depth (m) Test Method To	Measure Water Level To Measure Discharge Tested By
	(No Pumping	g Test Summary Details Found)	
Pumping Tests - Rea Pumping Test Type Date Tin	dings ne (mins) S.W.L. (m) D.D.L. (m) Yield (No Pumpin	l (L/s) Intake Depth (m) Test Method To ng Test Reading Details Found)	Measure Water Level To Measure Discharge Tested By
Chemical Treatment Treatment Method	Duration Su (No Chemi	uccess ical Treatment Details Found)	
Development Method Time	Taken Other (No De	Development Method evelopment Details Found)	
Remarks			

*** End of GW301886 ***

GW301924

License · 30RI 1786	560			
Work Type :Bore Work Status :(Unknown Construct. Method : Owner Type :	1)	Authorised Purpos DOMESTIC STOCK	e(s) Intend DOMI STOC	ded Purpose(s) ESTIC K
Commenced Date : Completion Date :	Final Depth : Drilled Depth :	43.00 m		
Contractor Name :Unknown Driller :				
Property : - "BLAG GWMA : - GW Zone : -	CK'S "	Standing Water I Sal	Jevel : inity : Yield :	
Site Details				
Site Chosen By	C Form A :FI Licensed :F	ounty Parish ITZROY MOON ITZROY MOON	Portio NEE LOT 1 NEE LT 1 1	m/Lot DP I DP415405 DP 415405
Region : 30 - NOF River Basin : Area / District :	RTH COAST	CMA Map Grid Zone): 2: Scale :	
Elevation : Elevation Source :		Northing Easting	; :6654396 La g :512902 Long	titude (S) :30° 14' 31" gitude (E) :153° 8' 3"
GS Map :	AMG Zone :56	Coordinate Source	:Map Interpretation	
Construction Negative	depths indicate Above Ground Level;H-h	Hole;P-Pipe;OD-Outside Diameter;ID-Inside	Diameter;C-Cemented;SL-Slot Leng	th;A-Aperture;GS-Grain Size;Q-Quantity
H P Component Type	From (m) To (m)	OD (mm) ID (mm) Interval Details		
	(No Construction Details Found)		
Water Bearing Zone	25			
From (m) To (m) Thickness	s (m) WBZ Type	S.W.L. (m) D.D.L. (m)	Yield (L/s) Hole Depth (m)	Duration (hr) Salinity (mg/L)
	(No	Water Bearing Zone Details Found)	,	
Drillore Log				
From (m) To (m) Thickness(m) Drill	ers Description	Ge	ological Material Comr	nents
	(No Drillers Log Details Found)		
Dumning Tests - Si	ummariae			
Pumping Test Type Date	Duration S.W.L. (m) D.D.L. (m) (hr)	Yield (L/s) Intake Depth (m) Test Metho	od To Measure Water Level	To Measure Discharge Tested By
	(No P	umping Test Summary Details Foun	<i>d</i>)	
Pumping Tests - Re Pumping Test Type Date	eadings Time (mins) S.W.L. (m) D.D.L. (m) (No F	Yield (L/s) Intake Depth (m) Test Methe Pumping Test Reading Details Found	d To Measure Water Level	To Measure Discharge Tested By
<u> </u>				
CNEMICAI Ireatmer	IT Duration	Success		
	(No	Chemical Treatment Details Found)	
	(110			
Development				
Method	Time Taken	Other Development Method		
	(No Development Details Found)		
Remarks				

*** End of GW301924 ***

GW301925

License :30BL178661 Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary		Authorised Purpose(s) DOMESTIC FARMING	Intended Purpose(s) DOMESTIC FARMING
Owner Type : Commenced Date : Commencian Date :26 Nov 1003	Final Depth : 52.00	m	
Contractor Name :D.C. JACKWITZ Driller :1504 JACK	KWITZ, William Douglas		
Property : - "JHAJ'S" GWMA : - GW Zone : -		Standing Water Level : Salinity : Yield :	20.00 m
Site Details			
Site Chosen By	County	Parish	Portion/Lot DP
	Form A : Licensed :FITZROY	MOONEE	LT A DP 374980
Region : 30 - NORTH COAST River Basin : Area / District :		CMA Map : Grid Zone :	Scale :
Elevation : Elevation Source :		Northing : 665420 Easting : 512655	6 Latitude (S) :30° 14' 37" Longitude (E) :153° 7' 54"
GS Map : AMG Z	Cone : 56	Coordinate Source :	
Construction Negative depths indicate	Above Ground Level;H-Hole;P-Pipe;O	D-Outside Diameter;ID-Inside Diameter;C	C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity
H P Component Type 1 Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	From (m) To (m) OD (mm) 0.00 52.00 168 -0.30 52.00 160 26.00 51.00 160	ID (mm) Interval Details Rotary Air Glued; Seated on Bott PVC Class 9; Sawn; S	tom SL: .15mm; A: 3mm
From (m) To (m) Thickness (m) WBZ Type 26.00 27.00 1.00 35.00 38.00 3.00 47.00 50.00 3.00	e S.W	'.L. (m) D.D.L. (m) Yield	(L/s) Hole Depth (m) Duration (hr) Salinity (mg/L) 0.61 0.61 2.47
Drillers Log From (m) To (m) Thickness(m) Drillers Description 0.00 4.00 4.00 gravel and clay 4.00 6.00 2.00 shale 6.00 24.00 18.00 broken rock 27.00 35.00 8.00 broken rock 35.00 38.00 3.00 shale 38.00 47.00 9.00 basalt 47.00 50.00 3.00 broken rock 50.00 52.00 2.00 basalt	,	Geological Mat Gravel Shale Basalt Broken Basalt Shale Basalt Broken Basalt	terial Comments
Pumping Tests - Summari	es		
Pumping Test Type Date Duration (hr)	S.W.L. (m) D.D.L. (m) Yield (L/s)	Intake Depth (m) Test Method	To Measure Water Level To Measure Discharge Tested By
	(No Pumping Test	t Summary Details Found)	
Pumping Tests - Readings Pumping Test Type Date Time (mins)	S.W.L. (m) D.D.L. (m) Yield (L/s) (No Pumping Tes	Intake Depth (m) Test Method At Reading Details Found)	To Measure Water Level To Measure Discharge Tested By
Chemical Treatment	Duration Success		
	(No Chemical T	reatment Details Found)	
DevelopmentMethod AirTime Taken 1.00Remarks	Other Develo	pment Method	
Warning To Clients: This raw data has been supplied to t The data is presented for use by you at your own risk. Y	he Department of Land and Water Conse You should consider verifying this data be	ervation (DLWC) by drillers, licensees and fore relying on it. Professional hydrogeolo 119	l other sources. The DLWC does not verify the accuracy of this data. gical advice should be sought in interpreting and using this data.

GW302022

License :30BL178389 Work Type :Bore		Authorised Purpose(s) MONITORING BORE	Intendo MONIT	Intended Purpose(s) MONITORING BORE		
Work Status :(Unknown) Construct. Method : Owner Type :						
Commenced Date : Completion Date :30-Apr-1998 D	Final Depth :5.5rilled Depth :5.5	50 m 50 m				
Contractor Name : Driller : , Allv	IIL PTY LTD					
Property : - "ENGLANDS RD GWMA : - GW Zone : -	LANDFILL "	Standing Water Level : Salinity : Yield :				
Site Details						
Site Chosen By	County	Parish	Portion	/Lot DP		
	Form A : Licensed :RALEIGH	BONVILLE	LOT 2	1 DP864611		
Region : 30 - NORTH COAST River Basin : Area / District :		CMA Map : Grid Zone :	Scale :			
Elevation : Elevation Source :		Northing :6645 Easting :5070	i110 Lat 138 Longi	tude (S) :30° 19' 33" tude (E) :153° 4' 24"		
GS Map : AMG Z	Cone :56	Coordinate Source :				
P Component Type 1 Hole Hole	Above Ground Level;H-Hole;P-Pipe; From (m) To (m) OD (mm) 0.00 5.50	OD-Outside Diameter;ID-Inside Diameter	er;C-Cemented;SL-Slot Lengt	;A-Aperture;GS-Grain Size;Q-Quantity		
Water Bearing Zones						
From (m) To (m) Thickness (m) WBZ Typ	e S (No Water Be	aring Zone Details Found)	ield (L/s) Hole Depth (m)	Duration (hr) Salimity (mg/L)		
		, , , , , , , , , , , , , , , , , , , ,				
To (m) To (m) Thickness(m) Drillers Description 0.00 1.50 1.50 grey and brown 1.50 1.80 0.30 mottled yellow 1.80 2.60 0.80 grey silty clay 2.60 5.50 2.90 brown-yellow we dharder from d	clayey silt moist and firm brown and grey silty clay n with quartz gravel moist a bathered shale moist and sti .5m	Geological Grey Ban moist and firm Mottled- and stiff Grey Str iff becoming drier an Brown	Material Comm ds Spotted eaks	ents		
Pumping Tests - Summari Pumping Test Type Date Duration (hr)	ES S.W.L. (m) D.D.L. (m) Yield (L/:	s) Intake Depth (m) Test Method	To Measure Water Level	To Measure Discharge Tested By		
	(No Pumping T	est Summary Details Found)				
Pumping Tests - Readings Pumping Test Type Date Time (mins)	S.W.L. (m) D.D.L. (m) Yield (L/	s) Intake Depth (m) Test Method	To Measure Water Level	To Measure Discharge Tested By		
	(No Pumping 1	Sest Reading Details Found)				
Chemical Treatment						
Treatment Method	Duration Succes	55				
	(No Chemical	Treatment Details Found)				
Development						
Method Time Taken	Other Dev	elopment Method				
	(No Devel	opment Details Found)				
Remarks						

*** End of GW302022 ***

GW302055

Liconse -30BI 1781	27					
Work Type :Bore Work Status :(Unknown Construct. Method :Rotary Air Owner Type :	a)		Authorised Purpose(s) DOMESTIC IRRIGATION	Intend DOME IRRIG	e d Purpose (s) STIC ATION	
Commenced Date : Completion Date :10-Dec-19	Final Dep 096 Drilled Dep	th: 75.00 m	1			
Contractor Name :TANNER Driller :1701	DRILLING TANNER, Robe	rt Leslie				
Property : - " WILI GWMA : - GW Zone : -	BERFORCE'S "		Standing Water Level : Salinity : Yield :	3,000.00 mg/L 1.89 L/s		
Site Details						
Site Chosen By		County	Parish	Portio	1/Lot DP	
	F	orm A : censed :FITZROY	MOONEE	LT 1 D	P 366171	
Region : 30 - NOF River Basin : Area / District :	RTH COAST		CMA Map : Grid Zone :	Scale :		
Elevation : Elevation Source :			Northing :6653 Easting :5122	3270 Lat 255 Longi	itude (S) :30° 15' 7" itude (E) :153° 7' 39	
GS Map :	AMG Zone :56		Coordinate Source :			
Construction Negative H P Component Type 1 1 Casing P.V.C.	depths indicate Above Grour From (m) -0.30	nd Level;H-Hole;P-Pipe;OD- To (m) OD (mm) II 64.00 100	Outside Diameter;ID-Inside Diamete D (mm) Interval Details	er;C-Cemented;SL-Slot Lengt	n;A-Aperture;GS-Grain S	ize;Q-Quantity
Water Bearing Zone From (m) To (m) Thickness	95 5 (m) WBZ Type	S.W.L (No Water Bearin	(m) D.D.L. (m) Y g Zone Details Found)	ield (L/s) Hole Depth (m)	Duration (hr) Sa	linity (mg/L)
Drillers Log From (m) To (m) Thickness(m) Drill	lers Description	(No Drillers L	Geological .og Details Found)	Material Comm	ents	
Pumping Tests - Su Pumping Test Type Date	Ummaries Duration S.W.L. (m) (hr)	D.D.L. (m) Yield (L/s) I	nfake Depth (m) Test Method	To Measure Water Level	To Measure Discharge	Tested By
		(No Pumping Test S	Summary Details Found)			
Pumping Tests - Re Pumping Test Type Date	eadings Time (mins) S.W.L. (m)	D.D.L. (m) Yield (L/s) I (No Pumping Test.	ntake Depth (m) Test Method Reading Details Found)	To Measure Water Level	To Measure Discharge	Tested By
Chemical Treatmen	1t Duration	Success				
		(No Chemical Tre	atment Details Found)			
Development						
Method	Time Taken	Other Developm	nent Method			
		(No Developm	ent Details Found)			
Remarks						
Form A Remarks: I have had the bore drilled for about 6 years be	ut I have only had it working sir	nce the 10/12/96 through lack o	f money to buy the pump and get the e	letricity on.		
	-	*** End of	GW302055 ***			

