



## REVIEW OF ENVIRONMENTAL FACTORS

(In support of Application for Determination under Part 5 of the  
Environmental Planning & Assessment Act, 1979)

For proposed  
Exploration Drilling Program

Clarence Moreton Basin, New South Wales.

(Petroleum Exploration Licence No 426)

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## CONTACT INFORMATION AND DECLARATION

This document was prepared by Metgasco Ltd (ABN 24 088 196 383) which is the exploration operator of Petroleum Exploration No 426 (PEL 426), where Metgasco is the registered titleholder. All Petroleum Exploration Licenses are granted under the Petroleum (Onshore) Act (1991). This REF has been prepared utilizing the Mineral Resources Division Guidelines for (the) Review of Environmental Factors [ESB18 June 2006] published by the NSW Department of Primary Industries.

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### Affected Lands

Lot	DP	Street	Parish	County	Hole type
1265	786278	Stuart Rd. Lawrence NSW 2460	Stuart	Clarence	Exploration
34	755605	Lyons Rd. Camira NSW 2469	Camira	Richmond	Exploration
TBA	TBA	Dilkoon	TBA		Exploration
TBA	TBA	Coaldale	TBA		Exploration

The statements and opinions attributable to Metgasco Ltd are given in good faith and in the belief that such statements are neither false nor misleading. In preparing this REF, Metgasco Ltd has considered and relied upon information obtained from the public domain, supplemented by discussions between key Metgasco staff and contractors.

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## 1. INTRODUCTION

Metgasco Ltd aims to find, produce, market and deliver natural gas from CSG and conventional sources within the Clarence-Moreton Basin. Metgasco has an interest in tenements located in the vicinity of Grafton in northern New South Wales which it proposes to assess for potential to yield commercial quantities of methane gas and conventional gas deposits.

Metgasco has 100% equity in PEL426 which covers an area of more than 3,440km<sup>2</sup> around Grafton, NSW (Figure 1). Proposed activities involve exploration drilling within PEL 426.

This document forms an integral part of the Environment Management Plan for the drilling and exploration of PEL 426, and relates specifically to proposed exploration drilling programmes at sites to the north, East and south of Grafton, NSW.

As a requirement of the title, Metgasco has prepared detailed documents, **Review of Environmental Factors** and **Safety Management Plan**. Copies of these documents have been submitted to the Department of Industry & Investment - Mineral Resources as part of the original approval process. Site specific **Manual of Emergency Response Procedures** has been prepared for the current program. These documents address, *inter alia*, environmental matters, both in regard to the Company's policy in relation to preventative measures, and to procedures to be implemented in the event of emergency situations. Copies of **The Code of Environmental Practice (1996)** and **The Schedule of Onshore Petroleum Exploration and Production Safety Requirements (1992)** and all documents will be on site and accessible to all site personnel.

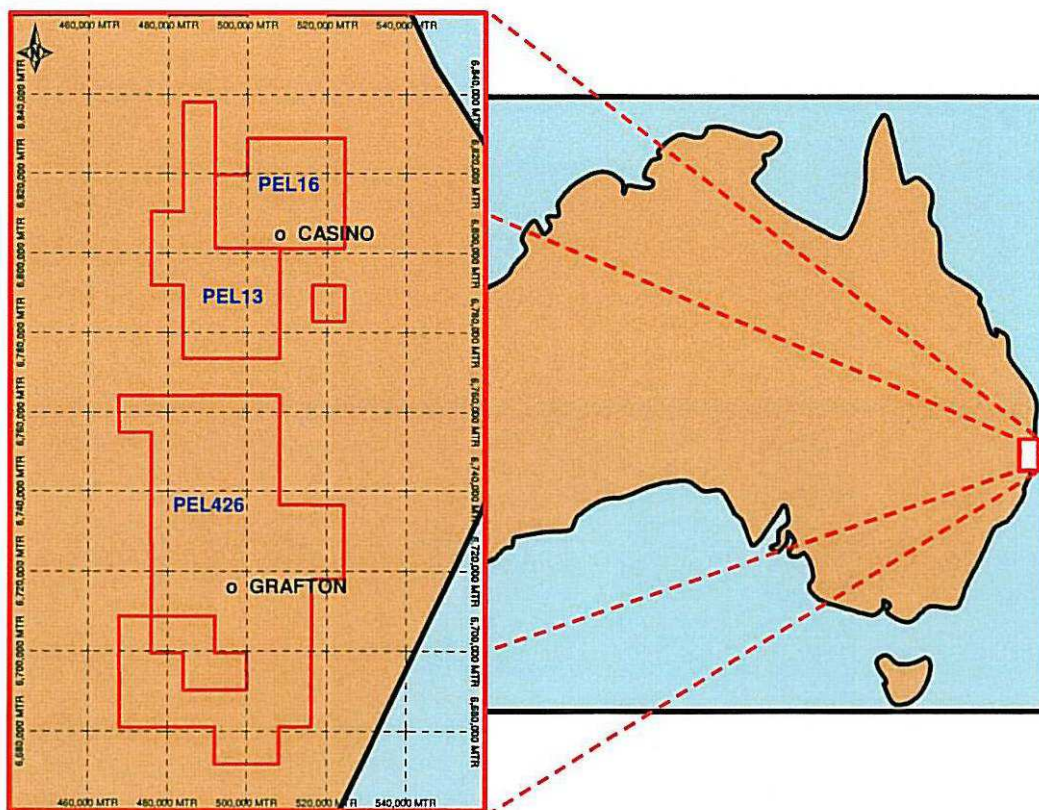


Figure 1. Location maps.

## 1.1 LOCALITY

The proposed exploration drilling program consists of up to four (4) wells in PEL426. Currently two possible sites have been identified in the area of Tullymorgan. These locations are identified in figure 2 below. The precise locations of the proposed four wells are still to be finalised, but will be supplied to the Department of Industry & Investment-MR prior to the commencement of drilling.

Presently available information indicates that the subject land does not fall within any of the eleven categories of land identified in Section 3.2.1 of Guidelines for (the) Review of Environmental Factors [ESB18 June 2006] that would reserve or protect the land for conservation purposes

In the placement of sites, Metgasco Ltd:

- Will situate sites such that they are not within 200m, and preferably at least 400m, from residences;
- Will situate sites such that the activity will not exceed the noise goals in the Interim Construction Noise Guideline (DECCW) at any affected residential receiver unless a formal agreement, permitting increased environmental impact, is in place with the affected receiver.
- Will not locate sites such that they are within 40m of a river bank or creek;
- Will place sites on land that is presently zoned Rural 1(a) (Prime Agricultural Land) and does not fall within any of the eleven categories of land identified in Section 3.2.1 of Guidelines for (the) Review of Environmental Factors [ESB18 June 2006];
- Will not, wherever possible, remove trees or otherwise alter the existing environment, except as described in Section 1.2 of this document;
- Will consult with the local Aboriginal Land Council;
- And will enter into Access Agreements with relevant landholders prior to the commencement of any activities.

Where potential sites do not adhere to these requirements, further approvals will be obtained from the DII-MR.

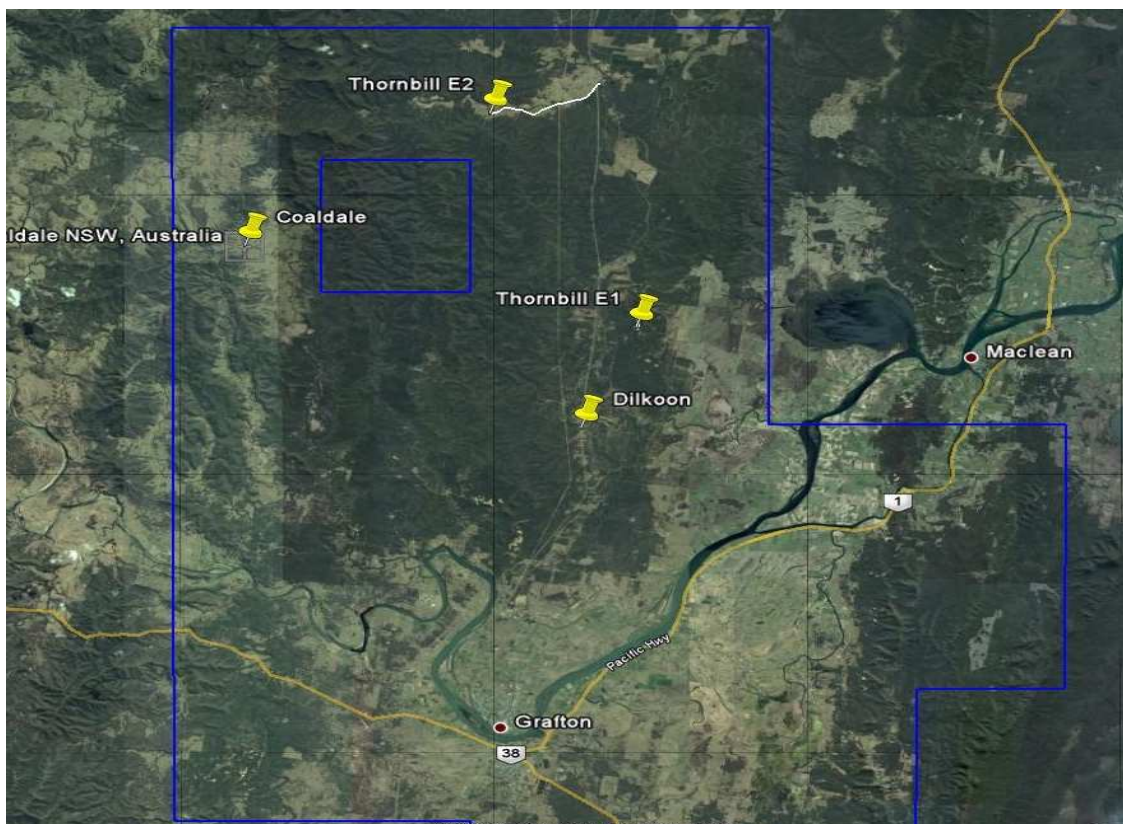


Figure 2: proposed location of drill holes.

The location of Thornbill E01 is approximately 6.5 km south of Tullymorgan 1 and some 34 km NE of the township of Grafton. The well is near the intersection of seismic lines C90-207 and R104.

The proposed site location for Thornbill E02 is approximately 15 km west of Tullymorgan 1 and some 43 km NNW of the township of Grafton. The well is near the intersection of seismic lines.

Possible locations for the remaining two wells have yet to be identified. These sites are expected to be within close proximity to the Dilkoon high and the Coaldale high and will be advised to the DII-MR at a later time prior to the commencement of drilling.

Photos of current land use of proposed bore hole locations can be seen in figures 3 to 6.

**Table 1. Approximate location of wells.**

Well ID	Proposed Well Name	Approx. Easting	Approx Northing	Approx RL
TBE01	Thornbill E01	501989.826	6744941.13	103 m
TBE02	Thornbill E02	492958.482	6758288.680	70 m
3	Dilkoon 3	TBA	TBA	TBA
4	Coaldale 4	TBA	TBA	TBA

## 1.2 DESCRIPTION OF THE PROPOSED ACTIVITY

The present proposal involves two phases of work. The first is the initial drilling of the exploration boreholes. These boreholes will then be logged using wireline techniques and further well and flow testing may be conducted at a slightly later time, depending on equipment availability. This REF covers both phases of the work.

At the sites, an area of up to 110 by 110 metres will be temporarily fenced for the period of drilling and testing activities and all such activities will be contained within the fenced area. Appropriate signage relating to restricted entry, fire hazards, protective clothing, etc. will be prominently displayed.

Equipment on site will include the drilling rig, air compressors, support vehicles and transportable buildings for drill equipment storage. There will be minimum physical disturbance at each site beyond the drilling of the well itself (including cellar). It is expected that the drilling operations will be zero release at the well site, and all drilling fluid will be contained within on-site tanks. However, if it is deemed necessary for safe drilling operations, up to three small sumps, (3m x 3m x 2m), two large sumps (10m x 10m x 2m) and a smaller flare pit at the end of the flare line may be dug on site. Sumps will be lined with high density polyethylene (HDPE) 200 µm poly liner. It may also be necessary to grade the area where the rig base will sit on the site.

Any displaced topsoil and mulched vegetation will be stockpiled for subsequent rehabilitation purposes, and stored as a bund along the up slope side of the site, to prevent any surface water flow over the site. Silt fencing may be erected on the down slope side of the site, to contain any site run-off. If required, a gravel pad up to 250mm thick or a transferable timber mat may be constructed to facilitate all weather activities on site. If the construction or upgrading of access tracks is required, these will be 4m wide x 150mm thick.

Access for the proposed drill sites will be along public roads. There will be no removal of vegetation required for access and if the construction or upgrading of farm access tracks is required, these will be 4m wide x 150mm thick. None of the borehole locations require creek crossings to access the site other than by the use of existing public road bridges.

The objective of the exploration drilling is to provide data on geological structures within the upper Clarence-Moreton Basin and to test the Walloon Coal Measures for gas potentials. It is proposed to

achieve this objective using coring and/or open hole drilling techniques, combined with wireline logging and in-process and post-drilling testing of the wells. On completion of activities the bore will be abandoned to the satisfaction of the DII-MR.

Steel casing will be set at intervals within the wells, at depths to be decided depending on drilling and operational concerns. No permanent steel casing will be set across coal seams intercepted within the Walloon Coal Measures (at depths between 450 – 750m) though previous exploration has indicated that these seams have ash contents of >60% and densities >1.5g/cc and are unlikely mining candidates using accepted mining and coal preparation techniques.

Anticipated final depths for the proposed exploration wells could be up to 1,000 m.

Because the proposed drilling comes under the Petroleum (Onshore) Act 1991, the wells may be fitted with blow out prevention (BOP) equipment which will be installed on casing cemented to at least 10% of the anticipated final depth.