GW302295

License :30BL140270 Work Type :Bore Work Status :(Unknown) Construct. Method :Rotary Air Owner Type : Commenced Date :	Final Denth -	Ai Di ST 64.00 m	uthorised Purpose(s) OMESTIC FOCK	Intended Pr DOMESTIC STOCK	urpose(s)
Completion Date :21-Aug-1990	Drilled Depth :	64.00 m			
Contractor Name :D C JACKWITZ Driller :1424 JA	CKWITZ, Douglas Char	les			
Property : - HOPWOOD'S GWMA : - GW Zone : -		S	Standing Water Level : Salinity : Yield :	38.00 m 0.50 L∕s	
Site Details					
Site Chosen By	Con Form A :RA Licensed :RA	unty LEIGH LEIGH	Parish BONVILLE BONVILLE	Portion/Lo LOT 45 DP LT 45 DP 2	t DP 264404 64404
Region : 30 - NORTH COA River Basin : Area / District :	ST		CMA Map : Grid Zone :	Scale :	
Elevation : Elevation Source :			Northing : 6644796 Easting : 506981	Latitude Longitude	e (S) :30° 19' 43" e (E) :153° 4' 21"
GS Map : AMO	G Zone :56	C	Coordinate Source :		
H P Component Type 1 Hole Hole Hole 1 1 Casing PVC Class 9 1 1 Opening Slots - Vertical	From (m) To (m) OI 0.00 64.00 0.00 64.00 0.00 64.00 52.00 64.00	ole;P-Pipe:OD-Outsi D (mm) ID (mr 168 150 150	de Diameter;ID-Inside Diameter;C-(n) Interval Details Rotary Air Seated on Bottom PVC; Sawn; SL: 150mi	Cernented;SL-Slot Length;A-Ap n; A: 3mm	perture;GS-Grain Size;Q-Quantity
From (m) To (m) Thickness (m) WBZ T 58.00 61.00 3.00 3.00 61.00 64.00 3.00 3.00	Гуре	S.W.L. (m)	D.D.L. (m) Yield () (L/s) Hole Depth (m) Dur 0.30 0.20	ation (hr) Salinity (mg/L)
To (m) To (m) Thickness(m) Drillers Description 0.00 1.00 1.00 SHALE 1.00 22.00 21.00 BASALT 22.00 26.00 4.00 FRACTURED BA 26.00 58.00 32.00 SOFT BASALT 58.00 61.00 3.00 BASALT 61.00 64.00 3.00 QUARTZ SPRING	ion SALT KLED IN BASALT		Geological Mate	rial Comments	
Pumping Tests - Summa Pumping Test Type Date Duratic (h	ries on S.W.L. (m) D.D.L. (m) r)	Yield (L/s) Intake	Depth (m) Test Method To	o Measure Water Level To 1	Measure Discharge Tested By
	(No Put	mping Test Sum	nary Details Found)		
Pumping Tests - Reading Pumping Test Type Date Time (min	gs s) S.W.L. (m) D.D.L. (m) (No Pu	Yield (L/s) Intake Imping Test Read	e Depth (m) Test Method To ding Details Found)	o Measure Water Level To	Measure Discharge Tested By
Chemical Treatment	Duration (No C	Success Chemical Treatma	ent Details Found)		
Development Method Time Taken	(λ	Other Development I No Development	Method Details Found)		

Remarks

Appendix B

Soil Landscape Groupings

Summary of Soil Landscape Groupings:								
Profile Abbreviation	Topography	Substrate Lithology	Vegetation	Land Use	Typical Soil Profile / Occurrence	Landscape Limitations	Soil Limitations	
Colluvial								
Suicide - su	Steep hills and dissected valleys	Late Carboniferous Metasediments	Partially cleared tall closed-forest & tall open-forest	Banana plantation	su1: 40cm dark brown friable (silty) loam; su2: 50cm brown clay loam; su3:100cm orange peda,I silty clay; su4: 100cm+ of well drained, stony, structured Red Earths & occasional Yellow Earths. Soil depth generally >100cm, may be >300cm.	Steep slopes, massmovement hazard High run-on High water erosion hazard Foundation hazard	Low - very low wet bearing strength, high organic matter, high permeability, slow - rapid permeability, and low fertility	
<u>Erosional</u> <u>Landscapes</u> Megan - me	Rolling low hills to hills with broad crests	2 Late Carboniferous metasediments	Tall open forest & tall closed forest	Banana plantations, urban development, and grazing	me1: 15-35cm brownish black earthy loam; me2: 5-40cm dark reddish brown pedal clay loam; me3: 60-75cm reddish brown pedal light clay; me4: moderately deep, well drained Red, Brown, and Yellow Podzolic Soils. Soil depth generally >120cm.	Steep slopes (localised) Mass movement hazard (localised) High water erosion hazard (localised) Foundation hazard (localised)	Low wet bearing strength, high organic matter (localised),strong to very strong acidity, stoniness (localised), high to extreme erodibility, low fertility and permeability, high aluminium potential, hardsetting surface (localised), high plasticity.	

Summary of Soil Landscape Groupings:								
Profile Abbreviation	Topography	Substrate Lithology	Vegetation	Land Use	Typical Soil Profile / Occurrence	Landscape Limitations	Soil Limitations	
Ulong - ul	Undulating to rolling low hills	Late Carboniferous metasediments	Tall closed-forest to tall open-forest	Urban development	ul1: 30cm dark brown crumbly loam; ul2: 80cm reddish brown, pedal loam; ul3: 100cm reddish brown clay to silty clay; ul4: 100cm+ reddish brown, pedal, mottled, light to medium silty clay (Red, Brown and Yellow Earths. Soil depth ranges 100cm-250cm.	Foundation Hazard Water erosion Hazard (localised) Steep Slopes (localised) High run-on (localised)	Low to very low wet bearing strength, high organic matter, slow to rapid permeability, strong to very strong acidity, low fertility, aluminium toxicity potential (localised), high erodibility, hardsetting soil.	
<u>Transferral</u> Landscapes								
Moonee - mo	Undulating rises, footslopes and drainage plains	Late Carboniferous metasediments	Extensively cleared tall closed-forest & tall open-forest	Beef cattle grazing and improved pastures	mo1: 32cm brownish grey, silty clay loam to silty clay; mo2: 15-75cm light brown, mottled, silty light clay; mo3: >50cm light grey, mottled, gravelly light clay (moderately deep to deep , poorly drained Humic Gleys). Soil depth generally >100cm.	Seasonal waterlogging Foundation hazard Water erosion hazard (localised) Permanently high water tables (localised)	strength, high to very high erodibility, slow permeability, strong to very strong acidity, high aluminium toxicity potential, low fertility, strong sodicity.	

Summary of Soil Landscape Groupings:							
Profile Abbreviation Alluvial	Topography	Substrate Lithology	Vegetation	Land Use	Typical Soil Profile / Occurrence	Landscape Limitations	Soil Limitations
Landscapes Coffs Creek - cc	Level to gently undulating floodplains, inset floodplains and terraces	Quaternary Alluvium	Extensively to completely cleared , tall open-forest and open-forest	Urban or industrial development, grazing. Poorly drained areas remain unchanged.	Soils patterns are complex due to alluvial nature cc1: 20cm dark brown, loamy sand; cc2: 60cm brownish black, weakly pedal loam; cc3: 25cm brownish black clay loam; cc4: 20cm brown , weakly pedal, silty clay loam to light clay; cc5-cc7: >50cm yellowish brown, massive light clay (moderately deep to deep, moderately to well drained, Yellow Podzolic soils and Red Podzolic Soils) cc8: >100cm greyish, yellow brown, weakly pedal sandy loam (deep, moderately well drained alluvial soils). Soil donth may accord 200cm	Flood hazard Foundation hazard (localised) Seasonal waterlogging (localised) Permanently high watertables (drainage plains and lower reaches of floodplains)	Low wet bearing strength, high organic matter, very slow to rapid permeability (localised), low fertility, strong acidity, aluminium toxicity potential (localised).
Dairyville - da	Level to undulating alluvial terraces and floodplains	Quaternary Alluvium	Completely cleared closed- forest	Cattle grazing on improved pastures	Soils patterns are complex due to alluvial nature da1: 80cm dark brown, friable, silty loam (overlying stones, cobbles and gravels); da2: brown, moderately pedal, silty clay loam; da3: 30cm brown, moderately pedal, fine, sandy clay loam; da4: 40cm brown, moderately pedal clay loam; da5: >50cm brown, silty light clay; da6: >43cm dark brown, weakly pedal, sandy light clay. Soil depth generally >150cm.	Water erosion hazard (localised) Foundation hazard (localised) High run on hazard (localised) Flood hazard (localised) Seasonal waterlogging (localised) High watertables (localised)	Very low wet bearing strength, high erodibility, high organic matter, strong to very strong acidity, aluminum toxicity potential, low fertility,

Summary of Soil	Summary of Soil Landscape Groupings:							
Profile Abbreviation	Topography	Substrate Lithology	Vegetation	Land Use	Typical Soil Profile / Occurrence	Landscape Limitations	Soil Limitations	
<u>Swamp</u> Landscapes								
Newports Creek - np	Low, level to gently undulating coastal back barrier floodplains	Pleistocene estuarine sediments	Extensively cleared closed- forest	Residential and Industrial subdivisions	np1: 50cm dark brown, weakly pedal clay loam; np2: 50cm greyish yellow brown whole coloured light clay; np3: 80cm yellowish brown, mottled Pleistocene clay; np4: >90cm grey, mottled Pleistocene clay (deep imperfectly to poorly drained Yellow Podzolic Soils); np5: 40cm dull, yellow, massive silty clay (deep imperfectly to poorly drained Yellow Podzolic Soils). Soil depth generally >150cm.	Flood hazard Foundation hazard Seasonal waterlogging Water erosion hazard (localised)	Low to very low wet bearing strength, very high organic matter, strong to very strong acidity, strong sodicity, high erodibility, slow permeability, high aluminium toxicity potential, low fertility.	

Appendix C

DIPNR Groundwater Status Report

poc 3

Coffs Harbour Local Government Area Groundwater Status Report & Map Notes



COFFS BYPASS 1093.65.CG RECIEVED 18/4/02 BOC

Technical Report No. NC3/98 Prepared by John Williams Regional Hydrogeologist North Coast Region September, 1997

Executive Summary Coffs Harbour Local Government Area Technical Report and Map Notes.

Background

Groundwater is an important resource in NSW. It makes a substantial contribution as a source of water for the maintenance of aquatic environments, and is an integral component in the long-term management of water resources on both regional and State levels. Groundwater is an important commodity, and a vital component of both urban and rural industries, and our economic and social framework.

The need to properly manage groundwater is, therefore, directly related to the value of this resource and the risk of devaluation or destruction of the resource or related environments through over exploitation or contamination. The risks of groundwater resource degradation are real and significant, and in some areas of the State the effects of degradation are beginning to translate into economic and environmental losses.

Where there is concentrated human activity there is usually contaminated groundwater. Contamination can reach the watertable directly through constructions, such as pits, bores, trenches and tanks; or indirectly through the soil. Once in the watertable groundwater moves laterally and shallow aquifers generally discharge into adjacent streams and springs.

Policies/Programs/Regulations

The NSW Government and the community recognise the need for a coordinated

approach to the improved management of groundwater. This is best achieved through implementation of the State Groundwater Policy Framework Document and its Component Policies. Together these documents make up the NSW State Groundwater Policy. The policy is consistent with NSW Government directions for natural resource management.

Why was it developed?

The preservation of groundwater quality and yield is of paramount concern. Under statewide natural resource policies currently being introduced, the DLWC, Environment Protection Authority, other agencies and government ensure will that local groundwater contamination and pollution is Integral to this regulatory minimised. process is that the beneficial use of aquifer systems as well as their vulnerability to pollution and protection measures need recognition.

At the request of Coffs Harbour Council, the DLWC has produced this groundwater status report in conjunction with a groundwater availability map and groundwater vulnerability map to aid council in making informative decisions in town planning.

Proper groundwater management guidelines need to be developed at an early stage if preservation of sensitive ecosystems and groundwater quality & quantity are to be maintained.