Prior exploration suggests that the composition of the gas encountered may be predominately methane with minor nitrogen (N<sub>2</sub>) and carbon dioxide (CO<sub>2</sub>). Any methane gas produced on site will be flared if necessary, utilising a flare line and flare pit at a safe location away from the well so as to minimise hazards. Although it is flammable, methane (the principal component of natural gas) is not poisonous.

Depending upon the general progress of drilling, the duration of the proposed activities is expected to total 14 to 28 days operational on each respective site. On completion of activities, the bore will be abandoned and the area rehabilitated to the satisfaction of the DII-MR.

### **1.3 JUSTIFICATION OF THE ACTIVITY**

The purpose of PEL426 granted under the *Petroleum (Onshore) Act 1991* is to permit the exploration for hydrocarbons. The purpose of the proposed drilling program is the delineation of potential CSG and conventional gas targets. As such the justification for the exploration is:

- The granting and the existence of Permit;
- Its suitability as an exploration site;
- The approved work plan for the permit;
- The intent of the permit holder;
- The consent of the landowner;
- Current and future demand profiles for gas as an alternative to less greenhouse friendly energy sources;
- Current and future demand for natural gas in the region.

### **1.4 EVALUATION OF ALTERNATIVES**

As exploration for the region is in its early stages, no real alternative exists to the effective delineation of subsurface structure and continuous presence of coal identified through exploration drilling. Numerous other sites are available for exploration via drilling, but the program as outlined has been identified by preliminary inspections as being the most suitable for the purposes of being on suitable ground and for effective hydrocarbon exploration.

It seems inappropriate to further consider alternative sites at this stage of exploration.

## **2.0 PLANNING CONTEXT**

### **2.1 LICENCES AND APPROVALS REQUIRED**

Under a Petroleum Exploration License granted under the *Petroleum (Onshore) Act 1991*, where the approval of the DII - Mineral Resources has been granted as a Part V Determination, and Landowner consent has been granted, no further approval is required.

For the purpose of mineral or CSG exploration drilling there is no precedent for the requirement of obtaining a water bore license from the Department of Water and Energy.

## 2.2 ZONING

Metgasco will position all drill sites on land that is currently zoned Rural 1(a) (Prime Agricultural Land) or equivalent under the relevant local government authority (LGA) LEP.

## 2.3 STAKEHOLDER CONSULTATION

At this time stakeholder consultation has been limited to consulting with landowners. At this early stage of activity and considering the distance from other properties and dwellings, only the immediate properties are likely to be affected by the exploration activities. Subsequent to approval being granted to undertake a drilling program, local landowners on adjoining properties and council officers will be advised of the activities to take place. Local residents and council officers are aware of Metgasco activities at other sites within the greater area.

## 3.0 EXISTING ENVIRONMENT

### 3.1 LANDFORMS AND GEOLOGY

Examples of the existing environment for the various proposed localities are shown in *Figure 3, 4, 5 & 6*. Due to the regional context of the proposed work, a wide variety of local environments will be covered. The area covered by the proposed activities is located to the north and north east of Grafton, NSW, in the general area bounded to the north by Banyabba, to the east by Maclean and to the south by Nymboida (approximately 35km, 44km and 50km from Grafton, respectively). The area is serviced by public sealed and unsealed roads which will be used to access well sites.

Existing land use has been considered and the current land use for the proposed locations is freehold.

**Table 2:** Consideration of land use at proposed sites.

#### Is the proposed location

An area reserved or dedicated under the <i>National Parks and Wildlife Act 1974</i> ?	No
Is the proposal located within land reserved or dedicated within the meaning of the <i>Crown Lands Act 1989</i> for preservation of other environmental protection purposes?	No
Is the proposal located within land reserved or dedicated within the meaning of the <i>Crown Lands Act 1989</i> for preservation of other environmental protection purposes?	No
A World Heritage Area?	No
Environmental Protection Zones in environmental planning instruments	No
Lands protected under SEPP 14 – Coastal Wetlands?	No
Lands protected under SEPP 26 – Littoral Rainforests?	No
Land identified as wilderness under the <i>Wilderness Act 1987</i> or declared as wilderness under the <i>National Parks and Wildlife Act 1974</i> ?	No
Aquatic reserves dedicated under the <i>Fisheries Management Act 1994</i> ?	No
Wetland areas dedicated under the Ramsar Wetlands Convention?	No
Land subject to a conservation agreement under the <i>National Parks and Wildlife Act 1974</i> ?	No
Land identified as State Forest under the Forestry Act 1916?	No
Western Lands Lease	No
Freehold or Crown Land. If Crown Land, what type?	Freehold

The existing environments where activities will be located consist of open, fenced, level improved pasture in low density rural areas. Typical land use located at the proposed borehole locations can be seen in figures 3 to 6. This activity is dominantly beef cattle grazing and some cropping.

Tree lines generally exist along waterways and overflow areas, and occasional zones of light to moderate woodland will be avoided. The main public roads within the area are the Summerland Way to the north,

the Pacific Hwy to the east and the Gwydir Hwy to the South west. No drilling operation will occur within close proximity to a surface water feature.

Gully erosion is not known to be present in the immediate area of any proposed drill site, though some areas of the region are subject to sheet flow during very heavy rainfall. The sites are serviced by public bitumen and gravelled roads. Drainage of the area is part of the Clarence River drainage system.

The Clarence River runs through the general area of PEL 426 where the proposed activities are to occur; all well sites will be located at least 40m from this river and all other water ways. It is expected that the land at final sites will be generally flat, but bunding will be constructed on relevant boundaries to prevent any accidental spills or run-off from the drill site entering the river system.

The Clarence-Moreton Basin is a mid Triassic to early Cretaceous Basin approximately 400 km long by up to 120 km wide and covering some 43,000 sq km. The southern portion of the basin in north eastern New South Wales covers an area of about 16,000 sq km. In NSW, the basin attains a maximum depth about of 3,500 m.

The basin is bounded by pre Permian basement metamorphic rocks and granites of the New England fold belt, represented by the Texas block to the south and west and the Yarraman, D'Aguilar, and Beenleigh blocks to the north and east. The basin is interpreted to have developed as a broad intracratonic sag in the mid-late Triassic with substantial deposition in the Triassic and Jurassic. Coal deposition occurred primarily in the Triassic (Nymboida Coal Measures) and Jurassic (Walloon Coal Measures).

The area has only been lightly explored for conventional oil and gas accumulations.

### **3.2 CLIMATE**

The Casino-Grafton area is located between 30-60km inland of north coast of NSW and experiences hot humid summers and mild drier winters. Temperature range from 5<sup>o</sup>C to 40<sup>o</sup>C and occasional frosts are experienced. Annual rainfall is about 1200mm, occurring throughout the year, though often associated with thunderstorm activity. Drilling activities will be conducted to provide for this. The heaviest rainfalls usually occur during April and May in association with cyclonic weather systems that may move south along the eastern Australian coast. Plant growth is most vigorous in summer but can occur all year, although germination may be limited to the period from spring to early autumn.

### **4.0 ENVIRONMENTAL IMPACTS & MANAGEMENT**

Clause 82 of the *Environmental Planning and Assessment Regulation, 1994* indicates specific factors which the Department of Primary Industries, Mineral Resources, must take into account in determining the likely environmental impacts of a proposed activity. These factors are addressed below.

Recognising the relatively temporary nature of the activities on-site, those activities will be conducted so as to minimise the disturbance of the existing environment wherever possible with all efforts to preserve the current amenity of the area.

#### **4.1 AIR QUALITY**

The activities associated with the drilling data acquisition will have a negligible impact on air quality. Dust may be created by the drilling of the upper 60 to 100 metres of any necessary up-holes. This dust will generally be restricted to the immediate area and is expected to last less than 4 hours.

Vehicle movements may create some dust on adjacent public roads but a project speed limit of 60kmh will be set for any unsealed portions of road used by the contractors to access the project area. This should reduce any dust to better than ambient conditions.

Exhaust emissions from the drilling rig and associated plant should not lead to significant deterioration of air conditions.

The total quantity of natural gas that may be liberated through the drilling process of the exploration holes will be negligible and flaring of any produced gas from the well will have negligible impact on air quality. Any gas that may be liberated by the drilling or testing process of the well may be burnt as the burning of natural gas (methane) releases only carbon dioxide and water as the by products.



**Figure 3: example of existing environment within PEL 426 – Thornbill E1 – Stuart Rd. Lawrence NSW**



**Figure 4: example of existing environment within PEL 426 – Dilkoon**



**Figure 5: example of existing environment within PEL 426 – Thornbill E2 Lyons rd. Camira**



**Figure 6: example of existing environment within PEL 426 – Tullymorgan 1**

## 4.2 WATER

### Storage and disposal of water, salinity and pH criteria

A water management plan has been drafted and will be implemented to the satisfaction of the DII-MR. All water produced during the drilling activities will be stored in on-site tanks or sumps lined with high density polyethylene (HDPE) 200 µm poly liner to prevent seepage while water samples are analysed for quality. If water quality is within general guidelines it will be utilized productively. Low quality water will be removed to a central storage pond.

All drilling fluids used will be developed, maintained and controlled by an on-site mud engineer where required. All drilling fluid will be retained in on-site tanks or sumps within a closed system. It is anticipated that town water or bore water will be used for all purposes on site. It is anticipated that the salinity of the drilling fluid will be maintained at less than 6% KCl and a pH of 7.0. Should this become excessively alkaline it will be neutralised. Acid conditions are not expected in drilling the strata.

On completion of the well, drilling fluids and produced water will be reused at subsequent drilling sites. Any water contaminated by hydrocarbons or non-degradable additives other than KCl will be removed to a council approved disposal site. The HDPE sump liners will be lifted and disposed of to an approved disposal site in accordance with council guidelines.

### Irrigation Plan

An Irrigation Plan will not be submitted at this time. If sufficient water is found to be produced from these wells and an irrigation plan is required it will be developed and submitted to Industry & Investment NSW for approval. Until such time any potentially produced water will be stored in tanks and sumps.

## 4.3 SOILS

The sites to be selected for drilling are gently sloping areas of cleared pasture land. The soils in the region are derived from weathered sandstone and shale, and the yellow clay subsoil is relatively erosion resistant. If it is necessary to clear vegetation, felled material will be mulched and stored in windrows for later rehabilitation. It is not anticipated that any trees will need removal. Activities requiring the movement of vehicles will be restricted to the more level part of the site and a gravel pad or timber matt may be constructed where necessary. The pad will be above grade and designed to permit safe placement and operation of the drilling equipment. The timber mat or gravel pad (if constructed) will be removed on rehabilitation of the site.

### Storm water runoff and erosion controls

To prevent surface runoff, silt fencing may be constructed down slope of the drilling area in the event of an accidental spillage or rainfall. In accordance with past practice, the existing surface grasses will be maintained to prevent erosion but will be slashed if a risk of fire exists. Depending on the drill rig used, drainage lines may also be installed to direct all surface runoff to the sumps.

### Soil management procedures - topsoil, acid sulphate soils

Soil management will include, but not be limited to:

- Wherever possible, soil, native grasses (and pasture) will not be disturbed.
- Topsoil will be stockpiled separately prior to any excavation.
- The topsoil will be replaced in the course of site rehabilitation.
- Mulched vegetation will be spread across replaced topsoil as an aid to re-vegetation and to prevent erosion.
- Seeding with native grass seed, harvested on site, will be undertaken where appropriate.

Any contaminated topsoil will be removed to an approved disposal site or buried on completion of works, depending on the severity and nature of contamination (e.g. hydrocarbon contaminated soil to an approved disposal site, and cement contaminated soil to sumps).

The presence of acid sulphate soils is highly unlikely to be in the area of works. Any areas of acid sulphate soils that might be encountered will be managed in accordance with LGA guidelines that limit such activities and outline the required special measures to be implemented.

#### 4.4 NOISE AND VIBRATION

The site activities likely to impact noise and vibration levels are well activities, vehicle movement and the use of machinery equipment. Under the guidelines of the “Department of Environment & Climate Change NSW Interim Construction Noise Guideline” the proposed drill locations are not classified as sensitive land use areas.

Activities may be conducted on a 24 hours per day basis as noise from the proposed activities is expected to be at ambient (natural background) levels at a distance of 400m. This is within the  $L_{Aeq}$  (15 min) as described by the guidelines. The results of noise testing conducted 23 Nov 2009 (copy attached as appendix 4) using a drill rig performing the same activity showed that the  $L_{Aeq, 15 \text{ min}}$  emanating from the rig:

- on average, are lower than the *Background Noise* level plus 5 dB(A) during all assessment periods (days, evenings and nights);

Noise mitigation will include sites located where possible at least 400m from residences; a minimum of 200m will be enforced. Where feasible and reasonable, the use of silenced equipment and noise shielding around stationary plant (such as generators), subject to manufacturers’ design requirements will be utilized. Work on site will be arranged to minimize the use of movement alarms on vehicles and mobile plant and noisy plant where possible will be located away from potentially noise affected neighbours or behind barriers, such as earth berms, tree lines and hills. Daily or weekly (as appropriate) noise measurements on site noise monitoring may be conducted for the duration of the work, and reviewed by the Site Supervisor and/or Superintendent. This monitoring will be undertaken by the OH&S officer of the company using standard equipment and techniques.

In response to noise and vibration complaints, monitoring will be undertaken at locations close to where the activities are occurring.

Vibration from the drilling will not be felt outside the perimeter fence.

Agreements with the respective Landholders approve the 24 hour per day drilling activity.

#### 4.5 FAUNA AND FLORA PROTECTION

No activity will occur in sensitive land use environments.

Under the 7 part test section 5A of the Environment Planning and Assessment Act 1979

- a) No threatened population of flora or fauna is likely to occur in the area of the proposed boreholes.
- b) No threatened population is likely to be significantly affected or impacted by the proposed activities and certainly no viable local population of any species is likely to be placed at the risk of extinction.
- c) No endangered population is likely to be significantly affected or impacted by the proposed activities and certainly no viable local population of any species is likely to be placed at the risk of extinction.
- d) In the case of an endangered ecological community or critically endangered ecological community:
  - i) The proposed activity will have minimal impact on the extent of any ecological community and certainly will not place any locally occurring ecological community at risk of extinction.

- ii) The proposed activity will have no impact on the composition of any ecological community and certainly will not place any locally occurring ecological community at risk of extinction.
- e) In relation to the habitat of a threatened species, population or ecological community:
  - i) The extent to which the habitat is likely to be removed or modified as a result of the proposed activity is minimal. No trees will be removed from any proposed site. The proposed activities will have minimal impact on the habitat of any threatened species, population or ecological community and certainly will not place any locally occurring species, population or ecological community at risk of extinction. Within a short time it is expected that the habitat will have completely recovered.
  - ii) The areal extent of the proposed activities is very limited. The area of habitat will not become fragmented or isolated from other area of habitat as a result of the proposed activities, and
  - iii) No interruption of habitat is expected and will be minimal and of short duration.
- f) The proposed activity will not have any significant adverse effect or impact on any critical habitat either directly or indirectly.
- g) The proposed action is consistent with and will be carried out in accordance with a recovery plan.
- h) The proposed action does not constitute or form part of any key threatening process. It will not result in the operation of or increase the impact of any key threatening process.

#### 4.5.1 Threatened Species in the Casino-Grafton Region

A search of the National Parks & Wildlife Atlas of NSW Wildlife has identified no species of significant flora, nor any sightings of vulnerable or endangered faunal species at any proposed site. Several threatened species of flora and fauna have been recorded across the Casino-Grafton area of New South Wales, and these are listed below. A more localised search surrounding the proposed borehole locations has been conducted on the coordinates of 152.50 – 153.36 degrees east and 29.20 to 29.55 degrees south and these searches have been presented as appendices 1 & 2 to this document. The list of threatened species presented below covers those of the Clarence Morton Basin and contains those species listed in the localised search.

**Table 3: Threatened species (Fauna)**

Green and Golden Bell Frog	<i>Litoria aurea</i>	Endangered
Green-thighed Frog	<i>Litoria brevipalmata</i>	Vulnerable
Olongburra Frog	<i>Litoria olongburensis</i>	Vulnerable
Pouched Frog	<i>Assa darlingtoni</i>	Vulnerable
Wallum Froglet	<i>Crinia tinnula</i>	Vulnerable
Fleay's Barred Frog	<i>Mixophyes fleayi</i>	Endangered
Giant Barred Frog	<i>Mixophyes iteratus</i>	Endangered
Loveridge's Frog	<i>Philoria loveridgei</i>	Endangered
Mountain Frog	<i>Philoria richmondensis</i>	Endangered
Eastern Bristlebird	<i>Dasyornis brachypterus</i>	Endangered
Speckled Warbler	<i>Pyrrholaemus saggitatus</i>	Vulnerable
Red Goshawk	<i>Erythrorchis radiatus</i>	Endangered
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>	Vulnerable
Square-tailed Kite	<i>Lophoictinia isura</i>	Vulnerable
Osprey	<i>Pandion haliaetus</i>	Vulnerable
Blue-billed Duck	<i>Oxyura australis</i>	Vulnerable
Freckled Duck	<i>Stictonetta naevosa</i>	Vulnerable
Magpie Goose	<i>Anseranas semipalmata</i>	Vulnerable
Australasian Bittern	<i>Botaurus poiciloptilus</i>	Vulnerable
Black Bittern	<i>Ixobrychus flavicollis</i>	Vulnerable

Rufous Scrub-bird	<i>Atrichornis rufescens</i>	Vulnerable
Bush Stone-curlew	<i>Burhinus grallarius</i>	Endangered
Beach Stone-curlew	<i>Esacus neglectus</i>	Endangered
Red-tailed Black-Cockatoo	<i>Calyptorhynchus banksii</i>	Vulnerable
Glossy Black-Cockatoo	<i>Calyptorhynchus lathamii</i>	Vulnerable
Barred Cuckoo-shrike	<i>Coracina lineata</i>	Vulnerable
Emu	<i>Dromaius novaehollandiae</i>	Endangered
Greater Sand-plover	<i>Charadrius leschenaultii</i>	Vulnerable
Lesser Sand-plover	<i>Charadrius mongolus</i>	Vulnerable
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	Endangered
Brown Treecreeper	<i>Climacteris picumnus</i>	Vulnerable
Wompoo Fruit-Dove	<i>Ptilinopus magnificus</i>	Vulnerable
Rose-crowned Fruit-Dove	<i>Ptilinopus regina</i>	Vulnerable
Superb Fruit-Dove	<i>Ptilinopus superbus</i>	Vulnerable
White-eared Monarch	<i>Monarcha leucotis</i>	Vulnerable
Black-browed Albatross	<i>Thalassarche melanophris</i>	Vulnerable
Diamond Firetail	<i>Stagonopleura guttata</i>	Vulnerable
Brolga	<i>Grus rubicunda</i>	Vulnerable
Sooty Oystercatcher	<i>Haematopus fuliginosus</i>	Vulnerable
Pied Oystercatcher	<i>Haematopus longirostris</i>	Vulnerable
Comb-crested Jacana	<i>Irediparra gallinacea</i>	Vulnerable
White Tern	<i>Gygis alba</i>	Vulnerable
Little Tern <i>Sterna</i>	<i>albifrons</i>	Endangered
Sooty Tern <i>Sterna</i>	<i>fuscata</i>	Vulnerable
Mangrove Honeyeater	<i>Lichenostomus fasciocularis</i>	Vulnerable
Black-chinned Honeyeater	<i>Melithreptus gularis gularis</i>	Vulnerable
Regent Honeyeater	<i>Xanthomyza Phrygia</i>	Endangered
Albert's Lyrebird	<i>Menura alberti</i>	Vulnerable
Olive Whistler	<i>Pachycephala olivacea</i>	Vulnerable
Hooded Robin	<i>Melanodryas cucullata</i>	Vulnerable
Red-tailed Tropicbird	<i>Phaethon rubricauda</i>	Vulnerable
Marbled Frogmouth	<i>Podargus ocellatus</i>	Vulnerable
Grey-crowned Babbler	<i>Pomastomus temporalis temporalis</i>	Vulnerable
Southern Giant Petrel	<i>Macronectes giganteus</i>	Endangered
Providence Petrel	<i>Pterodroma solandri</i>	Vulnerable
Flesh-footed Shearwater	<i>Puffinus carneipes</i>	Vulnerable
Double-eyed Fig-parrot	<i>Cyclopsitta diophthalma coxeni</i>	Endangered
Swift Parrot	<i>Lathamus discolor</i>	Endangered
Turquoise Parrot	<i>Neophema pulchella</i>	Vulnerable
Eastern Ground Parrot	<i>Pezoporus wallicus wallicus</i>	Vulnerable
Bush-hen	<i>Amaurornis olivaceus</i>	Vulnerable
Painted Snipe	<i>Rostratula benghalensis australis</i>	Endangered
Sanderling	<i>Calidris alba</i>	Vulnerable
Great Knot	<i>Calidris tenuirostris</i>	Vulnerable
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	Vulnerable
Black-tailed Godwit	<i>Limosa limosa</i>	Vulnerable
Terek Sandpiper	<i>Xenus cinereus</i>	Vulnerable
Barking Owl	<i>Ninox connivens</i>	Vulnerable
Powerful Owl	<i>Ninox strenua</i>	Vulnerable
Red-backed Button-quail	<i>Turnix maculosa</i>	Vulnerable
Black-breasted Button-quail	<i>Turnix melanogaster</i>	Endangered
Grass Owl	<i>Tyto capensis</i>	Vulnerable
Masked Owl	<i>Tyto novaehollandiae</i>	Vulnerable
Sooty Owl	<i>Tyto tenebricosa</i>	Vulnerable
Atlas Rainforest Ground-beetle	<i>Nurus atlas</i>	Endangered
Shorter Rainforest Ground-beetle	<i>Nurus brevis</i>	Endangered
Humpback Whale	<i>Megaptera novaeangliae</i>	Vulnerable

Eastern Pygmy-possum	<i>Cercartetus nanus</i>	Vulnerable
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Vulnerable
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	Vulnerable
Common Planigale	<i>Planigale maculata</i>	Vulnerable
Dugong	<i>Dugong dugon</i>	Endangered
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	Vulnerable
Black-striped Wallaby	<i>Macropus dorsalis</i>	Endangered
Parma Wallaby	<i>Macropus parma</i>	Vulnerable
Brush-tailed Rock-wallaby	<i>Petrogale penicillata</i>	Endangered
Red-legged Pademelon	<i>Thylogale stigmatica</i>	Vulnerable
Beccari's Freetail-bat	<i>Mormopterus beccarii</i>	Vulnerable
Eastern Freetail-bat	<i>Mormopterus norfolkensis</i>	Vulnerable
Eastern Chestnut Mouse	<i>Pseudomys gracilicaudatus</i>	Vulnerable
Hastings River Mouse	<i>Pseudomys oralis</i>	Endangered
Australian Fur-seal	<i>Arctocephalus pusillus doriferus</i>	Vulnerable
Yellow-bellied Glider	<i>Petaurus australis</i>	Vulnerable
Squirrel Glider	<i>Petaurus norfolcensis</i>	Vulnerable
Koala	<i>Phascolarctos cinereus</i>	Vulnerable
Sperm Whale	<i>Physeter macrocephalus</i>	Vulnerable
Rufous Bettong	<i>Aepyprymnus rufescens</i>	Vulnerable
Long-nosed Potoroo	<i>Potorous tridactylus</i>	Vulnerable
Eastern Tube-nosed Bat	<i>Nyctimene robinsoni</i>	Vulnerable
Black Flying-fox	<i>Pteropus alecto</i>	Vulnerable
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Vulnerable
Common Blossom-bat	<i>Syconycteris australis</i>	Vulnerable
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	Vulnerable
Hoary Wattled Bat	<i>Chalinolobus nigrogriseus</i>	Vulnerable
Eastern Pipistrelle	<i>Falsistrellus tasmaniensis</i>	Vulnerable
Golden-tipped Bat	<i>Kerivoula papuensis</i>	Vulnerable
Little Bentwing-bat	<i>Miniopterus australis</i>	Vulnerable
Eastern Bentwing-bat	<i>Miniopterus schreibersii oceanensis</i>	Vulnerable
Large-footed Myotis	<i>Myotis adversus</i>	Vulnerable
Eastern Long-eared Bat	<i>Nyctophilus bifax</i>	Vulnerable
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	Vulnerable
Eastern Cave Bat	<i>Vespadelus troungtoni</i>	Vulnerable
Loggerhead Turtle	<i>Caretta caretta</i>	Endangered
Green Turtle	<i>Chelonia mydas</i>	Vulnerable
Leathery Turtle	<i>Dermodochelys coriacea</i>	Vulnerable
White-crowned Snake	<i>Cacophis harriettae</i>	Vulnerable
Pale-headed Snake	<i>Hoplocephalus bitorquatus</i>	Vulnerable
Stephens' Banded Snake	<i>Hoplocephalus stephensii</i>	Vulnerable
Three-toed Snake-tooth Skink	<i>Coeranoscincus reticulatus</i>	Vulnerable

#### Table 4: Threatened Species (Flora)

Isoglossa	<i>Isoglossa eranthemoides</i>	Endangered
Slender Marsdenia	<i>Marsdenia longiloba</i>	Endangered
Southern Ochrosia	<i>Ochrosia moorei</i>	Endangered
Heart-leaved Star Hair	<i>Astrotricha cordata</i>	Endangered
Heath Wrinklewort	<i>Rutidosis heterogama</i>	Vulnerable
Dwarf Heath Casuarina	<i>Allocasuarina defungens</i>	Endangered
Corokia	<i>Corokia whiteana</i>	Vulnerable
Water Nutgrass	<i>Cyperus aquatilis</i>	Endangered
Cliff Sedge	<i>Cyperus rupicola</i>	Vulnerable
Square-stemmed Spike-rush	<i>Eleocharis tetraquetra</i>	Endangered
Davidson's Plum	<i>Davidsonia jerseyana</i>	Endangered
Smooth Davidson's Plum	<i>Davidsonia johnsonii</i>	Endangered