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1. INTRODUCTION

With the Coffs Harbour local government area (CHLGA) experiencing a rapidly increasing population, the increasing value of groundwater and the connection with surface water leads to concerns of best management practices. The community's attitude toward groundwater management has changed considerably during the past decade with both the DLWC, Council and the community now recognising the need to sustain the resource in the long term. The Department of Land and Water Conservation (DLWC) is responsible for the preservation of the State's water resources and at the request of Coffs Harbour Council, have investigated the various attributes of the physical and chemical environment in the CHLGA to develop both a groundwater vulnerability map and a groundwater availability map as well as a number of special purpose soil landscape derivative maps. It is envisaged that these maps will provide a useful management tool in the planning of future developments within the CHLGA and help to provide long-term sustainability of the groundwater resource. This is achieved by directing potentially polluting industries towards areas where natural barriers exist thus reducing the potential for groundwater contamination. The location, boundary and bore distribution for the CHLGA is shown in Figure 1.

2. PHYSIOGRAPHIC FEATURES

2.1 Stream Network

The boundaries of CHLGA lie within two catchments; i) Clarence River Valley, and ii) Bellinger River Valley. There are also a number of minor coastal streams extending from Coffs Harbour to Arrawarra that drain the coastal strip.

The Nymboida, Orara and Mitchell Rivers are the predominant tributaries that drain the southern section of the Clarence Valley and the eastern section of the Coffs Harbour tectonic block. These tributaries flow in a generally north - north west direction and have carved steep valleys out of the mountains and occasionally there exist small pockets of flat to undulating country. Rugged terrain and steep slopes separate these rivers from each other. East of Orara River the country tends to be more subdued and less rugged.

2.2 Climatic Features

2.2.1 Rainfall & Evaporation

In the CHLGA, the distribution of rainfall is seasonal and largely controlled by the topography. The highest precipitation of about 220 mm/month occurs in late summer-early autumn and the lowest values of about 45 mm a month occur in the winter months. Coffs Harbour has a median annual rainfall of around 1565 mm (Atkinson & Veness, 1981). Evaporation is highest during the months of September to March with December averaging 6.7 mm/day (Mackie Martin & Associates, 1993).

2.2.2 Temperature

The entire valley experiences warm to hot conditions during the period from November to April with an average summer maximum temperature of 26.3° C, however temperatures will vary with elevation and proximity to the coast. Mild to warm days occur for the remainder of the year with minimum winter temperatures of 7.8° C (Atkinson & Veness, 1981). Frost occurs everywhere in winter except along the coastal strip.

1


2.3 Soils

Three distinctly different soil/geomorphic associations can be recognised in the CHLGA and are frequently identifiable by their relationship to terrain features; i) Coastal Sands, ii) Alluvial Soils, and iii)Bedrock Soils (Atkinson & Veness, 1981). Milford H (in prep) Soil landscapes of the Coffs harbour 1:100 000 Sheet, DLWC Sydney.and separate it into Aeolian landscapes, alluvial landscapes and the rest

2.3.1 Aeolian Landscapes

These soils have sandy textured profiles, low nutrient status, highly erodible and have high permeability. The Holocene dunes, beaches and estuarine flats have little or no soil profile development and drainage depends on local relief.

2.3.2 Alluvial Landscapes

These soils are found on fluvial and estuarine sediments derived from the nearby uplands. Yellow Earths comprise the major part of the geomorphic floodplain, Alluvial Loams and Gravels are typically found on the modern inset floodplain, Red Brown Loams on a terrace and Humic Gleyed Silts in the swamps.

2.3.3 Bedrock Landscape

The soils have a commonly weakly structured loamy A horizon, a moderately structured light B horizon, red colour, moderate to free drainage, good soil depth, moderate to high natural fertility, low shrink-swell potential and low erodibility. Soils that overlie the Clarence Valley Sedimentary Rocks are typically Grey-Brown Podsolic Soils and Yellow Podsolic.

2.4 Regional Geology and Geography

The geology of CHLGA comprises rocks of both the most southern portion of the Clarence-Moreton Basin, the eastern section of the Coffs Harbour tectonic block, and a small portion of the Nambucca Block in the south eastern corner. Quaternary alluvium deposits occur along the major streams of the area and along the coastline.

2.4.1 Coffs Harbour Tectonic Block

The Coffs Harbour Block (CHB) underlies the majority of the study area and comprises Late Carboniferous metasediments and is overlain by the Mesozoic Clarence - Moreton Basin to the north. As indicated on the Dorrigo-Coffs Harbour 1:250 000 Metallogenic Series, the CHB is separated from the Dyamberin Block to the west by the Demon Fault and the east west trending Bellingen Fault system marks the southern boundary with the Nambucca Block. Within the CHB, the Late Carboniferous metasediments comprise the Coramba Beds to the north, the Brooklana Beds in the middle and the Moombil Beds to the south.

The Coramba Beds comprise a thick extensive sequence of turbidites as well as minor pelagic rocks and ocean floor basalt. The turbidite rocks are predominantly massive greywacke, laminated siltstone and mudstone with minor conglomerate derived from a felsic to intermediate volcanic chain. These beds are distinguished from the Brooklana Beds, which they conformably overlie, by a predominance of sandstone over siltstone and mudstone. These beds extend northward from Coffs Harbour and typical exposures can be observed along most of the headlands north to Arrawarra.

The Brooklana Beds consist of thinly bedded siliceous mudstone and siltstone with rarer sandstones. Bedding thickness can vary from one centimetre to several metres thick and are commonly interbedded with lighter coloured, more siliceous rocks which may be finely laminated. They extend from the Bellinger Fault to a line drawn from Coffs Harbour to Lowana (Atkinson &

Veness, 1981). The Moombil Beds are interpreted to be the oldest rocks of the CHB and comprise black massive siltstone with minor greywacke and granule conglomerate.

The origin of the CHB is interpreted as an accretionary complex associated with a subduction zone once active on the eastern margin of Australia. A series of accretionary prisms developed when the trench fill sediments (turbidites), and some pelagic sediments (chert and jasper) and underlying oceanic crust (meta-basalt) were scraped off from the descending oceanic plate and subsequently deformed.

In all there have been three periods of structural deformation affecting the Coffs Harbour Block resulting in tight folding of rock layers, steeply dipping bedding planes and cleavage planes (Dept. of Mineral Resources, 1992). The stress exerted on the rocks during structural deformation have caused the rocks to undergo dyanothermal metamorphism with the degree varying from prehnite-pumpellyite to lower greenschist facies. The regional strike of both bedding and cleavage in the CHB is predominantly west-northwest, however changes to a northerly direction near Red Rock (Dept. of Mineral Resources, 1992).

2.4.2 Clarence-Moreton Basin

The basin is a north-south-trending structure containing mostly unfolded Middle Triassic to Early Cretaceous sediments and minor volcanics. The drainage pattern of the main tributaries of the Clarence flow in a northwest direction. Haworth and Ollier (1992) provide evidence to suggest that the Clarence once flowed in a northwest direction connecting onto the Condamine River just across the Continental Divide. In Late Triassic times, terrestrial sediments began to fill the subsiding Clarence-Moreton Basin and continued through the Jurassic and probably Cretaceous era. Eroded material from the CHB provided a source of sediment to fill ancient valleys in the southern part of the basin. With time, thick sequences of sedimentary material accumulated covering and unconformably overlying rocks of the CHB. Large scale sedimentation in the Basin ended about 80 My ago. At about this point in time, seafloor spreading of the Tasman Sea commenced and continued until about 60 My ago. Haworth and Ollier (1992) state that an axis of uplift associated with the opening of the Tasman Sea developed parallel to and inland of the continental margin. Eastern Australia consequently had a new continental edge and coastline with the initiation of coastward drainage. Table 1 presents a summary of the stratigraphic subdivisions of the Clarence-Moreton Basin. The Department. of Mineral Resources (1992) provides a more detailed description of the stratigraphic units.

Age	Stratigraphic Unit	Lithology	Depositional Environment	Thickness
Middle - Late Jurassic	Kangaroo Creek Sandstone	Quartz arenite, conglomerate	Terrestrial	150m
Middle Jurassic	Walloon Coal Measures	Claystone, lithic sandstone, coal, minor ironstone	Terrestrial	600m
Early Jurassic to Late Triassic	Bundamba Group	Conglomerate, quartz-lithic sandstone and minor siltstone	Terrestrial	?600m
Middle Triassic	Nymboida Coal Measures	Quartz-lithic sandstone, siltstone, conglomerate, coal rhyolitic tuff, basalt	Terrestrial	100m

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2.4.3 Upper Nambucca Block

The south eastern corner of the CHLGA is underlain by the Bellingen Slate, a stratigraphic unit of the Nambucca Block. The Bellingen Slate, as indicated on the Dorrigo-Coffs Harbour 1:250 000 Metallogenic Series, is dominated by Early Permian age dark micaceous slate, lithofeldspathic sandstone and minor conglomerate. The provenance of these rocks are principally a quartz-rich

volcanic terrain which has subsequently undergone low-grade regional metamorphism (Dept. of Mineral Resources, 1992).

3. STATUS OF THE GROUNDWATER RESOURCE

3.1 The Occurrence of Groundwater

In recent years many bores and excavations have been constructed in the CHLGA and groundwater is becoming a more widely used water resource. It is however often overlooked that the surface water and groundwater resources are closely related. Due to the delay time between recharge from precipitation and discharge, groundwater often sustains flow in streams and creeks during extended dry periods until the drought is broken. Thus during dry periods, considerable recharge to the Nymboida, Orara, Mitchell and Bellingen Rivers occurs from the enveloping Carboniferous and Jurassic rocks.

As rain falls on to the land surface, a percentage of rainfall infiltrates the ground surface, depending largely on the climatic features such as annual rainfall, air temperature and evaporation. The percentage of rainfall that infiltrates to the water table will vary with the rainfall event. During low intensity rainfall events, most rainfall infiltrates or is lost to evapotranspiration and there is little runoff. In high intensity events, direct runoff occurs after the soil profile has become fully saturated. Secondary recharge results from topography, surface water, soil and geological characteristics.

Infiltrating water passes through the soil profile to the watertable or seeps along an impermeable interface to discharge down gradient, contributing to the base flow of streams. Some of the water that reaches the water table percolates further to the deeper aquifers within the consolidated rocks. However, the deeper aquifers are likely to have a slower rate of recharge and caution should be taken as yields and water levels can drop significantly after sustained pumping. Close monitoring of water levels should be undertaken and groundwater users may need to rely on more than one bore (with bores spread well apart) to obtain long term sustainable supplies.

In the CHLGA, groundwater occurs in all the rock formations to varying degrees with the greatest supplies being encountered in the more highly fractured and structurally deformed Carboniferous rocks. Generally the deeper a bore is drilled the more water bearing zones are intersected, thus slight increase in yields are likely to be obtained by deeper bores. At present, most groundwater pumpage in the fractured rocks and alluvium is from shallow aquifer zones less than 30m from the surface.

Individual property groundwater assessments can be obtained from the Department's Regional Hydrogeologist at Grafton or from the Hydrogeology Unit in Parramatta. Arrangements to obtain Departmental advice should be made through the North Coast Regional Office at Grafton.

3.2 Previous Groundwater Work

In April 1987, at the request of the NSW Public Works Department, the Dept. of Water Resources (DWR) conducted a groundwater survey of the unconsolidated sediments south of Sawtell to investigate the potential for an emergency groundwater supply. Subsequent investigations followed in 1991. In February 1993, the DWR undertook a detailed investigation of the Bonville sand dune aquifer. The investigation involved a mini wellfield consisting of 8 spearpoints and one bore. Using geophysical, geochemical and groundwater modelling, the estimated annual recharge, aquifer storage, transmissivity and drawdown levels were calculated. The results indicated that the sand dune aquifer at Bonville is capable of yielding the required 1000 ML over a six month period.

Mitchell McCotter & Associates Pty Ltd (November, 1992) developed an Environmental Impact Statement for the proposed borefield. Overall it was concluded that the development of the borefield will have a minimal effect on the overall catchment management objectives and initiatives.

Mackie Martin & Associates Pty Ltd (June, 1993) completed a pump test analysis on a fractured rock aquifer in the Moonee area. The water was observed to be of marginal quality (<1500 mg/L) but increased after sustained pumping to 1700 mg/L and contained elevated iron and manganese levels. The report concluded that in order to achieve a supply of 5 ML/day, 7 to 10 bores spaced well apart would be required. It was also observed that the groundwater quality was unsuitable for drinking purposes and the aquifer was in an area susceptible to pollution from surface activities, ie. septic tanks.