Tree Guinea Flower	<i>Hibbertia hexandra</i>	Endangered
Bordered Guinea Flower	<i>Hibbertia marginata</i>	Vulnerable
Giant Spear Lily	<i>Doryanthes palmeri</i>	Vulnerable
Waterwheel Plant	<i>Aldrovanda vesiculosa</i>	Endangered
Minyon Quandong	<i>Elaeocarpus sp. Rocky Creek</i>	Endangered
Hairy Quandong	<i>Elaeocarpus williamsianus</i>	Endangered
Hairy Melichrus	<i>Melichrus hirsutus</i>	Endangered
Narrow-leaf Melichrus	<i>Melichrus sp. Gibberagee</i>	Endangered
Acalypha	<i>Acalypha eremorum</i>	Endangered
Jointed Baloghia	<i>Baloghia marmorata</i>	Vulnerable
Sand Spurge	<i>Chamaesyce psammogeton</i>	Endangered
Southern Fontainea	<i>Fontainea australis</i>	Vulnerable
Brush Sauropus	<i>Phyllanthus microcladus</i>	Endangered
Rainforest Cassia	<i>Senna acclinis</i>	Endangered
Thorny Pea	<i>Desmodium acanthocladum</i>	Vulnerable
Pointed Trefoil	<i>Rhynchosia acuminatissima</i>	Vulnerable
Brush Sophora	<i>Sophora fraseri</i>	Vulnerable
Silverbush	<i>Sophora tomentosa</i>	Endangered
Marblewood	<i>Acacia bakeri</i>	Vulnerable
Rupp's Wattle	<i>Acacia ruppii</i>	Endangered
White Lace Flower	<i>Archidendron hendersonii</i>	Vulnerable
Narrow-leaf Finger Fern	<i>Grammitis stenophylla</i>	Endangered
Nightcap Plectranthus	<i>Plectranthus nitidus</i>	Endangered
Swamp Mint-bush	<i>Prostanthera palustris</i>	Vulnerable
Spiny Mint-bush	<i>Prostanthera spinosa</i>	Vulnerable
Stinking Cryptocarya	<i>Cryptocarya foetida</i>	Vulnerable
Crystal Creek Walnut	<i>Endiandra floydii</i>	Endangered
Rusty Rose Walnut	<i>Endiandra hayesii</i>	Vulnerable
Green-leaved Rose Walnut	<i>Endiandra muelleri subsp. Bracteata</i>	Endangered
Slender Screw Fern	<i>Lindsaea incisa</i>	Endangered
no common name	<i>Amyema plicatula</i>	Endangered
Onion Cedar	<i>Owenia cepiodora</i>	Vulnerable
Tinospora Vine	<i>Tinospora smilacina</i>	Endangered
Arrow-head Vine	<i>Tinospora tinosporoides</i>	Vulnerable
Ripple-leaf Muttonwood	<i>Rapanea sp. A Richmond River</i>	Endangered
Sandstone Rough-barked Apple	<i>Angophora robur</i>	Vulnerable
Woodland Babingtonia	<i>Babingtonia silvestris</i>	Endangered
Giant Ironwood	<i>Choricarpia subargentea</i>	Endangered
Slaty Red Gum	<i>Eucalyptus glaucina</i>	Vulnerable
Square-fruited Ironbark	<i>Eucalyptus tetrapleura</i>	Vulnerable
Sweet Myrtle	<i>Gossia fragrantissima</i>	Endangered
Weeping Paperbark	<i>Melaleuca irbyana</i>	Endangered
Red Lilly Pilly	<i>Syzygium hodgkinsoniae</i>	Vulnerable
Durobby	<i>Syzygium moorei</i>	Vulnerable
Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	Vulnerable
Peach Myrtle	<i>Uromyrtus australis</i>	Endangered
Square-stemmed Olax	<i>Olax angulata</i>	Vulnerable
Pink Nodding Orchid	<i>Geodorum densiflorum</i>	Endangered
Red-flowered King of the Fairies	<i>Oberonia titania</i>	Vulnerable
Southern Swamp Orchid	<i>Phaius australis</i>	Endangered
Lady Tankerville's Swamp Orchid	<i>Phaius tankervilleae</i>	Endangered
Dark Greenhood	<i>Pterostylis nigricans</i>	Vulnerable
Brown Butterfly Orchid	<i>Sarcochilus dilatatus</i>	Endangered
Hartman's Sarcochilus	<i>Sarcochilus hartmannii</i>	Vulnerable
Blotched Sarcochilus	<i>Sarcochilus weinthalii</i>	Vulnerable
Hairy Jointgrass	<i>Arthraxon hispidus</i>	Vulnerable
Native Milkwort	<i>Polygala linariifolia</i>	Endangered

Tall Knotweed	<i>Persicaria elatior</i>	Vulnerable
Needle-leaf Fern	<i>Belvisia mucronata</i>	Endangered
Basket Fern	<i>Drynaria rigidula</i>	Endangered
Nightcap Oak	<i>Eidothea hardeniana</i>	Endangered
Ball Nut	<i>Floydia praealta</i>	Vulnerable
Banyabba Grevillea	<i>Grevillea banyabba</i>	Vulnerable
Mason's Grevillea	<i>Grevillea masonii</i>	Endangered
Four-tailed Grevillea	<i>Grevillea quadricauda</i>	Vulnerable
Red Boppel Nut	<i>Hicksbeachia pinnatifolia</i>	Vulnerable
Rough-shelled Bush Nut	<i>Macadamia tetraphylla</i>	Vulnerable
Northern Clematis	<i>Clematis fawcettii</i>	Vulnerable
Sweet False Galium	<i>Hedyotis galioides</i>	Endangered
Spiny Gardenia	<i>Randia moorei</i>	Endangered
Cameron's Tarenna	<i>Tarenna cameronii</i>	Endangered
Scented Acronychia	<i>Acronychia littoralis</i>	Endangered
Yellow Satinheart	<i>Bosistoa transversa</i>	Vulnerable
Axe-Breaker	<i>Geijera paniculata</i>	Endangered
Austral Toadflax	<i>Thesium australe</i>	Vulnerable
Small-leaved Tamarind	<i>Diploglottis campbellii</i>	Endangered
Fine-leaved Tuckeroo	<i>Lepiderema pulchella</i>	Vulnerable
Rusty Plum	<i>Amorphospermum whitei</i>	Vulnerable
Moonee Quassia	<i>Quassia sp. Mooney Creek</i>	Endangered
Small-leaved Hazelwood	<i>Symplocos baeuerlenii</i>	Vulnerable
Native Jute	<i>Corchorus cunninghamii</i>	Endangered

#### 4.5.2. Environmental Impact Minimisation Methods

Recognising the relatively temporary nature of the activities on-site, those activities will be conducted so as to minimise the disturbance of the existing environment wherever possible with all efforts to preserve the current amenity of the area.

Sites will be selected to avoid sensitive land areas. The sites to be selected for drilling are gently sloping areas of cleared pasture land or of similar commercial use. If it is necessary to clear vegetation, felled material will be mulched and stored in windrows for later rehabilitation. It is not anticipated that any trees will need removal. Activities requiring the movement of vehicles will be restricted.

To prevent surface runoff, silt fencing may be constructed down slope of the drilling area in the event of an accidental spillage or rainfall. In accordance with past practice, the existing surface grasses will be maintained to prevent erosion but will be slashed if a risk of fire exists. Drainage lines may also be installed to direct all surface runoff to the sumps.

Soil management will include, but not be limited to:

- Wherever possible, soil, native grasses (and pasture) will not be disturbed.
- Topsoil will be stockpiled separately prior to any excavation.
- The topsoil will be replaced in the course of site rehabilitation.
- Mulched vegetation will be spread across replaced topsoil as an aid to re-vegetation and to prevent erosion.
- Seeding with native grass seed, harvested on site, will be undertaken where appropriate.

Any contaminated topsoil will be removed to an approved disposal site or buried on completion of works, depending on the severity and nature of contamination (e.g. hydrocarbon contaminated soil to an approved disposal site, and cement contaminated soil to sumps).

## **4.6 CHEMICAL AND HAZARDOUS SUBSTANCE MANAGEMENT**

The Operator has placed strict environmental controls on the proposed activities, including the recirculation of drilling fluids, their containment in on-site tanks or sumps, utilisation of spill kits, constant monitoring of all activities and subsequent rehabilitation of the site. The only potential pollutants on the site will be engine fuels and oils. Drilling additives acceptable for use are biodegradable or inert and the stabilisation/weight additive is a widely used farm fertiliser.

In the event of unexpected spills of pollutants, the procedures detailed in the Emergency Response Procedures will be instigated and the determining authority duly notified. As noted at 4.2 above, silt fencing for the containment of accidental spillages may be constructed on the down slope side of the site. This would intercept any potential pollution washed from the site. In the event of a fuel spill or similar event presenting potential environmental danger, spill kit materials will be used and additional emergency bunding may be constructed (at the point of the spill).

### Procedures to prevent spills and soil contamination (hydrocarbons, drilling chemicals/additives)

The main additives used in the course of drilling will be Potassium Chloride (KCl), Liquid Polymer and Portland cement. Others will be avoided if possible. The use of hydrocarbon additives will not be permitted.

The KCl is the same as the farming industry uses as a fertiliser in the course of pasture improvement. The liquid polymer used is widely utilised in the drilling industry and is degradable by both biological action and exposure to weather.

All chemicals on the site will be stored in sealed containers or on pallets, protected from weather and within a bunded area. Hydrocarbons on site will be stored in sealed containers within a bunded area and any spill will be immediately treated with drysorb type materials. A spill control kit of suitable materials will be kept on site.

All drilling fluids will be contained within the primary fluid circulation system of the rig and drilling tanks/sumps and escape prevented by a secondary bund type containment system.

## **4.7 CONTAMINATED LAND**

Any soil contaminated by materials introduced by the exploration activities will be removed for disposal at a site determined by the relevant LGA.

## **4.8 WASTE MINIMISATION AND MANAGEMENT**

All waste generated by the activities will be collected and disposed of at sites approved by the relevant LGA. In particular, food wastes will be regularly disposed of in order not to attract vermin. In the event that natural gas is produced by wells, gas shall be flared in a pit or containment device.

### Sanitation management

Garbage including foodstuffs will be removed weekly to council approved tip. If necessary, a portable toilet will be maintained on site for the duration of the program.

## **4.9 NATURAL RESOURCE UTILISATION**

The only demand on resources will be a requirement for water for use in drilling. Quantities used will not be great; an estimated 200kl may be required. Where possible, fluids used on previous sites will be recycled and reused. Any additional water required will be obtained from sources created by the drilling, or approved by local landowners and/or the relevant LGA. The project's modest electricity requirements (estimated 5kw) will be obtained from onsite generation.

## **4.10 IMPACT ON THE COMMUNITY**

The nearest sizeable communities to the proposed drilling activities are Casino, Maclean and Grafton. All activities will be conducted as far from dwellings as possible. The proposed drilling activities, which will be conducted on a 24 hour basis, should have minimal aural and visual impact. Unavoidable engine exhaust fumes should be dissipated to well below detectable levels at the nearest residences. Access to the area is via public sealed or gravelled roads. Noise, engine exhaust and dust from vehicle movements will have negligible impact on dwellings.

Other than restriction of access to the immediate sites for safety purposes, there will be no significant curtailment to beneficial uses of the environment, either during or subsequent to the drilling activities. The sites will be chosen to avoid intensive land use and will be located in open pasture land or sparsely wooded areas. No access routes will be blocked on the property and some access upgrading may take place in association with the work. The erection of fencing will avoid the potential for injury to livestock.

### Work hours and noise

Normal work hours on the wells during the drilling will be primarily on a 24 hour per day basis. Drilling activities should cause no disturbance to residents, however all such activities will be monitored to ensure noise levels remain within acceptable levels and to prevent undue disturbance to neighbouring residences. If necessary, sound level management will be actively employed.

## **4.11 VISUAL ASSESSMENT**

The sites chosen for drilling will be screened wherever possible from near-by residences by tree-lines and light to moderately forested areas, undulating topography and the distance between the drilling and residences. The rig to be utilised for drilling is expected to have a 22 metre high mast which may be observable from a distance.

The occupation of the drilling sites will be for a period of approximately 14 to 28 days. The site will be maintained in a tidy appearance during activities and every attempt will be made to ensure the site does not detract from the visual amenity of the district during or after the activities. At the completion of operational works, the site will be rehabilitated.

## **4.12 HERITAGE**

The areas proposed for drilling activity possess no known special or unique attributes in connection with aesthetic, anthropological, archaeological, architectural, cultural, scientific, social or other special values, either for present or future generations.

### **4.12.1 Aboriginal Heritage**

Metgasco utilises a strict Heritage Protection Protocol which it has developed in conjunction with the DII - MR. A search of the National Parks and Wildlife Service's Aboriginal Sites Register database and the AHIMS NSW Department of Environment & Climate Change has shown no known Aboriginal sites are recorded in or near the proposed drill sites. (See figure 7 below for known site locations.) In addition, prior to data acquisition activities, a meeting will be held with the relevant Aboriginal Land Council to ensure sites of significance are identified and avoided. All the sites have been previously disturbed and are presently improved pastures with open grazing land use or similar commercial activity. Pursuant to Section 146 of the Heritage Act, 1977 if any artifact is found, then work will stop until the local NPWS, local government Heritage Officer and/or Aboriginal Land Council nominee are notified and advice sought.

In addition a Cultural Heritage Protocol has been adopted by both Metgasco and its agents. This document now forms part of the Exploration Site Supervision Manual and acts a part of the Environmental Management Plan. In particular, the Richmond Valley Council and the Clarence Valley Council have provided contact details should expert local advice be required at short notice.



Figure 7: Aboriginal heritage information management system. (NB: green diamond indicates location of known Aboriginal heritage site.)

#### 4.12.2 Other Cultural Heritage

Areas known to contain historical, cultural or anthropological artefacts or ‘relics’ (as defined by the NSW Heritage Act) have been avoided in selecting the drilling locations. Every effort will be made to avoid disturbing such objects should they be encountered during activities. Pursuant to Section 146 of the Heritage Act, 1977, if any collection of historical objects more than 50 years old is identified during work, then work will stop and their presence is to be notified to local government heritage officers and the state Heritage Council and advice sought.

A search of the local government environmental plan of listed cultural heritage sites for the Richmond Valley council and the Clarence Valley council using the NSW State heritage listing website indicates no known historical, cultural or anthropological artefacts or relics within the proposed locations.(see appendix

3 for a list of sensitive sites.) . if any collection of historical objects more than 50 years old is identified during work, local government heritage officers and the state Heritage Council are to be notified.\

#### **4.12.3 Mitigation Measures**

To ensure there is no damage or contamination to heritage sites the following mitigation measures will be implemented: Appropriate approvals will be obtained prior to any disturbance caused by proposed activities; Personnel awareness of these sites and their values to the communities will be emphasised through cultural heritage awareness training; detailed inventory of heritage sites relevant will be maintained; sites adjacent heritage areas will have barriers installed.

#### **4.13 LANDUSE**

The properties around Casino and Grafton are generally used for beef cattle grazing and crops. No residences will be located within 200m of any drill, and a distance of at least 400m will be maintained whenever possible. In addition, efforts will be made to keep all residences separated from the drilling by forestation, tree lines, topography and/or distance.

Presently available information indicates that the subject land does not fall within any of the eleven categories of land identified in Section 3.2.1 of Guidelines for (the) Review of Environmental Factors [ESB18 June 2006] that would reserve or protect the land for conservation purposes. All drill sites will be situated on land that is currently zoned Rural 1(a) (Prime Agricultural Land) or equivalent under the relevant local government authority (LGA) LEP.

#### **4.14 CUMULATIVE ENVIRONMENTAL EFFECTS**

The cumulative environmental impacts on the biodiversity of the area are considered insignificant. The preparation of the sites of activity is considered to have a minimal impact due to siting within previously disturbed areas.

The direct impact of the activity on threatened species of flora and fauna is considered small due to the nature of the size of site of activity and the location of the activity.

The conservation of topsoil stocks is designed to maximize the effectiveness of the rehabilitation program and experience has shown this to be an effective method of rehabilitation.

Adequate mitigation measures are available to limit dust generation in the localized area and where the activity creates traffic on unsealed roads and tracks of access and egress to and from the site.

Impacts on aboriginal and cultural heritage sites is minimal as the location of the sites is well away from any known locations of significance and are on previously cleared and or disturbed areas.

Due to the limited duration of the activities and the stringent controls imposed by the operator, no cumulative environmental impact is anticipated as a consequence of the proposed activity. A short term increase in vegetation growth may be expected after rehabilitation due to mulching. The site is expected to be restored to its prior condition within three years of abandonment.

#### **4.15 SUMMARY OF MITIGATING MEASURES**

Mitigation measures will include but not be limited to

1. Careful site selection to where possible, avoid areas requiring special environmental protection.
2. Observation on site of any matters and items requiring protection, preservation or avoidance.
3. Implementation of Cultural Heritage Protocol.
4. Communication of matters identified by 2 and 3 above to all working on the site.
5. Where possible, preserve the prior environment.
6. Protection and avoidance of sensitive items.
7. Prevention of contamination or other avoidable environmental disturbance.
8. Restoration of the site prior environment on abandonment, and subsequent inspection.

## 5.0 REHABILITATION WORKS

At the conclusion of the program, environmental restoration of the site will be undertaken and no long term environmental effects are envisaged. Due to the nature of the drilling activities, it may be necessary for a small compound to remain at the wellhead. Otherwise, rehabilitation will be carried out in accordance with requirements of the DII-MR.

It is planned for drilling activities to be carried out in a closed system, with all on-site fluids and cuttings contained in tanks or sumps if required. Where possible, water and drilling fluid will be re-used on subsequent drill sites or otherwise disposed of in accordance with guidelines from the LGA at an approved site. Rock cuttings will also be stored or disposed of at a LGA approved site. No rubbish or material will be buried on any site.

Rapid regeneration of the site to its original state will be promoted by the re-spreading of any stockpiled topsoil. Mulching and seeding with endemic grasses will follow. The perimeter fence will be retained until satisfactory flora re-growth has taken place, to protect such re-growth from grazing stock.

Any materials for improvements to tracks and fencing will be removed from the site when appropriate, unless the property owner requests their retention in writing. Any gravel pads will be removed from the well site. Should the property owner request the retention of any such materials, these will be stockpiled at an appropriate location.

## 6.0 SUMMARY OF IMPACTS AND CONCLUSION

This REF presents the knowledge of the environment and the potential impacts as they are known at this time. As a consequence of experience with previous exploration activities in the area and the willingness of both Operator and Contractors to minimise all environmental impacts, the operator Metgasco Ltd sees no major long term unfavourable impacts that might ensue from the proposed exploration activity.

There will be an impact on the immediate vicinity of the holes for the duration of the program (as described above - Description of the Proposed Activity), however this will be both localised and non-permanent. Similar programs conducted elsewhere have been fully rehabilitated, and indeed the precise location of many former drill holes is difficult (if not impossible) to detect due to satisfactory rehabilitation. Such locations have not been permanently transformed in any environmentally adverse manner.

Except for the actual period of drilling, no diminution of aesthetic, recreational, scientific or other environmental quality will result from this proposal. The activity will enhance the scientific value of the locality by way of its contribution to geological knowledge and an understanding of the region's energy resources.

A future gas production project may, if commercial, have some favourable long term impacts on the economy of the local community and provide energy alternatives that reduce greenhouse impacts from those currently available.

This document and its review form part of the Environmental Management Plan of Metgasco Limited and as such is the subject of continuing updating as additional information is acquired. This document was originally prepared in March 2008 and amended in August 2009 and this version produced in July 2010.

**END of DOCUMENT**















## Appendix 1: Wildlife Atlas search results - Fauna



















## Search Results

**Your selection:** Fauna, threatened species, Selected Area - 152.50000-29.55000, 153.36000 - 29.20000 returned a total of 3317 records of 79 species.

Report generated on 02/08/2010 - 11:17 (Data valid to 25/04/2010)

\* Exotic (non-native) species

Amphibia	Map	Scientific Name	Common Name	Legal Status	Count	Info
Hylidae						
	<input type="checkbox"/>	Litoria aurea	Green and Golden Bell Frog	E1	1	
	<input type="checkbox"/>	Litoria brevipalmata	Green-thighed Frog	V	9	
	<input type="checkbox"/>	Litoria longburensis	Olongburra Frog	V	15	
Myobatrachidae						
	<input type="checkbox"/>	Crinia tinnula	Wallum Froglet	V	46	
	<input type="checkbox"/>	Mixophyes iteratus	Giant Barred Frog	E1	10	
Aves	Map	Scientific Name	Common Name	Legal Status	Count	Info
Acanthizidae						
	<input type="checkbox"/>	Pyrrholaemus sagittatus	Speckled Warbler	V	2	
Accipitridae						
	<input type="checkbox"/>	Circus assimilis	Spotted Harrier	V	3	
	<input type="checkbox"/>	Erythrotriorchis radiatus	Red Goshawk	E4A	6	
	<input type="checkbox"/>	Hamirostra melanosternon	Black-breasted Buzzard	V	1	
	<input type="checkbox"/>	Hieraaetus morphnoides	Little Eagle	V	4	
	<input type="checkbox"/>	Lophoictinia isura	Square-tailed Kite	V	7	
	<input type="checkbox"/>	Pandion haliaetus	Osprey	V	405	
Anseranatidae						
	<input type="checkbox"/>	Anseranas semipalmata	Magpie Goose	V	6	
Ardeidae						
	<input type="checkbox"/>	Botaurus poiciloptilus	Australasian Bittern	V	1	
	<input type="checkbox"/>	Ixobrychus flavicollis	Black Bittern	V	4	
Burhinidae						
	<input type="checkbox"/>	Burhinus grallarius	Bush Stone-curlew	E1	8	

	<input type="checkbox"/>	<i>Esacus neglectus</i>	Beach Stone-curlew	E4A	55	
Cacatuidae						
	<input type="checkbox"/>	<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V	106	
Campephagidae						
	<input type="checkbox"/>	<i>Coracina lineata</i>	Barred Cuckoo-shrike	V	10	
Casuariidae						
	<input type="checkbox"/>	<i>Dromaius novaehollandiae</i>	Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	E2	182	
Charadriidae						
	<input type="checkbox"/>	<i>Charadrius leschenaultii</i>	Greater Sand-plover	V	10	
	<input type="checkbox"/>	<i>Charadrius mongolus</i>	Lesser Sand-plover	V	36	
Ciconiidae						
	<input type="checkbox"/>	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1	694	
Climacteridae						
	<input type="checkbox"/>	<i>Climacteris picumnus</i>	Brown Treecreeper	V	44	
	<input type="checkbox"/>	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V	3	
Columbidae						
	<input type="checkbox"/>	<i>Ptilinopus magnificus</i>	Wompoo Fruit-Dove	V	9	
	<input type="checkbox"/>	<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove	V	11	
Diomedidae						
	<input type="checkbox"/>	<i>Thalassarche melanophris</i>	Black-browed Albatross	V	1	
Gruidae						
	<input type="checkbox"/>	<i>Grus rubicunda</i>	Brolga	V	84	
Haematopodidae						
	<input type="checkbox"/>	<i>Haematopus fuliginosus</i>	Sooty Oystercatcher	V	13	
	<input type="checkbox"/>	<i>Haematopus longirostris</i>	Pied Oystercatcher	E1	170	
Jacanidae						
	<input type="checkbox"/>	<i>Irediparra gallinacea</i>	Comb-crested Jacana	V	6	
Laridae						
	<input type="checkbox"/>	<i>Sterna albifrons</i>	Little Tern	E1	47	
Meliphagidae						
	<input type="checkbox"/>	<i>Lichenostomus fasciocularis</i>	Mangrove Honeyeater	V	58	
	<input type="checkbox"/>	<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V	5	

	<input type="checkbox"/>	<i>Xanthomyza phrygia</i>	Regent Honeyeater	E1	9	
Monarchidae						
	<input type="checkbox"/>	<i>Monarcha leucotis</i>	White-eared Monarch	V	2	
Neosittidae						
	<input type="checkbox"/>	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	17	
Petroicidae						
	<input type="checkbox"/>	<i>Melanodryas cucullata</i>	Hooded Robin	V	2	
	<input type="checkbox"/>	<i>Petroica boodang</i>	Scarlet Robin	V	1	
Phaethontidae						
	<input type="checkbox"/>	<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	V	1	
Pomatostomidae						
	<input type="checkbox"/>	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V	173	
Procellariidae						
	<input type="checkbox"/>	<i>Pterodroma solandri</i>	Providence Petrel	V	1	
Psittacidae						
	<input type="checkbox"/>	<i>Glossopsitta pusilla</i>	Little Lorikeet	V	45	
	<input type="checkbox"/>	<i>Pezoporus wallicus wallicus</i>	Eastern Ground Parrot	V	27	
Scolopacidae						
	<input type="checkbox"/>	<i>Calidris alba</i>	Sanderling	V	2	
	<input type="checkbox"/>	<i>Calidris tenuirostris</i>	Great Knot	V	43	
	<input type="checkbox"/>	<i>Limicola falcinellus</i>	Broad-billed Sandpiper	V	1	
	<input type="checkbox"/>	<i>Limosa limosa</i>	Black-tailed Godwit	V	32	
	<input type="checkbox"/>	<i>Xenus cinereus</i>	Terek Sandpiper	V	26	
Strigidae						
	<input type="checkbox"/>	<i>Ninox connivens</i>	Barking Owl	V	28	
	<input type="checkbox"/>	<i>Ninox strenua</i>	Powerful Owl	V	17	
Turnicidae						
	<input type="checkbox"/>	<i>Turnix maculosa</i>	Red-backed Button-quail	V	3	
Tytonidae						
	<input type="checkbox"/>	<i>Tyto capensis</i>	Grass Owl	V	7	
	<input type="checkbox"/>	<i>Tyto novaehollandiae</i>	Masked Owl	V	29	

<b>Mammalia</b>	Map	Scientific Name	Common Name	<a href="#">Legal Status</a>	Count	Info
<b>Dasyuridae</b>						
	<input type="checkbox"/>	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V	22	
	<input type="checkbox"/>	<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V	46	
	<input type="checkbox"/>	<i>Planigale maculata</i>	Common Planigale	V	7	
<b>Molossidae</b>						
	<input type="checkbox"/>	<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat	V	3	
<b>Muridae</b>						
	<input type="checkbox"/>	<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	V	1	
<b>Petauridae</b>						
	<input type="checkbox"/>	<i>Petaurus australis</i>	Yellow-bellied Glider	V	85	
	<input type="checkbox"/>	<i>Petaurus norfolcensis</i>	Squirrel Glider	V	46	
<b>Phascolarctidae</b>						
	<input type="checkbox"/>	<i>Phascolarctos cinereus</i>	Koala	V	236	
<b>Potoroidae</b>						
	<input type="checkbox"/>	<i>Aepyprymnus rufescens</i>	Rufous Bettong	V	34	
	<input type="checkbox"/>	<i>Potorous tridactylus</i>	Long-nosed Potoroo	V	1	
<b>Pteropodidae</b>						
	<input type="checkbox"/>	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V	105	
	<input type="checkbox"/>	<i>Syconycteris australis</i>	Common Blossom-bat	V	28	
<b>Vespertilionidae</b>						
	<input type="checkbox"/>	<i>Chalinolobus nigrogriseus</i>	Hoary Wattled Bat	V	13	
	<input type="checkbox"/>	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	3	
	<input type="checkbox"/>	<i>Miniopterus australis</i>	Little Bentwing-bat	V	75	
	<input type="checkbox"/>	<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V	4	
	<input type="checkbox"/>	<i>Myotis macropus</i>	Southern Myotis	V	32	
	<input type="checkbox"/>	<i>Nyctophilus bifax</i>	Eastern Long-eared Bat	V	21	
	<input type="checkbox"/>	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	7	
	<input type="checkbox"/>	<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V	1	
<b>Reptilia</b>						
<b>Reptilia</b>	Map	Scientific Name	Common Name	<a href="#">Legal Status</a>	Count	Info









Elapidae

 Hoplocephalus stephensii Stephens' Banded Snake V 1 
**Appendix 2:** Wild Atlas search results - Flora**Search Results**

**Your selection:** Flora, threatened species, Selected Area - 152.50000 -29.55000, 153.36000,-29.20000 returned a total of 223 records of 23 species.