Mackie Martin & Associates (MM&A) Pty Ltd (August, 1993) carried out an analysis of the regional groundwater resources for Coffs Harbour Shire Council. The investigation utilised 149 bore records stored on the DLWC groundwater database to determine aquifer hydraulic properties and define prospective areas for an additional water supply scheme. The report identified several areas containing significant bore yields however, elevated iron levels were common at the majority of sites due to the nature of the bedrock.

In November 1993, the DWR raised a number of concerns over the accuracy of the MM&A assessment of the Moonee Area. The DWR indicated that the Moonee Area could not satisfy council requirements and that further investigations were not justified.

3.3 Groundwater Chemistry

The quality of natural groundwater within these aquifers may be influenced by many factors including the chemical composition of rain water, aquifer media and pollution associated with human activity. Soluble minerals from the sediments accumulate with in the groundwater as it flows through a particular aquifer zone. Aquifers that mostly consist of mineral quartz, such as sands, gravels, sandstones and quartzite, do not add much salt to the water (McKibbin, 1995). The metamorphosed clay and shale sedimentary sequences of the CHB were originally deposited in a marine environment, thus a high level of residual salt (NaCl) has been incorporated within the sediment during the time of consolidation.

Plotting the hydrogeochemical results on a trilinear diagram indicates a strong sodium cation trend. The sodium adsorption ratio (SAR) was calculated to assess the suitability of the water for irrigation. Excessive sodium in irrigation water can adversely affect soil structure. The magnitude of this effect can be related to the relative proportions of sodium ions to calcium and magnesium ions in irrigation water. If water used for irrigation is high in sodium and low in calcium, the cation-exchange complex may become saturated with sodium. This can destroy the soil structure owing to dispersion of the clay particles. A low SAR (2 to 10) indicates little danger from sodium; medium hazards are between 7 and 18, high hazards between 11 and 26, and very high hazards above that (Fetter, 1994). SAR values for samples collected from the CHB ranged from 0.9 to 9.3.

The groundwater quality can also vary with respect to the overlying soil composition. The soil has the capability to generate relatively large amounts of acid and to consume much of the dissolved oxygen in the infiltrating water. Through the decay of organic matter via oxidation, carbon dioxide gas generated can then react with water to produce carbonic acid (H₂CO₃). Carbonic acid can dissociate by transferring hydrogen ions to produce bicarbonate (HCO₃⁻), which is the dominant carbonate species over the normal pH range of groundwater. Groundwater chemical analysis carried out on bores within the Carboniferous age Brooklana and Coramba Beds indicate that the major anion with in the upper zone of the shale rocks is bicarbonate. This indicates that the upper zone is characterised by active flushing through relatively well leached rocks that result in low

total dissolved salt concentrations. Chemical analysis of the major ions from deeper aquifers identify chloride as the dominant anion. The source of the chloride is from the residual salt and indicates there has been a lower level of flushing as compared to the shallower aquifers.

The groundwater quality in all basalt layers is very good although only sparse information is available on the deeper aquifer zones. Groundwaters are typically of fresh quality. However, the basalts contribute calcium and magnesium salts to the groundwater. Water that contains high levels of dissolved calcium or magnesium salts are described as being hard. In domestic use, the calcium and magnesium will react with soap and form insoluble scales that clog pipes. Groundwaters with a high hardness are still very good quality for stock, domestic, horticulture and general farming purposes. For further information on hardness, the DLWC has a Water Environmental Laboratory at Arncliffe, NSW. It is recommended for groundwater users that rely on this resource for domestic or irrigation purposes to have the water tested for the major ions to assess the suitability of the water for the desired purpose.

3.4 Groundwater Availability

As of 01/09/96 there are 581 licensed bores within the CHLGA. There are also likely to be a large number of bores which are unlicensed and therefore not recorded. Groundwater within the CHLGA can be categorised into three broad geological features. These include 1) the unconsolidated sediments (beach and sand dunes plus the Quaternary alluvium), 2) the Carboniferous age fractured rocks of the Coffs Harbour Block (Coramba Beds, Brooklana Beds and Moombil Beds) together with Permian age Nambucca Block (Bellingen Slate), and 3) porous Mesozoic age sedimentary rocks (Kangaroo Creek Sandstone, Walloon Coal Measures, and Bundamba Group).

3.4.1 Unconsolidated Sediments

The unconsolidated sediments in the CHLGA are generally quite shallow and discontinuous, offering little potential for large supplies of groundwater. The coastal streams along this section of the coastline do not extend into the highlands forming the New England Plateau, and they do not have the physiographic features of the larger valleys. The unconsolidated material along this section of the coastline is interpreted as having been predominantly deposited under estuarine conditions with scattered beach and dune deposits.

Between Mullaway and Moonee Beach, the sediments consist mainly of brown and grey sands, silts, and clays underlain by siltstone followed by basalt. Private bore yields are low (<0.3 L/s) and are of good to marginal quality, however most bores are drilled in excess of 10 metres to intersect shallow aquifers within the bedrock where greater yields are achieved. Further south, around the town of Coffs Harbour, lithological bore logs indicate the sediments comprise more clays and muds with occasional shelly bands, reducing the overall permeability.

To date the only prospective areas identified include a sand and gravel aquifer south of Bonville, situated between Pine Creek and the coast. This aquifer was identified by the Department of Water Resources during exploration drilling in 1992. The bore yields 13 L/s of good quality water from an aquifer of fine yellow sand with some minor interbeded clays before grading into marine clays at a depth of 10 metres. Other exploration bores nearby intersected similar lithological horizons however only yielded 2.5 L/s and 6.6 L/s.

Around the township of Aurania, the DLWC records show two private bores that yield 10 L/s and 16.5 L/s from a shallow gravel aquifer. These bores and others are located within close proximity to the Orara River which is most likely to be acting as a recharge source. Historical records of the groundwater chemistry show typically the water has very low salinity values, is slightly acidic (pH = 6) and typically has very low ion concentrations. The major cation within this area is sodium

whilst the dominant anion is bicarbonate. Calculated SAR values are typically low (less than 10) and of low hazard.

3.4.2 Fractured Rocks

The metamorphic rocks of Coffs Harbour Block are typically thought to have a low porosity as they are principally composed of fine grained sedimentary material that that have undergone low grade metamorphism forming interlocking crystals. The tectonic stresses exerted on the CHB during structural deformation have caused folding and faulting increasing the porosity of the rocks. Physical and chemical weathering can also increase the rock porosity and the weathering is often more intense along the fracture surface where a plane of weakness exists. It can therefore be difficult to definitively class the groundwater potential of these rocks as the recorded bore yields can change considerably over short distances.

The best potential for high bore yields occur in regions where the bedrock is deeply weathered and fractured. Areas that exhibit deep weathering profiles tend to have increased bore yields as a result of an increased permeability. It is the ability of the weathered zone to transmit water and its ability to store water that constitutes the most significant hydrologic properties. A large proportion of the bores drilled in the CHB intercept water bearing zones in the weathered portion of the rock.

The CHB as a groundwater resource is generally used for stock watering and supplementing domestic requirements where suitable. The rock strata exhibits a secondary porosity consisting of tight discontinuous fractures that gives a minimal increase in permeability. Areas that have undergone structural deformation as shear zones create groundwater pathways allowing a greater yield to be obtained. Most common bore yields are around 0.5 to 1.0 L/s with occasional supplies up to 5 L/s. The groundwater is generally slightly acidic with a low salinity value. To better describe the groundwater potential of the CHB, it has been divided into stratigraphic units as defined on the Dorrigo - Coffs Harbour 1: 250 000 Geological Series Sheet.

As mentioned earlier, the south eastern corner of the CHLGA is underlain by the Bellingen Slate, a stratigraphic unit of the Nambucca Block. The Bellingen Slate is a low-grade metamorphic sequence and as such has been grouped within the fractured rock classification.

3.4.2a Coramba Beds

Between Corindi Beach and Woolgoolga there are only a small number of bores which are generally licensed for domestic purposes. Good quality water with bore yields typically less than 1 L/s can be obtained at shallow depths. Most bores in this area are drilled through the shale sequences and into the underlying oceanic basalt to a depth of around 10 - 15 metres.

Between Woolgoolga and Moonee Beach good quality water is obtained at variable depths, however most bores intersect either a basalt or fractured shale aquifer at about 20 to 30 metres depth. Yields are typically around 1 L/s although higher yields can be achieved from deeper bores drilled to intersect two or more aquifers. The water quality is likely to deteriorate with depth from the surface. The DLWC records indicate along the northern part of Sandy Beach individual bores have obtained yields of 6 L/s and 19 L/s from a weathered and fractured shale sequence. Other areas that have obtained small irrigation supplies occur to the north west of Moonee Beach within a fractured basalt aquifer. An analysis of water from a bore north of Sandy Beach shows a slightly elevated electrical conductivity (EC) value of 1160 uS/cm, a pH of 6.65, a total calcium value of 11.62 mg/L and a calculated SAR value of 9.0. Similarly an analysis of water from approximately 2.5 kilometres west of Dammerels Head shows a slightly elevated EC value of 1260 uS/cm, a pH of 7.2, a total calcium value of 44.1 mg/L and a calculated SAR value of 4.82.

To the west around Nana Glenn and Coramba, yields of 0.5 L/s are typical with most bores drilled 15 to 20 m in depth. Yields in excess of 2 L/s have been obtained from the deeper shale aquifers east of the Orara River near the tributaries Kalbury Creek and Poperaperan Creek. Further west there are very few bores however a private bore at Lowanna yields 3 L/s of good quality water.

South of Moonee Beach to Coffs Harbour there is a reasonable distribution of bores providing stock, domestic and garden supplies with yields varying from 0.1 to 7 L/s. Bores drilled to a depth of about 40 m typically intersect two to three aquifers, each aquifer yielding about 1 L/s. To the west of the Pacific Highway within the more elevated areas, there are fewer bores and only domestic supplies of around 0.5 L/s are usually obtained. The water is of good quality but is observed to deteriorate with depth. Measured pH values vary from 5.8 to 6.7 and have sodium concentrations around 45 - 110 mg/L. Calculated SAR values within this areas vary from 1.1 to 4.5.

3.4.2b Brooklana Beds

South of Coffs Harbour, around North Bonville and Boambee there is a dense concentration of private bores with the majority licensed for domestic purposes. Good quality water, similar to the Coramba Beds, occurs at shallow depths, however bore yields are typically low, varying between 0.1 and 1 L/s. Around the township of Boambee there are about 70 licensed bores and during extended dry periods there is likely to be some interference effects between bores when excessive pumping occurs. An analysis from a shallow shale aquifer shows an EC value of 270 uS/cm, a pH of 6.3, a total calcium value of 16.4 mg/L and a calculated SAR value of 1.4.

The highest recorded bore yield within this stratigraphic sequence, as indicated on the DLWC database, is 5 L/s from a private construction near Sawtell. It is expected that the quality of the water would be similar to other areas, although variations are to be expected as a result of differing rock types and other factors. Water analysis from a shallow weathered shale aquifer shows an EC value of 530 uS/cm and a pH of 6.5.

3.4.2c Moombil Siltstone

This stratigraphic unit occupies only a small portion of the CHLGA and there is only a limited number of bores for which information is available. Bores extracting groundwater from this unit occur at Crossmaglen, within the upper reaches of Bonville Creek. The Department's records indicate a number of private bores extract 0.5 L/s of good quality groundwater from a meta-basalt aquifer. The permeability of the meta-basalt is influenced by the degree of fracturing and the inter-connection of vesicular bubbles formed during cooling & crystallisation of the magma.

3.4.2d Bellingen Slate

Where the Bellingen Slate occurs, bore yields are typically low (0.5 L/s) with most bores drilled tapping aquifers between 15 to 25 m. The water is of good quality (TDS: 500 - 1000 mg/L) due to active flushing of the weathered zone but is likely to deteriorate with greater depth of the aquifer. The maximum recorded yield is 2 L/s located approximately 2 km south west of Bonville. The township of North Bonville lies on the CHB and is geologically separated from Bonville by the Crossmaglen Fault. Around Bonville, numerous low yielding domestic bores have been constructed with most bores extracting water from one or more shale/slate aquifers to obtain yields of around 0.5 to 1 L/s. The predominance of bores are drilled 20 to 30 metres in depth.