Report generated on 02/08/2010 - 11:32 (Data valid to 25/04/2010)

\* *Exotic (non-native) species*

Plants	Map	Scientific Name	Common Name	Legal Status	Count	Info
Asteraceae						
<input type="checkbox"/>		Rutidosia heterogama	Heath Wrinklewort	V	2	
Casuarinaceae						
<input type="checkbox"/>		Allocasuarina defungens	Dwarf Heath Casuarina	E1	2	
Cyperaceae						
<input type="checkbox"/>		Cyperus aquatilis	Water Nutgrass	E1	4	
Dilleniaceae						
<input type="checkbox"/>		Hibbertia marginata	Bordered Guinea Flower	V	36	
Ericaceae						
<input type="checkbox"/>		Melichrus sp. Gibberagee	Narrow-leaf Melichrus	E1	3	
Euphorbiaceae						
<input type="checkbox"/>		Chamaesyce psammogeton	Sand Spurge	E1	1	
Grammitidaceae						
<input type="checkbox"/>		Grammitis stenophylla	Narrow-leaf Finger Fern	E1	3	
Lamiaceae						
<input type="checkbox"/>		Prostanthera palustris	Swamp Mint-bush	V	5	
Lauraceae						
<input type="checkbox"/>		Endiandra hayesii	Rusty Rose Walnut	V	1	
<input type="checkbox"/>		Endiandra muelleri subsp. bracteata	Green-leaved Rose Walnut	E1	3	
Lindsaeaceae						
<input type="checkbox"/>		Lindsaea incisa	Slender Screw Fern	E1	1	
Myrtaceae						

<input type="checkbox"/>	Eucalyptus glaucina	Slaty Red Gum	V	13	
<input type="checkbox"/>	Eucalyptus tetrapleura	Square-fruited Ironbark	V	2	
<input type="checkbox"/>	Melaleuca irbyana	Weeping Paperbark	E1	51	
Orchidaceae					
<input type="checkbox"/>	Geodorum densiflorum	Pink Nodding Orchid	E1	3	
<input type="checkbox"/>	Phaius australis	Southern Swamp Orchid	E1	5	
Polygalaceae					
<input type="checkbox"/>	Polygala linariifolia	Native Milkwort	E1	1	
Polygonaceae					
<input type="checkbox"/>	Persicaria elatior	Tall Knotweed	V	2	
Polypodiaceae					
<input type="checkbox"/>	Drynaria rigidula	Basket Fern	E1	2	
Proteaceae					
<input type="checkbox"/>	Grevillea masonii	Mason's Grevillea	E1	66	
<input type="checkbox"/>	Macadamia tetraphylla	Rough-shelled Bush Nut	V	1	
Rubiaceae					
<input type="checkbox"/>	Oldenlandia galioides		E1	1	
Rutaceae					
<input type="checkbox"/>	Acronychia littoralis	Scented Acronychia	E1	15	

\* *Exotic (non-native) species*

**Appendix 3:** Listing of cultural heritage items by the NSW Heritage Council

<i>Working with the community to know, value and care for our heritage</i>				
<b>Statutory Listed Items</b>				
Information and items listed in the State Heritage Inventory come from a number of sources. This means that there may be several entries for the same heritage item in the database. For clarity, the search results have been divided into two sections.				
<ul style="list-style-type: none"> <li>• <b>Section 1.</b> contains items listed by the <b>Heritage Council</b> under the NSW Heritage Act. This includes listing on the State Heritage Register, an Interim Heritage Order or protected under section 136 of the NSW Heritage Act. This information is provided by the Heritage Branch.</li> <li>• <b>Section 2.</b> contains items listed by <b>Local Councils &amp; Shires and State Government Agencies</b>. This section may also contain additional information on some of the items listed in the first section.</li> </ul>				
<b>Section 1. Items listed under the NSW Heritage Act.</b>				
Click on an item name to view the full details. The search results can be re-sorted by clicking on the <b>(sort)</b> option at the top of each column.				
<b>Item Name (sort)</b>	<b>Address (sort)</b>	<b>Suburb (sort)</b>	<b>LGA (sort)</b>	<b>Listed Under Heritage Act</b>
There were no records in this section matching your search criteria.				
<b>Section 2. Items listed by Local Government and State agencies.</b>				
<b>Item Name (sort)</b>	<b>Address (sort)</b>	<b>Suburb (sort)</b>	<b>LGA (sort)</b>	<b>Information Source (sort)</b>
<a href="#">Abbotsford</a>	11 Alice Street	Grafton	Clarence Valley	LGOV
<a href="#">Alumny Creek Community Hall Site</a>	465 Lawrence Road	Alumny Creek	Clarence Valley	LGOV
<a href="#">Alumny Creek Public School Museum</a>	465 Lawrence Road	Alumny Creek	Clarence Valley	LGOV
<a href="#">Alumny Creek Bridge</a>	Butterfactory Lane	Alumny Creek	Clarence Valley	LGOV
<a href="#">Alumny Creek Reserve</a>	465 Lawrence Road	Alumny Creek	Clarence Valley	LGOV

<b>Angourie National Park</b>	property 119940 The Lakes Bvd	Angourie	Clarence Valley	LGOV
<b>Angourie Point</b>	Angourie Reserve end Pacific Parade, Property 119940	Angourie	Clarence Valley	LGOV
<b>Angourie Point Pools</b>	Angourie Reserve	Angourie	Clarence Valley	LGOV
<b>Angourie Reserve</b>	Property 119940 off Angourie Road	Angourie	Clarence Valley	LGOV
<b>Arcola</b>	150 Victoria Street	Grafton	Clarence Valley	LGOV
<b>Argyll</b>	170 Fitzroy Street	Grafton	Clarence Valley	LGOV
<b>Ashby Bathgate Residence</b>	384 Murrayville Road	Ashby	Clarence Valley	LGOV
<b>Ashby Dry Dock</b>	Green Point	Ashby	Clarence Valley	LGOV
<b>Ashby Sarah Philips Headstone</b>	168 Pateman's Road	Ashby	Clarence Valley	LGOV
<b>Austen's House</b>	364 Lawrence Road	Alumy Creek	Clarence Valley	LGOV
<b>Bancroft Stamper Battery</b>	1054 Lionsville Road	Lionsville	Clarence Valley	LGOV
<b>Bank of NSW former</b>	35-37 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Baryulgil Aboriginal Cemetery</b>	Yulgilbar Station	Baryulgil	Clarence Valley	LGOV
<b>Baryulgil Asbestos Mine Site</b>	Lionsville Road	Baryulgil	Clarence Valley	LGOV
<b>Baryulgil Hall</b>	7139 Clarence Way	Baryulgil	Clarence Valley	LGOV

<b>Blanch's Drain</b>	Riverbank Road	Lower Southgate	Clarence Valley	LGOV
<b>Breimba Street Fig Trees</b>	Breimba Street	Grafton	Clarence Valley	LGOV
<b>Bronte</b>	13 Alice Street	Grafton	Clarence Valley	LGOV
<b>Brooms Head Hall</b>	Property 114797 Brooms Head Road	Brooms Head	Clarence Valley	LGOV
<b>Brooms Head Reserve Pine Trees</b>	property 114797 Brooms Head Reserve	Brooms Head	Clarence Valley	LGOV
<b>Brushgrove Clarence Street Residence</b>	12 -14 Clarence Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove Donaldson Street Bank, Former</b>	2 Donaldson Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove Free Presbyterian Church</b>	Woodford Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove Hotel</b>	6-8 Clarence Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove Police Station &amp; Residence, Former</b>	9 Clarence Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove Post Office</b>	34 Clarence Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove River Street Cottages Pair</b>	34 - 36 River Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove River Street Group</b>	40,36,34,30,28,26,24 River Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove River Street Residence</b>	40 River Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove River Street Residence</b>	28 River Street	Brushgrove	Clarence Valley	LGOV

<b>Brushgrove River Street Residence</b>	26 River Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove Shop and Residence</b>	15 Clarence Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove Shops</b>	40 Clarence Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove The Common</b>	Woodford Street	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove The Triangle</b>	Woodford, Clarence & Donaldson streets	Brushgrove	Clarence Valley	LGOV
<b>Brushgrove Uniting Church</b>	Woodford Street	Brushgrove	Clarence Valley	LGOV
<b>Campbell's House</b>	58-60 Queen Street	Grafton	Clarence Valley	LGOV
<b>Carr's Creek Hall</b>	189 Drake Street	Carr's Creek	Clarence Valley	LGOV
<b>Carr's Creek Public School</b>	195 Drake Street	Carr's Creek	Clarence Valley	LGOV
<b>Carr's Creek School Residence</b>	193 Drake Street	Carr's Creek	Clarence Valley	LGOV
<b>CBC Bank Former</b>	39 Prince Street	Grafton	Clarence Valley	LGOV
<b>Central Hardware</b>	39-43 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Chatsworth Island "Fa Yuen" Residence</b>	142 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Anglican Church</b>	Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Avenue of Trees</b>	Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island</b>	17 Chatsworth Road	Chatsworth	Clarence	LGOV

<b>Community Hall</b>		Island	Valley	
<b>Chatsworth Island CSR Memorial</b>	Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Engineer's Residence</b>	37 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island General Store</b>	9 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Glencoe Residence</b>	10 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Police Residence, Former</b>	27 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Presbyterian Church, Former</b>	Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Puntman's Cottage</b>	Chatsworth Road Reserve	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Read's Store, Former</b>	29 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Residence</b>	7 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Residence</b>	114 North Arm Drive	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Residence</b>	35 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island Residence</b>	Fig Tree Lane	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island School</b>	136 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chatsworth Island School Residence</b>	136 Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV

<b>Chatsworth Island War Memorial</b>	Chatsworth Road	Chatsworth Island	Clarence Valley	LGOV
<b>Chemist Shop</b>	27-29 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Christ Church Cathedral</b>	Duke Street	Grafton	Clarence Valley	LGOV
<b>Christ Church Cathedral Conservation Area</b>	Duke Street	Grafton	Clarence Valley	LGOV
<b>Christ Church Hall</b>	Duke Street	Grafton	Clarence Valley	LGOV
<b>Church of the Holy Apostles</b>	25 Cambridge Street	Copmanhurst	Clarence Valley	LGOV
<b>Church of the Holy Apostles Rectory</b>	3 Cangri Street	Copmanhurst	Clarence Valley	LGOV
<b>Clarence House</b>	71 Through Street	South Grafton	Clarence Valley	LGOV
<b>Clock Tower</b>	Prince Street Intersection	Grafton	Clarence Valley	LGOV
<b>Coaldale-Barretts Creek Memorial Hall</b>	2438 Coaldale Road	Coaldale	Clarence Valley	LGOV
<b>Copmanhurst &amp; Upper Clarence War Memorial</b>	Grafton Street	Copmanhurst	Clarence Valley	LGOV
<b>Copmanhurst CBC Bank</b>	9 Prescott Street	Copmanhurst	Clarence Valley	LGOV
<b>Copmanhurst Cemetery</b>	Clarence Way	Upper Copmanhurst	Clarence Valley	LGOV
<b>Copmanhurst Memorial Hall</b>	Grafton Street	Copmanhurst	Clarence Valley	LGOV
<b>Copmanhurst Police Station &amp; Residence</b>	12 Prescott Street	Copmanhurst	Clarence Valley	LGOV
<b>Copmanhurst Powder</b>	7 Prescott Street	Copmanhurst	Clarence	LGOV

<b>Store</b>			Valley	
<b>Copmanhurst Public School</b>	11 Prescott Street	Copmanhurst	Clarence Valley	LGOV
<b>Copmanhurst Saleyards &amp; Well Site</b>	14 Stuart Street	Copmanhurst	Clarence Valley	LGOV
<b>Davey's Store</b>	2363 Clarence Way	Upper Copmanhurst	Clarence Valley	LGOV
<b>Doust Park</b>	Lawrence Road	Lower Southgate	Clarence Valley	LGOV
<b>Dovedale</b>	8 Breimba Street	Grafton	Clarence Valley	LGOV
<b>Eighteen Mile Dingo Fence</b>	200 Eighteen Mile Road	Eighteen Mile	Clarence Valley	LGOV
<b>Eighteen Mile Sheep Dip</b>	487 Eighteen Mile Road	Eighteen Mile	Clarence Valley	LGOV
<b>Emporium</b>	31-35 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Ewingar Bob-tail</b>	North Ewingar Road	Ewingar	Clarence Valley	LGOV
<b>Ewingar Forestry Camp</b>	North Ewingar Road	Ewingar	Clarence Valley	LGOV
<b>Ewingar Hall</b>	584 Ewingar Road	Ewingar	Clarence Valley	LGOV
<b>First Falls Crossing</b>	Mylneford Road	Mylneford	Clarence Valley	LGOV
<b>Fitzgerald Building</b>	54 Victoria Street	Grafton	Clarence Valley	LGOV
<b>Flying Horse Hotel Site</b>	4983 Pringles Way	Lawrence Road	Clarence Valley	LGOV
<b>Foley's Butter Factory</b>	Riverbank Road	Lower Southgate	Clarence Valley	LGOV

<b>Foott, Law &amp; Co. Offices</b>	56 Victoria Street	Grafton	Clarence Valley	LGOV
<b>Georgian Cottage</b>	Duke Street	Grafton	Clarence Valley	LGOV
<b>Georgian Cottage</b>	137 Victoria Street	Grafton	Clarence Valley	LGOV
<b>Gordon Brook Cottage Site</b>	Gordon Brook Road	Gordon Brook	Clarence Valley	LGOV
<b>Gordon Brook Stables</b>	Gordon Brook Road	Gordon Brook	Clarence Valley	LGOV
<b>Gorge, The</b>		Carnham	Clarence Valley	LGOV
<b>Grafton Agricultural Research &amp; Advisory Station</b>	Trenayr Road	Trenayr	Clarence Valley	LGOV
<b>Grafton Agricultural Station Administration Building</b>	Trenayr Road	Trenayr	Clarence Valley	LGOV
<b>Grafton Agricultural Station Bunyip Swamp</b>	Trenayr Road	Trenayr	Clarence Valley	LGOV
<b>Grafton Agricultural Station Farm Buildings</b>	Trenayr Road	Trenayr	Clarence Valley	LGOV
<b>Grafton Agricultural Station Managers Residence</b>	Trenayr Road	Trenayr	Clarence Valley	LGOV
<b>Grafton Agricultural Station Rainforest Remnant</b>	Trenayr Road	Trenayr	Clarence Valley	LGOV
<b>Grafton Agricultural Station Workers Cottages</b>	Trenayr Road	Trenayr	Clarence Valley	LGOV
<b>Grafton Art Gallery</b>	158 Fitzroy Street	Grafton	Clarence Valley	LGOV