3.4.3 Porous Rocks

Sedimentary rocks are formed from sediments through a process termed diagenesis. This involves compaction from the weight of overlying materials and binding of individual grains by physiochemical reactions. The sedimentary rocks of the Clarence catchment were formed by these processes. The rocks are fractured to some degree from the release of pressure during erosion of

the overlying material. There are few bores drilled within the porous sedimentary rocks within the CHLGA. For completeness of the report, a summary of their groundwater potential is provided with the information given having been largely sourced from McKibbin (1995).

3.4.3a Walloon Coal Measures

Groundwater in the Walloon Coal Measures mostly occurs in joints, bedding planes, fractures and porous sequences. The aquifer is mostly confined, with low to medium permeability. Bore yields commonly range from 0.5 to 5 L/s of good quality water.

3.4.3b Bundamba Group

The Bundamba Group is a low yielding and low salinity aquifer system with very few bores tapping the groundwater resource. Bore yields are mostly less than 0.5 L/s but range to 2.5 L/s. The maximum thickness is believed to be approximately 600 m, which indicates the potential for increased yields with greater bore depths.

3.4.3c Kangaroo Creek Sandstone

The Kangaroo Creek Sandstone obtains its name from the prominent sandstone escarp:nents exposed by Kangaroo Creek in the Nymboida area (Drury, 1982). This unit comprises quartz sandstone with minor conglomerate horizons and offers the best potential of the Clarence River Valley sedimentary rocks for a low salinity groundwater resource. Groundwater can be found in the pores between grains (primary porosity) as well as in fractures (secondary porosity). The water quality is typically good, however most bore yields are about 0.5 L/s. Higher yields can be obtained from weathered and fractured horizons.

4. DLWC Groundwater Availability Mapping

A methodology for preparing groundwater availability maps has been developed by the DLWC Centre for Natural Resources (CNR), Hydrogeology Unit. The method used to produce the GHLGA groundwater availability map has refined the traditional CNR methodology combining this information with special purpose soil landscape derivative maps (Milford, in prep) available for the local area.

Geology was used to define the three aquifer systems; unconsolidated sediments, porous rocks, and fractured rocks, in which groundwater commonly occurs. The major geological units of the regions were defined from published geological maps. The geology was provided in digital format by the Department of Mineral Resources, Armidale and incorporated into the DLWC Geographic Information System (GIS).

To give better definition within the unconsolidated sediments, special purpose soil permeability and soil thickness maps were used to indicate likely changes in groundwater availability.

A search of the existing groundwater information from the Department's groundwater database provided yield and salinity information on individual bores. An assessment of the dominant water quality and yield information for the area was made based on groundwater information from the database and hydrogeologic setting. Where specific bore or groundwater information was not available, interpolation between data points and general hydrogeologic assessment was used to classify particular geological units and areas. Where conflicting TDS data between bores was found, the median value was chosen. Local variations in water salinity can be expected due to isolated hydrogeologic conditions.

4.1 Suitability Classification

Groundwater was classified into one of four definitions based on individual bore TDS and EC water quality information and a general suitability index used in the State of the Environment

Report, Groundwater Sub-Chapter (DWR, 1995). This classification is based on the maximum concentration of salts for the intended purpose. It provides a general guide to the suitability of water for a particular use and may vary according to plant or stock type, soil type, nature and concentration of saline content, climate, duration of use and need.

Total Dissolved Salts (TDS)	Classification	Suitability
<500 mg/L	"fresh"	Suitable for stock domestic and
Ũ		irrigation purposes as well as municipal
		use.
501-1500 mg/L	"marginal"	Suitable for stock, domestic and some
Ū.		irrigation purposes.
1501-5000 mg/L	"brackish"	Stock water, suitable for dairy cattle,
		beef, cattle, horses and sheep.
> 5000 mg/L	"saline"	Limited stock use.

Aquifers were further classified according to whether they would yield greater than or less than 1.5 L/s, to a bore or well. A groundwater availability map has been prepared by the DLWC which shows the groundwater potential for the various aquifers (Figure 2).

5. VULNERABILITY MAPS -

5.1 Why Do We Need Them

Groundwater and surface water interact to control river flow. A typical "rule of thumb" for rivers and streams is that approximately 50% of the flow (volume) is groundwater derived (Sinclair Knight Merz, 1995). The DLWC considers that in order to maintain surface water quality, it is very important to limit particular land use activites that are located within close proximity to environmentally sensitive areas. If the groundwater is contaminated, then pollutants can relocate via an aquifer within the the underlying geology and discharge into nearby streams and rivers

With Coffs Harbour experiencing rapid urban expansion, it is imperative that sound environmental planning be implemented to manage the region's resources so that they can sustain their economic, social and environmental uses. Not only will vulnerability maps play an important role in planning, but in the long term can save millions of dollars since remedial works of contaminated aquifers are costly and often irreversible.

Part of understanding the degree to which an aquifer is vulnerable is knowing what activities pose the most serious threat of contamination. By limiting certain industries and their associated activities to areas consistent with the Department's guidelines, effective management policies can be implemented with the empathises on a sustainable groundwater resource.

Potential anthropogenic sources for metals and other contaminants include saw mills, garbage depot's, sewerage disposal sites, cattle dips, petrol stations., fertilised pastures, pesticides and herbicides & runoff from roads & buildings. Other pollutant sources include poultry farms, piggeries and any intensive farming practices. Significant landscape "capacitance" may be buffering adverse impacts that will become apparent only in the future as the buffer zone becomes exhausted. Nutrients and agrochemicals should be retained near the surface for degradation or uptake in the rhizosphere, rather than flushed through to the water table.





Figures 3 and 4 show two possible scenarios for potential contamination of adjacent surface water bodies via faulty septic tanks.



FIGURE 3. CONTAMINATION OF A SHALLOW PERCHED AQUIFER VIA A FAULTY SEPTIC TANK ON STEEP TERRAIN.

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FIGURE 4. CONTAMINATION OF THE SHALLOW GROUNDWATER ENVIRONMENT VIA A FAULTY SEPTIC TANK.

There are ways in which the community can reduce the environmental impacts of certain industries such as waste disposal sites. Through the use of recycling and segregation of waste into different types, better management of an area can be achieved. Whilst generally a waste disposal site may be considered unacceptable for a particular site, the removal of the potential contaminants and the initiation of recycling can reduce the volumes of waste and surface area. The EPA are currently undertaking a report on Waste Minimisation & Management Regulation with the vision that waste disposed per capita will be reduced by 60% by the year 2000 (compared to 1990). The draft guidelines adopt a new waste system which classifies landfills into inert waste, solid waste & hazardous waste landfills.

Other initiatives include the concept of "designer" irrigation to provide a "best match" between the hydraulic properties of the land, the water requirements of the crop being grown, and optimal management and irrigation methods. This would prevent negligent wastage of water and the transfer of unnecessary contaminants into the groundwater, however the funds required to carry out the studies & the establishment cost are high.

5.2 Dlwc Groundwater Vulnerability Mapping

The methodology for groundwater vulnerability maps was developed by the DLWC Centre for Natural Resources, Hydrogeology Unit and has been adapted here to incorporate recently available local soils information. A groundwater vulnerability map has been prepared by the DLWC which shows the vulnerability classifications of the various aquifers (Figure 5). Previous vulnerability mapping projects for the North Coast Region and in other parts of the State carried out by the DLWC involved the overlay and index method, based on a modified DRASTIC technique developed by the United States Environment Protection Authority (EPA). The technique selected is usually based on levels of data, the scale of the area and the intended end use of the vulnerability assessment.

For the Coffs Harbour LGA, the DRASTIC technique was used. The technique involves the compilation of a number component maps comprising depth to water table, recharge potential, aquifer media, vadose zone media, soil media and topography that are overlain and combined to produce a single output map. Two of the input maps used in the analysis (Net Recharge and Vadose Zone) are each made from a composite of four other maps. Explanatory notes which describe how the map was developed is provided in Appendix 1.

5.3. Aquifer Vulnerability Classification In The Coffs Harbour LGA Area

"High" vulnerability ranked groundwater resources usually contain fresh quality groundwater, are both unconfined aquifers that are highly permeable and have a shallow depth to water table. Aquifers contained within the aeolian beach and sand dunes are typically found in this class. Characteristics deemed to be highly vulnerable include a water table less than 5 metres, combined with shallow soil depth and a high recharge component. Areas in the river alluvial belts also have a high groundwater vulnerability due to the shallow slopes, permeable soils and shallow water table. Aquifers within this class require a high level of protection.

"Moderately High" vulnerability aquifers for the CHLGA area would include the unconfined shallow alluvium along the coast and along the major rivers and its tributaries where the slope and depth to water table is minimal and a high groundwater recharge component exist.

"Moderate" vulnerable groundwater refers to areas associated generally with the meta-sediment terrain with moderate slopes and a depth to water table greater than 10 metres. These areas have a moderate recharge component.

"*Moderately-Low*" vulnerability for groundwater covers a considerable proportion of the map and would include much of the hilly or steep country associated with the meta-sediments located around the more remote areas. These areas generally have moderate soil permeability with depth to water often greater than 15 metres providing the conditions suitable for some attenuation of the contaminant prior to it reaching the water table.

"Low" vulnerability groundwater areas in general contain a considerable depth to the water table and low aquifer potential. There are a number of extensive areas classed as low vulnerability on the meta-sediments and Clarence - Moreton porous sedimentary rocks.

5.3.1 Level of Assessment Required

Groundwater vulnerability maps do not directly consider the chemical nature of the pollutant in assessing vulnerability, they are concerned only with the hydrogeological setting which makes the groundwater susceptible to contamination from a surface source.

When a development application is being prepared or considered it is important that the impact of the development on both surface and groundwater resources is assessed. It is important to know who uses these resources (beneficial use) and also the current water quality. Certain developments should not be allowed within highly vulnerable areas. Where such activities are proposed, significant engineering measures would be necessary to minimise the risks of pollution.

The following Table, modified after AWRC, Draft Guidelines for Groundwater Protection, 1992, is a guide to the amount of groundwater assessment required for a development that requires consent in either of the five aquifer vulnerability classes.

Vulnerability
Classification

Low

Groundwater Contamination Assessment Report

A desk study is required to identify the concerns and potential risk to groundwater or the environment and the need for any further action to be presented in the development application. A standard format hydrogeological report would most likely result, including definition of the flow systems, known geology, soil information for the site and a professional statement as to the likely impact on the groundwater resources.

Moderately Low

Site Investigation

A potential risk is indicated by the vulnerability map requiring site investigation. The extent of work should involve a site investigation, including soil and water sampling and testing, definition of flow systems and reporting in addition to a desk study.

Moderate Detailed Site Investigation and Monitoring

Moderately vulnerable areas, or where the previous levels of investigation indicate a demonstrated risk to groundwater then a detailed groundwater site investigation is required. The work should investigate and make recommendations on the need for an ongoing monitoring program, details on the protection design factors, (natural attenuation, physical barriers, etc) in addition to the previous levels of investigation.

Moderately High

Demonstrated Groundwater Protection System

The risk to groundwater is demonstrated by the vulnerability map, as an area in which contamination to the groundwater systems should not be tolerated. The work should include a desk study, detailed site investigation, and implementation of an on-going monitoring program. In addition the protection design system incorporating natural attenuation, hydraulic barriers, physical barriers etc needs to be demonstrated to be effective. The proposal will need to include a feasibility plan for a clean-up in addition to a detailed monitoring and ongoing assessment program.

High

Demonstrated Remedial Action Plan/Prohibition

This classification identifies the area as having a potential risk so great as to warrant a demonstrated remedial action plan. The work should include a desk study, site investigations, ongoing monitoring plus a demonstrated remedial action plan for clean-up which analyses the effectiveness of the remediation approach in achieving designated water quality criteria. The financial capacity of the responsible party to enact the plan should also be evaluated. In the event that the risk to groundwater is unacceptable an activity may be banned by the responsible authority.

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7. REFERENCES

Atkinson, G. and Veness, R.A. 1981. Soils of the Coffs Harbour Region. Journal of the Soil Conservation Service of NSW. **37**, No. 2.

Department of Mineral Resources, 1992. Dorrigo-Coffs Harbour 1:250 000 Metallogenic Study and Mineral Deposit Data Sheets.

Fetter, C.W. 1994. "Applied Hydrogeology "Third Edition Macmillan College Publishing Company, Inc.

Freeze, R.A. and Cherry, J.A. 1979. "Groundwater" Prentice-Hall, Inc.

Haworth, R.J. and Ollier, C.D. 1992. Continental Rifting and drainage reversal: The Clarence River of Eastern Australia', Earth Surface Processes and Landforms, Vol.17, 387-397.

Mackie Martin & Associates (MM&A) Pty Ltd (August, 1993). "Coffs Harbour Shire Council Analysis of Regional Groundwater Resources".

McKibbin, D. 1995. "Upper North Coast Groundwater Resource Study". Dept. of Land and Water Conservation - Technical Services Division.

Milford H (in prep) Soil landscapes of the Coffs Harbour 1:100 000 Sheet, DLWC Sydney.

Mitchell McCotter & Associates Pty Ltd (November 1992). "Emergency Borefield Bonville Peninsula - Environmental Impact Statement".

Sinclair Knight Merz Pty Ltd, 1995 "Towards a National Groundwater Management Policy and Practice".

APPENDIX 1

DLWC Methodology for Groundwater Vulnerability Mapping

The basis of the vulnerability mapping is the US EPA DRASTIC model.

Drastic

There are two major portions of the US EPA groundwater vulnerability mapping technique DRASTIC.

1) Designation of mappable units into hydrogeologic settings

2) Relative ranking of hydrogeologic parameters - DRASTIC

HYDROGEOLOGIC SETTINGS

A composite description of all the major geologic and hydrogeologic factors which affect and control groundwater movement, into and though and out of an area. Similar hydrogeologic parameters therefore produce similar vulnerability.

The USA is divided into Groundwater Regions (15) within which hydrogeologic settings were developed for each region.

Each hydrogeologic setting describes topography, soil type, bedrock type, estimate of rainfall and net recharge, depth to water table (DTWT), aquifer yield, relative permeability and any particular features associated with setting ie. over pumping => saline intrusion.

DRASTIC is an acronym for the most important mappable features controlling groundwater pollution.

- D Depth to water
- R (Net) Recharge
- A Aquifer media
- S Soil media
- T Topography (slope)
- I Impact of Vadose Zone Media
- C Conductivity (Hydraulic) of Aquifer.

To assess groundwater pollution potential within hydrogeologic settings numerical ranking is used on the DRASTIC features. There are 3 significant parts

- 1) Weights
- 2) Ranges
- 3) Ratings

Weights

Each DRASTIC feature is assigned a weight relative to each other in order of importance from 1-5. Most significant 5, least 1.

"Weights were determined by a committee in the US and should not be changed" (US EPA Drastic Manual).

DRASTIC by its namesake attempts to identify those features important in determining vulnerability of groundwater resources. However each study area will need to be assessed as to the importance of each specific feature for its area. Topography is obviously more important in a mountainous area than in the flat plains country. Also some features will be taken into consideration in the production of other features, eg topography will influence the production of a DTWT map in a fractured rock terrain where area between data points will need to be interpolated and may not be required in the final analysis

Assigned Weights for DRASTIC Features

Feature	Weight
Depth to water	5
Net Recharge	4
Aquifer media	3
Soil media	2
Topography	1
Impact of Vadose Zone Media	5
Hydraulic Conductivity of Aquifer	3

Ranges

For each DRASTIC feature/factor ranges or significant media types have been devised based on its impact of pollution potential. In the US EPA manual these ranges were generated for a wide variety of settings found in the US and were meant to cover most hydrogeologic settings. These settings often do not translate to hydrogeologic settings found in NSW. The ranges offered by the US EPA manual for some features can be used directly, for example slope classification, others can be used as a guide only and will require customising for each specific study area.

The following graphs and tables are those as defined by the US EPA manual.

Ratings

In the US EPA the range for each DRASTIC feature has been assigned a rating which varies between 1 and 10. D,R,S,T and C have been assigned one value per range. A and I have been given variable ratings to allow specific knowledge of site to be incorporated.

The ratings for each DRASTIC feature in the CHLGA exercise will be assigned a value between 0 -10. The rating enables the ranking of the ranges found in each DRASTIC feature map. These ratings provide for a relative assessment between ranges in each feature.

The DRASTIC Index is determined.

Pollution = DrDw + RrRw + ArAw + SrSw + TrTw + IrIw + CrCw Potential

where r = ratingw = weight

The computed DRASTIC index identifies areas which are more likely to be susceptible to groundwater contamination relative to one another. The higher the DRASTIC index the greater the groundwater pollution potential. DRASTIC is a relative evaluation tool and not designed to provide absolute answers. It offers planners and developers a categorisation of areas based on the level of site investigation required or expected for an area when considering the impact of potential development on the groundwater resources.

Feature Definition

Depth To Water

This is an important feature as it determines the depth of material through which a contaminant must travel before reaching the aquifer. In general attenuation capacity increases with depth to water increases, because deeper water levels imply longer travel times. The presence of low permeability layers which confine aquifers will also limit the travel of contaminants into an aquifer. Where an aquifer is confined Depth to Water should be redefined as the depth to the top of the aquifer. For semi-confined a decision must be made as to whether it is more appropriate to consider the aquifer as unconfined or confined.

Depth to Water feature for CHLGA was calculated by combining actual DTWT data with geology and topography. The groundwater is defined as a having three discrete aquifer system, which recharge locally. Initially a groundwater contour map was constructed using groundwater data where available and hydrogeologic principles where no data was available. A Depth to Water map was then constructed from the groundwater contour map and hydrogeologic principles with 5 metre intervals.

Recharge

Net Recharge represents the amount of water per unit area of land which penetrates the ground surface and reaches the water table. This recharge water is available to transport a contaminant vertically to the watertable and horizontally within the aquifer. In addition it controls the volume of water available for dispersion and dilution of the contaminant in the vadose and saturated zones. In general the greater the recharge the greater the potential for groundwater pollution.

DRASTIC modelling by the US EPA attempts to provide a value for Net Recharge for an area based on:

Net Recharge = Annual Precipitation - Surface Runoff - Evaporation - Transpiration

For the CHLGA study area an alternative is being proposed which will derive a recharge potential for a zone relative to another zone within the study area. It is believed that this will more closely approximate recharge potential within the study area than applying a Net Recharge value for the area. The factors incorporated into this approach which are believed to be important for recharge include; Infiltration Proportion of Geology (Aquifer) Type, Rainfall, , and Soil Permeability.

Aquifer Media

Aquifer medium governs the route and path length, (flow system), within the aquifer. The path length is important in determining the time available for attenuation processes such as sorption, reactivity, and dispersion to occur. The aquifer medium also influences the amount of effective surface area of materials with which the contaminant may come in contact within the aquifer. The route which a contaminant will take can be strongly influenced by fracturing or by an interconnected series of solution openings which may provide pathways for easier flow.

The US EPA defines aquifer media by descriptive names based on geological units or settings. A similar approach was taken for the CHLGA, where the aquifer was defined by its geology.

Soil Media.

The US EPA considers the soil to be the upper weathered surface of the earth which averages a depth of 2 metres or less from the ground surface. Soil has a significant impact on the amount of recharge which can infiltrate into the ground and hence on the ability of a contaminant to enter into the ground and hence on the ability of a contaminant to move vertically into the vadose zone. The presence of fine-textured materials such as silts and clays can decrease relative soil permeability's and restrict contaminant migration. Moreover where the soil zone is fairly thick, the attenuation processes of filtration, biodegradation, sorption, and volatilisation may be quite significant. The US EPA describes the soil media in terms of its textural classification and ranks it in order of pollution potential.

The soil mapping for the CHLGA area was organised by Glenn Atkinson (DLWC Soil Surveyor). Field mapping was at a 1:25 000 scale with the final maps produced at a 1:100 000 scale. The final soil map incorporated into the CHLGA vulnerability map was a combination of soil thickness, soil permeability and cation/anion exchange of both the topsoil and subsoil.

Topography

The US EPA refers to topography as the slope and slope variability of the land surface. Topography helps control the likelihood that a pollutant will run off or remain on the surface, in one area long enough to infiltrate. Slopes which provide a greater opportunity for contaminants to infiltrate will be associated with a higher ground-water pollution potential. Topography influences soil development and therefore has an effect on contaminant attenuation. For the CHLGA digitised terrain data was provided by the Land Information Centre (LIC). From the terrain data, the GIS then calculated slope percentage which could be used for ranking and rating purposes.

Impact of the Vadose Zone

The vadose zone refers to the zone above the water table which is unsaturated or discontinuously saturated. The type of vadose zone media determines the attenuation characteristics of the material below the typical soil horizon and above the water table. The media also controls the path length and routing, thus affecting the time available for attenuation and the quantity of material encountered. The routing is strongly influenced by any fracturing present. The US EPA have designated vadose zone media by lithology descriptions from bore logs and ranked according to pollution potential.

An alternative was proposed for the CHLGA study area as there was insufficient borehole data available for characterising the vadose zone over the entire study area. Those factors which are believed to influence contaminant movement or attenuation through the soil profile were incorporated into an equation and a map constructed for the resulting polygons which identified zones (polygons) relative to each other which would be relatively more susceptible to contaminants moving through a vadose zone than another area. The factors considered important in defining the vadose zone in the CHLGA include soil depth, vadose zone type, and depth to water. A more detailed breakdown of the factors employed and the resulting equation and rating is discussed in the range and rating tables devised for The CHLGA study area.

Hydraulic Conductivity

The US EPA define hydraulic conductivity as the ability of aquifer materials to transmit water, which in turn, controls the rate at which ground water will flow under a given hydraulic gradient. The rate at which the groundwater flows also controls the rate at which it enters the aquifer. Hydraulic conductivity is controlled by the amount and interconnection of void spaces within the

aquifer which may occur as a consequence of intergranular porosity, fracturing and bedding planes. For purposes of this document, hydraulic conductivity is divided into ranges where high hydraulic conductivities are associated with higher pollution potential. Hydraulic conductivities are determined from aquifer pumping tests.

For the CHLGA, the details available on hydraulic conductivities for the differing geological units were scarce. As it was considered that this would not contribute in defining zones of vulnerability this feature was not included in the DRASTIC equation.

Range and Rating Tables For the CHLGA Study Area

Within the CHLGA study area the features which were deemed important in the development of a vulnerability map included: Depth to Water, Recharge, Aquifer media, Soil Media, Impact of Vadose Zone and Topography. The other features found within the DRASTIC framework such as the aquifer, soil permeability and aquifer media (geology) are incorporated as the factors when generating the Recharge, and Impact of Vadose Zone maps or they are not considered to demonstrate enough variation within the study area to provide a useful feature for assessing vulnerability for the study area.

Depth to Water Table (m)		
Range	Rating	
< 5	10	
5 - 10	9	
10 - 15	7	
15 - 20	5	
20 - 25	3	
>25	1	
Weight 5		

Table 1 - Ranges and Ratings for Depth to Water

Table 2 - Ranges and Ratings for Topography

Range	Rating
< 2%	10
2 - 5%	8
5 -10%	5
10 - 30%	3
>30%	1
Weight 1	

Copography as Slope %

Table 3 - Ranges and Ratings for Aquifer Media

Aquiter media	
Range (Geology Type)	Rating
Beach sand and dunes	10
Fluvial Alluvium	8
Sedimentary	5
CHB Metasediments	4
Estuarine Alluvium	3
Weight 3	

Aq	ui	fer	M	edia

The derivation of the a) Recharge, b) Vadose Zone Impact, and c) Soils maps will now be discussed.

a) Recharge

This feature is generated as a map which is specific for the study area. It incorporates features into an equation which are believed to be important to the recharge component of the study area. The equation used calculates the ability of an area to act as a recharge zone relative to another area. The factors used to generate the Recharge map include: geology type (aquifer media), geological infiltration proportion, slope, soil permeability, and rainfall.

The equation is used to generate a Recharge Value. This Recharge Value is then grouped into a range of values which are given a rating for use in the final DRASTIC calculation.

Recharge Value = Slope % + Rainfall + Infiltration Proportion of Geological Type + Soil Permeability

Where:

Range	Factor
Beach sand and dunes	5
Fluvial Alluvium	4
Sedimentary	3
Metasediments	2
Estuarine Alluvium	2

Infiltration Proportion of Geological Type

Slope %	
---------	--

Range	Factor
<2%	5
2 - 5%	4
5 - 10%	3
10 - 30%	2
>30%	1

Rainfall (mm)	
Range	Factor
>1600mm	4
1500 - 1600mm	3
1400 - 1500mm	2
<1400mm	1

Soil Permeability

Range	Factor
very low	1
low	2
medium	3
high	4
very high	5

The maximum Recharge Value is:19The minimum Recharge Value is:5

The rating table for Recharge is shown in Table 4.