<b>Grafton Civic Group 3</b>	51,53,54,56,57,58 Victoria Street	Grafton	Clarence Valley	LGOV
<b>Grafton Correctional Centre</b>	170 Hoof Street	Grafton	Clarence Valley	LGOV
<b>Grafton Courthouse</b>	53 Victoria Street	Grafton	Clarence Valley	LGOV
<b>Grafton Gaol</b>	Hoof Street	Grafton	Clarence Valley	LGOV
<b>Grafton Old Courthouse Site</b>	51 Victoria Street	Grafton	Clarence Valley	LGOV
<b>Grafton Post Office</b>	57 Victoria Street	Grafton	Clarence Valley	LGOV
<b>Grafton Rail and Road Bridge</b>	North Coast Railway	Grafton	Clarence Valley	LGOV
<b>Grafton Teacher's Centre</b>	97 Mary Street	Grafton	Clarence Valley	LGOV
<b>Grimsby House</b>	805 Summerland Way	Deep Creek	Clarence Valley	LGOV
<b>Harwood Church Street Residence</b>	3 Church Street	Harwood	Clarence Valley	LGOV
<b>Harwood Hall</b>	River Street	Harwood	Clarence Valley	LGOV
<b>Harwood Martins Point Road Residence</b>	86 Martins Point Road/River St	Harwood	Clarence Valley	LGOV
<b>Harwood Mill Road Tram Tracks</b>	Mill Road	Harwood	Clarence Valley	LGOV
<b>Harwood Mill Sports field and Grandstand</b>	Mill Street	Harwood	Clarence Valley	LGOV
<b>Harwood Morpeth Street Residence</b>	18 Morpeth Street	Harwood	Clarence Valley	LGOV

<b>Harwood Old Pacific Hwy Tram Tracks</b>	road reserve Old Pacific Highway	Harwood	Clarence Valley	LGOV
<b>Harwood River Street Trees</b>	River Street	Harwood	Clarence Valley	LGOV
<b>Harwood School</b>	9 Morpeth Street	Harwood	Clarence Valley	LGOV
<b>Harwood School Residence</b>	9 Morpeth Street	Harwood	Clarence Valley	LGOV
<b>Harwood War Memorial</b>	road reserve River Street	Harwood	Clarence Valley	LGOV
<b>Iluka Bluff Sea Stack</b>	Iluka Bluff	Iluka	Clarence Valley	LGOV
<b>Iluka Bluff Tramway Relics</b>	Bluff Head	Iluka	Clarence Valley	LGOV
<b>Iluka Breakwater and crane blocks</b>	adjacent to the River	Iluka	Clarence Valley	LGOV
<b>Iluka Cemetery</b>	Elizabeth Street	Iluka	Clarence Valley	LGOV
<b>Iluka Charles Street Residence</b>	9 Charles Street	Iluka	Clarence Valley	LGOV
<b>Iluka Cricket Pitch, Former</b>	Riverview Street	Iluka	Clarence Valley	LGOV
<b>Iluka Ferry Landing site</b>	Marandowie Drive	Iluka	Clarence Valley	LGOV
<b>Iluka Post Office, Former</b>	90-92 Queen Street	Iluka	Clarence Valley	LGOV
<b>Iluka Riverview Street Residence</b>	14 Riverview Street	Iluka	Clarence Valley	LGOV
<b>Iluka Soldiers Memorial Hall</b>	Charles Street	Iluka	Clarence Valley	LGOV
<b>Iluka Spencer Street</b>	93 Spencer Street	Iluka	Clarence	LGOV

<b>Residence</b>			Valley	
<b>Iluka War Memorial</b>	road reserve Charles Street	Iluka	Clarence Valley	LGOV
<b>Istria</b>	95 Victoria Street	Grafton	Clarence Valley	LGOV
<b>James Creek Cameron Residence</b>	35 James Creek Road	James Creek	Clarence Valley	LGOV
<b>James Creek Flood Gates</b>	Off James Creek Road	James Creek	Clarence Valley	LGOV
<b>James Creek Residence</b>	580 Yamba Road	James Creek	Clarence Valley	LGOV
<b>James Creek Residence</b>	112 James Creek Road	James Creek	Clarence Valley	LGOV
<b>Koolkhan Power Station</b>	Summerland Way	Koolkhan	Clarence Valley	LGOV
<b>Lawrence Anglican Church</b>	High Street	Lawrence	Clarence Valley	LGOV
<b>Lawrence Baptist Church, Former</b>	9 Bridge Street	Lawrence	Clarence Valley	LGOV
<b>Lawrence Manton's Lane Residence</b>	Manton's Lane	Lawrence	Clarence Valley	LGOV
<b>Lawrence School of Arts</b>	10 Bridge Street	Lawrence	Clarence Valley	LGOV
<b>Lawrence Sportsman's Creek Bridge</b>	Grafton Road	Lawrence	Clarence Valley	LGOV
<b>Lionsville Bassetti Grave</b>	Solferino Road	Lionsville	Clarence Valley	LGOV
<b>Lionsville Cemetery</b>	Lionsville Road	Lionsville	Clarence Valley	LGOV
<b>Lionsville Cricket Pitch</b>	Lionsville Road	Lionsville	Clarence Valley	LGOV

<b>Lionsville Hotel Site</b>	nr Donarra Creek	Lionsville	Clarence Valley	LGOV
<b>Lionsville Town Site</b>	nr Donarra Creek	Lionsville	Clarence Valley	LGOV
<b>Lower Southgate River Light</b>	Riverbank Road	Lower Southgate	Clarence Valley	LGOV
<b>Lower Southgate War Memorial</b>	Lawrence Road	Lower Southgate	Clarence Valley	LGOV
<b>Maclean Alexander Street Residence</b>	22 Alexander Street	Maclean	Clarence Valley	LGOV
<b>Maclean Argyle Street Residence</b>	12 Argyle Street	Maclean	Clarence Valley	LGOV
<b>Maclean Cameron Street Cemetery</b>	Cameron Street	Maclean	Clarence Valley	LGOV
<b>Maclean Cameron Street Fine Arts building</b>	Cameron Street	Maclean	Clarence Valley	LGOV
<b>Maclean Cameron Street Showground</b>	Plan 88428 Cameron Street	Maclean	Clarence Valley	LGOV
<b>Maclean Church Street Group 1</b>	24,26,28,30 Church Street	Maclean	Clarence Valley	LGOV
<b>Maclean Church Street Group 2</b>	5,7,12,12A Church Street	Maclean	Clarence Valley	LGOV
<b>Maclean Church Street Residence</b>	23 Church Street	Maclean	Clarence Valley	LGOV
<b>Maclean Church Street Residence</b>	51 Woodford Street	Maclean	Clarence Valley	LGOV
<b>Maclean Church Street Residence</b>	21 Church Street	Maclean	Clarence Valley	LGOV
<b>Maclean Church Street Uniting Church hall</b>	Cnr Church & River Streets	Maclean	Clarence Valley	LGOV

<b>Maclean Church Street Uniting Church/Honour rolls</b>	Church Streets	Maclean	Clarence Valley	LGOV
<b>Maclean Clarence Street Residence</b>	2 Clarence Street	Maclean	Clarence Valley	LGOV
<b>Maclean Clarence Street Residence</b>	3 Clarence Street	Maclean	Clarence Valley	LGOV
<b>Maclean Clyde Street Bakery, Former</b>	14 Clyde Street	Maclean	Clarence Valley	LGOV
<b>Maclean Clyde Street Flats</b>	18-20 Clyde Street	Maclean	Clarence Valley	LGOV
<b>Maclean Clyde Street Group</b>	22,24,26,28 Clyde Street	Maclean	Clarence Valley	LGOV
<b>Maclean Ferry Park Ferry &amp; Barge</b>	Cameron Street & Pacific Highway	Maclean	Clarence Valley	LGOV
<b>Maclean Grafton Street Group</b>	15,17 Grafton Street	Maclean	Clarence Valley	LGOV
<b>Maclean Howard Street the Gables</b>	2b Howard Street	Maclean	Clarence Valley	LGOV
<b>Maclean John Street Residence</b>	10 John Street	Maclean	Clarence Valley	LGOV
<b>Maclean Jubilee Street Hillcrest</b>	Jubilee Street	Maclean	Clarence Valley	LGOV
<b>Maclean McFarlane Bridge</b>	off Woodford Street	Maclean	Clarence Valley	LGOV
<b>Maclean McIntyres Lane Catholic Church</b>	Cnr McIntyres Lane & Woodford Street	Maclean	Clarence Valley	LGOV
<b>Maclean McIntyres Lane Catholic Convent</b>	McIntyres Lane	Maclean	Clarence Valley	LGOV
<b>Maclean McIntyres Lane Catholic Presbytery</b>	McIntyres Lane	Maclean	Clarence Valley	LGOV

<b>Maclean McLachlan Street Group</b>	11,13,15,17 McLachlan Street	Maclean	Clarence Valley	LGOV
<b>Maclean McNaughton Place Courthouse</b>	McNaughton Place	Maclean	Clarence Valley	LGOV
<b>Maclean McNaughton Place Police Station</b>	McNaughton Place	Maclean	Clarence Valley	LGOV
<b>Maclean McNaughton Place Post Office</b>	44 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean Memorial Cairn</b>	Plan 8422 Taloumbi Street	Maclean	Clarence Valley	LGOV
<b>Maclean Morven Street Group</b>	3,4, 5,6,7,9 Morven Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street Residence</b>	3 Oban Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street Residence</b>	10 Oban Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street Residence</b>	16 Oban Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street Residence</b>	14 Oban Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street Residence</b>	11 Oban Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street Residence</b>	7 Oban Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street Residence</b>	9 Oban Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street Residence</b>	15 Oban Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street Residential Group</b>	Oban Street	Maclean	Clarence Valley	LGOV
<b>Maclean Oban Street</b>	road reserve Oban Street	Maclean	Clarence	LGOV

<b>sign</b>				Valley	
<b>Maclean Pages Brickworks</b>	84 Farlows Lane	Maclean	Clarence Valley	LGOV	
<b>Maclean Pinnacle Rock Lookout</b>	off Wharf Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Shops Façade</b>	16 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Antiques Shop</b>	150 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Café</b>	215 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Clarence Hotel</b>	173 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Doctor's Surgery</b>	265 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Fire Station</b>	257 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Flower Box</b>	12 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Footpath Engraving</b>	221 - 225 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Maclean Hotel</b>	28 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Newsagency</b>	227 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Office</b>	6 River Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Offices</b>	30 River Street and Basin Street	Maclean	Clarence Valley	LGOV	
<b>Maclean River Street Parapet Façade</b>	14 River Street	Maclean	Clarence Valley	LGOV	

<b>Maclean River Street Professionals</b>	207 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Real Estate Agency</b>	229 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Residence</b>	65 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Residence</b>	78 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Residence</b>	269 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Residence</b>	76 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Residence</b>	103 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Salvation Army Hall</b>	259 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Shop &amp; Residence</b>	8 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Shop, former Church</b>	267 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Shops &amp; Residences</b>	239-245 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street St. Vincent Shop</b>	185-7 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Theatre Façade</b>	221 - 225 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street Toy Kingdom</b>	217 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean River Street War Memorial</b>	road reserve Cnr River & Short Streets	Maclean	Clarence Valley	LGOV

<b>Maclean River Street Woolitji House</b>	203 River Street	Maclean	Clarence Valley	LGOV
<b>Maclean Short Street Residence</b>	5 Short Street	Maclean	Clarence Valley	LGOV
<b>Maclean Short Street Residence</b>	4 Short Street	Maclean	Clarence Valley	LGOV
<b>Maclean Short Street Residence</b>	3 Short Street	Maclean	Clarence Valley	LGOV
<b>Maclean Stanley Street Brewery, Former</b>	17 -19 Stanley Street	Maclean	Clarence Valley	LGOV
<b>Maclean Stanley Street Group 1</b>	12,16,24,28,30,36,38,40b,44A Stanley Street	Maclean	Clarence Valley	LGOV
<b>Maclean Stanley Street Group 2</b>	(11),13,(15), 17-19, (21) Stanley Street	Maclean	Clarence Valley	LGOV
<b>Maclean Stanley Street Residence</b>	36 Stanley Street	Maclean	Clarence Valley	LGOV
<b>Maclean Stanley Street Residence</b>	16 Stanley Street	Maclean	Clarence Valley	LGOV
<b>Maclean Stanley Street Residence</b>	13 Stanley Street	Maclean	Clarence Valley	LGOV
<b>Maclean Stanley Street Trees</b>	Stanley Street	Maclean	Clarence Valley	LGOV
<b>Maclean Taloumbi Street Group 1</b>	10,(12,14),16 Taloumbi Street	Maclean	Clarence Valley	LGOV
<b>Maclean Taloumbi Street Group 2</b>	27, 31, 33a Taloumbi Street	Maclean	Clarence Valley	LGOV
<b>Maclean Union Street Operating Theatre</b>	Union Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Anglican Rectory</b>	44 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street</b>	5a Wharf Street	Maclean	Clarence	LGOV

<b>Baptist Manse</b>			Valley	
<b>Maclean Wharf Street Free Presbyterian Church</b>	8-10 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Free Presbyterian Manse</b>	10 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Group 1</b>	1,3,5a,7,9,11, Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Group 2</b>	14,16,18,20,22 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Group 4</b>	31,33a,33b,35 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Masonic Lodge</b>	23 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Residence</b>	19 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Residence</b>	34 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Residence</b>	7 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Residence</b>	11 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Residence</b>	12 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Residences</b>	36-38 Wharf Street	Maclean	Clarence Valley	LGOV
<b>Maclean Wharf Street Stone Cottage</b>	Wharf Street & Grafton Street	Maclean	Clarence Valley	LGOV
<b>Maclean Woodford Street Group</b>	12,13 Woodford Street	Maclean	Clarence Valley	LGOV

<b>Maclean Woodford Street Public School Complex</b>	Woodford Street	Maclean	Clarence Valley	LGOV
<b>Maclean Woodford Street Residence</b>	5 Woodford Street	Maclean	Clarence Valley	LGOV
<b>Maclean Woodford Street Residence</b>	38 Woodford Street	Maclean	Clarence Valley	LGOV
<b>McKee's Dairy &amp; Bails</b>	564 Stockyard Creek Road	Stockyard Creek	Clarence Valley	LGOV
<b>Methodist Parsonage former</b>	133 Fry Street	Grafton	Clarence Valley	LGOV
<b>Moleville Rocks Grinding Grooves</b>	Clarence Way	Moleville	Clarence Valley	LGOV
<b>Moleville Rocks Recreation Reserve</b>	Clarence Way	Moleville	Clarence Valley	LGOV
<b>Mountain View Arboretum</b>	Clarence Way	Mountain View	Clarence Valley	LGOV
<b>Mylneford Cemetery</b>	Mylneford Road	Mylneford	Clarence Valley	LGOV
<b>Newbold Lookout</b>	Clarence Way	Winegrove	Clarence Valley	LGOV
<b>Northern Rivers County Council</b>	17 Prince Street	Grafton	Clarence Valley	LGOV
<b>Old Tenterfield Road</b>	Back Forest Lane	Banyabba	Richmond Valley	LGOV
<b>Orange Grove Cottage</b>	18 Baker Street	Carr's Creek	Clarence Valley	LGOV
<b>Palmers Island Residence</b>	24 River Road	Palmers Island	Clarence Valley	LGOV
<b>Palmers Island Residence</b>	1096 -1130 Yamba Road	Palmers Island	Clarence Valley	LGOV

<b>Palmers Island Residence</b>	858 Yamba Road	Palmers Island	Clarence Valley	LGOV
<b>Palmers Island Residence</b>	898 Yamba Road	Palmers Island	Clarence Valley	LGOV
<b>Palmers Island Residence</b>	114 River Road	Palmers Island	Clarence Valley	LGOV
<b>Palmers Island Silo</b>	1096 Yamba Road	Palmers Island	Clarence Valley	LGOV
<b>Palmers Island Village site</b>	River Road	Palmers Island	Clarence Valley	LGOV
<b>Palmers Island Wynyabbie House</b>	797 Yamba Road	Palmers Island	Clarence Valley	LGOV
<b>Plane Trees</b>	Prince Street	Grafton	Clarence Valley	LGOV
<b>Pluck Copper Smelter &amp; Mine</b>	1 km SW	Fine Flower	Clarence Valley	LGOV
<b>Police Inspector's Residence former</b>	1 Duke Street	Grafton	Clarence Valley	LGOV
<b>Post Office Hotel</b>	73-75 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Post Office Hotel</b>	58 Victoria Street	Grafton	Clarence Valley	LGOV
<b>Presbyterian Church</b>	113 Oliver Street	Grafton	Clarence Valley	LGOV
<b>Pulganbar Smelter &amp; Mines</b>	cnr Clarence Way Gordon Brook Road	Gordon Brook	Clarence Valley	LGOV
<b>Residence</b>	99 Oliver Street	Grafton	Clarence Valley	LGOV
<b>Residence</b>	13 Mary Street	Grafton	Clarence Valley	LGOV
<b>Rest Point Hotel</b>	59 Grafton Street	Copmanhurst	Clarence	LGOV

			Valley	
<b>Robert's Cottage</b>	2634 Coaldale Road	Coaldale	Clarence Valley	LGOV
<b>Romiaka Island Burns Farm</b>	1200 Yamba Road	Romiaka Island	Clarence Valley	LGOV
<b>Romiaka Island Burns Silo</b>	1200 Yamba Road	Romiako Island	Clarence Valley	LGOV
<b>Romiaka Island Oyster Channel Bridge</b>	Yamba Road	Romiaka Island	Clarence Valley	LGOV
<b>Roslyn</b>	137 Alice Street	Grafton	Clarence Valley	LGOV
<b>Schaeffer House</b>	192 Fitzroy Street	Grafton	Clarence Valley	LGOV
<b>School Of Arts</b>	77-81 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Semi-detached Cottages</b>	30-32 Villiers Street	Grafton	Clarence Valley	LGOV
<b>Shark Creek Bridge</b>	Pacific Highway	Tyndale	Clarence Valley	LGOV
<b>Shark Creek Pioneers Memorial</b>	Shark Creek Road	Tyndale	Clarence Valley	LGOV
<b>Shop</b>	45-47 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Showground the Barn</b>	Prince Street	Grafton	Clarence Valley	LGOV
<b>Skinner Street Commercial &amp; Civic Group</b>	27-29,31-35,35-37,39-43,45-47,49-51,60,62,73-75,77-81,83-85 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Solferino Township Site</b>	Solferino Road	Solferino	Clarence Valley	LGOV
<b>Solferino Wells</b>	Solferino Road	Solferino	Clarence	LGOV

			Valley	
<b>South Grafton Council Chambers former</b>	64 Spring Street	South Grafton	Clarence Valley	LGOV
<b>South Grafton Post Office</b>	83-85 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Southgate Bakery</b>	1146 Lawrence Road	Southgate	Clarence Valley	LGOV
<b>Southgate Hall</b>	1145 Lawrence Road	Southgate	Clarence Valley	LGOV
<b>Southgate Hotel</b>	1143 Lawrence Road	Southgate	Clarence Valley	LGOV
<b>Southgate Public School</b>	32 School Lane	Southgate	Clarence Valley	LGOV
<b>Southgate School Residence</b>	34 School Lane	Southgate	Clarence Valley	LGOV
<b>Sportsman's Creek Bridge</b>	Grafton Road	Lower Southgate	Clarence Valley	LGOV
<b>Sportsman's Creek Weir</b>	Weir Road	Lower Southgate	Clarence Valley	LGOV
<b>Square, The</b>	7181 Clarence Way	Baryulgil	Clarence Valley	LGOV
<b>St John of the Cross Church</b>	Clarence Way	Upper Copmanhurst	Clarence Valley	LGOV
<b>St Patrick's Church</b>	72 Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Taloumbi Station Blaze Tree</b>	1099-1101 Brooms Head Road	Taloumbi	Clarence Valley	LGOV
<b>Taloumbi Station Hoop Pines</b>	1099-1101 Brooms Head Road	Taloumbi	Clarence Valley	LGOV
<b>Telarah</b>	289 Oliver Street	Grafton	Clarence Valley	LGOV

<b>The Deanery</b>	Duke Street	Grafton	Clarence Valley	LGOV
<b>Townsend Jubilee Street Residence</b>	3 Jubilee Street	Townsend	Clarence Valley	LGOV
<b>Tullymorgan Arndilly</b>	662 Tullymorgan Road	Tullymorgan	Clarence Valley	LGOV
<b>Tullymorgan former School and Reserve</b>	1069 Tullymorgan Reserve	Tullymorgan	Clarence Valley	LGOV
<b>Tyndale Cane Barracks</b>	18 Gallagher's Lane	Tyndale	Clarence Valley	LGOV
<b>Tyndale Residence</b>	3121 Pacific Highway	Tyndale	Clarence Valley	LGOV
<b>Tyndale Residence</b>	2861 Pacific Highway	Tyndale	Clarence Valley	LGOV
<b>Tyndale Sheehy Residence</b>	2742 Pacific Highway	Tyndale	Clarence Valley	LGOV
<b>Ulgundahi &amp; Corolama Islands</b>	Clarence River by North Arm	Maclean	Clarence Valley	LGOV
<b>Ulverstone</b>	197 Fitzroy Street	Grafton	Clarence Valley	LGOV
<b>Verona</b>	213 Fitzroy Street	Grafton	Clarence Valley	LGOV
<b>Victorian Cottage</b>	Duke Street	Grafton	Clarence Valley	LGOV
<b>Waghorn's Slab House</b>	Pine Street	Junction Hill	Clarence Valley	LGOV
<b>Walker's Marina Hotel</b>	90 Through Street & Skinner Street	South Grafton	Clarence Valley	LGOV
<b>Warregah Island Lewis Residence</b>	Warregah Island Road	Warregah Island	Clarence Valley	LGOV

<b>Warregah Island Residence</b>	Not located Warregah Island Road	Warregah Island	Clarence Valley	LGOV
<b>Warregah Island The Oaks</b>	Warregah Island Road	Warregah Island	Clarence Valley	LGOV
<b>Woodford Island Residence</b>	321 Woodford Dale Road	Woodford Island	Clarence Valley	LGOV
<b>Woodford Island Residence</b>	25 South Arm School Road	Woodford Island	Clarence Valley	LGOV
<b>Woodford Island Small's Cemetery</b>	South Arm Road	Woodford Island	Clarence Valley	LGOV
<b>Woodford Island South Arm School and Residence, Former</b>	179 South Arm School Road	Woodford Island	Clarence Valley	LGOV
<b>Woodford Island Woodford Leigh School</b>	3701 Woodford Dale Road	Woodford Island	Clarence Valley	LGOV
<b>Woody Head Hall and Piano</b>	Bundjalung NP	Woody Head	Clarence Valley	LGOV
<b>Woody Head Hammond's Cottage</b>	Bundjalung NP	Woody Head	Clarence Valley	LGOV
<b>Woombah School &amp; Residence, Former</b>	43 Adams Street	Woombah	Clarence Valley	LGOV
<b>Yamba Ager Park</b>	Ocean Street	Yamba	Clarence Valley	LGOV
<b>Yamba Clarence Head Lighthouse Precinct</b>	Off Pilot Street	Yamba	Clarence Valley	LGOV
<b>Yamba Clarence Street Commercial Group</b>	7,9,11,13 Clarence Street	Yamba	Clarence Valley	LGOV
<b>Yamba Flinders Park</b>	Cnr Clarence & Queen Streets	Yamba	Clarence Valley	LGOV
<b>Yamba Gantry Wall</b>	Clarence River	Yamba	Clarence Valley	LGOV

<b>Yamba Harbour Street Calypso Caravan Park</b>	Harbour Street	Yamba	Clarence Valley	LGOV
<b>Yamba Pacific Hotel:Columns and 1950s façade fronting Pilot St</b>	18 Pilot Street	Yamba	Clarence Valley	LGOV
<b>Yamba Queen Street War Memorial</b>	road reserve Queen Street	Yamba	Clarence Valley	LGOV
<b>Yamba River Street Flagpole</b>	Norfolk Park River Street	Yamba	Clarence Valley	LGOV
<b>Yamba River Street Museum</b>	River Street	Yamba	Clarence Valley	LGOV
<b>Yamba Rock Swimming Pool</b>	Main Beach	Yamba	Clarence Valley	LGOV
<b>Yamba Rocky Laurie Drive Sign</b>	Rocky Laurie Drive	Yamba	Clarence Valley	LGOV
<b>Yamba Surf Club</b>	Main Beach	Yamba	Clarence Valley	LGOV
<b>Yamba Wooli Street Mile Post</b>	Fred Phillips Park Wooli Street	Yamba	Clarence Valley	LGOV
<b>Yamba Wooli Street Norfolk Pines</b>	road reserve Wooli Street	Yamba	Clarence Valley	LGOV
<b>Yamba Wooli Street Police Station</b>	45 Wooli Street	Yamba	Clarence Valley	LGOV
<b>Yamba Wooli Street School Residence</b>	44 Wooli Street	Yamba	Clarence Valley	LGOV
<b>Yamba Yamba Road Kearns Boatshed</b>	off Yamba Road	Yamba	Clarence Valley	LGOV
<b>Yamba Yamborra Fibro Cottages</b>	Rocky Laurie Drive	Yamba	Clarence Valley	LGOV
<b>Yulgilbar Hamilton Graves</b>	Lionsville Road	Yulgilbar	Clarence Valley	LGOV

<b>Yulgilbar Homestead</b>	351 Lionsville Road	Yulgilbar	Clarence Valley	LGOV
<b>Yulgilbar Laundry Cottage</b>	300 Lionsville Road	Yulgilbar	Clarence Valley	LGOV
<b>Yulgilbar Ogilvie Vault</b>	351 Lionsville Road	Yulgilbar	Clarence Valley	LGOV
<b>Yulgilbar Penrose House Site</b>	Lionsville Road	Yulgilbar	Clarence Valley	LGOV
<b>Yulgilbar Sketch House</b>	300 Lionsville Road	Yulgilbar	Clarence Valley	LGOV
<b>Yulgilbar Station</b>	Lionsville Road	Yulgilbar	Clarence Valley	LGOV
<b>Yulgilbar The Big House</b>	300 Lionsville Road	Yulgilbar	Clarence Valley	LGOV

There were **375** records in this section matching your search criteria.

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There was a total of **375** records matching your search criteria.

**Key:**  
LGA = Local Government Area  
GAZ= NSW Government Gazette (statutory listings prior to 1997), HGA = Heritage Grant Application, HS = Heritage Study, LGOV = Local Government, SGOV = State Government Agency.

**Note:** The Heritage Branch seeks to keep the State Heritage Inventory (SHI) up to date, however the latest listings in Local and Regional Environmental Plans (LEPs and REPs) may not yet be included. Always check with the relevant Local Council or Shire for the most recent listings.