Table 4 - Ranges and Ratings for Recharge

Recharge	
Range	Rating
17-19	10
14-16	9
11-13	5
8-10	. 3
5-7	1
Weight 4	

b) Impact of Vadose Zone

This feature attempts to classify that zone of soil and regolith (saprolite) found above the water table, known as the vadose zone, with regard to its ability to allow any potential contaminant to move through this zone towards the aquifer. This zone is known as the Vadose zone and incorporates Soil Depth, Vadose Zone Type, and DTWT.

An equation is used incorporating these factors, believed to be important to the vadose zone for the study area. The equation provides a Vadose Zone Value for a particular area defined by these factors and which is relative to another zone within the context of the study area. This Vadose Zone Value is then grouped into a range of values which are given a rating for use in the final DRASTIC calculation.

Impact of Vadose Zone = Soil depth + Vadose Zone Type + DTWT

Where:

Soil Depth information has been provided by Glenn Atkinson (Senior Soil Officer - Kempsey) as a derivative maps from Soil Landscapes 1:100 000 sheets.

Vadose Zone Type is based on the digitised ion exchange index maps.

Depth to water table has previously been calculated but is factored for its contribution to the vadose zone impact.

Soil Depth (m)		
Range	Factor	
very low	5	
low	4	
medium	3	
high	2	
very high	1	

Vadose Zone Type (Ion Exchange Capacity >20cm depth)

Range	Factor
< 6 me/100g (very low)	5
6-12 me/100g (low)	4
12-25 me/100g (moderate)	3
25-40 me/100g (high)	2
> 40 me/100 g (very high)	1

Vadose Zone Type (Ion Exchange Capacity <20cm depth)

Range	Factor
< 6 me/100g (very low)	5
6-12 me/100g (low)	4
12-25 me/100g (moderate)	3
25-40 me/100g (high)	2
> 40 me/100g (very high)	1

Depth To Water Table (m)

Range	Factor
<5	5
5 - 10	4
10-15	3
15-25	2
>25	1

The maximum Vadose Zone Impact Value is:	20
The minimum Vadose Zone Impact Value is	4

The ratings for Vadose Zone Impact are displayed in Table 5.

Vadose Zone Impact	
Range	Rating
18-20	10
14-17	8
10-13	6
7-9	3
4-6	1
Weight 5	

Table 5 - Ranges and Ratings for Vadose Zone Impact

c) Soils

The soils feature attempts to classify the unique soil of the study area with regard to its ability to allow any potential contaminant to move through this zone towards the aquifer.

The impact of the soil media within the CHLGA was based solely on the soil permeability.

The ranges and ratings for soils have been classified as outlined in Table 6.

Table 6 - Ranges and Ratings for Soils

Range	Rating
very low	1
low	4
medium	7
high	9
very high	10
Weight 2	

Soil Permeability

Appendix D

NSW Department of Mineral Resources: Titles Data



Warning : Information in this diagram may have been produced using a "managing" technical to create a fit with a digital cadastral databas. The information has not been reproduced with survey accuracy. No responsibility is accepted for any loss or damage of any kind (including for due to negligence, or any consequential loss) arising aither directly or indirectly from the use of this diagram for any purpose other than as a o





Title: Holder(s):

Mineral Group(s): Grant Date: Determination Date: Determination Status; Area: Location; Original Application: MC-243-1992 EDWARDS, Edward Charles EDWARDS, Mark John ANTIMONY, ARSENIC, BARYTES, BISMUTH, CADMIUM, CHROMITE, COBALT 0:00:00 Friday 6 August, 1999 uli

Area: Location: Original Application: Correct Position Flag: Massaged to fit DCDB

Warning : information in this diagram may have been produced using a "massaging" technique to create a fit with a digital tadestivel database. The information has not been reproduced with survey accuracy. No responsibility is accepted for any loss or damage of any loss or datage due to negligence, or any consequential last) arising either directly or indirectly from the use of this diagram for any purpose other than as a map.





Title: Holder(s):

> Mineral Group(s): Grant Date: **Determination Date:** Arca: Location:

Determination Status: Original Application: MCA 54 CH 1992

MC-242-1992 EDWARDS, Edward Charles EDWARDS, Mark John ANTIMONY, ARSENIC, BARYTES, BISMUTH, CADMIUM, CHROMITE, COBALT 0:00:00 Friday 6 August, 1999 αÜ

1.417 HECTARES About 6km N of COFFS HARBOUR Correct Position Flag: Massaged to fit DCDB

489

Date Printed : 14:11:47 Monday 24 September, 2001 Page 1/1





Title: Holder(s):

Mineral Group(s); Grant Date: Determination Date: Determination Status; Area: Location; ML-1259-1973 GRANT, Colln GRANT, Gillian Rore GOLD 0:00:00 Wcduesday 27 May, 1992 nil

Determination Status: Area: 4.84 HECTARES Location: About 16km NNW of COFFS HARBOUR Original Application: MLA 109 CH 1973 Correct Position Flag: Massaged to fit DCDB

Warning : Information to this diagram may have been produced saing a "massaging" tochnique to create a fit with a digital national database. The information has not been reproduced with survey accuracy. No responsibility is accupied for any loss or damage of any kind (including has or damage due to negligence, or any consequential loss) arising either directly or indirectly from the use of this diagrams for any purpose other than as a map.

Dute Printed ; 14:08:15 Monday 24 September, 2001 Page 1/1

Appendix E

Cattle Tick Dip Locations Data

001

DOCI FILE 3.4

CATTLE TICK PROGRAM Wollongbar Agricultural Institute

> Phone: (02) 6626 1201 Fax: (02) 6626 1202

FACSMILE MESSAGE

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NSW AGRICULTURE North Coast Region

Pavid Caro George Nastaie 15/2/02 Total Pages: RECEIVED - CONNELL WA TO: 15 APR 2002 FROM: DATE: T PROJECT / FILE No: 1093-65.660

Coffs Shire dips










Available information	for selected dip.		<i>.</i>	-			
Dip Name: Co	ORAMBA	Road:	ation is valid to: CORAMBA	15/05/ ROAD	2001 J	wn:	CORAMBA
Location and status details	for this din						
Location and status details for this dip. Map Sheet: 9537-IV-S Map Zone: 56 Easting: 500800 Northing 6656950 Sampling Valid date."Active" means dipping occurred in past 12 months, splease contact NSW Agriculture on 0266261201 For further information on samples please contact NSW Agriculture on 0266261201 Valid date."Active" means dipping in that time. To assist in any decisions please call NSW History of chemicals used in this dip. Chemical		current e - see dipping hs, ng in 01 for n.	Dip Status:**DEMOLISHLand TenureGOVERNMELease Status:NOT CURRELease Expiry Date:PriorityRanking:Zoning:Legal Encumbrances:NONE				
Chemical ARSENIC			D	ate Charg 6/32	ed	The chemi used at this NONE Its trade na	cal currently being s dip is: me is:
Site details for this dip . Proximity to Housing: Adjacent Land Uses:		ERVE		Wat	erway wi	ithin 100m:	
				Warning	Signs in	Place:	No
Site works undertaken at the Cleanup Commenced: Cleanup Completed:	his dip . Yes No Date	Completed:			Dip Sta	atus: DEMOI	ISH
Cleanup Details:	Drainage Works: Dip Fences Remo Dip Shed Remove Dip Bath Remove Dip Bath Buried:	No ved: Yes d: Yes d: No Yes	Highly Conta Contaminate	iminated S d Areas C	oil Remo	oved No No	

Available information f	for selected dip.						
This report was printed of	on: 15/04/2002	The informat	lion is valid to:	15/05/2	001		
Dip Name: COFF	S HARBOUR	Road: CF	R ALBANY & HO	GBIN DR	Town:	CITY	HILL, COFFS
Location and status details	for this dip.					n an fail an	
Map Sheet: 9537-III-N Map Zone: 56 Easting: 511400 Northing 6647050 Sampling Soil Yes Water:	N Parish: Co County: Fi Council: Co No	DFFS HARE TZROY DFFS HARE **Please no at time of d Valid date." occurred ir "Inactive" n	BOUR BOUR Dite: Dip Status cu latabase release Active" means di n past 12 months neans no dipping	urrent - see pping , in	Dip Status Land Tenu Lease Stat Lease Exp PriorityRat Zonino:	re rus: iry Date: nking:	DEMOLISH LEASED NOT CURRENT
For further informat please contact NSW 0266261201	ion on samples Agriculture on	that time . I decisions pl Agriculture current sta	o assist in any lease call NSW on 0266261201 ltus information.	for	Legal Enc	umbrances:	NONE
Chemical ARSENIC			Dat	e Charge 1/43	T U N II	The chemical sed at this di NONE s trade name	currently being p is: e is:
Site details for this dip . Proximity to Housing:	NO			Wate	erway withir	n 100m:	No
Adjacent Land Uses:				Soil Warning S	Type: Signs in Pla	LO ce: No	AMY SAND
Site works undertaken at i	this dip .						HEARING AND AND AND AND AND AND AND AND AND AND
Cleanup Commenced Cleanup Completed:	: Yes No Date Co	mpleted:			Dip Statu:	s: DEMOLIS	H
Cleanup Details:	Drainage Works: Dip Fences Remove Dip Shed Removed: Dip Bath Removed: Dip Bath Buried:	No d: Yes Yes No Yes	Highly Contan Contaminated	ninated S Areas C	oil Remove overed:	id No No	

Available information for selected dip.

nis report was printed	on: 15/04/2002	The informa	tion is valid to:	15/05/2001		nya waka ka kuta ya kuta kuta kuta kuta kuta kuta kuta kut
p Name: E	ONVILLE	Road:	PACIFIC HIGHW	/AY Tow	n:	BONVILLE
ocation and status detail	s for this dip.		s contractor and the second			
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					used at this o NONE Its trade nam	dipis: neis:
ite details for this dip .			7	Γ	11.1.400	
Adjacent Land Uses:	RESIDENTIAL]	M	Soil Type:	Place: N	Yes IILT LOAM
Site works undertaken a	t this dip .	na a de la constante en esta constante de Carlo De l Constante de Carlo De Constante de Carlo De Car				
Cleanup Commence Cleanup Completed	ed: Yes I: No Dat	e Completed:		Dip Sl	atus: DEMOL	ISH
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Appendix F

Holmes and Holmes PTY Ltd Desk Study Report



HOLMES & HOLMES PTY. LTD.

TERED ENGINEERS (AUSTRALIA)

P.O. Box J 159, Coffs Harbour Jetty, 2450. Laboratory: Rippingale Road, Kororo, 2450. Telephone: (066) 53 6457

14th June 2002 (023 959)

COMMENTS ON GEOTECHNICAL CONSIDERATIONS FOR HIGHWAY ROUTES FROM SOUTH OF COFFS HARBOUR, TO NORTH OF WOOLGOOLGA

The following comments have been prepared for Connell Wagner as an overview of our local knowledge of this area.

Because of the lack of major civil engineering projects in this area, the knowledge has been accumulated over the last twenty eight years by our involvement in residential buildings and subdivisional work, and site investigations for civil engineering projects such as the airport, water supply, roads and bridges. Such projects have rarely required diamond coring.

The underlying bedrock is a complex of metasediments, some of which have been silicified and formed into very hard beds whilst the majority are deeply weathered and highly fractured claystones and siltstones. The distinctive topographical features of the area reflect the variation in bedrock resistance to erosion, with the steep ridge lines being associated with the more silicified beds.

However, such beds are often discontinuous and soft areas can occur in the ridges.

Low elevation areas of the routes are associated with wetter more swampy terrain. While there are no major waterway crossings, the existing Highway route traverses back swamp terrain associated with aeolian sand dune formations along the coastal fringe. Such areas have a high water table, (often at ground level in a wet period) and require appropriate subgrade preparation. The use of geofabric cloth and rock stabilization is generally required to allow fill to be placed.

Creek crossings in the foothills are less problematic, although there is frequently a two to three metre deep poorly consolidated layer of erosion debris of gravel and clay in the bed.

Page Two

Geotechnical Considerations Highway Routes, Coffs Harbour

1) <u>Stability</u>

There is considered to be a low risk of slope instability associated with natural slopes in the area.

Landslides and slips are invariably associated with surface disturbance due to man-made works, including land clearing. Such instability is usually in the form of translational surface slips and erosion debris slides.

Observation of road cuttings in the area indicates that batters of one vertical to one-and-a-half horizontal are generally stable, although minor 'settling in' slumping can be expected.

Where the silicified sediments are encountered, steeper batters can be used, but weaker beds within such sediments if present, can be expected to cause problems with stability, particularly if they act as aquifers for ground water.

2) Chemical Residue Testing of Former Bananalands

The proposed routes will cross former bananalands and the necessary testing for arsenic, lead, organochlorines and organophosphates may be required.

Coffs Harbour City Council has Plans indicating former banana plantation areas which could be contaminated with chemicals.

It would seem that the risk to the environment and humans is very minimal if the topsoil is to be retained within the road reserve, and testing could be unnecessary. This should be ascertained with Council and the E.P.A. If the topsoil is to be removed and used elsewhere, then testing should be undertaken.

The attached copy of threshold levels from the E.P.A. "Guidelines for N.S.W. Site Auditors" indicates the appropriate residue threshold levels. We consider that Column 4 is appropriate for work within the road reserve, whereas Column 1 should be used as a precautionary measure if soil is to be sent off site.

Page Three

Geotechnical Considerations Highway Routes, Coffs Harbour

From our experience in the Coffs Harbour area since 1992 when testing was first undertaken, low level arsenic contamination is widespread across older plantations. However levels rarely exceed 200 p.p.m. Because of the variability in application, the stripping and stockpiling of topsoil (as would be expected in large scale earthworks) and subsequent re-spreading will ensure adequate mixing and dilution of the arsenic.

Identifiable packing shed locations represent locations likely to be significantly more highly contaminated, and soil from these areas should be tested. Again, considering the extent of the earthworks on this type of project, remediation by mixing and dilution with the surrounding topsoil should be possible where necessary.

It is not expected that the problem of chemical contamination will play a significant role in the route selection, although the cost of testing (if required) should not be overlooked, currently about \$1600 / Ha.

3) Acid Sulphate Soils

The soil conservation Maps of the area indicate that the low lying (below R.L. 10) estuarine creek lines have the potential to provide acid sulphate soils, with varying likelihood of occurrence. This will affect the upgrading of the existing Highway more than the alternative routes further from the coast.

From the limited testing carried out in this area, it is expected that significant problems will not be encountered. Generally the likely occurrence will be over relatively short lengths. Because of the topography such areas will have to be filled to provide a stable pavement foundation.

Problems will therefore be limited to dealing with the potential acid generation in the surface layer. This tends to be of low significance since the natural cycle of wet and dry in this layer has, over time, completed the oxidization and already leeched out the acid.

Where encountered, it is expected that acid forming soils will be able to be neutralised with 5 kg to 10 kg of lime per tonne, with the usual precautions being taken to prevent runoff from stockpiles entering waterways before neutralisation can be achieved.

It is not expected that the problem of acid sulphate soils will play a significant role in the route selection.

SOIL INVESTIGATION LEVELS FOR

	Provisional phytotoxicity- based investigation				
Substance	Residential with gardens and accessible soil (home-grown produce contributing less than 10% fruit and vegetable intake; no poultry), including children's day- care centres, preschools and primary schools, or town houses or villas (NEHF A)	Residential with minimal access to soil including high- rise apartments and flats (NEHF D)	Parks, recreational open space, playing fields including secondary schools (NEHF E)	Commercial or industrial (NEHF F)	levels⁴ for sandy loarns pH 6-8 (mg/kg)
na na katala na katal	Column I	Column 2	Column 3	Column 4	Column 5
Aldrin + Dieldrin	10	40	20	50	-
Arsenic (total)	100	400	200	500	20
Benzo(a)pyrene	I	4	2	5	-
Beryllium	20	80	40	100	-
Cadmium	20	80	40	100	3
Chlordane	50	200	100	250	
Chromium (III) ²	12%	48%	24%	60%	400
Chromium (VI)	100	400	200	500	
Copper	1000	4000	2000	5000	100
Cyanides (complex)	500	2000	1000	2500	
DDT	200	800	400	1000	
Heptachlor	10	40	20	50	_
Lead	300	1200	600	I 500	600
Manganese	1500	6000	3000	7500	
Methyl mercury	10	40	20	50	-
Mercury (inorganic)	15	60	30	75	⁵
Nickel	600	2400	600	3000	60
PAHs (total)	20	80	40	100	
PCBs (total)	10	40	20	50	
Phenol ¹	8500	34000	17000	42500	70
Zinc	7000	28000	14000	35000	200

					1	<u></u>
Job Nº	Nº-	As	РЬ	DCs	Remotes	
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1102	2	9.9	12	0.01	Apt composite	С
117	3.	28	lt	0.02	4 pt composites in banance	, U
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1392 / 3788	6	19	 14-	3.7	individual > NEW Ag for	ud
/	7	33	14-	<0.02	4 pt composite 5 Pb B	•
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1664	9	26	24-	<0.02	<i>۱</i> /	C
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(863	15	50	12	0.2	in dividual	<i>لد</i> .
1865	16	12	20	0.14_	4 pt compositos	C
	17	39	30	26.0	1	C
	18	29	35	0.12	· · · · · · · · · · · · · · · · · · ·	C
1877	19	120	17	0.03	individual remediated	L
1890	20	12	14	20.02	5 pt composites	u
1928	21	8.5	49	<0.02	5 pt composites	V
2.026	22	42	43	<0.02	individual samples	્ય
2067	23	22	18	0.30	Ppt composites	1
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boundy 2375	insep	58	26	0.10	individerals ~	0
2457	25	44	35	0.07	" dividuals	١
2557	26	G	16	<0.02	5pt compositor	С

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5pt composites	0.04 5	18	19	29	2857
5 pt composites	0.02 5	17	28	30	2912
5 pt composites	20.02 5	12	5	31	2992
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A pt composites	<0.02 A	35	12	39	3224
Spt composite	<0.02 £	15	16	40	3271
5 pt composite	0.08 5		not tested	41	3284
5pt composite	20.02 3	15	14-	42	3313
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	<0.02	18	71/2	47	
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4 pt composites	<0.02 4	10	20	50	3523
4 pt composites	<0.02 4	14	13	51	3532
Apt comprosite	0.08	15	7	52	3534-
. []	0.05	15	4.5	53	3572
F 11	0.35 \$	34	170	54	3577
individuals	0.11 m	25	54-	55	36 14-
	0.32	17	160	56	3621
4 pt composites	<0.02 4	50	46	57	3666

Appendix G

Field Mapping Photo Interpretation



Siltstone/Greywacke: Weathering grades evenly from red, orange residual/saprolytic clayey silt to distinctly weathered, dark grey medium strong rock. Joints extremely to very closely spaced, typically closed but occasionally in-filled.

<u>Notes</u>

- * Slope angle of cutting 48° , slope direction 258°
- * No major erosion or slope failures evident
- * Dominant joints, dip/direction, 9/233, 84/88, 86/52, 85/292, 25/245, 35/295

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Siltstone/Greywacke: Grey, fine grained, weak, extremely to distinctly weathered rock, joints extremely to moderately closely spaced.

<u>Notes</u>

- * Thin soil cover (<1.0m)
- * Slope angle at cutting 45° , slope direction 90°
- * Major slumping type failure evident in centre of cutting
- * Dominant joint, dip/direction 59/110 (50mm spacing)

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Argillite: Grey speckled white, distinctly to slightly weathered, medium strong to very strong rock, moderately closely spaced joints.

<u>Notes</u>

- * Slope angle at cutting 50°, cutting on 90° bend in road
 * Numerous joints at approximately 45° seen day lighting in face
 * Dominant joints, dip/direction, 75/70, 28/34, 40/65, 80/130, typical joint spacing 100-200mm

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Dark grey speckled white, slightly weathered, very strong rock with moderately spaced joints. Argillite:

<u>Notes</u>

- * Abandoned Quarry dense vegetation at base prevented access to face
 * Slope angle at face vertical
 * Not possible to accurately measure joints, but 30⁰ joint set noted striking approximately south

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Weathered Argillite/siltstone:

light grey stained orange brown, extremely weathered, extremely to very weak rock with very to moderately closely spaced joints.

<u>Notes</u>

- * Slope angle at cutting 75° , slope direction 182°
- * Severe erosion of face and evidence of old sliding failure
- Netting placed over face to reduce erosion and encourage plant growth has been unsuccessful
 Dominant joints, dip/direction, 29/56 (20mm spacing) 61/324, 84/184, (100-200mm spacing)

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Argillite: Highly variable weathering from extremely weathered, orange and red, very weak rock that crumbles in hand to silt, to very strong, grey stained red and black on defects, distinctly weathered rock.

<u>Notes</u>

- * Slope angle of cutting 84° , slope direction 133°
- * Evidence of slump type failures in very weak rock and toppling failures in strong rock
- * Dominant joints in strong rock, dip/direction, 12/275, 84/133, 85/223

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Dark grey, distinctly weathered, very strong, extremely to moderately closely spaced defects, but Argillite: with occasional 500mm wide, near vertical extremely weathered gullies/bands.

<u>Notes</u>

- * Slope angle of cutting 65°, slope direction 65°
 * Dominant joints, dip/direction, 25/72, 65/252, 75/326, 90/230

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Argillite: Blue grey stained white on healed joints, distinctly weathered, medium to very strong rock with moderately closely spaced defects.

<u>Notes</u>

- * Slope angle of cutting 60°, slope direction 0-90°
 * Colluvial slope above cut face consists of cobbles and boulders in a silty clay matrix
 * Dominant joints, dip/direction 40/80, 37/352, 65/88, (spacing 100-400mm), 38/85

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Colluvium and lithic sandstone: Colluvium consists of loose cobbles in a silty clay matrix, lithic sandstone is blue grey, coarse grained, distinctly weathered, medium to very strong rock with moderately closely spaced defects.

<u>Notes</u>

- * Slope angle of cutting as noted on photograph
- * Silty matrix of colluvium appears erodible
- * Dominant joints in sandstone, dip/direction 42/182, 75/102, 35/180

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH





<u>Notes</u>

- * Slope angle of cutting 50° slope direction 222°
- * Major slump failure and erosion gullies noted
- * Rock fragmented into 20mm size blocks

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH

<u>NOTES</u>

- * Natural rock outcrop noted on north face of Roberts Hill
- * Outcrop on private property, not possible to access area, photo taken from Coramba Road
- * Appears to be blue/grey hard rock argillite



COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Argillite: Blue grey, stained red brown in upper portion of cutting, distinctly to slightly weathered, medium to very strong rock, silcified, moderately closely jointed.

<u>Notes</u>

- * Slope angle of face 90° 50° , slope direction 120°
- * 20mm Quartz seam noted in face
- * Minor failures noted where high angled joints, daylight in face
- * Dominant joints, dip/direction, 20/168, 82/114 (spacing 50-100mm), 88/32

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Weathered Argillite/Siltstone:

Yellow brown, extremely weathered, extremely weak rock, breaks down to silt in hand or under light hammer blows, fragmented.

<u>Notes</u>

- * Slope angle of cutting 50°, slope direction 0°
 * Major slumping and erosion evident in residual clayey silt at end of cutting
 * Dominant joints dip/direction 11/208, 85/18 (numerous other high angled defects noted stricking in many directions)

COFFS HARBOUR HIGHWAY PLANNING COFFS HARBOUR BYPASS 1093.65.CH



Weathered Argillite/Siltstone:

Yellow brown, extremely to distinctly weathered, weak to medium strong rock with extremely closely spaced defects.

<u>Notes</u>

- * Slope angle at cutting 35° , slope directions 25°
- * Generally rock is broken up into 20mm blocks that are loose and in-filled with silt between blocks.
- * In some areas towards the base of the cut the material becomes more closely packed, with less silt infilling, but remains fragmented

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Very weak rock: Weathered Argillite: light grey and white, silicified, stained red and orange on defects, extremely weathered, defects very closely spaced.

Residual silty clay: Red and white, medium to low plasticity

<u>Notes</u>

* Face cut vertical

- * Section of bulk earthworks for industrial area
- * Spoil heaps of crushed hard rock in other areas of the site indicate hard rock argillite was also encountered during the bulk earthworks operations.

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Argillite: Dark blue, highly silcified, distinctly to slightly weathered very strong rock, defects moderately closely spaced.

Notes

- * Probably site of abandoned quarry, now forms part of waste disposal site.
- Dominant joints, dip/direction, 35/170, 80/284, 85/206
 Joint spacing typically 100-300mm

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COFFS HARBOUR WASTE DISPOSAL SITE



Strata, Rock Type, Description

Residual clay: Red and grey, medium plasticity, moist, stiff tending to saprolytic / very weak rock.

<u>Notes</u>

- * Area within waste disposal site
- * Occasional quartz band noted in residual and saprolytic material
- * Major erosion can be seen in cut faces of residual clay

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